European Journal of Business and Social Sciences, Vol. 4, No. 01, **April 2015.** **P.P. 90 – 105**
URL: *http://www.ejbss.com/recent.aspx-/*
ISSN: 2235 -767X

EFFECT OF ACCRUALS QUALITY ON SEGMENTAL COST OF CAPITAL IN THE KENYAN EQUITY SECURITIES' MARKET.

Josephat Oluoch

(Corresponding Author)
Jomo Kenyatta University of Agriculture & Technology, Kenya.

Prof. Gregory Namusonge, (PhD)

Jomo Kenyatta University of Agriculture & Technology, Kenya.

Prof. Silas Onyango, (PhD)

KCA University, Kenya.

ABSTRACT

This study uses a mixed research design to test the effect of segmental accruals quality on the cost of capital of the companies quoted in the various non-financial institutions segments of the Nairobi Securities Exchange (NSE). The study's sample of 38 is purposively derived from a population of 61companies quoted at the NSE covers the period January 1993 through December 2013. Panel data regression of cost of capital on the cost of capital factors (growth, leverage, market risk and size) augmented with the accruals quality rank (the proxy for accruals quality) reveals that the effect of overall accruals quality on cost of capital varies widely among the various segments of the NSE. There is a significant positive effect on cost of capital for the Commercial, Manufacturing, Energy and Agricultural segments; a negative one for the Construction segment and no effect at all in the automobiles segment. The study further indicates accruals quality among the segments is relatively poor compared to accruals quality in other capital markets. It is concluded that segmental idiosyncratic accruals quality factors are significant in determining corporate cost of capital.

Key Words: *Accruals quality, Market return premium, Pricing effect*

I. Introduction

Accruals' quality is taken as a measure of uncertainty about the reliability of the information provided in corporate earnings as predictors of corporate cash flows. Suffice it to note that whereas business cash flows inherently depend on their accruals structure, the very estimation of accruals is fraught with innate and discretionary judgment limitations which inevitably reduce the reliability of reported earnings. Lobo et al. (2012) depict accruals quality as the extent to which the accruals implied in the business reported earnings map into actual cash flows over successive financial periods. Literature identifies discretionary accruals quality and the innate accruals quality as the two components of overall accruals quality (Kent et al., 2010). Discretionary accruals quality reflects creative accounting efforts and relates to intentional manipulation of accruals to reflect managed business earnings while innate accruals quality arises from the unintentional errors inherent in the estimation of accruals.

Cost of capital is critical as a hurdle rate for investment decisions in the securities markets particularly in the face of fundamental analysis of businesses for security valuation. It is mostly taken as the minimum required rate of return to providers of capital (debt, equity and hybrid capital) to a firm (Rosenbaum and Pearl, 2009). Literature tries to link the role of information risk intrinsic in accruals quality with cost of capital. In essence, Francis et al. (2005) are of the view that accruals quality reflects financial information risk to investors in the capital markets. This is because of the absence of clarity about the extent to which the accruals reported in earnings information ultimately convert to cash flows in subsequent financial periods. If accruals quality is taken as a source of information risk to investors who rely on financial statement information for decision making, it is expected to affect firms' cost of capital.

There are numerous theoretical and empirical expositions that explore the link between cost of capital and accruals quality. Firstly, the information uncertainty hypothesis advanced by Francis et al. (2005) contends that accruals quality has an inverse relationship with cost of capital. In their view, although earnings are a good yardstick for predicting future cash flows, the accruals component of earnings is uncertain. It is this uncertainty of the accruals component that presents information risk to investors and security analysts. Francis et al. (2005) argue that accruals quality is a remote indicator of information risk and that since investors make future estimations of cash flows based on current earnings, the poorer the accruals quality, the poorer the future cash flows estimates and hence the higher the cost of capital ceteris paribus. Francis et al. (2005) tested this theorization using 91,280 US large firm year observations over the 1970 to 2001 period. Using time series regressions of contemporaneous stock returns they test the pricing effect of innate and discretionary accruals quality for both cost of debt and cost of equity. Their findings also indicate that innate and discretionary accrual qualities positively affect the cost of capital although the innate effect is more pronounced and significant than the discretionary effect on cost of capital.

Core et al. (2008) cast doubt on the conclusions arrived at by Francis et al. (2005) and carry out an invalidation examination of the methodology used by Francis et al (2005) in a bid to show that the Francis et al. (2005)'s time-series asset-pricing regressions approach constituted a mis-specification of the pricing effect and that in deed accruals quality is not an information risk priced factor. They study the period April 1971 to March 2002 and use the two-stage cross sectional regressions approach where accruals monthly excess returns are regressed on risk factor betas. Their study fails to find any evidence that accruals quality is a priced risk factor. The study is useful in that it provides an opportunity to re-examine accruals as a priced risk factor using a different methodology. This is important because it helps literature to refocus on model specification errors and provides a basis for further evaluation of accruals quality.

