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The Relationship Between Macro Economic Variables And Stock Market Performance In Kenya

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This study investigates the relationship between macroeconomic variables on NSE All share index (NASI) and goes further to determine whether changes in macroeconomic variables can be used to predict the future NASI. Three key macroeconomic variables are examined and they include lending interest rate, inflation rate and 91 day Treasury bill (T bill) rate. Secondary data for the periods March 2008 to March 2012 is collected as follows; data for NASI was obtained from the Nairobi Securities Exchange (NSE), data for inflation was obtained from Kenya National Bureau of Statistics and finally data for lending rates and 91-day T Bill was obtained from Central Bank of Kenya (CBK). The data is analysed using regression method. The lending rate is dropped from the regression model since it is correlated with the 91-Day T bill rate. The findings in the study indicate that 91 – day T bill rate has a negative relationship with the NASI while inflation has a weak positive relationship with the NASI. Based on these findings, the study recommends monitoring of the macroeconomic environment since the changes in the macroeconomic variables has an effect on the stock market performance, which also influences the foreign investor's decisions in the local investments.

Key Words: Nairobi All Share Index (NASI), Macroeconomic Variables, Stock market performance, Multi Model Framework (MMF), Kenya.

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Introduction

The stock market promotes economic growth by providing avenue to pool large and long term capital through issuing of shares and stocks and other equities for industries in dire need of finance to expand their business. Thus, the overall development of the economy is a function of how well the stock market performs and empirical evidences have proved that development of the capital market is essential for economic growth (Asaolu and Ogunmuyiwa, 2010). No doubt, a relationship exists between stock market development and growth of the economy and stock prices are generally believed to be determined by some fundamental macroeconomic variables such as lending rate, inflation, money supply and exchange rate. Empirical evidences have shown that changes in stock prices are linked with macroeconomic behaviour in advanced countries (Muradoglu *et al*., 2000). Ross (1976) employed statistical tools like factor analysis in the Arbitrage Pricing Theory (APT) and therefore initiated the use of variables without the need of pre specification of variables in determination of stock returns. But it did not take too long before the criticisms started to appear. One major criticism was that APT could not specify the factors, but just derive them statistically. This inadequacy of the APT was accepted even in the first empirical APT study done by Roll and Rose in 1980.

Roll and Ross (1980) posits that the factors derived by factor analysis should be fundamental economic aggregates such as GNP or interest rates. Furthermore, they acknowledged that the APT could not specify these economic factors. Finally they suggested an investigation of economic factors that are proxy by derived factors in the APT (Roll and Ross, 1980). Chen, Roll and Ross (1986) were the first to employ specific macroeconomic factors as proxies for undefined variables in the APT. The three researchers attempted to express the equity returns as a function of macroeconomic variables. Since economic forces like interest rates, Treasury bill rates can influence expected dividends and the discount rate, it was concluded that stock prices hence stock returns are systematically affected by economic variables.

The Macroeconomic Factor Model (MFM) has been of great interest to various researchers after APT failed to pre specify the factors in its model rather than deriving them statistically. Another concern about APT was the inability to make economic interpretation of the results derived from the model. These inadequacies led to emergence of a new model based on macroeconomic variables called MFM. Since macroeconomic forces influence expected dividend and discount rate, it can be concluded that stock prices and hence stock returns are systematically affected by macroeconomic variables. After 1986, the relationship between various macroeconomic variables and stock returns has been widely documented for various countries majorly in developed countries and therefore the need to undertake the studies in developing countries as well, Kenya included. There exists no theoretical framework for the selection of macroeconomic variables and hence different studies yield different results based on the macroeconomic factors included in the model and therefore there is need to harmonize the MFM model.

Towards the end of the year 2011, Kenyan economy experienced very unpredictable movement of macroeconomic variables like very high lending interest rates and high rates of inflation that led to several domestic workers take industrial actions. Foreign currency rates were very volatile and led to importers losing a lot of funds in imports since the foreign currency rates were not favourable while farmers and exporters were beneficiaries of the same. This led to Central Bank of Kenya increase the base lending rates in a bid to stabilize the Kenyan currency that had performed poorly as compared to the major world currencies. All these however did have an effect on the returns of various investments in the country since more funds were being channelled towards consumption rather than investments. The study is therefore designed to establish the resultant relationship between these specified Macroeconomic factors and NASI in the economy. The study covers all the listed firms in NSE for the four year period starting March 2008 to March 2012.

