The Cost of Equity Capital in Emerging Market – The Case of Kenya

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***Abstract* - Risk is often expressed as cost of capital in the context of investment valuations. The estimation of an appropriate discount rate to evaluate investment cash flows in order to determine its viability is the most important in the capital budgeting process, whether it is a multinational or small size company. From a strategic point of view, determining the appropriate cost of equity capital is critical in reducing the uncertainty that multinationals (MNCs) and domestic companies face when investing in different countries. Differences in risk and a lack of understanding of how emerging African stock market returns are influenced by the developed markets, as well as lack of reliable long-standing historical market data, are factors that international investors and corporate managers have to cope with. Most companies estimate their cost of equity capital using the Capital Asset Pricing Model (CAPM). However, the use of CAPM to estimate cost of equity capital in emerging African capital markets has numerous challenges, which are discussed in the literature below. This study is designed to empirically investigate whether the CAPM is a sufficient asset pricing model to estimate cost of equity capital in Kenya. A time series methodology was followed and the result showed that although the CAPM's beta significantly explains equity returns, there are other risk factors not captured by CAPM. This means corporate managers and investors must beware.**

Index Terms: Beta, Capital Asset Pricing Model, Cost of Equity Capital, Emerging Market

I. INTRODUCTION

Calculating cost of capital in emerging capital markets has been an age-old problem. Attempt to resolve this problem has created a pervasive disparity among academics and practitioners of finance, as to how to tackle this problem. However, the Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965) has been the most widely used asset pricing model in estimating cost of equity in recent memory. This may be so, because the CAPM provides parsimonious and intuitively appealing definition for risk as beta. In other words, the only risk investors care about and will require compensation for is the systematic (or undiversifiable) risk created by the market factor. The contribution of this paper is to provide evidence on how the CAPM is able to explain the risk – return relationship in Kenya, which has an economic basis to estimate cost of equity capital.

Assessment of Kenya's capital market integration into the world market is important ingredient when analysing cost of capital using CAPM. Proponents and supporters of CAPM appear to suggest that it has international application because they are of the opinion that global capital markets are significantly integrated. Therefore, they propose the use of a global or international capital asset pricing model, popularly known as the ICAPM (O'Brien, 1999; Stulz, 1995 and 1999; Schramm and Wang, 1999) to estimate return. This implies that international investors can enter and leave any market anywhere in the world with reasonable certainty and a minimum transaction costs. However, application of the global version of the capital asset pricing model in emerging capital markets has proved impractical and controversial, since these markets are highly segmented and have country specific barriers that minimise their integration to the world markets (Bekaert, 1995; Harvey, 2000; Bekaert and Harvey 2002; Chaieb and Errunza, 2007; etc.)

Previous studies have used portfolios rather than individual securities to test the CAPM's ability to explain equity return and hence estimating cost of equity capital. However, this paper is using information on individual securities rather than portfolios. Although I recognize that estimation errors are reduced when portfolios are used, I believe since the CAPM was developed as an individual asset pricing model, accordingly, it is important to establish the performance of the model with regard to individual securities initially before jumping to portfolios in frontier market studies. This will also help individual companies to understand and evaluate the relevance of the CAPM on the basis of their firm specific risk profile rather than the risk characteristics of a combination or portfolio of securities. In order to avoid spurious

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regression, the methodology is developed to overcome the problem pose by using single securities.

II. REVIEW OF THEORETICAL AND EMPIRICAL EVIDENCE

A. Theory

The Capital Asset Pricing Model (CAPM) was developed out of the Modern Portfolio Theory (Markowitz, 1952 & 1959) and the Capital Market Theory. According to Markowitz (1952), the portfolio selection process begins with pertinent beliefs concerning future security performances and end with choice of portfolio. Expected return is considered by investors as a favourable thing and variance of return as unfavourable. This belief in many respects has influenced investors' behaviour.

Markowitz (1959) further states that investors are able to choose an optimal combination of risky assets if they know the econometric relation between expected returns, variance of returns and their covariance or correlation. However, in it entirety, investors and corporate managers will find it difficult to apply Markowitz's theory since they need to know expected return, variance of return and correlation.

