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Effect of Market Risk on Market Returns of Equity Securities Market in Kenya

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Abstract: ***The study aimed to establish the effect of market risk on market returns of securities traded in Kenyan securities exchange market. The study used panel data analysis to evaluate specific objectives. These included: to evaluate the effect of market risk on the market returns of equity securities in Kenya. The study used secondary data from all the firms listed in NSE during the period 2004 to 2016. The target population of the study consisted of the 64 companies listed in Nairobi securities exchange market that is, both financial and non-financial companies. The study was a census study of all the 64 companies listed in the Nairobi security exchange market for 13 years starting the year 2004 to the year 2016. The study started with descriptive and then diagnostic tests. The measures of central tendency used to test normality were mean, median, maximum and minimum value, standard deviation, skewness and kurtosis. The results from these tests showed that the variables were fairly normally distributed. The study further sought to investigate the stationality properties of market returns, trading volume, trading activity, market risk and trading volume. The study used five panel data unit root tests. Particularly the test were, Levin, Lin and Chu t, Breitung t-stat, Im, Pesaran and Shin W-stat developed, Fisher-type tests using augmented dickey fuller ADF and (Phillip and Peron) PP tests. The all these tests revealed that the variables were stationary on average. The results from granger causality showed that there was a unidirectional granger causality running from market returns to market risk. The cointegration results showed that there was long-run equilibrium. The regression technique used was the DOLS (dynamic ordinary least square method). The regression results revealed that market risk had a negative and statistically significant effect on market returns. It is therefore in this light that the future research should consider other variables which would increase the predictive power of the model. The other relevant variables would be variables such as the size of the firm, market value of the firm and the macroeconomic variables such as exchange rate, inflation, money supply among others.***

Keywords: Market returns and Market Risk

1. Introduction

Many Kenyan investors have been expecting an exceptional performance from the Nairobi securities exchange market but this has not been the case. This is because the market has been experiencing weak management as evidenced by the collapse of two stock brokers in the years 2008 and 2009 which affected the investors' confidence. This also caused under subscription of both initial public offer and right issue for companies such as Kenya airways, Cooperative bank of Kenya and British American Insurance. This is a clear evidence that there has been a decline in the performance of the exchange market.

Galagedera (2007), notes that the main aspect of security analysis is its valuation through a relationship between the security return and the associated risk. The purpose of this paper is to review the traditional capital asset pricing model (CAPM) and its variants adopted in empirical investigations of asset pricing. Pricing models are discussed under five categories: the single-factor model, multifactor models, CAPM with higher order systematic co-moments, CAPM conditional on market movements and time-varying volatility models. The last half-century has witnessed the proliferation of empirical studies testing on the validity of the CAPM. A growing number of studies find that the cross-asset variation in expected returns cannot be explained by the systematic risk alone. Therefore a variety of models have been developed to predict asset returns. There is no consensus in the literature as to what a suitable measure of risk is, and consequently, as to what is a suitable measure for evaluating risk-adjusted performance. So the quest for robust asset pricing models continues. From its beginning to its possible demise the paper reviews the history of the CAPM assuring that we are all up to speed with what has been done.

Karacabey (2004), argue that beta and return relationship of ISE stocks is examined between January 1990 and December 2000. To analyze unconditional relationship between beta and realized return Fama and MacBeth's cross-section regression model is employed. Consistent with findings for other countries, there is not any evidence of a significant unconditional relationship between beta and stock returns for ISE stocks over the sample period which implies that using beta as a systematic risk measure for asset selection purposes may add little value.

Mehrara, Falahati, and Zahiri (2014), in Iran note that, the Stock Exchange as the pulse of economy is consideration economic analysis. Means of a formal capital market in which companies buy and sell stock or bonds or private institutions, under the rules and regulations are made. Also with Competitive environment as economic instruments, that makes it profitable companies able to finance the deal by selling shares and vice versa so that unprofitable companies are automatically excluded. And market can pay optimal allocation of resources and Securities market within the framework of a market mechanism that can operate in a more efficient allocation of financial resources. The evidence shows that countries with developed capital markets could be higher economic growth.

