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The Relationship between Stock Market Performance and Economic Growth In the East African Community

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Abstract

Purpose – This paper investigated the relationship between the stock market performance and the economic growth in the East African Community. The stock market variables considered in the study were stock market capitalization, market liquidity and share price volatility. The GDP growth was a used a measure for economic growth.

Methodology – The quantitative research methods were employed to define the nature of relationship between the variables. The population of the study was the All-Share index in the 4 stock markets in the member countries. To fulfill the purposes under the research, the stock market performance of the EAC member countries was collected from the Capital markets, EASRA and the respective Stock Exchanges. Data for GDP growth was collected from the World Bank website. The study employed the Vector Autoregressive (VAR) model as well as the Granger test for causality to estimate as well as provide evidence regarding the nature and direction of relationship of the variables.

Findings - The study established an existence of long term relationship between the stock market performance variables (market capitalization and liquidity) and economic growth in the East African community. The study established that there was no relationship between the share price volatility of the stock market and economic growth.

Implications - These results depict that an increase in stock market capitalization and liquidity in the East African Community contributes to the economic growth in the long term. Policies, measures and efforts geared towards improving the efficiency of the stock markets through lowering transactional costs and improving equity turnover should be put in place by the East Africa Community to enhance economic development and growth of the region.

Value – The study established the need for the East Africa Community to focus on developing strong and effective stock markets as well as policies to foster investments and economic growth in the region. Through the establishment of the East African Securities Regulatory Authority (EASRA), policies that encourage financial integration and deepening as well as listings and cross listings ought to be established to spur economic growth.

Key Words; *Stock market performance, economic growth, East Africa Community*

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Introduction

The market of stock is one of the most significant aspects of the economy as it offers long-term as well as short-term capital to companies and investment opportunities to both primary and secondary investors. Trading in the stock market is well organized and regulated by the Stock Exchange Authorities. The returns from equity investments vary to the movement of share prices which depend on various factors. The factors could be internal or firm specific such as earnings per share, dividends and book value or external factors like inflation, economic development, interest rates, foreign exchange rates as well as government regulation. An improvement in the stock market performance could indicate an improvement of the macroeconomic factors of a country while on the other hand; it could also be a consequence of economic growth (Barasa, 2014).

Economic theory proposes that there must be a stronger connection between economic action as well as prices of stock given that the price of the stock is the discounted present worth of a company's expenditure. However, this is not the case in certain instances. For example, the stock market crash around the world in 1987 barely affected the economic growth of the USA, Spain, Hong Kong, United Kingdom and Canada as was widely predicted. The decline of 2009 nevertheless, activated a huge scale drip in stock prices that was mirrored in the Dow Jones as well as the S&P 500 (Fuentes-Nieva, & Pereira, 2010).

In EAC, the equity markets include; (NSE), (USE), (DSE) and (RSE).The EAC countries' have recorded improved economic act at an average of 3.7% during the past decade (Gigineishvili, Mauro and Wang, (2014), Kaijage and Elly (2014) underscores that though financial integration has not deepened in EAC, there exists a strong significant relationship amongst EAC equity market

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returns. There is a need therefore to examine if the performance of the equity markets has played a role in the economic growth in EAC or if the act in the market stock is a consequence of the economic growth.

The indicators of performance of a stock market include capitalization, liquidity and stock prices. Capitalization indicates the total market value of all shares that are registered as well as traded at the stock exchange. It is a product of the prevailing stock prices and number of shares issued by quoted companies. The capitalization therefore moves with movement in share prices. Liquidity refers to the extent to which the stock market allows trading of securities at stable prices whereas stock prices refer to the prevailing market prices for securities driven by the forces of supply and demand (Barasa, 2014).