The literature is silent on the proponent(s) of the Capital Market Theory (CMT) but it is often credited to both Harry Markowitz and William F. Sharpe. The CMT simplified the Markowitz theory by adding two important assumptions to identify the mean-variance-efficient portfolio: 1. that investors are in complete agreement (i.e. homogeneity of investor expectations because they have equal access to the same information set) on the joint distribution of returns on asset from *t-1* to *t* and it is from this distribution that we draw returns used to test the model. Other words, investors are assumed to agree on the prospects of various investments – the expected return, variance of return and correlation and 2. That there is unrestricted borrowing and lending at a risk-free rate accessible to all investors and does not depend on the quantity borrowed or lent. The theory states that the ability for an investor to choose an optimal or efficient portfolio (i.e. best combination of investments) is determined by their ability to choose the amount of investment in risk-free and risky assets. However, the CMT still defines risk as the standard deviation.

The inability of both portfolio theory and CMT to quantify risk led to the development of capital asset pricing model (CAPM) of Sharpe (1964) and Lintner (1965). The CAPM fundamentally seeks to quantify the relationship between expected return and risk (known as beta) which the portfolio theory and CMT were unable to achieve. According to CAPM, once risk (beta) is quantified and known, it is practicable to quantify the corresponding expected return. The CAPM expresses the relationship between expected return of investment *i* and its corresponding risk exposure as:

$$E(R_i) = R_f + \beta_i \left[E(R_M) - R_f \right] \qquad (1)$$

$$\beta_i = \frac{\sigma_i r_{iM}}{\sigma_M} = \frac{\mathrm{cov}(R_i, R_M)}{\sigma_M^2} \qquad (2)$$

Where,

Ri = required return on asset *i*.

R_f = risk free return.

R_M = the market return

β_i = the coefficient for the risk premium, $E(R_M) - R_f$

σ_M^2 = the variance of the market.

$Cov(R_i, R_M)$ = the covariance between the return of the market and the return of the asset.

Over the last four decades, finance researchers have attempted to empirically prove the validity or otherwise of the Capital Asset Pricing Model of Sharpe (1964) and Lintner (1965) and the explanatory power of its beta in estimating cost of equity.

Beta quantifies systematic (that is, undiversifiable) risk and posit that investors only receive compensation for this type of risk (Sharpe, 1964 and Lintner, 1965). Therefore, investors should not be compensated for bearing unsystematic (or diversifiable) risks by not holding a diversified portfolio (Markowitz, 1959).

However, the CAPM has come under attack from pre and post 1980 finance researchers who have identified other patterns in asset and portfolio returns that are not captured by the classic CAPM's beta. For instance, a major criticism of CAPM is its view of using a single

factor to determine expected asset return (Jensen, 1968 and Jensen, Black and Scholes, 1972) and the dominant impact of the market portfolio (Ross, 1976 and Roll, 1977)**.** The CAPM emphasized that investors are only concerned with systematic risk, but is it really? Banz (19981) and Reinganum (1981) find that small capitalisation equities experienced returns in excess of what could be explained by CAPM. Basu (1977, 1983) find that low price-earnings ratios (P/E) stocks experience returns in excess of what could be explained by the CAPM, whereas high P/E ratio equities experience returns lower than what could be explained by the CAPM. These findings challenged the explanatory power of CAPM's beta as the only priced or explanatory factor. These patterns that cannot be explained by the CAPM are termed anomalies in asset pricing.

B. Empirical Evidence

The emergence of new stock markets in the developing countries is important for international portfolio diversification. The existence of these stock markets has made it imperative for researchers to investigate the risk return characteristics of investments. Since the mid 1990s, quite an extensive literature has been documented mostly in the Asian and Eastern European markets with little attention on Africa. This section reviews firstly, some of these specific studies in Emerging Markets and secondly, in Africa.

Claessens et al. (1995) provide additional evidence on the nature of asset returns by investigating cross-sectional returns in 19 emerging markets. Using data from IFC emerging markets data base, they examine the effects of other risk factors on asset returns in addition to beta. Following a regression similar to that of Fama and French (1992), they find that in addition to beta, size and trading volume have significant influence in explaining asset returns in most of these markets. In a fewer markets, dividend yield and earning-price ratios are essential. The evidence provided in most of these countries contradicts existing evidence documented in developed capital markets. This implies that evidence gathered in developed markets alone should not be used to determine the way asset pricing theories are evaluated because there are other classes of market around the world which may provide contradictory evidence. As weak as the relationship between asset returns and beta, other factors may play significant roles in determining equity market returns.