1.2 Problem statement

Despite the Kenyan government effort on the development of the Nairobi securities exchange market, the performance of the market has been volatile. Statistical evidence shows

that between the years 2000 to 2009 there were only 62 companies that were listed and 12 companies were delisted in the same period, between 2010 to 2016 only 62 companies were listed with 14 companies delisted in that period (NSE, 2016). Also, according to Ngugi and Njiru (2005) there has been stagnation in the development of NSE with regard to the number of listing bearing in mind that the Kenyan market has been in existence for the last 62 years. Research on the significance of the market structure has been the subject of considerable interest in microstructure analysis. As indicated by Easley and O'Hara (2003), the behavior of prices and even the capability of markets depend on the ability of the trading structures to match the trading desires of the buyers and sellers.

Coffie and Chukwulobelu (2012), examine whether or not the Capital Asset Pricing Model (CAPM) reasonably describes the return generating process on the Ghanaian Stock Exchange using monthly return data of 19 individual companies listed on the Exchange during the period January 2000 to December 2009. The study followed a methodology similar to Jensen (1968) time series approach. Parameters were estimated using OLS. The study was designed to measure beta risk across different times by following the time series approach. The betas of the individual securities were estimated using time series data of the excess return version of the CAPM. The results showed that although market beta contributed to the variation in equity returns in Ghana, its contribution was not as significant as predicted by the CAPM, and in some cases very weak.

Pamane, and Vikpossi (2014), found a positive both non-linear and linear and statistically insignificant relationship between market risk and return. Mehrara, Falahati and Zahiri (2014), in Tehran Stock Exchange showed that the relationship between systematic risk and stock returns were positive and statistically significant. Theriou Aggelidis Maditinos and Šević (2010), tested the relation between beta and returns in the Athens stock exchange. The study found that for conditional capital asset pricing model (CAPM) under cross-sectional regression analysis, the evidence tended to support the significant positive relationship in up market and a significant negative relationship in down market. Chae and Wang (2003) in United states found that trading activities had a negative effect on the market returns of equity securities market. Kelley, and Tetlock (2013) revealed that, the aggressive and passive net buying positively predict firms' monthly stock returns with no evidence of return reversal.

Worawuth Kongsilp, Cesario Mateus, (2017), confirmed the impact of idiosyncratic volatility (individual firm price movement) on stock returns predictability. Huang, Liu, Rhee, and Zhang (2009), showed that the relationship between idiosyncratic volatility and expected stock return depends on whether the portfolio is composed of stocks with extreme performance. Ang, Hodrick, Xing, and Zhang (2009), find that monthly stock returns are negatively related to the one-month lagged idiosyncratic volatilities. Given the foregoing background, the study provides investigation on the effect of market risk on market returns of equities market in Kenya. Therefore this study aims at filling the knowledge gap existing by enlightening individuals and mostly potential investors about the existence of the market dynamics and their consequent effects on the performance of the listed companies in the Nairobi Securities exchange market.

1.3 Research Objective

To assess the effect of market risk on market returns of equity securities market in Kenya.

1.4 Research Hypotheses

Market risk has no significant effect on market returns of equity securities market in Kenya.