Secondly is the information asymmetry conjecture based on the concept of information heterogeneity between corporate insiders and the investing public, Easley and O'Hara (2004) posit that it is the differences in the content of information that is separately held by the public investors and the corporate insiders which affects cost of capital. Their theory argues that the informed insiders have different portfolio weights from the uninformed public which leads to different attributes of their portfolios and their respective costs of capital. According to this argument, private information portent information risk for the uninformed investors. Accordingly, Easley and O'Hara (2004) provide evidence that the relative magnitudes of public and private information among investors feeds the information risk that is reflected in accruals quality. The informed investors have more access to private information than the uninformed ones and they adjust their portfolios accordingly while the uninformed investors do not. The relative disadvantage of non-systematic information risk faced by uninformed investors that causes them to underweight good securities while overweighting the poor securities makes them demand a higher return. Inevitably, investors demand a higher return than average in order to hold a portfolio of stocks with a high level of private information (Easley and O'Hara, 2004). They indicate that firms can realign their cost of capital by tinkering with accounting treatments. It is in this context that accruals quality as a source of information asymmetry influences a firms cost of capital.

Still based on information asymmetry, Leuz and Verrecchia (2005) hold a different argument that investors take into consideration an information risk premium arising out of the inability of earnings information to perfectly align firms and investors with respect to capital investments. The magnitude of the information risk premium depends of the perception of investors about the degree of this non-alignment. If the information risk is evaluated from an accruals quality point of view, the conclusion by Francis et al. (2005) that cost of capital is inversely related to the accruals quality will also apply in this argument. Empirical tests by Hughes et al. (2007) in competitive noisy markets with rational expectations support this theorization.

In yet a different postulation on how information asymmetry influences cost of capital, Lambert, Leuz and Verrecchia (2012) theorize that it is the level of competition in the capital market that influences how information asymmetry affects cost of capital. Their empirical tests show that in a perfectly competitive market, information asymmetry, through information precision, is totally irrelevant in determining the cost of capital. They further show that when the markets are less than perfectly efficient, information asymmetry influences cost of capital given that investors are expected to bear exogenous risk in such a market structure. In tandem with Lambert, Leuz and Verrecchia (2012), Armstrong et al. (2011) had earlier examined the association between information asymmetry among investors and cost of capital in excess of standard risk factors. They show that in perfectly competitive equity markets, cost of capital is irresponsive to information asymmetry.

Thirdly, the exogenous influence supposition, another school of thought on how accruals quality affects cost of capital, has it that the effect of accruals quality on cost of capital depends on factors other than accruals quality information. Chen, Dhaliwal and Trombley (2008) find that the association between accruals quality and the cost of capital is a function of fundamental risk, the uncertainty about future dividend payments. They find that there is no relationship between accruals quality and the cost of capital measured as return realizations for low fundamental risk firms. The opposite however applies for the high fundamental risk firms where they show a strong relation between accruals quality and cost of capital.

Gray, Koh and Tong (2009) also show that economic fundamentals also have a critical effect on accruals quality and cost of capital. Using data from the Australian regulatory environment they show that only the innate accruals quality component (reflecting environmental idiosyncrasies) has an aggressive effect on the cost of capital. Gray, Koh and Tong (2009) who use the Dechow and Dichev (2002) metric to capture accruals quality and information precision and who represent cost of debt using interest as a proportion of total debt and industry adjusted earnings to price ratio to proxy for cost of equity on 1,362 firm year observations in Australia over the 1998 to 2005 period find that accruals quality, particularly the innate version, is a priced risk factor for both cost of debt and cost of equity.

In support of this view, Kim and Qi (2010) indicate that the pricing effect of accruals quality changes in tandem with business cycles and macro economic variables. They provide empirical evidence that the accruals quality risk premium is in existence during economic expansion cycles but absent during economic recessions. They further show that the pricing effect of accruals quality is significant, contrary to the assertions of Core et al. (2008), once the effect of the low return stocks is controlled for. Measuring accruals quality using the residual volatility approaches of Francis et al. (2005), Kim and Qi (2010) use a period of 444 months from January 1970 to December 2006 that yields 103,682 firm-year observations on CRSP/Compustat data. They use the two-stage cross sectional regression tests with poor minus good (PMG), the return on a zero investment portfolio of buying long the top 40 percent and selling short the bottom 40 percent firms in terms of accruals quality, acting as the accruals quality risk factor. They find a greater pricing effect for the total and innate accruals qualities in an economic expansion and a negligible effect for the discretionary accruals quality. They take their findings to indicate that accruals quality contributes to the cost of equity in such a way that the pricing effect is related to a firm's fundamental risk

Mashruwala and Mashruwala (2011) scrutinize the effect of seasonality on the pricing of the modified Dechow and Dichev (2002) accruals quality measure (AQ). They use 447 monthly and 9,399 daily portfolio returns over the January 1971 to December 2008 study period. They use the Fama and French (1993) time four factor time series regressions and regress portfolio excess returns on the four factors viz CSRP market excess returns, size, book to market and the momentum effect. The findings indicate that it is only in January that high accruals quality stocks outperform low AQ stocks with about 50% of the accruals quality premium happening in the first 5 trading days in January. The accruals quality premium is related to the stock price effects of tax loss selling and not the information risk premium. Although the study rejects the notion that accruals quality is a priced information risk factor, it fails to explain if the January regularity of the accruals premium can be replicated in non tax loss selling environments