Economic expansion is usually described as the upsurge in the welfare of an economy as result of increased production of products as well as services over a specific time. This growth can either be measured in nominal terms or in real terms, which are inflation adjusted. There are various theories that put into light the important factors that are factored in when an economy grows. The two common growth theories are the Sollow-Swan model (Exogenous growth model) and the Endogenous growth model. The distinct broad category for these models is the process of science and productive knowledge, growth of individual skills and incentives (Quah, 2001).

The growth in the economy is conventionally measured as the percentage increment in real gross domestic product (GDP). The GDP is the entire value of a nation's output (Quah, 2001). GDP is measured either by the expenditure approach or the income approach. The real GDP (inflation adjusted) provides a more reliable measure of economic growth as it takes into account the inflation factor which might exaggerate the extent of economic growth (Nyamakanga,2013).

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The extent to which market stock performance impacts future economic expansion or vice versa is a topic of key interest and focus in economics and finance. It is generally assumed that huge decreases in market prices are a reflection of upcoming downturn whereas large increases in stock prices are possible indicators of future economic growth (Har, Ee, & Tan, 2008). For example, the world recession in 1987 was preceded by the stock market crash.

The stock market has been linked to economic development over its part as sources of new isolated capital. While, economic development may be the reagent for stock progress (Osamwonyi &Kasimu, 2013). Effective and developed stock markets are usually projected to theoretically increase savings by providing alternative investment vehicles to savers and investors to diversify their portfolios by managing the inherent risks and improving allocation of capital to productive sectors resulting to growth in the economy. Bencivenga&Smith (1991) argues that there is proof of more developed equity market may offer liquidity that reduces the rate of foreign capital critical for economic growth (Kenny & Moss, 1998).

The Capital market was established the year 1950's with NSE in Kenya. Tanzania and Uganda recognized their own nationwide stock exchange; the (USE) and Dar es Salaam Stock Exchange (DSE) respectively in the 1990's. Rwanda later joined by the Rwanda Stock Exchange (RSE) in 2011. Plans are underway to develop a capital markets development framework that will support the establishment of a capital market in Burundi. There are four security markets in the EAC markets that trade in both fixed and equity revenue securities. Whereas the RSE and USE are still physical using the open-outcry exchange structure, the DSE and NSE are automated. Uganda has over the counter market (OTC) for management bonds unlike the other three partner states. The performance of the stock markets in the EAC is on average 36% of the GDP (*http://www.eac.int/http://eac.int/sectors/financial/capital-markets).*

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According to McAuliffe, Saxena and Yabara (2012), the EAC is among the fastest growing regions in SSA in the past decade. During 2005-10, per capita growth rate averaged 3.7% in the EAC related to 3.2% for SSA as a total. The growth in Tanzania and Rwanda has been robust since the early 2000s while Kenya is slowly picking up since 2005.With the output growth, the average per capita income in the EAC reached US$411 in 2010.

The performance of the stock market place in the EAC in terms of market return and trading activity has been impressive over the recent period. Statistics indicate that the DSE, NSE and USE were the best performing stock markets in Africa in 2014 based on a yearly return index averaging 23.5%, 13.5%, and 12.5% respectively. The NSE, DSE and the USE were also among the top 10 most active stock markets in Africa with a weekly traded volume of 44.1m, 5.7m and 2.9m stocks respectively (*http://www.africanbusinesscentral.com).*

The World Bank Statistics (2010-2014) indicate a growth and improvement in the stock exchange markets in EAC. The number of listed firms shared trading and market capitalization has significantly grown over the last ten years. All the member countries in the EAC apart from Burundi have developed stock markets that are regulated by the Capital Markets Authorities.

Research Objective

The study sought to establish relationship between the stock market performance and the economic growth in the East Africa Community.

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Methodology

The study took into consideration the cause and effect approach to establish the relationship between the stock market performance and economic growth in the last fifteen years from 2000-2015. In this regard, therefore, quantitative research methods were employed to determine the nature of relationship between the variables. This period is suitable because it takes into consideration the most recent developments and policy impacts of the capital markets authorities on the stock markets. For instance, the NSE automation trading in 2006 integrated the Nairobi Securities Exchange with international markets in a bid to boost stock market development.