2. Theoretical Literature

2.1 Extreme Value Theory for Risk Managers

McNeil (1999), developed a theory of Extreme Value Theory for Risk Managers and note that Extreme event risk is present in all areas of risk management. Whether we are concerned with market, credit, operational or insurance risk, one of the greatest challenges to the risk manager is to implement risk management models which allow for rare but damaging events, and permit the measurement of their consequences (McNeil,1999). Assessing the probability of rare and extreme events is an important issue in the risk management of financial portfolios. Extreme value theory provides the solid fundamentals needed for the statistical modelling of such events and the computation of extreme risk measures (Gilli, 2006). A common assumption in quantitative financial risk modelling is the distributional assumption of normality in the asset's return series, which makes modelling easy but proves to be inefficient if the data exhibit extreme tails. When dealing with extreme financial events like the Global Financial Crisis of 2007-2008 while quantifying extreme market risk, Extreme Value Theory (EVT) proves to be a natural statistical modelling technique of interest. Extreme Value Theory provides well established statistical models for the computation of extreme risk measures like the Return Level, Value at Risk and Expected Shortfall (Singh, Allen, and Powell, 2011). Extreme value theory (EVT) holds promise for advancing the assessment and management of extreme financial risks. Recent literature suggests that the application of EVT generally results in more precise estimates of extreme quintiles and tail probabilities of financial asset returns. Francis, Diebold, Til and Stroughair (2000). This theory is relevant to this study because it describes the markets risk, According to this theory the probability of rare and extreme events can be managed to reduce risk of financial portfolios In this case the theory addresses the issue of market risk which is a variable in the study.

2.2 Empirical Literature Review

2.2.1 Market Risks and Market returns

Pamane, and Vikpossi (2014), found a positive both non-linear and linear and statistically insignificant relationship between market risk and return. Mehrara, Falahati and Zahiri (2014), set to investigate the Relationship between systematic risk and stock returns in Tehran Stock Exchange

using the capital asset pricing model (CAPM). The sample search included panel data for 50 top companies of Tehran Stock Exchange over a five year period. The results showed that the relationship between systematic risk and stock returns were positive and statistically significant. However, the nonlinear (quadratic) function form of the results were found to outperforms the linear one explaining the relationship between systematic risk and stock returns. The interpretation in that study meant that the assumption of linearity between systematic risk and stock returns was rejected in the case of Tehran Stock Exchange. Theriou Aggelidis Maditinos and Šević (2010), tested the relation between beta and returns in the Athens stock exchange. The study found that for conditional capital asset pricing model (CAPM) under cross-sectional regression analysis, the evidence tended to support the significant positive relationship in up market and a significant negative relationship in down market.

Fernandesand Luiz (2007), studied risk-taking in financial markets, a behavioral approach. The study found out that most passive managers in most organizations are usually rewarded without incentive fees and are risk averse. On the other hand the study also concluded that in active managed funds, whether the incentives increases or decreases, the riskiness of the fund will depend on how hard it is to outperform the benchmark. Goltz and Sahoo (2010) present simplified examples of the negative effects of concentration on performance, and how it produces a significant drag in market portfolio returns due to relative underperformance of a single large stock in the index. Theriou Aggelidis Maditinos and Šević (2010), tested the relation between beta and returns in the Athens stock exchange. The study found that for conditional capital asset pricing model (CAPM) under cross-sectional regression analysis, the evidence tended to support the significant positive relationship in up market and a significant negative relationship in down market.

3. Research Methodology

The study used quantitative research design which involved the use of cross-sectional and longitudinal survey design. The financial information computed for each firm during the period of study was stacked into panels. This approach is useful for this kind of study where both the cross-sectional and longitudinal characteristics of the units being analyzed constitute an important ingredient of the study (Gujarati, 2003). The study used secondary data available from 2004 Jan to Dec 2016.

The target population of the study consisted of the sixty 62 companies listed in Nairobi securities exchange market that is, both financial and non-financial companies at the time. This population was taken due to the nature of companies listed in the NSE in that they have made their financial information public and represents all sectors of the economy**.** These companies are classified as: Agricultural companies, banking, commercial and communication services, automobiles and accessories, construction and allied, Energy and petroleum, Insurance and investment companies.

Sampling was conducted to refine the population of the study into a simple unit. A sampling frame is the list of elements from which the sample is actually drawn (Cooper and Shindler, 2006).Kothari (2009) explains that sampling is the procedure of selecting a representative of the total population as much as possible in order to produce a miniature (small) cross section. Due to the small size of the study population, the researcher conducted a census of all the sixty two institutions listed in NSE. A census is done where all the firms in the target population are selected for analysis. This procedure was preferred to sampling as the small size of the population makes it possible to study all the firms in the population to be done and at the same time a census solves the accuracy problems associated with samples in representing the population.