Geng et al. (2013) examine if earning quality risk magnifies its influence on cost of capital, measured by earnings-price ratio, as fundamental risk increases based on the empirical data of Shanghai Stock Exchange non financial businesses over the period 1999 to 2009. They carry out asset pricing tests on the basis of Fama-French risk factors and incorporate accruals quality measure in the regression of excess returns against these factors. They find that as fundamental risk rises, accruals quality's influence on cost of capital is enhanced, although this influence on cost of capital does not exceed that of low-fundamental-risk enterprises. The study fails to disentangle total risk into the systematic and nonsystematic components hence fails to show the effect of each on cost of capital in order to compare with Yee (2006)'s assertion that only systematic risk is connected to the cost of capital.

In summary, except for the anomalous behaviour of stock returns that presupposes an indirect effect of accruals quality on cost of capital, all the theoretical explanations of the pricing effect of accruals quality reflect a behavioural angle that presupposes that investors are keen and discerning in the evaluation of financial statements and the attendant accruals quality. They underlying tone in the information uncertainty

hypothesis of Francis et al. (2005), the information asymmetry conjecture of Leuz and Verrecchia (2005) and the rational expectations hypothesis of Easley and O'Hara (2004) is that accruals quality communicates financial condition information whose differential perception by investors affects cost of capital in different ways. From these, it can be concluded that indeed accruals quality is an information risk factor. However, whether this risk factor is a priced risk factor at all and how such pricing takes effect or affects cost of capital is a matter on which literature has yet reached a consensus.

Three conflicting views about how accruals quality affects cost of capital emerge from the foregoing discussion. Firstly, is the view that accruals quality does not affect cost of capital. Proponents of this view maintain that it is often the defective research designs that allegedly provide a misleading view that accruals quality affects cost of capital yet in reality it is has no effect at all. Core, Guay and Verdi (2008) lead this argument and are supported Mohanram and Rajgopal (2009). Secondly, is the alternative view that accruals quality has a negative effect on cost of capital such that the higher the accruals quality, the lower the cost of capital. This conjecture is supported by Francis et al. (2005) and Gray et al. (2009). Finally is the view that accruals quality has a positive effect on cost of capital such that the higher the accruals quality, the higher the cost of capital. This orientation is supported by Easley and O'Hara (2004) and Brousseau, Mao and Wei (2012).

From these divergent views about the effect of accruals quality on cost of capital, it is logical to conclude that the effect of accruals quality on cost of capital is a function of numerous moderating variables within a financial reporting and markets regulatory environment. The factors that are explicitly identified in literature are the level of competition (Armstrong et al., 2011); size of the firm, segmentation and its value (Brousseau and Gu, 2011; Demirkhan et al., 2012); the level of risk particularly fundamental risk (Chen, Dhaliwal and Trombley, 2008); corporate governance and internal control characteristics and agency risk (2007; Kent, Routledge and Stewart, 2010; Lu, Richardson and Salterio, 2011; Demirkhan et al., 2012) as well as corporate reputation (Luchs, Stuebs and Sun, 2011). Whereas all these factors have been considered in several empirical studies, the literature has been biased towards developed markets yet these have different fundamentals expected to impact cost of capital differently from emerging markets like the Nairobi Securities Exchange. Part of the bias could admittedly be due to the yawning lack of data for markets like NSE and the significantly small size of such markets.

This study based at the NSE is particularly enriching because it has been shown to exhibit reliable levels of information efficiency. Chipo and Biekpe (2007) evaluate the nature of ten African stock markets in terms of their efficiency particularly the weak-form variety. Using the adjusted trade-to-trade approach to compute returns, they find Nairobi, Namibia and Zimbabwe stock exchanges to be efficient albeit in the weak form. This places NSE among the more efficient stock markets besides Johannesburg Stock Exchange. The rest including those in Egypt, Botswana Mauritius and Ghana were found less efficient. This level of efficiency lays a basis for studying the effect of accruals quality on the cost of capital in the relatively vibrant NSE.

II. Research Objectives and Justification

To appraise the effect of segmental accruals quality on cost of capital among the various segments of the Nairobi Securities Exchange (NSE), three objectives are undertaken in this study. It firstly aims to establish the nature of segmental accruals quality among the non-financial institutions segments of the NSE. It secondly sets to appraise the idiosyncrasies of the cost of capital among the companies in the various segments of the Kenyans equity securities market. Lastly, the study purposes to establish how cost of capital is affected by the varying levels of accruals quality in each of the distinctive segments of the NSE.

Achieving these objectives is instrumental in a number of ways. Firstly, it helps test the suggestion by Gray, Koh and Tong (2009) supported by Mao and Wei (2012) that institutional and regulatory differences among various countries affect the levels of accruals quality. NSE provides a unique opportunity for this test since companies are listed is various segments that reflect different institutional and regulatory regimes. In addition, the identification of the nature of the effect of accruals quality on cost of capital at NSE provides new knowledge in the context of an underdeveloped securities market that is considerably small in size, under-capitalized, relatively new and with comparatively weak control structures. The results can be evaluated against empirical findings from complex and organizationally diverse capital markets to enrich accruals quality pricing literature.