Bekaert and Harvey (1995) documents that implementing the standard asset pricing model in emerging capital markets is less likely due to the complex abnormal behaviour of equity returns in these markets and that the global version of the CAPM may not work for emerging capital markets. Harvey (2000) emphasized that there would be a serious problem in applying International Capital Asset Pricing Model(ICAPM) to emerging capital markets because of the model's assumption of a perfect capital market.

Akdeniz et al. (2000) examined the impact of beta on monthly asset returns in Turkey from 1992 to 1998. They followed Fama and French (1992) regression approach. Beta coefficients are estimated by regressing monthly returns of assets on the contemporaneous and one-month-lagged return on value-weighted Istanbul Stock Exchange (ISE) Composite Index, which is made up of 100 equities. Beta estimate for each month is the sum of contemporaneous and it's lagged values. The sum-beta calculated in this manner is regarded as an adjustment for nonsynchronous trading in the market return (see Dimson, 1979). Evidence shows that the market beta is insignificant in explaining realised asset returns for Greek Stocks.

Pereira (2005) examined the challenges of applying traditional valuation techniques and asset pricing model(s) adopted by practitioners in emerging capital markets with emphasis on Argentina, an important capital market in Latin America. He interviewed corporate executives, financial advisors, private equity funds, banks and insurance companies using written questionnaire. Pereira found that the capital asset pricing model (CAPM) is the most popularly used asset pricing model to discount cash flows, yet is often adjusted to take account of country risk premium. Country specific risks such as asset expropriation by regimes, fluctuation in exchange rate, political instability etc., need to be considered in calculating cost of capital or discount rate for investment inflows. These country-specific risks may vary with time and from country to country and therefore using a constant risk premium to determine discount rate is inappropriate.

Michailidis et al. (2006) investigated the validity of the capital asset pricing model (CAPM) in the emerging Greek capital market using weekly and annual data from 100 listed equities on Athens stock exchange from January 1998 to December 2002. The result of their study did not support the CAPM's hypothesis that higher risk (beta) is associated

with higher returns in the Greek capital market, nor did it support any alternative model.

Bundoo (2008) tests Fama and French three-factor model by taking into account time-variation in betas on the Mauritius capital market. The aim of his methodology is to establish whether the size and book-to-market equity effects may be reduced or disappeared as time-varying risk premium is adjusted for temporal variation in idiosyncratic risk and this case time lag in beta. Bundoo constructed six size-BE/ME portfolio mimicking Fama and French (1993) and estimate parameters using Fama-French regression:

$$R_t - R_{ft} = \alpha_t + \beta_t(R_{Mt} - R_{ft}) + s(Smb)_t + h(Hml)_t + \varepsilon_t \quad (3)$$

And his finding was consistent with Fama and French (1992, 1993) that in addition to beta, size and book-to-market premia are present in the Stock Market of Mauritius.

Hearn and Piesse (2009) proposed and tested size and liquidity-augmented CAPM focussing on emerging African Markets. Their sample includes Johannesburg Stock Exchange (JSE), Nairobi Stock Exchange (NSE), Swaziland and Mozambique. Their results show that size-illiquidity augmented CAPM performs better than the Sharpe-Lintner CAPM and Fama-French Model as they found that size and illiquidity is a priced factor in South Africa and Kenya but less significant in Swaziland and Mozambique. 'Illiquidity for a given stock on a given day is measured as the ratio of the absolute value of the percentage price change per US$ of trading volume'.

Hearn and Piesse (2009) estimated cost of equity for the major sectors within Africa's major equity markets: Morocco, Tunisia, Egypt, Kenya, Nigeria, Zambia, Botswana and South Africa. Cost equity was found to be highest in the financial sector of all countries and lowest in blue chip stocks of Tunisia, Morocco, Namibia and South Africa.

Al-Rjoub et al. (2010) also investigated the cross-sectional behaviour of stock returns in four MENA markets, namely, Egypt, Jordan, Morocco and Saudi Arabia. Their results show that in all four markets beta have significant explanatory powers in predicting stock returns however, other fundamentals namely, P/E, BE/ME and M-CAP failed to account for variations in stock returns. Other studies in Morocco have shown that the beta is significant in determining asset returns (Hearn, Piesse and Strange, 2008).