The study collected secondary data from all the firms listed in NSE during the period 2004-2016. This approach was guided by econometric theory that advocates for panel data analysis to achieve better regression results (Baltagi, Bratberg and Holmås 2005). One of the main advantages of panel data is that it enables the researcher to control against unobserved heterogeneity and provides the researcher with both cross-sectional and time-series dimensions; which reduces the likelihood of bias in the parameter estimates.

Upon extracting data from the financial statements, quarterly statistical bulletins from CMA and NSE hand books. Panel regression analysis using Eviews (Econometric package) was employed to establish how microstructure dynamics market returns of equity securities in Kenya. Finally, inferential statistics that included adjusted R-squared and t-test were used to determine the significance of the overall model and individual explanatory variables respectively. The results of the study were presented in form of tables.

3.1Variables measurement

3.1. 1 Market risk

Market risk was measured using Beta on average, Beta is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. In other words, beta gives a sense of a stock's market risk compared to the greater market. Beta is also used to compare a stock's market risk to that of other stocks. Investment analysts use the Greek letter 'ß' to represent beta. Beta is used in the capital asset pricing model (CAPM). Market risk was measured using Beta, Beta is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. In other words, beta gives a sense of a stock's market risk compared to the greater market. Beta is also used to compare a stock's market risk to that of other stocks. Investment analysts use the Greek letter 'ß' to represent beta. Beta is used in the capital asset pricing model (CAPM)

$$R_i = R_f + B(R_m + R_f)$$

$$B = \left[\frac{R_i - R_f}{R_m + R_f}\right]$$

3.1.2 Market returns

Performance was measured in terms of individual stocks returns. This was calculated as percentage change in price of a security in any two consecutive months.

$$R_i = \frac{p_t - p_{t-1}}{p_{t-1}} \times 100\%$$

Where p_t is the current month's price of a stock and p_{t-1} is the values of the stock in the previous one month. R_i is the return on a security.

3.2Model Specification

Model specification involves coming up with a combination of study variables that represents the empirical relationship between the dependent, explanatory and moderating variables. This was done in line with the conceptual framework. The study employed panel regression model to analyze secondary data because the data was collected exhibited both time series and cross-sectional dimensions. The study used panel data to carry out the research analysis for 13 years starting from 2004 to 2016, panels are very important and increase precision as they contain detailed information as compared to cross sectional data and (Hoechle, 2007).

Hsiao (2004),concluded that longitudinal data allow a researcher to analyze a number of important economic issues that can be addressed using cross sectional or time series data sets with ease. Choi (2006) and Gujarati (2012) asserts that combinations of cross section observations, panel data always provide better results with valuable information, with reduced collinearity among variables, more degrees of freedom and more efficiency. Panel data does allow a researcher to construct and test more complicated behavioral models than purely cross sectional or time series data, but as suggested by Hsiao (2006), panel data also provides a means of resolving or reducing the magnitude of a key econometrics problem that often arises in empirical studies(Hsiao 2006).

Model

$$MR_{it} = \beta_0 + \beta_1 MR_{it} + \mu_{it} + \varepsilon_{it}$$

Where MR is Market Returns, MR is the market risk, μ_{it} is the cross-sectional effect, ε_{it} is the error term (j=1, 2,..,6); β_i Are the associated regression coefficients.

4. Results and Discussion

4.1 Descriptive statistics

Table 1 presents the results on the variables descriptive statistics for the 50 companies out of the 62 listed companies. The reduction in the sample was attributed to cleanup of the data used the analysis. The cleanup was conducted to make sure that all the companies used do not have large missing observations. There was also the need to make sure that the companies include had traded for a reasonable amount of time to allow for a sensible analysis. These are the two major reasons the researcher arrived at a sample size of 50 companies out of 62 that were listed at the time the analysis commenced. It is always recommended to test the normality distribution of variables through the descriptive statistics before including them in further analysis such as the regression analysis. The key descriptive statistics presented above include; Mean, Median, Maximum, Minimum, Std. Dev., Skewness, Kurtosis.