In addition, the findings of the study provide results on the effect of accruals quality on the cost of capital for public companies in Kenya based on the variations in the regulatory and institutional frameworks of the various industries represented at the NSE. Gray, Koh and Tong (2009) suggest that institutional and regulatory differences among various countries affect the empirical findings with respect to the effect of accruals quality on the cost of capital. The importance of the regulatory framework is underscored by Mao and Wei (2012) who show a positive direct relationship between accruals quality and cost of capital in the Dutch market. This is especially critical because the existing empirical studies done on the effect of accrual quality have almost exclusively to other countries particularly USA, Canada and Australia. The seminal work of Francis et al. (2005) in USA has been followed up by Core, Guay and Verdi (2008) and Brousseau and Gu (2011) all with confounding results from the American markets. The study by Gray, Koh and Tong (2009) added an Australian perspective but instrumentally showed how the idiosyncrasies in the operating and regulatory environment affect accruals quality and its possible effect on the cost of capital. The importance of the regulatory environment has also been emphasized by Lu, Richardson and Salterio (2011) while studying accruals quality in the unique Canadian reporting environment. From this perspective, studying the accruals quality and its effect on cost of capital among Kenyan firms in their respective segments helps expose the inter-linkage between the two in a financial and reporting environment with unique attributes like those in the Kenyan environment.

The study helps reveal the effect of accruals quality on cost of capital particularly because studies done in Kenya have focused on other aspects of market pricing. Musyoki (2012) for instance evaluates the changes in share prices as a predictor of accounting earnings for financial firms listed at the Nairobi Securities Exchange over the period 2001 to 2005. Whereas this closely relates to the persistence aspect of accruals and earnings quality, the study does not examine how accruals quality affects cost of capital. In addition, the study is not comprehensive enough in that it only evaluates 11 companies quoted at the NSE which represents less than 20% of the listings at the bourse. This represents critical gaps that are covered by the hypotheses proposed in this study. In addition, it is not clear how accruals quality affects cost of capital in the Kenyan capital markets. This is particularly critical because literature is still confounding on how accruals quality influences cost of capital. Whereas studies like those of Core, Guay and Verdi (2008); Mohanram and Rajgopal (2009); Armstrong et al. (2011) Lambert et al. (2012) refute the existence of an effect, Brousseau and Gu (2011) and Mao and Wei (2012) are of the view that there is a positive effect of accruals quality on cost of capital while Francis et al. (2005); Gray, Koh and Tong (2009); Qi, Subramanyam and Raghunandan (2010) and Demirkhan et al. (2012) predict a negative effect on cost of capital.

III. Research Methodology

The study is an empirical evaluation of the effect of accruals quality on market returns based on a population of 38 firms quoted in the non-financial institutions segments of the NSE. These are the Agricultural, Automobile, Commercial, Construction, Energy and Manufacturing segments. It covers the period January 1993 through December 2013. The focus on public companies is justified on the fact that there are stringent disclosure requirements imposed on these firms by the capital markets regulator. It is these disclosures that provide adequate data necessary for this study. Although set to be a census study, purposive sampling is used to establish the firm-year observations that meet all the criteria for estimating innate accruals quality. The criteria relates to full data over five year-rolling periods both for the financial statement data used to compute accruals quality and the market price data for establishing periodic security returns.

The initial step is to estimate of accruals quality and its components among the target public companies. It in effect is taken as the five year measure of volatility (standard deviation) of firm specific residuals that emanate from the multiple linear regressions of accruals on five accrual determinant variables. These variables are the one-year lagging cash flows from operations (CFO_{t-1}), current-year cash flows from operations (CFO_t); one year leading cash flows from operations (CFO_{t+1}), the change in revenue between the current year and the past one period (ΔREV.) as well as current year gross value of plant, property and equipment (PPE_t).

The five-year moving standard deviation of the residual term is model (i) is taken as accruals quality. All the variables are adjusted for size by dividing the values by the value of total assets (TA) at respective year ends. The Dependent variable is the change in working capital over successive financial years ($\Delta WC_{i,t}$). Accordingly change in working capital is equivalent to change in current assets less change in current liabilities between years t-1 and t. The change in working capital is taken as the accruals of the year t. The accruals quality is computed for each of the six non-financial institutions segments of the NSE.

$$\Delta WC_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta \text{REV}_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_{i,t} \dots\dots i$$

To test for the effect of accruals quality on cost of capital as indicated in the first and second null hypothesis, the accruals quality rank AQR are separately augmented in a regression of cost of capital on the factors that influence this cost as identified by Palepu (2000) and Francis et al. (2005). These factors are identified as the growth in equity, capital structure, market risk and firm size. The four factors are consistent with CAPM and the Gordon's model used in determination of the cost of capital. The resultant model identified in equation (ii) controls for these four factors such the coefficient on the proxy for accruals quality indicates the effect of accruals quality on cost of equity. The statistical significance of b_5 (the coefficient on the proxy for accruals quality) is determined to evaluate the effect of accruals quality on cost of capital.

