THE EFFECT OF SEGMENTAL EARNINGS SMOOTHNESS ON MARKET PERFORMANCE OF PUBLIC COMPANIES IN KENYA

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This study uses a longitudinal design to test the effect of earnings smoothness on segmental market performance of companies quoted in the various segments of the Nairobi Securities Exchange. Based on modified capital asset pricing model (CAPM) the study uses a purposive sample of four segments (Manufacturing; Commercial and Services; Construction and Energy segments) out of the eleven segments listed at the NSE. The study's covers the period January 1994 through December 2015 and involves regression of segmental portfolio semi-annual return premium on market premium over risk free rate of return as well as equal-weighted earnings smoothness efficiency marketing (EM) value. The earnings smoothness is computed as the ratio of the standard deviation of earnings before interest and taxation (EBIT) to the cash flows from operations, being equal weighted values on a three period basis. This yields 44 semi-annual observations for each of the segments. Using the F-test, the findings show that the earnings smoothness of the segments are significantly different from each other. Testing the statistical significance of the EM coefficients from each of the segments, the findings reject the null hypothesis in the manufacturing, commercial and energy segments. The results show that EM has a positive effect of market performance of companies quoted in the manufacturing segment and a negative one in the commercial and energy segments. The study however fails to reject the null hypothesis for the Construction segment in which earnings smoothness has no effect on market performance of securities listed in the segment. The coefficients of the market return premium are positive and significant for all the four segments, an indication that besides earnings smoothness, market risk plays an important role in the market performance of the securities listed in the various segments of the NSE. It is concluded that segmental specific earnings smoothness factors are significant in determining market performance of securities of public companies in Kenya

Keywords: Earnings Smoothness; Efficiency Market; Market Performance; Market Return Premium

I. INTRODUCTION

Earnings smoothness is an aspect of earnings quality that reflects the idea that managers use their private information about future income to smooth out transitory fluctuations and thereby achieve a normalized and stable reported earnings figures (Young & Cohen, 2013). Earnings smoothness derives from earnings smoothing. According to Young & Cohen (2013), earnings smoothing is an aspect of earnings quality that reflects the idea that managers use their private information about future income to smooth out transitory fluctuations in earnings numbers and thereby achieve a normalized and stable reported earnings. Stability in reported income over successive financial periods is important because it can help investors make predictions about future incomes and therefore help them make investing decisions in the stock market as to whether to buy, hold onto or sell shares of companies quoted at stock markets (Young & Cohen, 2013).

Extant literature from the global and contextual arena reveals several studies that have been undertaken to show the effect of earnings quality in general and earnings smoothness in particular on various aspects of performance. Bhattacharya, Daouk and Welker (2003) for instance evaluate the world price of earnings opacity but fail to show how such opacity, which is related to earnings smoothing, affects the market performance, profitability and growth of public companies. DeFond and Park (1997) on the other hand extensively discuss earnings smoothing but they focus their attention of the theoretical rationale of the earnings smoothing phenomenon. Jung, Soderstrom and Young (2013) on the other hand evaluate how earnings smoothing is related to credit rating of companies with the hypothesis that firms are likely to engage in earnings smoothing to prevent their demotion to adverse crediting rating bands. Further, LaFond et al. (2007) although focus on earnings smoothing, they focus their efforts in evaluation how it is related to corporate governance and liquidity of companies from a wide array of companies to provide another global angle.

The findings of Isenmila and Afensimi (2012) suggest that both external block and insider/managerial ownership structures encourage earnings management which compromises earnings and accruals quality. Besides the effect of family ownership, block ownership and insider ownership, institutional ownership can encourage monitoring of managers and reduce managerial negative effect on accruals quality (Isenmila and Afensimi, 2012).

Jung, Soderstrom and Yang's (2013) sample includes all bond issuers available in COMPUSTAT database over the period 1990 to 2008 with the exclusion of utility and financial firms. They regress change of smoothness on plus rated, minus rated and controlled firms to test the statistical significance of the coefficients on the plus size ratings and minus size ratings. Their empirical findings are consistent with increased earnings smoothing for firms at the top notch of the rating category. They further establish that for firms in the top notch, increased earnings smoothness has a favorable impact on the likelihood of a rating upgrade in the subsequent period. On an overall basis, their evidence is indicative of the observation that managers use long-term financial reporting strategies to impact perceptions of credit risk.