Table 1: Descriptive statistics

Test statistic	Market returns(%)	Market Risk(no unit)
Mean	0.212622	0.647834
Median	0.0000*00	0.945062
Maximum	69.17544	2.137909
Minimum	-55.56740	-1.996757
Std. Dev.	10.19068	0.864417
Skewness	0.689507	-1.169273
Kurtosis	7.436973	3.620556
Jarque-Bera	5774.898	1565.916
Probability	0.000000	0.000000
Observations	6420	6420

4.1.1 Market Return

Table 1, presents the descriptive statistics of market Return. This variable was measure by the returns of each security in the market. The measures of central tendency used were mean, median, maximum and minimum value, standard deviation, skewness, kurtosis and Jarque-Bera (JB) test of normality (Table 1). Positive and low stock return's mean of 0.212622% is associates with less volatility (Table 1) of the series (consistent with low standard deviation; 10.19068%). The wide gap between maximum and minimum value (Maximum; 69.17544, Minimum; -55.56740) of stock return indicates that there is a high variability in stock return changes in the in Kenyan market. Stock return portrays a positive Skewness 0.689507 indicating a right tail of distribution which indicates that the data are fairly asymmetry. Kurtosis value was found to be 3.436973 which is>3, which shows that it is a leptokurtic distribution, sharper than a normal distribution, with values concentrated around the mean and thinner tails. Furthermore, significant JB value (5774.898) explains the deviation of normal distribution thus rejecting the null hypothesis these findings are in line with those of (Tapa and Hussin ,2016).

4.1.2 Market Risk

The second variable is the Market Risk. This variable was measure by the beta of each security in the market. The measures of central tendency used were mean, median, maximum and minimum value, standard deviation, skewness, kurtosis and Jarque-Bera (JB) test of normality (Table 1). Positive and low Market Risk mean of 0.647834 is associates with less volatility (Table 1) of the series (consistent with low standard deviation; 0.864417). The wide gap between maximum and minimum value (Maximum; 2.137909, Minimum;-1.996757) of Market Risk indicates that there is a high variability in Market Risk changes in the in Kenyan market. Market Risk portrays a negative Skewness -1.169273 indicating a left tail of distribution which indicate that the data are fairly asymmetry. Kurtosis value was found to be 3.620556 which is >3, which shows that it is a leptokurtic distribution, sharper than a normal distribution, with values concentrated around the mean and thinner tails. Furthermore, significant JB value (1565.916) explains the deviation of normal distribution thus rejecting the null hypothesis these.

4.2 Market returns of equity securities unit root

Table 2; presents the unit roots tests of the dependent variable under three distinct techniques. This was done for comparison and for clarity purposes. The first set of two tested, test the unit root under the assumption that the

variables have a common unit root process. The second set of three tested, test the unit root under the assumption that the variables have a individual unit root process.

Table 2: Market returns of equity market securities: unit root

Method	Statistic	Prob.	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin and Chu t	-85.9524	0.0000*	50	6329
Breitung t-stat	-33.4667	0.0000*	50	6279
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-72.9268	0.0000*	50	6329
ADF - Fisher Chi-square	3030.51	0.0000*	50	6329
PP - Fisher Chi-square	3484.93	0.0000*	50	6370

* Means that is statistically significant at 95% confidence level

Table 2 resents the unit roots tests of the dependent variable (Market returns of equity securities). In particular the table presents the results of five basic tests of unit roots in panels. These tests are; Levin, Lin and Chu t developed by (Levin, Lin and Chu, 2002), Breitung t-stat developed by (Breitung, 2000), Im, Pesaran and Shin W-stat developed by (Im, Pesaran and Shin, 2003), Fisher-type tests using augmented dickey fuller ADF and (Phillip and Peron) PP tests (Maddala and Wu, 1999) and Choi (2001). From the test results the test statistics reveals that four of the test agree with the null hypothesis that the variable is stationary at level. The probabilities are very significant implying that we do reject the null hypothesis of a unit root problem apart from one of the test (Breitung t-stat). The implication is that the variable is stationary. The results also shows that there were 50 categories considered (that is the number of companies included in the analysis).