The objective of the study is to investigate whether there exists a relationship between macroeconomic variables and stock market performance in Kenya.

Review of Related Literature

Atje and Jovanovic (1993) found strong evidence to support the view that stock market development leads to economic growth. Using data from 1976 to 1993 on 41 countries including both developed and developing, Levine and Zervos (1996a) investigated the relationship between economic growth and stock market development. They all found a strong positive correlation between the stock market development and long-run economic growth after controlling for the initial level of per capita GDP, initial level of investment in human capital, political instability and measures of fiscal and monetary policies as well as exchange rate policy. Ajayi and Mougoue (1996) examined the relationship between stock prices and exchange rates. They studied both the short-run and long-run relationships between the two variables in eight major industrial markets. Their results showed that an increase in domestic stock prices has a negative short-run effect on the domestic currency value. However, sustained increases in the domestic stock prices in the long run cause an increase in the domestic currency, due to the increased demand for the currency.

Maghyereh (2002) investigated the long-run relationship between the Jordanian stock prices and selected macroeconomic variables, again by using Johansen and Juselus (1999) cointegration analysis and monthly time series data for the period from January 1987 to December 2000. The study showed that macroeconomic variables were reflected in stock prices in the Jordanian capital market. Pisedtasalasai and Power (2004) examined the influence of macroeconomic variables on stock market equity values in Sri Lanka, using the Colombo All Share price index to represent the stock market and the money supply, the treasury bill rate (as a measure of interest rates), the consumer price index (as a measure of inflation) and the exchange rate as macroeconomic variables and with monthly data for the 17-year period from January 1985 to December 2001 and employing the usual battery of tests, which included unit roots, co integration they examined both long-run and short-run relationships between

the stock market index and the economic variables. The Vector Error Correction Model analysis provided support for the argument that the lagged values of macroeconomic variables such as the consumer price index, the money supply and the Treasury bill rate have a significant influence on the stock market. Patra and Poshakwale (2006) examined the short-run dynamic adjustments and the long-run equilibrium relationships between selected macroeconomic variables, trading volume and stock returns in the Greek stock market during the period of 1990 to 1999. They reach results showing that short run and long run equilibrium relationship exists between inflation, money supply and trading volume and the stock prices in the Athens stock exchange. No short run or long run equilibrium relationship is found between the exchange rates and stock prices.

Abugri (2006) performed a study to determine whether selected macroeconomic indicators like exchange rates, interest rates, industrial production and money supply in four Latin American countries significantly explain market returns. His research results indicated that the global factors are consistently significant in explaining returns in all the markets. The country macroeconomic variables are found to impact the markets at varying significance and magnitudes. Robert (2008) while conducting a study on the effect of macroeconomic variables on stock market returns for four emerging economies of Brazil, Russia, India and China affirmed that there was no significant relationship between present and past market returns with macroeconomic variables, suggesting that the markets of Brazil, Russia, India and China exhibit weak form of market efficiency. Also, no significant relationship was found between respective exchange rate and oil price on the stock market index prices of the four countries studied. Coleman and Tettey (2008) while examining the impact of macroeconomic variables on Ghana Stock Exchange using quarterly data for the period 1991 to 2005 concluded that market lending rates from deposit money banks have adverse effect on stock market performance. The study also found inflation to be negatively related to stock market performance and this effect takes time because of the presence of a lag period.

METHODS

The study is a correlation study. The basic empirical investigation here is to determine whether there exists a relationship between stock market performance and selected macroeconomic variables. Data for the NASI and the Macroeconomic Variables is collected for the periods between March 2008 and March 2012. Various researchers including Coleman and Tetty (2003) and Asaolu and Ogunmuyiwa (2010) have successfully used the design to analyze the relationship between stock prices and different macroeconomic variables. This study uses a census of all listed companies at the Nairobi Securities Exchange. There were 58 companies listed in NSE as at March 2012. Their stock returns through the NASI are analyzed together with the selected macroeconomic factors namely 91day T-Bill rate, inflation rate and the lending rate.