A different study by Allayannis and Simko (2009) examine the relationship between earnings smoothing based on accounting discretion and firm value in an environment where limited information. They estimate a smoothing index which measures the decrease in earnings per share volatility related to the use of discretionary accruals, and proxy for a firm's information environment using the number of analysts following the firm. In unconditional tests, they find a modest though statistically significant premium for firms that smooth earnings. They however, in line with their postulation find that this premium is concentrated among firms with low or no analyst following. When taken on average, their findings do not provide any evidence of a relation between firm value and earnings smoothing for firms with a high analyst following. Their conclusion based on the findings is that earnings smoothing increases the informativeness of earnings (Allayannis and Simko, 2009).

Bhattacharya, Daouk, & Welker (2003) analyze earnings smoothing alongside related aspects of earnings aggressiveness and loss avoidance to construct an earnings opacity measure to test how it is related to return on shareholders demand and trading behaviour. Their study covers financial statements from 34 countries for the period 1984–1998. They use panel data regression to test their hypothesis of an implied association to earnings opacity. They hypothesize that these three dimensions are associated with uninformative or opaque earnings, and so they combine all the three attributes and to obtain an overall earnings opacity time-series measure per country. They then check out whether the three measures of earnings opacity affect two characteristics of an equity market in a country viz the return the shareholders demand and their trading behaviour. The study's panel data tests provide evidence that, after controlling for other influences, an increase in overall earnings opacity in a country is linked to an economically significant increase in the cost of equity and an economically significant decrease in trading in the stock market of that country (Bhattacharya, Daouk, & Welker, 2003)

To investigate the influence of the smoothness of estimated taxable income influences on firm value Mayberry, McGuire, and Omer (2015) find contradictory findings to the expectation that smoothness enhances the value relevance of book income. In reality, their findings show that smoothness reduces the value relevance of taxable income. They decompose the smoothness of taxable income into its innate and discretionary components. Their findings indicate that innate smoothness is not associated with the value relevance of taxable income. The however find an association when they test discretionary smoothing which points out that discretionary smoothness is associated with a reduction in taxable income's value relevance. This may be suggestive of the expectation that discretionary smoothness either eliminates or reduces the information contained in taxable income. Their extended analysis reveals that that discretionary smoothness is also associated with higher levels of future tax avoidance. This finding is consistent with managers smoothing taxable income as part of their tax avoidance strategy. In combination, their results are indicative of the expectation that the reduced value relevance of estimated taxable income is a byproduct of managers' tax-planning strategy (Mayberry, McGuire and Omer, 2015)

While studying the relationship between Smoothed income and future earnings, DeFond and Park (1997) test the validity of the theory that concerns about job security create an incentive for

managers to smooth earnings in consideration of both current and future relative performance. They find support for this theory. Their evidence suggests that when current earnings are 'poor' and expected future earnings are 'good', managers 'borrow' earnings from the future for use in the current period. Conversely, when current earnings are 'good' and expected future earnings are 'poor' managers 'save' current earnings for possible use in the future. However, sensitivity analysis indicates that they are unable to rule out selection bias as a potential alternative explanation for their findings (DeFond and Park, 1997).

Oluoch and Waita (2015) evaluate the quality of earnings among Kenyan Banks suing earnings persistence as a measure of earnings quality. Using a longitudinal empirical survey, which covered a 12 year period of January 2001 to December 2012, they tests two null hypotheses first that earnings among banks are not transitory over time and second that there is no significant difference between the earnings persistence of size based portfolio quartiles they represent various size groups. Their study fails to reject the first null hypothesis for all the size portfolios and finds that the earnings of commercial banks are not transitory and are therefore of a high quality. The study however rejects the second null hypothesis and finds that the large size commercial banks have higher persistence coefficients than the small size commercial banks. Their findings suggest that the investors in a Kenyan commercial bank can have access to highly predictable earnings data given the high quality of financial reporting by the banks. The results are however limited by the small size of the commercial banking sector in Kenya which limits the opportunities available for the assessment of earnings' quality inherent in financial reports (Oluoch and Waita, 2015). The study also fails to use alternative measures to test their findings. In the context of this study, they fail to apply earnings smoothing to test the quality of earnings in Kenya.

The confounding findings from the various empirical studies provide the literature hags that have been used in developing the research objectives and hypotheses of this paper.