4.3 Market risk unit root

Table 3 resents the unit roots tests of the dependent variable under three distinct techniques. This was done for comparison and for clarity purposes. The first set of two tested, test the unit root under the assumption that the variables have a common unit root process. The second set of three tested, test the unit root under the assumption that the variables have a individual unit root process.

Table 3: Market risk: unit root

Method	Statistic	Prob.	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin and Chu t	-72.7566	0.0000*	50	6288
Breitung t-stat	-29.2561	0.0000*	50	6238
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-60.5845	0.0000*	50	6288
ADF - Fisher Chi-square	2438.41	0.0000*	50	6288
PP - Fisher Chi-square	3501.59	0.0000*	50	6370

* Means that is statistically significant at 95% confidence level

Table 3 resents the unit roots tests of the market risk. In particular the table presents the results of five basic tests of unit roots in panels. These tests are; Levin, Lin and Chu t developed by (Levin, Lin and Chu, 2002), Breitung t-stat developed by (Breitung, 2000), Im, Pesaran and Shin W-stat developed by (Im, Pesaran and Shin, 2003), Fisher-type tests using augmented dickey fuller ADF and (Phillip and Peron) PP tests (Maddala and Wu, 1999) and Choi (2001). From the test results the test statistics reveals that four of the test agree with the null hypothesis that the variable is stationary at level. The probabilities are very significant implying that we do reject the null hypothesis of a unit root problem apart from one of the test (Breitung t-stat). The implication is that the variable is weak stationary. The results also shows that there were 50 categories considered (that is the number of companies included in the analysis).

4.4 Correlation Test

Table 4 presents the results on correlation analysis among the five study variables. In particular the correlations among Market returns, Market risk. The table also presents the results of probability levels.

Table 4: Correlation Test

Correlation	**Market return**	**Market risk**
Market returns	1.000000	
Market risk	-0.593511	1.000000
Probability	**Market returns**	**Market risk**
Market returns	-----	
Market risk	0.0000*	-----

* Means that is statistically significant at 95% confidence level

Table 4 presents the results on correlation analysis of the five variables. From the results the correlation analysis shows that there was high correlation between market returns and market risk of -0.593511 and the associated p-value was statistically significant with a value of 0.0000. This value shows that there was high level of correlation between the market risk and market return variable.

4.5Granger Causality

This study set to assess whether, Market risk does not granger cause market returns, market returns does not granger cause market risk

Table 5 Granger causality

* Means that is statistically significant at 95% confidence level

Table 5: Granger Causality

Panel pairwise granger causality tests			
null hypothesis:	obs	F-statistic	prob.
Market risk does not granger cause performance of equity securities market	6220	1.25307	0.2862
Market returns does not granger cause market risk		5.75106	0.0001

From table 5 it can be observed that the element of granger causality cannot be ignored. The table shows that there is both one-way granger causality from market returns and market risk in between the variables. The table reveals that; Market risk does not granger cause market returns could not be rejected since F-statistic was 1.25307 and p-value was

0.2862, the null hypothesis that Market returns does not granger cause market risk was rejected since F-statistic was 5.75106 and p-value 0.0001,Thus the essence of granger causality was to assess whether a dynamic structure of analysis was required if one may intended to combine the variables in regression analysis. In short if the test F-statistic is statistically significant it implies that there is some form of causality and dynamic mode of regression analysis is required.