The cause and effect approach enabled the researcher to understand how the dependent variable is influenced by the independent variable. Cooper and Schindler (2006) points out that the use of cause effect simplifies the explanations and relationship of variables under research.

Due to the small size of the population, there was no sampling. The population of the study was the All-Share index in the 4 stock markets in the member countries (Kenya, Uganda, Tanzania and Rwanda). These increased the data validity and ensure representation of all the segments of the economy in the study. The performance of the East Africa economy measured in growth of real GDP will be considered (Mugenda &Mugenda, 2003).

To satisfy the objectives of this study, the stock market performance of the EAC member countries was collected from the Capital markets, EASRA and the respective Stock Exchanges (USE NSE, RSE and DSE. Other sources of data for the economic reports and analysis were the annual Statistical reports by from the EAC website. The GDP growth is broadly accepted by economists and decision makers as a macroeconomic indicator of the economic status of a region (Biyan, 2012). Data for GDP growth was collected from the World Bank website.

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The measure of stock market performance was the market capitalization, market liquidity and share price volatility. The yearly data on the market capitalization was collected from the NSE, USE, DSE and RSE while the yearly stock market liquidity was computed as ratio between the total price of stocks traded in that particular year to the stock market capitalization. The data on the price of stocks traded and stock market capitalization was collected from the respective security exchange markets. The yearly share price volatility was measured as a regular of the standard deviation of all the listed stocks in the EAC stock markets.

The Vector Autoregressive (VAR) model was used to approximate and provide the experimental evidence on the extent of association of the variables. This model provides a systematic, intelligible and trustworthy method to statistics explanation, predicting, organizational as well as policy examination. The ideal involves current and protected principles of numerous time sequences as well as capability to seizure co-movements that cannot be distinguished in univariate as well as bivariate models.

Analytical Model

Data collected was changed to logarithms and using the VAR model and subsequently converted into a linear equation as follows;

$$\triangle GDP = \alpha X + \beta 1 MktCap + \beta 2 MktL + \beta 3 MktSpv + \mu$$

$$LogGDPt = LogX + \beta\ LogMktCapt + \beta LogMktLt + \beta LogMktSpvt + \mu t$$

Whereby:

$\triangle GDP$- rate of progression in real GDP

MktCap-market capitalization

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MktL-Market liquidity

MktSpv-Market share price volatility.

The variables in the linear equation were then converted into logarithms model to estimate the parameters of the VAR model. Data collected was then tested for stationarity, cointegration and causality to analyze direction of causation between the performance of the stock market and growth in the East Africa's economy. The findings from the test were used to create the cause outcome relationship between the variables under study.

According to Granger (1969), an existence of relationship between variables means that the variables can be used to interpret each other. For instance, in a case of two variable series X and Y, it can be said that X causes Y if Y can be better projected using the past ethics of both X and Y rather than only using historical values of Y. The causativeness test helps to ascertain the existence of relationship between variables.

Results and Discussions

This presents the analysis and findings of the study as set out in the research objective and research methodology. The general objective of the study was to evaluate the relationship between stock market performance and economic progression in the East Africa Community from the year 2000 to 2015.

Descriptive Statistics

In section 1 the study present the research finding on the descriptive statistic in the data collected.

Table 1: Descriptive Statistics

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	N	Minimum	Maximum	Mean	Std. Deviation
GDP Growth	64	0.2	13.5	6.3406	2.41613
Market capitalisation	64	0.4	55.8	22.5719	13.19637
Liquidity	64	0.1	19.4	3.6984	3.40222
Share price volatility	64	0.13	0.62	0.346	0.12896

GDP growth, market capitalization, Liquidity and share price volatility were the variables used for the study. Their mean, maximum, minimum and standard deviation in the four countries was taken into account. From the findings, the study found that there was mean of 6.3406 for GDP growth, 22.519 for market capitalisation, 3.6984 for liquidity and 0.346 for share price volatility. On standard deviation market capitalisation had a standard deviation of 13.19637, an indication that it had the highest variation from the mean followed by liquidity with 3.40222, GDP growth had 2.41613 while share price volatility 0.12896.