Secondary data is used in this study. A time series of monthly data spanning from March 2008 to March 2012 is used employing 48 data points for effective inference. The data is obtained from

various sources. Data on T bill rates and lending rates is obtained from the Central Bank of Kenya's monthly publication. The monthly inflation rate is obtained from the Kenya National Bureau of statistics. The NASI is an average measure of the performance of all quoted companies in NSE spanning through insurance, manufacturing, banking, service companies and real estate. The data for NASI was obtained from the NSE bulletin
Co integration analysis (Regression with non stationary variables) is used to establish the relationship between various macroeconomic variables and the performance of the Nairobi Securities Exchange. Most studies have established that majority of macroeconomic variables are non stationary hence Unit root test is not undertaken. Estimation results from running simple regression models for these macroeconomic variables would imply obtaining spurious relationships. Co integration analysis could be applied to avoid dubious regression results. Most researchers have used Engel and Granger (1987) two-step procedure however this research uses autoregressive distributed lag (ARDL) bound test approach which has been suggested by Pesaran and Shin (1999).

ARDL approach has an advantage in a sense that it relaxes a restrictive assumption that all variables must be integrated of order one variable. ARDL method allows some variables to be integrated of purely order 1, and some of order 0 or mutually Co integrated. Thus, under uncertainty condition of variable characteristics, ARDL method may be most suitable. Moreover, the estimates of ARDL approach are unbiased and efficient. It also has the following advantages: Method is powerful even for small sample size investigations, it helps to estimate long-run and short-run relationship models and lastly it determines explanatory strengths of exogenous variables. In order to undertake the empirical analysis on the relationship between the selected macroeconomic indicators and the performance of the stock market index, the below macro-econometric model is used:

$$Y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + \beta_3 x_{3t} + \mu_t$$

Where:

- Y is the dependent variable (NSE Performance)
- X_1 is the 91 Treasury bill rate, X_2 is the Lending rate and X_3 is the inflation rate.
- *Bj* represents the various coefficients
- μ_t is the error term

RESULTS AND DISCUSSION

This study investigates the relationship that exists between stock market performance and selected macroeconomic variables. Below is the summary of the findings:

Table 1: Summary of Various Variables under Study:

	Mean	Std. Deviation	N
The NSE All Share Index	82.7865	15.1380	50
CPI (Measure of inflation)	169.5284	88.99431	50
The Lending Rate	6.6034	6.32429	50
The 91 day Treasury Bill	7.5945	4.53994	50

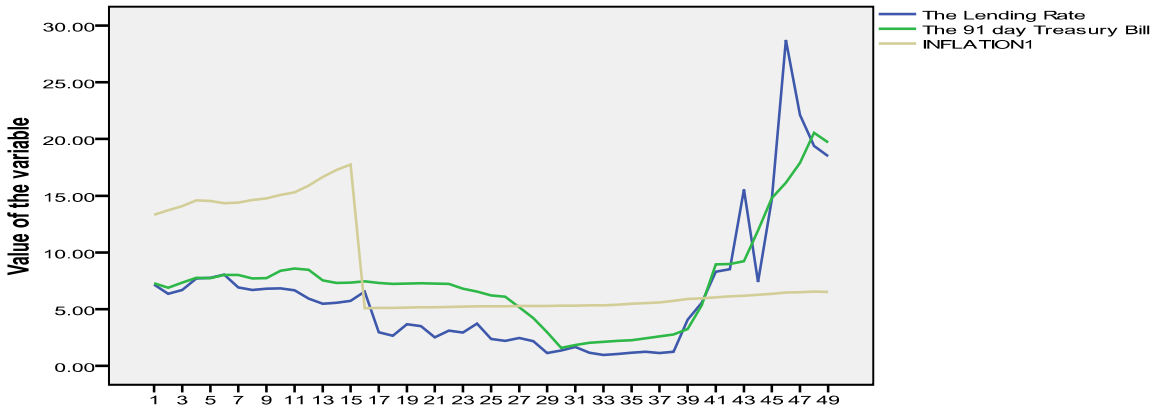
From Table 1, the average NASI during the period is 82.78, the average for CPI (proxy for inflation rates), lending rate and 91 day Treasury bill are 169.52, 6.603 and 7.594 respectively.

Figure 1: A Line Graph of Monthly NASI Data from March 2008 to March 2012



Monthly data from March 2008 to March 2012

The NASI index started from a low of 92.00 from March 2008 to an all time maximum of 131 in August in 2008. The rate has been fluctuating depending in various macroeconomic environment as well as the different government and monetary policies in place.