$$K_{av} = b_0 + b_1 Ln(1+g)_{i,t} + b_2 LnDTA_{i,t} + b_3 LnCAPM\beta_{i,t} + b_4 LnTA_{i,t} + b_5 LnAQR_{i,t} + e\dots.. ii$$

Here K_{av} is the cost of capital taken as the earnings to price ratio-EPR (computed as earnings per share divided by market price per share of the respective firms at the end of every of the 21 financial years in the study; g is the firms growth in book value of equity over the proceeding five years; DTA is the total debt to total assets ratio, a proxy for firm capital structure or leverage; CAPMβ is the capital asset pricing model beta from five year rolling regressions which indicates market risk; TA is the total assets, a proxy for firm size while AQR is the accruals quality rank which is a proxy for accruals quality. The regressions for each segment are done on a panel data linear regression basis to test the effect of accruals quality aspects on cost of capital.

IV. Results and Analysis

The accruals quality variables inherent in model (i) were aggregated for each of the six segments at the NSE. After testing and controlling for the linearity, homoscedasticity, collinearity and normality the regression was run and the statistical significance of each of the parameters in model (i) established. Accrual quality values were subsequently computed. The regression outputs for each of the qualifying segments of the NSE are indicated in Table 1. The results indicate that the accruals quality model is robust for all the qualifying segments of the NSE. This is confirmed by the high coefficient of determination values and the statistically significant F-values for all the nine segments.

Table 1: Segmental Accruals Quality Regression Output

	Commercial	Manufacturing	Energy	Automobile	Construction	Agriculture
Adj. R^2	0.6919	0.8231	0.7335	0.5924	0.8365	0.6911
SE	0.0800	0.0312	0.0444	0.0781	0.1516	0.2238
F	9.9809	19.60867	12.0081	4.3594	21.4722	9.8510
Sig.. F	0.0002	0.0000	0.0000	0.0119	0.0000	0.0002
β_0 Sign	-	+	+	-	+	-
β_0	-3.8397*	4.0724*	2.6278*	-4.4697*	4.7369*	-1.0985
	(0.0016)	(0.0010)	(0.0190)	(0.0005)	(0.0003)	(0.2893)
β_1	-3.1794*	-3.7844*	-3.9524*	-2.6919*	1.4593	1.0116
	(0.0062)	(0.0018)	(0.0013)	(0.0171)	(0.1651)	(0.3278)
β_2	-3.3951*	-0.8505	-2.2772*	0.1973	-2.4316*	2.9555*
	(0.0039)	(0.4084)	(0.0379)	(0.8463)	(0.0280)	(0.0098)
β_3	2.5460*	-3.8159*	-4.0143*	2.2737*	2.4559*	-2.9482*
	(0.0022)	(0.0017)	(0.0011)	(0.0381)	(0.0262)	(0.0100)
β_4	3.1075*	2.5467*	1.85204	2.0296	4.6869*	4.2090*
	(0.0072)	(0.0224)	(0.0838)	(0.0605)	(0.0003)	(0.0008)
β_5	5.4083*	-4.5080	-4.6323*	4.1720*	-9.0370*	3.7056*
	(0.0001)	(0.0004)	(0.0003)	(0.0008)	(0.0000)	(0.0021)

*Indicates significant of the t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, one-year lagging cash flows from operations (CFO_{t-1}), Current-year cash flows from operations (CFO_t), one-year leading cash flows from operations (CFO_{t+1}), Change in revenues (ΔREV.) and Plant, Property and Equipment (PPE_t) respectively.

The model best fits the Commercial and Services segment of the NSE. This is illustrated by the adjusted R-square of 0.6919 and the statistically significance of all the coefficients in the model as indicated by the low p-values that are all well below the statistical significance level of 0.05 just the same way all the t-values are above the statistical significance level of ±2.131. This could perhaps be best explained by the trading model of the companies in this sector that is characterized by heavy working capital and well as combined cash and accrual oriented business model. The model also fits well in the rest of the segments with a coefficient of determination of above 0.75 and well as high R^2 adjusted values. Four of the five working capital parameters have statistically significant P and t-values in all of the remaining 5 segments. These are the Manufacturing, Construction, Automobile and the Agricultural and the Energy segments.

From the foregoing observations, the null hypothesis that one-year leading cash flows from operations, current cash flows from operations, one-year leading cash flows from operations, changes in revenues and investment in plant property and equipment do not explain working capital changes in therefore rejected. This means that the accruals quality model is applicable to the NSE segments. Accordingly, the descriptive statistical properties of the resultant accruals quality values for each of the years and each of the NSE segments over the study period are presented in Table 2.