Diagnostic Test Results

The researcher conducted various diagnostic exams help to ensure that the expectations of typical linear reversion model (CLRM) were not disrupted and to select the suitable models for examination in the event that CLRM expectations were negotiated. This segment offers the outcomes of the following diagnostic examinations: test of stationarity, cointegration test, vector error correlation and test for causality.

Stationarity Test

In order to check for stationarity of the data, the study employed Augmented Dickey Fuller unit root test (ADF). If the statistics is established to contain unit root and require first difference in order to be stationary, then the variable in question will be deemed to have a long term association

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with the dependent variable and would therefore require a co-integration test to be conducted. The null hypothesis is that variable is not stationary.

Table 2: Market Capitalization Unit Test

Dickey-Fuller test for unit root Number of obs = 15

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Interpolated Dickey-Fuller		
Z(t)	-2.017	-3.750	-3.000	-2.630

MacKinnon approximate p-value for Z(t) = 0.2791

In the case the null assumption is that market capitalization has a unit root. The Z-score yielded by the test displays that market capitalization has a unit root, because it falls in the acceptance interval (-2.017< -3.000) at 5% significance level. In addition, the p-value (0.2791) was more that the significance level (0.05). This is an indication that it has a long run relationship with GDP growth.

Table 3: Liquidity Test

Dickey-Fuller test for unit root Number of obs = 15

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Interpolated Dickey-Fuller		
Z(t)	-1.030	-3.750	-3.000	-2.630

MacKinnon approximate p-value for Z(t) = 0.7422

In case the null suggestion is that liquidity test has a unit roots. The Z-score produced by the test displays that liquidity test has a unit root, because it falls within the acceptance interval -1.030<-3.000 at 5% significance level. In addition, the p-value (0.7422) was more that the significance level (0.05).This is an indication that there is a long run relationship between liquidity and GDP growth.

Table 4: Share Price Volatility

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Dickey-Fuller test for unit root Number of obs = 15

	Test Statistic	Interpolated Dickey-Fuller 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.923	-3.750	-3.000	-2.630

MacKinnon approximate p-value for Z(t) = 0.0019

In the null theory is that share price volatility has a unit root. The Z-score produced by the test displays that share price volatility has no unit root, since it falls in the disallowed interval (-3.923<-3.000) at 5% significance level. In addition, the p-value (0.0019) was less that the significance level (0.05).

Table 5: Cointegration Model

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
q2	1	.	.	.	.	.
q3	-19.5385	1.026629	-19.03	0.000	-21.55065	-17.52634
q4	187.3081	9.414859	19.89	0.000	168.8553	205.7609
q5	28.33869	1.377632	20.57	0.000	25.63858	31.0388
_cons	-67.34068	.	.	.	.	.

Table 6: Cointegrating Equation

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	3	713.0293	0.0000

In null hypothesis is that there exist no cointegration between stock market performance and GDP growth. The p values generated in market capitalization, liquidity and share price volatility were less that the significance level (0.05). This is an indication that we will not reject the null

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hypothesis hence there exist a cointegration between market capitalization, liquidity, share price volatility and GDP growth.

Table7:VectorErrorCorrelationModel

Vector error-correction model

Sample: 2002 - 2015		No. of obs	= 14
		AIC	= 10.00188
Log likelihood = -43.01319		HQIC	= 9.887797
Det(Sigma_ml) = .0054794		SBIC	= 11.23435

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_q2	6	10.8015	0.4483	6.50105	0.3695
D_q3	6	2.70826	0.6320	13.73783	0.0327
D_q4	6	.042109	0.5932	11.66712	0.0698
D_q5	6	2.83939	0.4250	5.9119	0.4331

From the above model, there was a noteworthy association between market capitalization and GDP growth were significant since the ($p<0.05$) but there was no significant association amid liquidity, share price volatility and GDP growth since ($p>0.05$).