Graph Representing Various Independent Variables

Figure 2: A Line Monthly data from March 2008 to March 2012

The above line graph represents the trend of various macroeconomic variables in the study. Both the 91 day T bill rate as well as the lending rate has a common upward trend notably from March 2011. A decline on this trend is expected since the government through various monetary policies has been able to control both rates. The inflation rate was in the all time high in 2008 and 2009 but has declined in the years 2010 and 2011.

Before carrying out the regression analysis, various tests were done on the data to ensure that key assumptions of regression model are not violated. Tests to detect the presence of heteroskedasticity, Autocorrelation as well as multicollinearity were undertaken.

Examination of the residuals is a good visual diagnostic to detect autocorrelation and heteroskedasticity. Heteroskedasticity occurs if variance of residuals isn't constant across observations in the sample. A key assumption of regression analysis is that the variance of the residuals is constant across the observations. Effect of heteroskedasticity is that standard errors and F-test become unreliable but the coefficient estimated becomes unaffected (Newey and West, 1987). To detect heteroskedasticity (Non Homoscedasticity) of error term, we carry out a null hypotheses that the variance of the error term is zero. From the test carried out, the F statistic is found to be 1.165 with a probability of 0.078 which is insignificant. We therefore fail to reject the null hypothesis and conclude that the variance of the error term is constant.

Table 2: A Table of Residual Squared

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6919770.385	3	2306590.128	5.627	.002[a]
	Residual	1.886E7	46	409900.595	1.165	.078
	Total	2.578E7	49			

a. Predictors: (Constant), The 91 day Treasury Bill, The Inflation Rate, The Lending Rate

b. Dependent Variable: The NSE All Share Index

R-Squared can be used to measure the fraction of the variation of dependent variable that is explained by the regression equation. It can therefore be used to check the validity of the resultant model. In the above model, the coefficient of determination (R - Squared) is 0.636. This implies that 63.6% of the changes in the explanatory variable can be explained by the predictor variable. This leaves only 36.4% unexplained by the model. Since the Adjusted R-Squared isn't affected by the sample size, it therefore becomes the best measure. Our adjusted R-squared measure is 0.582 hence the explanatory variables can explain well the changes in the predictor variable.

Autocorrelation refers to a situation in which the residual terms of the independent variables are correlated with one another. Positive serial correlation results in coefficient standard errors which are too small leading to misleading results (Newey and West, 1987). The null

hypothesis is that the residuals are not correlated. The Breusch-Godfrey serial correlation test gives a probability of 0.0438. This value is insignificant thus we accept the null hypothesis and conclude that there is no correlation.

Table 3: Breusch-Godfrey Serial Correlation

Breusch-Godfrey Serial Correlation			
F-statistics	1.7564	Probability	0.0438
Obs*R-squared	2.951	Probability	0.2568

Multicollinearity refers to the condition when two or more of the independent variables, or linear combinations of the independent variables, in a multiple regression are highly correlated with each other (Mukras, 1995). This condition distorts the standard error of estimates hence leading to problems when conducting t-tests for statistical significance of parameters. Multicollinearity can be tested by checking for correlation among the independent variables.

Table 4: A Table of Collinearity Statistic

Coefficients[a]

Model		Correlations			Collinearity Statistics	
		Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)					
	TheInflation Rate	.084	.146	.127	.991	1.009
	The Lending Rate	-.274	.291	.260	.191	5.241
	The 91 day Treasury Bill	-.430	-.446	-.427	.190	5.252

a. Dependent Variable: The NSE All Share Index

Variance Inflation Factor (VIF) measures the degree to which the interrelatedness of the variable with other predictor variables inflates the variance of the estimated regression coefficient for that variable. Therefore, a high VIF value indicates high multicollinearity of that variable with other independents and instability of the regression coefficient estimation process. VIF=1 is ideal hence in our model hence the independent variables are not correlated while the lending rate and the 91 day T bill is highly correlated and therefore one variable (lending rate) can be eliminated from our model.