Table 2: Segmental Accruals Quality Descriptive Statistics

	Const	*Auto*	*Energy*	*Agric*	*Comm*	*Manuf*
Mean	0.1326	0.4403	0.5136	0.1016	0.1104	0.1274
Median	0.0888	0.3916	0.6402	0.1141	0.1107	0.1351
Std Deviation.	0.0732	0.2183	0.2254	0.0433	0.0315	0.0578
Coefficient of Variation	0.5522	0.4957	0.4388	0.4263	0.2852	0.4540
Range	0.2037	0.7199	0.6045	0.1119	0.0985	0.1686
Minimum.	0.0654	0.2365	0.1805	0.0463	0.0626	0.0444
Maximum.	0.2690	0.9564	0.7850	0.1582	0.1610	0.2130
95%Conf.	0.0377	0.1122	0.1159	0.0223	0.0162	0.0297

The findings indicate that if the mean value is used. The accruals quality values range from 0.1016 for the agricultural sector (highest accruals quality) to 0.5136 for the Energy segment (the poorest accruals quality). When the coefficient of variation of the accruals quality is used, the values indicate that the rank order of accruals quality from the highest quality to the poorest quality are Commercial (0.2852), Agricultural (0.4263), Energy (0.4388), Manufacturing (0.4540), Automobile (0.4957) and Construction (0.5522) segments respectively.

The rank order could be attributed to the nature of companies listed in each of the segments of the NSE. The Commercial segment is perhaps listed top largely because of the nature of operations of companies in this segment which mostly involve short cash conversion cycles. The construction segment comes last possibly due to the long cash conversion cycles involved given that the insurance business is mostly long term in nature.

These segmental accruals quality characteristics of can be compared with similar information from other regulatory regimes. Wong (2009) while studying the pricing effect of earnings quality in Australia over the period 1991 to 2007 determines an accrual quality of 0.0269. This when compared with a standard devaiation of 0.0363 translates to a coefficient of variation (CV) of 1.349. In a different study over the period 1988 to 2007, Perotti and Wagenhofer (2014) while evaluating the relationship between earnings quality and excess returns establish a mean of 0.0371 and a standard deviation of 0.0917. This provides a relatively high CV of 2.472. A similar study by Wysocki (2008) provides a coefficient of variation of 5.5. All these findings when compared to the NSE case over the 1993 to 2013 period provides evidence that NSE has a comparatively poor accruals quality than firms quoted in other financial markets.

With respect to the second objective, cost of capital in this study is taken as the earnings to price ratio (EPR). This is computed as earnings per share divided by market price per share of the respective firms at the end of every of the 21 financial years in the study. The findings in Table 3 portray a highly volatile and dispersed EPR over the study period with a range of 46.86% as the difference between the minimum and the maximum cost of capital of 7.15% and 54.01% respectively. This represents a significant market risk premium given that the over the same period, the 91-day TB rate reflected a range of only 18.51% coupled with 1.46% and 19.97% as the minimum and maximum values respectively. This firm industry level premium is further indicated by a standard deviation of 12.18% which is significantly higher than that shown by the TB rate of only 4.92%

Table 3: EPR Segmental Descriptive Statistics

	Const	*Auto*	*Energy*	*Agric*	*Comm*	*Manuf*
Mean	*0.2162*	*0.1397*	*0.1496*	*0.1129*	*0.4569*	*0.0541*
Standard Deviation	*0.3625*	*0.0566*	*0.1265*	*0.0936*	*1.1647*	*0.0482*
Coefficient of Variation	*1.6767*	*0.4052*	*0.8456*	*0.8291*	*2.5491*	*0.8909*
Minimum	*0.0265*	*0.0689*	*-0.1065*	*0.0127*	*-0.2703*	*-0.0620*
Maximum	*1.5747*	*0.2733*	*0.4517*	*0.2905*	*4.2752*	*0.1417*
Confidence Level(95.0%)	*0.1864*	*0.0291*	*0.0650*	*0.0481*	*0.5988*	*0.0248*

Derivative coefficients of variation of 0.5285 and 0.7883 for the NSE market and the TB rates confirm that the NSE cost of capital is more volatile over the study period than the market risk free rate of return. The findings can be compared to those from similar studies. Atyeh and Al-Rashid (2015) for instance find that in Kuwait, over the period 2005-2011, weighted average cost of capital had a mean of 10.3%, a standard deviation of 2%, a maximum of 14.5% and a minimum of 7.4%. In this respect Kuwait Stock Exchange reflects a lower average cost than NSE. The related coefficient of variation of 0.1942 is indicative of a market whose cost of capital is less volatile than that of the NSE. From South Africa, Swartz (2008) reveals a mean of 9.46% and a related coefficient of variation of 0.4387 which is considerably less than the Kenyan case.

The descriptive statistics of the segmental cost of capital as proxied by earnings to price ratio are indicated in Table 3. The highest average cost of capital of 45.69% is reported in the Commercial segment of the NSE while the least average cost of capital of 5.41% is reported in the Manufacturing segment. The rest of the segments have an average cost of capital of less than 21.62% reported in the Construction segment of the NSE. Meaningful information is derived when the segmental mean averages are compared with the respective standard deviations. This converts these absolute measures to a relative measure, the coefficient of variation. From this standpoint, the segments can be ranked from the least volatile to the most volatile cost of capital as Automobile (0.4052), Agricultural (0.8291), Energy (0.8456), Manufacturing (0.8909), Construction (1.6767) and Commercial (2.5491) respectively.-

In the third objective, the statistical significance of b_5 , the coefficient of the accruals quality rank (AQR) the proxy for accruals quality, in model (iii) is tested using the t-statistic at 95% confidence interval. The objective is to test the null hypothesis that the accruals quality has no effect on cost of capital of the firms listed in the various segments of the NSE. Panel data diagnostic tests were done for the possible models for use in interrelating cost of capital with the various determinants including the AQR. Using the weighted least squares panel regression, the findings are indicated in Table 4.