Reddy and Thomson (2011) investigated the CAPM with the aim of testing whether it provides reasonable basis for actuarial modelling in South Africa. They went on to use data from 2000 to 2009 to separately regress excess returns on sector indices and excess return returns on market portfolio for individual years as well as for all periods combined against their corresponding estimated betas. Unlike this study and numerous others found in the literature, data used by Reddy and Thomson in their study are of yearly interval. Their results show that, with exception of 2001, the CAPM was rejected and the performance of the beta was quite weak for regression on sectoral indices and similar results was produced, except 2003, with regression on the market portfolio.

In a departure from econometric studies, Nel (2011) conducted a field research on the use of the CAPM by investment and accounting practitioners in South Africa. His interviewees also included some academics. Surprisingly, he found that all the investment practitioners interviewed indicated that they use the CAPM frequently, but not surprisingly, less than 100 per cent (74%) academics support its application. In general though, both practitioners and academics agree that CAPM is the best approach to calculate cost of equity. Coffie and Chukwolobelu (2012) investigated the equity return generating process in Ghana using CAPM. Jensen (1968) methodology was adopted and they found that the market beta plays a very significant role in determining investment returns.

Although the concepts of CAPM, Arbitrage Pricing Theory (APT) and other multifactor models have done a lot to increase our understanding of how cost of equity are determined however, the way in which this is done in emerging Africa Capital Markets remain unclear. It is important that corporate managers and investors understand the consequences of estimating cost of equity in Africa. The aim of this paper is to provide insight (supported by empirical evidence) into how the CAPM can be used to estimate cost of equity capital in Kenya.

III. METHODOLOGY

A. Data and Sources

Data for this research are obtained from Thomson Reuters DataStream. Reuters

DataStream is attractive because its estimates reflect all effects of merger, acquisition and spin offs/demerger. Once any of these actions is closed and finalised, the estimates must fully reflect the effects of the action. Both historical and current data estimates in Reuters DataStream are adjusted for stock splits, right issues and stock dividends. The period of study is from 1992 – 2009. The sample is carefully selected to reflect sufficient representation of all industries in the Kenyan capital market which is mainly manufacturing, banking/financial services, real estate, mining, agriculture and trading. This enhances comparability and unbiased conclusion being drawn. One month annualised government of Kenya Treasury bill rate is used as a proxy for risk free interest rate.

In order to test the stationarity of the series, the presence of unit roots is tested using Augmented Dickey-Fuller (ADF) test to determine the integrability order. To avoid spurious regression that may arise from using a nonstationary time series data, I transformed nonstationary time series returns data by taking the first differences of the data to make them stationary.

B. Empirical Method

I follow a methodology similar to Jensen (1968) time-series approach. Parameters are estimated using ordinary least squares (OLS). Most research in capital asset pricing in Africa has been conducted using cross sectional studies. This means that the beta risk is measured at one particular point in time. However, this study adopts time series approach and therefore is designed to measure beta risks at different time periods.

The testable unconditional CAPM is expressed as:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_{it}\left[\left(R_{Mt}\right) - R_{ft}\right] + \varepsilon_{it} \quad (4)$$

Let

$$R_{it} - R_{ft} = r_{it} \quad (5)$$

$$R_{Mt} - R_{ft} = r_{Mt} \quad (6)$$

Equation (4) can be re-written as:

$$r_{it} = \hat{\alpha}_{it} + \hat{\beta}_{it} r_{Mt} + \varepsilon_{it} \quad (7)$$

R_{it}-R_{ft} is the excess return on asset i at time t. R_{Mt} is the value-weighted monthly percent return on the market portfolio at time t. R_{ft} is the one-month treasury bill rate, observed at the beginning of the month t. A testable restriction implied by the market model is that the intercept *(*denoted as*, α)* is equal to zero and the beta *(denoted as, $\beta_{i,}$* which measures systematic risk*)* must be significantly different from zero to capture all systematic risk. The error term ε_{it} represents the residual on return with a mean value of zero and assumed to be independent of all other variables in equation (4 or 7).

Newey-West error correction model is used to correct both the presence of autocorrelation and heteroscedasticity. Because single securities are used the beta estimate is exposed to estimation error which could lead to unbiased beta. In order to improve the beta estimate, ARCH is used to model the error variance to make beta BLUE (best linear unbiased estimate). Bollerslev and Woodridge (1992) heteroscedasticity consistent covariance is also used to overcome residuals that are not conditionally normally distributed.