The study also conducts a regression analysis in order to predict future stock performance using the selected macroeconomic variables. The empirical model is estimated is as below:

$Y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + \beta_3 x_{3t} + \mu_t$

Where:

- Y is the dependent variable (NSE Performance)

- X_1 is the 91 Treasury bill rate, X_2 is the Lending rate and X_3 is the inflation rate.
- *Bj* represents the various coefficients
- μ_t is the error term

R-Squared measures the fraction of the variation of dependent variable that is explained by the regression equation. It can therefore be used to check the validity of the resultant model. The resultant R-Square results are as below;

Table 5: A Table of Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798[a]	.636	.582	13.17831

a. Predictors: (Constant), The 91 day Treasury Bill, The Inflation Rate

In the above model, the coefficient of determination (R Squared) is 0.636. This implies that 63.6% of the changes in the explanatory variable can be explained by the predictor variable. This leaves only 36.4% unexplained by the model. Since the R-Squared doesn't increase with an increase in the sample size, it therefore becomes the best measure. Our adjusted R-squared measure is 0.582 hence the explanatory variables can explain well the changes in the predictor variable.

Table 6: A Table of Regression Coefficient Results

Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	94.736	4.973		19.050	.579
	The Inflation Rate	.006	.021	.035	.279	.781
	The 91 day Treasury Bill	-1.677	.420	-.505	0.0989	0.274

a. Dependent Variable: The Nairobi All Share Index

From the table, the trend multiple regression model below can be deduced.

NASI= 94.736 + 0.035INF -0.505TBILL

Where:

- NASI is the dependent variable (NSE Performance)
- TBILL is the 91 Treasury bill rate
- INF is the inflation rate.

There is a direct positive relationship between NASI and Inflation, while the relationship between the NASI and T bill is negative. This implies that when the rates of 91 day T Bill go up most investors find it more attractive as compared to investing on common shares at NSE and hence the decline in the stock market activity leading to decreased performance. Variable coefficient for inflation in our model is positively signed. In Kenya however, inflation plays a major role in price determination and has a negative impact on prices.

CONCLUSION

From the study, it has been established that there exists a relationship between selected macroeconomic variables and the Nairobi All Share Index. The diagnostic tests revealed that the residuals are normally distributed, there is no autocorrelation and the multicolinearity test indicated that 91 day T bill rate and the lending rates are correlated and therefore one variable was eliminated in the final model so that the estimates may be reliable.

From the model, the NASI is positively affected by inflation and negatively affected by the T bill rate. Inflation leads to a reduction in the demand for market instruments which tends to reduce the volume of trading and thus value of traded stocks with no price increase (Coleman and Tettey, 2008). This can explain the weak positive relationship of 0.035 found in the study. There is a strong negative relationship between the 91 day T-bill and the NASI. The reason could be that T-bill rates tend to compete with stocks and bonds for the resources of investors. This reduces the demand for stock market instruments and causes an eventual reduction in stock prices. The relationship between stock prices and Treasury bill rates is thus negative.

Implications of the Study

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. Regions with stable macroeconomic environment enjoy increased activity at the stock market and hence an increased performance.

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.

REFERENCES

Abeyratna, G., Pisedtasalasai, A. and Power, D. (2004). Macroeconomic influence on the stock market: evidence from an emerging market in South Asia. *Journal of Emerging Market Finance* 3, 85-304

Abugri B.A. (2006). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American markets. *International Review of Financial Analysi.19.228-245*

Ajayi R.A., and Mougou M. (1996). On the dynamic relation between stock prices and exchange rates. *Journal of Financial, 19, 193-207.*

Asaolu, T. O., and Ogunmuyiwa, M.S. (2010).An econometric analysis of the impact of macroeconomic variables of stock market movement in Nigeria. *Asian Journal of Business Management*, 3, 72-78.

Atje, R., and Jovanovic, B. (1993). Stock markets and development. *European Economic Review,* 37,632-640.

Chen, N., Roll, R., and Ross, S. A. (1986). Economic Forces and the Stock Market. *Journal of Business,* 59,383-403.

Coleman, A. K., and Tetty, K. F.A. (2008).Impact of Macroeconomic variables on Ghana stock exchange.

Journal of Risk and Fiinance,4, 365-378.

Daniel, K., Hirshleifer, D. and Subrahmanyam, A. (1997). A theory of overconfidence, self-attribution, and security market

Engel, R.F., and Granger, C.W.J. (1987). Cointegration and error-correction representation, estimation and testing, *Econometrica*, 55, 251-76

Fama, E. F. (1981). Stock returns, real activity, inflation and money. *The American Economic Review* 71(4), 45-565.