Table 4: Effect of Segmental Accruals Quality on Cost of Capital

	Commercial	Manufacturing	Energy	Automobiles	Construction	Agriculture
Adj. R^2	0.6919	0.5648	0.5383	0.6264	0.6759	0.47339
SE	0.0978	0.0969	1.0084	0.0998	0.1044	0.80715
F	29.291	3.6432	12.6593	23.469	21.858	19.159
P-value	0.0000	0.0059	0.0000	0.0000	0.0000	0.0000
AIC	184.531	194.35	151.21	198.42	154.74	251.57
β_0 Sign	-	+	-	+	+	-
β_0	-0.2063*	2.6717*	-0.0716*	5.9010*	5.7042*	-0.0417*
	(0.0000)	(0.0000)	(0.0004)	(0.0000)	(0.0000)	(0.0179)
β_1	0.0160	0.08697	0.0033	0.4750*	0.5477*	-0.0067
	(0.5253)	(0.4286)	(0.1569)	(0.0068)	(0.0037)	(0.7917)
β_2	-0.0478	1.0736*	0.1182*	-1.4113*	-1.7663*	-0.0387*
	(0.2186)	(0.0007)	(0.0000)	(0.0277)	(0.0249)	(0.0478)
β_3	1.0255*	6.2120*	0.0032*	0.0972*	0.0531*	0.0095*
	(0.0007)	(0.0046)	(0.0325)	(0.0281)	(0.0141)	(0.0278)
β_4	-0.0182	0.1615	0.6207*	-2.7657*	-2.2987*	0.0348
	(0.2877)	(0.2494)	(0.0000)	(0.0008)	(0.0012)	(0.0833)
β_5	0.07210*	0.2874*	0.0107*	-0.0474	-0.1300*	0.04832*
	(0.0000)	(0.0048)	(0.0001)	(0.6407)	(0.0131)	(0.0000)

*Indicates significance of the coefficient using t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, natural logarithm of one plus the growth rate over five successive years [Ln(1+g)]; natural logarithm of total debt to total assets ratio (LnDTA); natural logarithm of market beta (LnCAPMβ); natural logarithm of total assets in millions of Shillings (LnTA) and natural logarithm of the accruals quality rank (LnAQR) respectively.

The model fits well for all the segments given that all had an adjusted R-square value of at least 0.4734 for the Agricultural segment and at most 0.6919 for the Commercial and Services segment. This finding of a robust panel regression model for the eight qualifying segments is confirmed by the model F-test with all the eight F-ratios being statically significant. In addition, the P-values of the six segmental models are all below the critical value of 0.05 at the 95% confidence interval. The lowest F-value of the model of 3.6432 for the manufacturing segment and the highest value of 29.291 for the Commercial segment are all above the critical value. In a nutshell, the model is suitable for the data. In the Commercial Segment, the null hypothesis that overall accruals quality does not affect cost of capital is rejected because it has a statistically significant coefficient of 0.0721 at 95 % confidence interval. The positive coefficient implies that the higher the accruals quality (the smaller the natural logarithm of the accruals quality rank), the lower the cost of capital. Accordingly, companies listed in the Commercial segment of the NSE have their accruals quality being directly related with the cost of capital. The same relationship is exhibited by the Manufacturing, Energy and Agricultural segments. All these have a positive coefficient of the accruals quality factor.

The Automobiles and Construction segments have a negative coefficient to the accruals quality factor. This implies that cost of capital is inversely related with accruals quality in these segments and those companies with highest accruals quality rank values (poorest accruals quality) are expected to have the least cost of capital and vice versa. The coefficient for the Automobile and Accessories segment is however not statistically significant because it has a p-value of 0.6407 which is higher than the critical level of 0.05 at 95% confidence interval. This apparent contradictory finding could perhaps be attributed to the unique financial reporting circumstances in each of the segments. The Automobile and Construction segments for instance focus on business models that take a long time for working capital to be translated to the cash flow components.

Of the remaining factors in the model (ii), market risk premium as indicated by beta plays a significant role in the determination of cost of capital. This is evidenced by the fact that all the coefficients to the CAPM beta (β_3) are statistically significant at the 95% confidence interval. In addition, these coefficients are positive; an indication that cost of capital has a direct relationship with market risk premium. In addition, the model constant is significant for all the analysed segments of the NSE. Whereas the constant is positive in the Manufacturing, Automobiles and Construction segments, it is negative in the Commercial, Energy and Agricultural segments of the NSE.