IV. EMPIRICAL RESULTS AND ANALYSIS

Beta coefficient, intercept and other key parameters are estimated using time series regression. Contemporaneous monthly market risk premium of price-weighted geometric mean of All Share index is regressed on contemporaneous equity excess return. The aim of this test is to establish the central theme of CAPM which says that the only risk investors care about or compensated for is systematic risk. A result for Bamburi Cement is presented in the equation below for demonstrative purposes. Results for the remaining companies are presented in the table below.

$$r_{it} = \hat{\alpha}_{it} + \hat{\beta}_{it} r_{Mt} + \varepsilon_{it}$$

$$r_{it} = 10.5834 + 0.9094 r_{Mt} + \varepsilon_{it}$$

$$t = (13.2410) \quad (7.8035)$$

$$p = [0.0000] \quad [0.0000]$$

TABLE I
TIME SERIES REGRESSION ESTIMATES OF EQUATION 7

Company name	β	α	R^2	AIC	SC
Bamburi Cement	0.9094 (7.8035) *[0.0000]***	10.5834 (13.2410) *[0.0000]***	*0.1893*	8.1621	8.1934
Barclays Bank	1.0547 (13.8460) *[0.0000]***	10.1781 (14.7726) *[0.0000]***	*0.3863*	7.4670	7.4983
BAT Kenya	0.8246 (5.8892) *[0.0000]***	9.1162 (14.7088) *[0.0000]***	*0.2861*	7.4260	7.4574
Centum Investment	1.1998 (8.8327) *[0.0000]***	9.6488 (12.8331) *[0.0000]***	*0.3839*	7.7347	7.7660
Stanbic Bank	1.2542 (3.6800) *[0.0003]***	9.6755 (8.3632) *[0.0000]***	*0.1398*	9.1674	9.1988
East African Cables	0.8240 (4.3091) *[0.0000]***	9.8477 (10.1706) *[0.0000]***	*0.0754*	9.0185	9.0499
East African Breweries	1.0063 (7.8231) *[0.0000]***	10.2297 (20.9174) *[0.0000]***	*0.4395*	7.1532	7.1846
KCB	1.2797 (10.7467) *[0.0000]***	5.8479 (6.6273) *[0.0000]***	*0.4404*	7.6301	7.6614
Kenya Airways	0.9733 (5.3139) *[0.0000]***	9.6290 (9.4266) *[0.0000]***	*0.2839*	7.4246	7.4643
Kenya Power & Lightening	1.5814 (8.6943) *[0.0000]***	10.2955 (10.1498) *[0.0000]***	*0.4549*	7.9949	8.0262
Mumias Sugar Co	1.4178 (6.0026) *[0.0000]***	8.9792 (5.7881) *[0.0000]***	*0.3498*	8.1292	8.1826
National Industrial	0.8886 (6.3583) *[0.0000]***	9.6050 (15.7780) *[0.0000]***	*0.2619*	7.6976	7.7290
National Media	0.8505 (8.1869) *[0.0000]***	10.2324 (13.7504) *[0.0000]***	*0.2176*	7.8531	7.8847
National Bank of Kenya	1.2354 (5.9057) *[0.0000]***	3.0534 (3.4306) *[0.0007]***	*0.2883*	7.9497	7.9852
Pan African Insurance	0.3229 (2.7215) *[0.0070]***	8.2839 (9.6032) *[0.0000]***	*0.0381*	7.8668	7.8982
Standard Chartered Bank	0.7833 (9.2139) *[0.0000]***	9.5588 (15.1462) *[0.0000]***	*0.1616*	8.0552	8.0865
Total Kenya	-19595.26 (1.4491) *[0.1488]*	378097.8 (1.7301) *[0.0851]*	*0.0085*	31.4273	31.4587
TPS Eastern Africa	1.0612 (6.5769) *[0.0000]***	9.1911 (12.374) *[0.0000]***	*0.3336*	7.3759	7.4160
UNGA Group	1.1012 (5.5673) *[0.0000]***	4.2171 (2.9041) *[0.0041]***	*0.1374*	8.9277	8.9591

There are two fundamental propositions of the CAPM (i) that asset returns are positive (and linear) functions of beta, and (ii) that beta is the only determinant of asset returns. As can be seen from Table I, with the exception of Total Kenya, which has an unusually high negative beta, proposition (i) is supported by our results. In other words, investors in the Kenyan market, like investors elsewhere, expect to be compensated more, the higher the systematic risk on their investment.