Fama E. F., and Schwert, W.G. 1977. Asset returns and inflation. *Journal of Financial Economics* 5: 115-146.

Fama, E., and French, R. (1996). Multifactor explanations of asset pricing anomalies. *Journal of finance, 51,* 55-84

Fama, E. (1970). Efficient capital markets: a review of theory and empirical work. *Journal of Finance,* 25, 383-417.

Gan, C., M. Lee, H. Yong and J. Zhang, 2006. Macroeconomic variables and stock market interactions: New Zealand evidence. Int. Manage. *Financ. Innov., 3(4): 89-101*

Granger, C. W. J. (1986). Developments in the study of cointegrated economic variables. *Oxford Bulletin of Economics and Statistics,* 48, 213-228.

Granger, C.W.J. (1969). Investigating causal relationships by econometric models and cross spectral methods. *Econometrica*, 17, 424-438.

Gurley, J.G., and Shaw, E.S. (1955). Financial aspects of economic development. *American Economic Review*, 4, 515-38.

Hong, H., and Stein, J. (1997). A unified theory of underreaction, momentum trading, and overreaction in asset markets. *Unpublished Working Paper. Sloan School of Management, Massachusetts Institute of Technology*

Jebet, C. (2001). A study of corporate governance. The case of quoted companies in Kenya. Unpublished project of University of Nairobi.

Johansen, S., and Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. O*xford Bulletin of Economics and Statistics*, 52, 169-210.

Kimura J., and Amoro, Y. (1995). Impediments to the Growth of the Nairobi Stock Exchange. Unpublished project of University of Nairobi.

Kibuthu, G.W. (2005). Capital market in emerging economies, a case study of the Nairobi Securities exchange. Unpublished University of Nairobi Project, 15.

Levine, R., and Zervos, S. (1996a). Stock market development and long-run growth. *The World Bank Economic Review*, 2, 323-39.

Maghyereh, A. I. (2002). Causal relations among stock prices and macroeconomic variables in the small, open economy of Jordan. Available at http://ssrn.com

Maysami, R. C., and Sim, H. H. (2002). Macroeconomics variables and their relationship with stock returns: error correction evidence from Hong Kong and Singapore. *The Asian Economic Review* 44(1): 69-85.

Masila, M. J. (2010). The Determinants of stock market development; A case of Nairobi stock exchange. Unpublished project of University of Nairobi.

Muradoglu, G., Taskin F., and Bigan, I. (2000). Causality between stock returns and macroeconomic variables in emerging markets. *Journal of Finance and Trade,* 36(6), 33-53.

Mukras M. S (1995). Elementary Econometrics: Theory, applications and policy. Kenya Literature Bureau, Nairobi

Munga, N. (1974). The Nairobi stock exchange, its history, organization and role in Kenya economy. *Unpublished MBA Project, University of Nairobi.*

Nelson, C. R. (1976). Inflation and rates of return on common stocks. *Journal of*

Finance 31(2): 471-483.

Newey W., and West K. (1987). A simple positive semi-definite,heteroskedasticity and autocorrelation consistent covanriance matrix. *Econometrica*, 55, 703-703.

NSE (2011). *History of Organization*, retrieved on June 29, 2011 from http://www.nse.co.ke/about-nse/history-of-organisation.html.

Nyamute M. N. (1998). Relationship between NSE Index and Major Macroeconomic Variables. . Unpublished MBA Project of University of Nairobi.

Oyoga, B. O. (2010). Corporate Governance and Firm Performance of Financial Institutions Listed in Nairobi stock Exchange. Unpublished MBA Project of University of Nairobi.

Patra T., and Poshakwale S. (2006). Economic variables and stock market return; evidence from the Athens stock exchange. *Applied Financial Economics. 6, 993-1006.*

Pesaran, M. H., and Shin. Y. (1997). An autoregressive distributed lag modeling approach to cointegration analysis. *Econometrica*, 11,224-236.

Ross, S. A. (1976). The Arbitrage Theory of Capital Asset Pricing. *Journal of Economic Theory*, 13, 341-360.

Roll, R., and Ross S. (1980). An Empirical Investigation of the Arbitrage Pricing Theory. *Journal of Finance*, 35, 1073-1103.

Robert, D.G. (2008). Effect of macroeconomic variables on stock market returns for four emerging economies: Brazil, Russia, India and China. Int. Bus. Econ. Res. J., 7(3)