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Table 8: Test for Causality

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
q2	q3	4.6518	2	0.098
q2	q4	.63018	2	0.730
q2	q5	.58709	2	0.746
q2	ALL	8.1152	6	0.230
q3	q2	12.815	2	0.002
q3	q4	1.9788	2	0.372
q3	q5	8.9398	2	0.011
q3	ALL	30.773	6	0.000
q4	q2	.94504	2	0.623
q4	q3	3.4991	2	0.174
q4	q5	2.8999	2	0.235
q4	ALL	12.325	6	0.055
q5	q2	1.7746	2	0.412
q5	q3	.14647	2	0.929
q5	q4	1.5815	2	0.454
q5	ALL	5.9806	6	0.425

Since the data was found to have a unit root, the Engel Granger test was used to test for causality. The zero hypotheses is that market capitalization does not Granger-cause GDP growth rate should not be rejected as the p-value (0.098). Likewise we cannot discard the null proposition that the numbers on the two intervals of liquidity in the equation for GDP growth are equally zero (p-value=0.730). The third is a Wald examination that the numbers on the two intervals of GDP development that seem in the equation for share volatility are equally null hence we cannot reject the null hypothesis (p-value=0.746). The final test is with regard to the null proposition that the numbers on the two intervals of the other endogenous variables are jointly zero. Since the p-value (0.230) is more than 0.05, we will not reject the null hypothesis that market capitalization, liquidity and share price volatility do not Granger-cause.

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Table 9: Coefficient of Determination

Vector autoregression

Sample: 2002 - 2015		No. of obs	= 14
Log likelihood = 51.78976		AIC	= -2.255681
FPE = 3.22e-06		HQIC	= -2.407797
Det(Sigma_ml) = 7.19e-09		SBIC	= -.6123903

Equation	Parms	RMSE	R-sq	chi2	P>chi2
Y	9	.13234	0.9466	248.348	0.0000
X1	9	.326854	0.5568	17.58724	0.0245
X2	9	.170701	0.9003	126.3845	0.0000
X3	9	.16738	0.5954	20.60074	0.0083

The Attuned R squared is figure of purpose which signifies the difference in the independent variable due to changes in the in because dependent variable, from the verdicts in the table beyond the rate of attuned R squared for market capitalisation was 0.557an suggestion that there was dissimilarity of 56% on GDP due to changes in market capitalisation. The attuned R squared for liquidity was 0.900 a suggestion that there was variation of 90 % on GDP because of changes in in liquidity. The adjusted R squared for market capitalisation was 0.595an sign that there was dissimilarity of 60% on GDP due to changes in share price volatility. All the variables were significant since p values were less than 0.05.

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Table 10: Regression Equation

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Y						
Y						
L1.	.4705863	.3004599	1.57	0.117	-.1183042	1.059477
L2.	.3210797	.2059569	1.56	0.119	-.0825884	.7247477
X1						
L1.	-.0905185	.1244409	-0.73	0.467	-.3344181	.1533811
L2.	-.2501137	.0636152	-3.93	0.000	-.3747973	-.1254301
X2						
L1.	.1892931	.2428391	0.78	0.436	-.2866627	.6652489
L2.	-.1526004	.1734685	-0.88	0.379	-.4925925	.1873917
X3						
L1.	.5812321	.2491138	2.33	0.020	.0929781	1.069486
L2.	.2758711	.1878861	1.47	0.142	-.0923788	.6441211
_cons	-.3712808	.5394983	-0.69	0.491	-1.428678	.6861164

From the findings, the first lag of market capitalization was not significant however the second lag was significant (p-value=0.000). The first lag of share volatility was significant p-value < 0.05 however the second was not significant. The lag values of liquidity were not significant. The models are expressed as follows; Y= -0.371 – 0.091 + 0.189 + 0.581

Where Y=GDP growth, x1=market capitalization, x2=Liquidity and x3=share price volatility.