II. RESEARCH HYPOTHESES AND METHODOLOGY

To facilitate the overall of establishing the effect of segmental earnings smoothness on market performance of public companies in Kenya, the following specific null hypotheses are specified

H_{01}: There is no significant effect of segmental earnings smoothness on market performance of public companies listed in the manufacturing segment of the stock market

H_{02}: There is no significant effect of segmental earnings smoothness on market performance of public companies listed in the commercial and services segment of the stock market

H_{03}: There is no significant effect of segmental earnings smoothness on market performance of public companies listed in the construction segment of the stock market

H_{04}: There is no significant effect of segmental earnings smoothness on market performance of public companies listed in the energy segment of the stock market

The population of the study includes all the companies quoted in the eleven segments of the NSE Over the period from January 1994 through December 2015. Purposive sampling was used to identify the sample segments of Manufacturing, Commercial, Construction and Energy segments. Finance companies in the investment segment, banking segment, insurance segment as well as the investment services segment were excluded. This is because Lashgari, & Gawradar (2015) indicate that such companies must be excluded because they are highly regulated and may therefore provide a biased earnings smoothing information. The study used secondary data to achieve the study objectives. Various monthly data were collected for each of the 44 semi-annual periods used in the study period i.e. the monthly 91-day Treasury bill (TB) rate applicable at the end of each of the semi-annual periods to proxy for the risk free rate, the semi-annual Nairobi Securities Exchange (NSE-20) share index for computing overall market returns; the semi-annual stock prices of the companies that made the purposive sample for computing stock market returns as well company data on earnings before interest and tax (EBIT) as well as cash flows from operations (CFO) for computing earnings smoothness.

To test the null hypotheses, a regression of semi-annual stock returns on market returns premium augmented for earnings smoothness of the company was undertaken as indicated in equation 1

$$R_P = \beta_0 + \beta_1(R_m - R_f) + \beta_2(Smoothness) + e --------------- (1)$$

Following Young and Cohen (2013), an adaptation for measurement of earnings smoothness was taken as the ratio of the firm's standard deviation of earnings before interest and tax (δEBIT) to the standard deviation of cash flows from operations (δCFO) brought forward. This is specified in equation (2). All these values are converted to common sizes suing total asset values at the beginning of every year

$$Smoothness = \frac{Standard\ deviation\ of\ EBIT}{Standard\ Deviation\ of\ CFO} ------------- (2)$$

To test null hypotheses the statistical significance of β_2 in equation 1 is tested at 95% confidence interval using the t-statistic for each of the four qualifying segments

III. RESEARCH FINDINGS AND DISCUSSION

The study evaluated the descriptive statistics before analyzing the inferential statistics. Market performance in this study was measured using semi-annual market returns (R_m, R_{mf}, R_{cs}, R_{cn} and R_e for the Overall Market, Manufacturing segment, Commercial, Construction and Energy segments respectively) over the period January 1994 to December 2015. The findings are indicated in Table 1.

Table 1: Market Return Descriptive Statistics

	R_f	R_m	R_{mf}	R_{cm}	R_{cn}	R_e
Mean	0.0567	0.0283	0.0122	-0.0119	0.0325	-0.0518
Median	0.0439	-0.0091	0.0142	-0.0227	0.0055	0.0291
Standard Deviation	0.0352	0.2000	0.0311	0.0531	0.2783	0.4029
CV	0.6207	7.0680	2.5483	-4.4483	8.5552	-7.7737
Count	44	44	44	44	44	44

The findings using coefficient of variation (CV) show that the most volatile segment is construction with a CV of 8.5552 while the least risk is manufacturing with a CV of 2.5483. The energy segment is the second most risky with a CV of 7.7737 while the commercial and services segment comes at number three at a CV of 4.4483. The study found out that the market outperforms all the segments with a mean return of 2.83 % except the construction segment which has a higher mean return of 3.25%. Interestingly, the risk free rate (R_f) as indicated by the 91-day Treasury bill outperforms all the segments of the NSE as well as the overall performance of the NSE itself. These could be attributed to the high rates of interest experienced after the first and second multiparty elections in Kenya in the 1990s.

The independent variable in the study was taken as Earnings Smoothness (ES). The descriptive statistics of the variable over the 44 semi-annual periods are summarized in Table 2. When the coefficient of variation of the earnings smoothness is considered, the rank order from highest to lowest of the segments (earnings smoothness volatility) listed at the NSE is Manufacturing, Energy, Construction and Commercial segments respectively. This implies that from a descriptive perspective, the highest quality of earnings in terms of predictability is in the Commercial and Services segment while the lowest quality of earnings as measured by earnings smoothness is registered among the companies quoted in the Manufacturing segment. The Energy and Construction segment seem to register moderate levels of earnings Smoothness volatility relative to the other segments.