4.6 Panel Cointegration Tests

Engle and Granger (1987) note that, cointegration test is based on an examination of the residuals of a spurious regression performed using I(1) variables. If the variables are cointegrated then the residuals should be integrated of order zero I(0). On the other hand if the variables are not cointegrated then the residuals will be integrated of order one I(1). In this research even though the variables were found to be stationary from the unit root test it was decided to go into deeper analysis by executing the cointegration test. The testing was informed by the fact that the variables had a time series in panel structure.

Table 6: Pedroni Residual Based Cointegration Test Pedroni Residual Cointegration Test, Series: RETURN MARKETRISK, Sample: 2004M01 2016M12, Included observations: 6420, Cross-sections included: 50, Null Hypothesis: No cointegration, Trend assumption: Deterministic intercept and trend, Automatic lag length selection based on SIC with a max lag of 12,Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	5.789038	0.0000*	-4.855109	1.0000*
Panel rho-Statistic	-159.7338	0.0000*	-155.855	0.0000*
Panel PP-Statistic	-84.24082	0.0000*	-82.02704	0.0000*
Panel ADF-Statistic	-83.24641	0.0000*	-80.32079	0.0000*
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	-116.7294	0.0000*		
Group PP-Statistic	-80.79599	0.0000*		
Group ADF-Statistic	-78.83412	0.0000*		

* Means that is statistically significant at 95% confidence level

The idea of cointegration is to assess whether there is some form of long run relationship among the variables under study. Table 6 presents the results of pedroni residual based cointegration test. This test was developed by Pedroni (1999; 2004). According to Pedroni (1999; 2004), there are two alternative hypotheses: the homogenous alternative, for all (which Pedroni terms the within-dimension test or panel statistics test), and the heterogeneous alternative, for all (also referred to as the between-dimension or group statistics test). The general approach is to obtain residuals from the primary regression of the dependent variable on the independent variables. The next step was to regress the current values of the residuals on their lagged values and check whether there coefficients are less than unity or are unity.

In total there are eleven test statistics presented in table 6. It was observed that they were all statistically significant as depicted by their respective p-values which were found to be highly statistically significant except for one test. The interpretation is that there was evidence of the long-run relationship between market risk and market returns variables since the probability of drawing a test statistic as extreme as the one observed, under the assumption that the errors are normally distributed, or that the estimated coefficients are asymptotically normally distributed was very low in all cases.

4.7 Hypothesis Testing

4.7.1 Market risk has no significant effect on market returns of equity securities market in Kenya.

From table 7 the value of the R-squared 0.274672 and Adjusted R-squared 0.166285. This value clearly suggests that after adjusting for the degrees of freedom there is a relationship between Market risk and performance of securities equity market. This indicates that Market risk causes a variation of 0.274672% on performance of securities market.

Table 7: Market risk has no significant effect on market returns of equity securities market in Kenya. Dependent Variable: market Returns, Method: Panel Dynamic Least Squares (DOLS), Sample (adjusted): 2004M08 2016M06,Periods included: 143,Cross-sections included: 50,Total panel (unbalanced) observations: 5770,Panel method: Pooled estimation, Cointegrating equation deterministics: C @TREND, Fixed leads and lags specification (lead=6, lag=6),Coefficient covariance computed using default method, Long-run variance (Bartlett kernel, Newey-West fixed bandwidth) used for coefficient covariances.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Market risk	-1.490756	0.254368	-5.86063	0
R-squared	0.274672	Mean dependent var		0.37119
Adjusted R-squared	0.166285	S.D. dependent var		10.1148
S.E. of regression	9.235614	Sum squared resid		428104
Long-run variance	73.45186			