Summary of Findings

It was established that the Z-score yielded by the test on market capitalization has a unit root, because it falls within the acceptance interval (-2.017< -3.000) at 5% significance level. The Z-score yielded by the test on liquidity test has a unit root, because it falls within the acceptance interval -1.030 < -3.000 at 5% significance level. In addition, the p-value (0.7422) was more that the significance level (0.05). This is an indication that there is a long run connection within liquidness and GDP progression. The Z-score produced by the test displays that share price volatility has no unit root, because it decreases in the acceptance intermission (-3.923 < -3.000) at 5% significance level. In addition, the p-value (0.0019) was less that the significance level (0.05).

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On cointegration, the values generated in market capitalization, liquidity and share price volatility were less that the significance level (0.05). This is an indication that we did not reject the null hypothesis hence there exist a cointegration between market capitalization, liquidity, share price volatility and GDP progression. There was significant relationship amid market capitalisation and GDP growth were significant since the ($p<0.05$) but there was no significant relationship between liquidity, share price volatility and GDP growth since ($p>0.05$).

It was established that market capitalisation does not Granger-cause GDP growth rate cannot be rejected as the p-value (0.098). The third is a Wald test that the coefficients on the two lags of GDP growth that appear in the equation for share volatility are jointly zero hence we cannot reject the null hypothesis (p-value=0.746). The final examination is with reverence to the zero hypotheses that the figures on the two intervals of the other endogenous variables are jointly zero. Since the p-value (0.230) is more than 0.05, we will not reject the null hypothesis that market capitalisation, liquidity and share price volatility do not Granger-cause.

The value of attuned R squared for market capitalization was 0.557 a sign that there was difference of 56% on GDP because of changes in market capitalisation. The adjusted R squared for liquidity was 0.900 a sign that there was difference of 90 % on GDP due to changes in in liquidity. The adjusted R squared for market capitalisation was 0.595 an indication that there was variation of 60% on GDP because of changes in share price volatility. All the variables were significant since p values were less than 0.05.The first lag of market capitalisation was not significant however the second lag was significant (p-value=0.000). The first lag of share volatility was significant p-value < 0.05 however the second was not significant. The lag values of liquidity were not significant.

Conclusions

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This study examined the relationship between GDP on market capitalisation, liquidity and share price volatility. The result for each indictors of the stock market development showed different magnitudes of impact on economic progression. Each parameter showed different ability to influence economic progression. The results indicated a significant long-term link between market capitalisation and GDP evolution the connection was adverse in the short-run but positive in the long run.

These results show an increase investment in market capitalisation could lead to increase in GDP growth. There was a long run positive relationship between liquidity and GDP growth. Liquidity in the economy enables employment of high production techniques that are long term and enables the enjoyment of economies of scale. Finally share price volatility has no long run relationship with GDP. This shows that share price volatility is not a good proxy for stock market performance; therefore market capitalisation should not be used alone to concluded about the connection amid stock market improvement and economic progression.

Recommendations

The study findings on the existence of relationship between stock market performances vide the market capitalisation and liquidity and the economic growth in the East Africa community indicate various implications on the policy makers.

The policy makers in East Africa Community should come up with a policy that makes sure that more efforts are geared towards improving efficiency, lowering transaction cost and increasing liquidity in the East Africa Community securities markets with an objective to improve equity turnover. This is because the link between the stock market and economic growth through equity

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turnover was positive in the long run. The same policy too will improve total share traded which had a strong and positive effect on economic growth in Kenya in the long run.

The stock markets need to increase the number of listed companies from the current position which in turn increases the liquidity in the stock market. Stock markets liquidity in turn provides liquidity to the economy which enables employment of high production techniques that in long term increases investment opportunities and hence economic growth.

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