Per the evidence above, ten companies have their beta coefficient greater than 1, more than that of the market portfolio. Thus these companies exhibit high variation in returns than the market portfolio and hence, expected to be more risky. By investing in such companies investors will require higher returns in compensation for taking up higher systematic risk (see for example, Sharpe, 1964; Lintner, 1965). Cost of capital for these companies is also expected to be high. The remaining equities have beta coefficient less than that of the market (that is, less than 1) and therefore experience variation in returns less than of the market portfolio, making investment in these companies less risky than the market portfolio.

This evidence gathered here further upholds the explanatory power of beta and show that systematic risk is significant in explaining the pattern of returns generating process in Kenya. The central theme of the CAPM says that the only risk that determines asset returns is the systematic risk which is the risk that correlates with the market return. This is possible because according to the CAPM, other half of risk, that is, unsystematic, is eliminated through diversification (see for example, Markowitz, 1952, 1959; Sharpe, 1964; Lintner, 1965).

However, it is observed from the above results that there are significant deviations from the CAPM as shown by statistically significant intercepts. This implies that systematic risk on its own is unable to capture all risks associated with equity returns and that risk factors that are unique to the firm or other macroeconomic innovations may be important in determining equity returns (see for example, Jensen *et al*., 1972; Ross, 1976; Fama and French, 1992).

The R^2 for the individual regressions are very low, and this is buttressed by the high Akaike Information Criterion (AIC) and Schwarz Criterion (SC), which are all well above the critical value of 3. The highest total variation in equity returns in Kenya which can be explained by the CAPM, as measured by R^2, is only 45.49% (for Kenya Power & Lightening), leaving more than 50 per cent of the variations in the company's equity returns unexplained by the model. For a company like Pan African Insurance, with R^2 of 3.81%, the unexplained variation of 96.19% renders the appropriateness of CAPM even more suspect. This implies that there are other risk factors other than systematic risk, including perhaps company-specific and industry/economy wide risk factors, which equity investors seek compensations for in the Kenyan market. This is consistent with Jensen et al (1972) Ross (1976) and Fama and French (1992).

The result for Total Oil is a statistical oddity or quirk. We have no explanation for the very high negative beta, but have included it for completeness.

V. IMPLICATION FOR CORPORATE MANAGERS

Theory suggests that corporate managers should go ahead and invest in capital projects provided there is a proof of maximising corporate value. Subsequently, if some shareholders differ with management decisions, they can sell their shares and be well off as if management have made different decisions. This underpins the theoretical recommendation that managers invest only in those projects that yield positive net present value (NPV).

As academics are still busily debating the value of the CAPM, it puts practitioners and companies who use the CAPM in their capital investment process into a state of stupor. Although capital investment decisions can be made without the CAPM, evidence seems to suggest that those who choose to adopt it presently in spite of the academic debate will actually not receive a worthless advice. For those interested in the strategic view of business, the CAPM still appears to have something to offer in the capital investment decision process.

The capital asset pricing model provides a method of assessing the riskiness of cash flows arising from a project and also estimates the relationship between that riskiness and the cost of capital (or the risk premium for investing in that project). The CAPM asserts that the important measure of a project risk is systematic or common risk known as the

project's beta. According to the CAPM, a project cost of capital is an exact linear function of the rate on risk-free project and the systematic risk (that is, beta) of the project being evaluated.

However, test results documented in this study appear to suggest that the risk adjusted one factor CAPM's beta is not sufficient to fully explain the equity return generating process in Kenya. There may be other important risk factors that affect return due to country or firm specific characteristics. Thus, although beta is significant in explaining firms return generating process in Kenya one should interpret this with caution. Corporate managers must be cautious when using CAPM as their basis of estimating cost of equity capital as they may be misled into under estimating project risk.

VI. CONCLUSION

The main focus of this study was to investigate the risk-return relationship which serves as basis of estimating cost of equity capital in Kenya using CAPM. Empirical evidence produced in this study supports the explanatory power of beta. However, contribution made by beta to variation in equity returns in Kenya is less than the CAPM's prediction as measured by low R^2 and high AIC and SC. This means that other risk factors in addition to the market beta are likely in Kenya.

The literature revealed that size, BE/ME, P/E and liquidity may be contributing to the return generating process. Future studies in Kenya will extend the test to include both size and BE/ME fundamentals and also factors relating to P/E ratio and liquidity.

This evidence will also make corporate managers think twice when using CAPM as a basis to determine cost of equity capital for investment appraisal purposes and fund managers when allocating assets and evaluating portfolio performance.

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