V. Conclusion

Several conclusions are made from the study. Firstly, the accruals quality model for which working capital is mapped to cash flows, change in revenues and values of plant property and equipment fits very well on the financial statement data of companies listed in the non-financial institutions segments of the NSE. Accordingly, it is concluded that the accruals quality model is applicable to the companies quoted at the NSE. The varying characteristics of the six non-financial institutions segments of the NSE implies that the relationship between working capital elements with working capital vary with respect to each segment as indicated in Table 5 (-ve denotes a negative association while +ve implies a positive relationship with working capital used in determining accruals quality).

Table 5: Relationship between Working Capital and its Elements

WC Item	Commercial.	Manufacturing	Energy	Automobile	Construction	Agricultural
CFO_{t-1}	-ve	-ve	-ve	-ve	+ve	+ve
CFO_t	-ve	-ve	-ve	+ve	-ve	+ve
CFO_{t+1}	+ve	-ve	-ve	+ve	+ve	-ve
ΔREV	+ve	+ve	+ve	+ve	+ve	+ve
PPE	+ve	-ve	-ve	+ve	-ve	+ve

The summary in Table 5 shows that only change in revenues has a positive effect on changes in working capital for each of the six segments evaluated. Leading cash flows from operations, lagging cash flows from operations, current cash flows from operations and the value of plant property and equipment have varying effects on working capital and hence accruals quality in each of the six segments. In the Commercial segment lagging and current cash flows are negative predictors of changes in working capital while all the rest are positive predictors. In the Manufacturing and Energy segments, only change in revenues is a positive predictor of working capital while all the other variables are negative indicators of the change in working capital. In the Construction segment current year cash flows and the value of plant property and equipment are negative indicators of changes in working capital while all the rest are positive. Finally, in the Automobile and Agricultural segments all the variables are positive predictors of changes in working capital except the lagging cash flows for the Automobile segment and the leading cash flows for the Agricultural segment. The Commercial segment (1) was found to be the best at portraying accruals quality among the six segments. The others in their order of portrayal of accruals quality are Manufacturing (2), Agricultural (3), Energy (4), Automobiles (5) and Construction segment (6) respectively.

Secondly, the effect of accruals quality on the segmental cost of capital at the NSE is widely varied among the segments as indicated in Table 6. There is a significant effect on cost of capital for all the segments except the automobiles segment. In addition, the effect is positive for the Commercial, Manufacturing, Energy and Agricultural Segments and negative for the Construction segment. This implies that the effect of accruals quality on cost of capital is dependent on the industry characteristics of the segment in which the company is quoted at the NSE. The negative effect in the construction segment could be related to the long operations cycles that characterize this segment compared to the short cash conversion cycles in the other segments of the securities market.

Table 6: Effect of Accruals Quality on Segmental Cost of Capital

	Overall AQ	
	Effect	**Signif.**
Commercial	Positive	Yes
Manufacturing	Positive	Yes
Energy	Positive	Yes
Automobiles	Negative	No
Construction	Negative	Yes
Agricultural	Positive	Yes

Thirdly, the quality of accruals reported in the various segments of the NSE is widely varied among the various segments of the NSE. Accordingly the rank order from highest quality to poorest accruals quality among the six evaluated segments of the NSE on the basis of the coefficient of variation of accruals quality is Commercial (1); Manufacturing (2); Agricultural (3); Energy (4); Automobiles (5) and Construction (6) segments respectively.

In addition, the cost of capital is highly volatile for public companies. There is therefore a significant market risk premium when it is considered that the corresponding risk free rates of return have not been as unpredictable over the same time period covered by the study. From a segmental point of view, the cost of capital also varies widely among the companies in the different segments of the NSE. The cost of capital within the segments is relatively ranked from the cheapest to the most expensive as Automobiles (1), Agricultural (2), Energy (3), Manufacturing (4), Construction (5) and Commercial (6) segments respectively.

Finally, the effect of overall accruals quality on cost of capital varies widely among the various segments of the NSE. There is a significant positive effect on cost of capital for the Commercial, Manufacturing, Energy and Agricultural segments; a negative one for the Construction segment and no effect at all in the automobiles segment.

This study had various limitations the solution to which may call for further studies to address them. Firstly, it focused on the only overall. Firstly, whereas this study evaluated the effect accruals quality on segmental cost of capital, it made the assumption that firms quoted in the same segment have similar innate and discretionary characteristics. Accordingly the effect of firm idiosyncratic characteristics on accruals quality was not individually evaluated. Studies have shown that these could affect cost of capital. Such aspects as

corporate governance attributes (Kent et al, 2010), regulatory and macroeconomic conditions (Kim and Qi, 2010) have all been shown to affect accruals quality. Accordingly, a study is suggested to evaluate the effect of the various innate and discretionary firm characteristics on the accruals quality shown by the companies that operate in the Kenyan regulatory market.

Secondly, the study focused only on the non-financial institutions firms listed at the Nairobi securities Exchange. The study did not take into account the accruals quality and cost of capital the financial institutions and the non listed small and medium size companies in Kenya. The fact that most firms in Kenya are not listed implies that a suggestion for study on the effect of accruals quality on cost of capital of small and medium size enterprises is apt. The findings from such a study could be compared to those from this study to check if there are any significant differences between cost of capital and accruals quality characteristics of the listed and non listed firms as well as large and small scale enterprises in Kenya.

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