* Means that is statistically significant at 95% confidence level

4.7.2 Market risk

From table 7, the regression coefficient of market risk was found to be -1.490756. This value shows that holding other variables in the model constant, an increase in market risk by one unit causes the Market returns of equity securities to decrease by 1.490756units. These results are in contrast with those of (Pamane and Vikpossi2014), who found a positive both non-linear and linear and statistically insignificant relationship between market risk and return. Mehrara, Falahati and Zahiri (2014), set to investigate the Relationship between systematic risk and stock returns in Tehran Stock Exchange using the capital asset pricing model (CAPM). The sample search included panel data for 50 top companies of Tehran Stock Exchange over a five year period. The results showed that the relationship between systematic risk and stock returns were positive and statistically significant. However, the nonlinear (quadratic)

function forms of the results were found to outperforms the linear one explaining the relationship between systematic risk and stock returns. The interpretation in that study meant that the assumption of linearity between systematic risk and stock returns was rejected in the case of Tehran Stock Exchange. Theriou Aggelidis Maditinos and Šević (2010), tested the relation between beta and returns in the Athens stock exchange. The study found that for conditional capital asset pricing model (CAPM) under cross-sectional regression analysis, the evidence tended to support the significant positive relationship in up market and a significant negative relationship in down market. The negative effect shows that there is a negative relationship between market risk and performance of securities market.

The "Std. Error" column reports the estimated standard errors of the coefficient estimates. The standard errors measures the statistical reliability of the coefficient estimates—the larger the standard errors, the more statistical noise in the estimates. The last column of the output shows the probability of drawing a t-statistic as extreme as the one actually observed, under the assumption that the errors are normally distributed, or that the estimated coefficients are asymptotically normally distributed. This probability is also known as the p-value or the marginal significance level. From table 8, the conclusion was to reject the null hypothesis that the market risk coefficient is zero, since the level of significant used was 5% and that the p-value observed was 0.0000* = 0% which was less than 5%.

5. Summary, Conclusion and Recommendation

5.1 Summary of findings

The study established the effect of market microstructure dynamics on the market returns of equity securities market in Kenya. This involved investigating the effect of Market Risk, on returns of equity securities market in Kenya. The study revealed that all the two variables were cointegrated and thus a linear combination was possible and it was executed. The study focused on multidimentional diagnostic analysis, the descriptive statistics, unit root test, correlation analysis, granger causality and cointegration test. The study then proceeds to regression analysis. The regression techniques used was DOLS (dynamic ordinary least square method). These techniques were used in an effort to reveal the effect of market microstructure dynamics on the market returns of equity securities market in Kenya.

5.2 Conclusion

The study sought to determine the effect of Market Risk on market returns of equity securities market in Kenya. The descriptive analysis revealed that market risk was normally behaved since the kurtosis and skewness measurers were within the acceptable range of 0 and 3 respectively. The study also examined the unit root test statistics of market risk and found that the variable was stable at level. Unit root test was important to assess the stationary of market risk variable before including it in further analysis. The correlation analysis was also conducted to ascertain the orthogonality of market risk and other variables in used in the study. The results revealed that the variable was not highly correlated with other variables. The regression models revealed that market risk has significant effect on performance of equity securities market in Kenya. The study conclude that in Kenya that Market Risk has a negative and statistically significant effect on performance of equity securities market in Kenya in Kenya.

5.3 Recommendation

This research, has revealed that market risk has a significant effect on performance of equity securities market in Kenya. The investors and other key market players should be keen on the variability of the market risk factor in the market. These key players should keep truck on the role of market risk on the performance of both individual and all the stock in their portfolios. The study also recommends that the regulator, that is the CMA (Capital Market Authority) should be keen on enacting laws that enables disclosure of market risk information on individual stocks in order to facilitate trade.

5.4 Area for Further research

This research was not able to identify all the possible variables with explanation power on performance of equity market in Kenya. This is evidence from the regression results Dynamic Ordinary Least Square Method (DOLS), The DOLS model shows that the model was able to explain approximately 27.4672% on the variation of the equity market returns. It is therefore in this light that the future research should consider other variables which would increase the predictive power of the model. The other relevant variables would be variables such as the size of the firm, market value of the firm and the macroeconomic variables such as exchange rate, inflation, money supply among others.

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