Table 2: Earnings Smoothness Descriptive Statistics

	ES_{mf}	ES_{cs}	ES_{cn}	ES_e
Mean	0.7275	0.2496	0.9659	1.6836
Median	0.3142	0.1282	0.4585	0.9226
Standard Deviation	4.1046	0.5626	4.3275	8.5490
CV	5.6421	2.2537	4.4802	5.0778
Count	44	44	44	44

After evaluating the descriptive statistics, inferential statistics were appraised. Before testing the hypotheses, the study tested whether the earnings smoothness figures in each of the segments were significantly different from each other. The findings of the F-test carried out on the four earnings smoothness figures of the four segments are presented in Table 3.

The Table 3 shows that the F-value is 4.4786 against a critical F of 2.6571. This implies that the earnings smoothness of the four segments of the NSE are significantly different from each other. It is with this confirmation that it is possible to test the effect of the earnings smoothness on market performance of each of the various segments.

Table 3: Segmental ES ANOVA

Groups	Count	Sum	Average	Variance		
ES_{mf}	44	5.3417	0.7275	0.0006		
ES_{cs}	44	11.3838	0.2496	0.0337		
ES_{cn}	44	11.8521	0.9659	0.0533		
ES_e	44	12.6780	1.6836	0.1412		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.7687	3	0.2562	4.4786	0.0047	2.6571
Within Groups	9.8403	172	0.0572			
Total	10.6089	175				

The first null hypothesis involved testing the statistical significance of the earnings smoothness coefficient in the regression of manufacturing segment return premium against overall market return premium and the segmental semi-annual earnings smoothness. The findings are indicated in Table 4.

Table 4: Effect of EM on the Manufacturing Segmental Market Returns

R-Square	0.586737		
	Coefficients	Standard Error	t Stat
Intercept	0.04434	0.007173	6.1813
R_m-R_f	0.08125	0.034892	2.3286
ES_{mf}	0.02946	0.001751	16.8281

The output provides an R-square value of 0.5867. This implies that the model fits the data given that 58.67% of the changes in the manufacturing market return premium over the risk free rate is

explained by the model independent variables being the market risk premium and earnings smoothness.

The output provides an earnings smoothness coefficient value of 0.02946 and a market risk premium coefficient of 0.08125. The corresponding t-value for the earnings smoothness is 16.8281. This is greater than the critical t-value of 2.000. Accordingly the null hypothesis is rejected with the conclusion that Earnings smoothness has a positive effect on the market performance of the manufacturing segment of the Nairobi Securities Exchange.

In line with Fama and French (2004) the market risk effect is statistically significant at 95% confidence interval with a t-value of 6.1813. The positive effect expected by Fama and French (2004) in the capital asset pricing model is confirmed by a positive coefficient of 0.04434. Apart from the confirmation of the Sharpe (1964) expectations about market risk pricing, this study is in line with the findings of Oluoch, Namusonge and Onyango (2015) which indicate that there exists accruals quality market return premium at the Nairobi Securities Exchange (NSE). This could be because of the fact that the accruals quality used by their study is also a measure of earnings quality just as is earnings smoothing as used in this study.

The second null hypothesis involved testing the statistical significance of the earnings smoothness coefficient in the regression of commercial segment return premium against overall market return premium and the segmental semi-annual earnings smoothness. The findings are indicated in Table 5.

The output provides an R-square value of 0.73981. This implies that the model fits the data given that 73.98% of the changes in the commercial segment market return premium over the risk free rate is explained by the model independent variables being the market risk premium and earnings smoothness.

Table 5: Effect of EM on the Commercial & Services Segmental Market Returns

	Coefficients	*Standard Error*	*t Stat*
R Square	0.73981		
Intercept	-0.07545	0.01056	-7.14592
R_m-R_f	0.37077	0.04863	7.62489
ES_{cs}	0.31576	0.01780	17.73766

The output provides an earnings smoothness coefficient value of 0.031576 and a market risk premium coefficient of 0.37077. The corresponding t-value for the earnings smoothness is 17.7377. This is greater than the critical t-value of 2.000. Accordingly the null hypothesis is rejected with the conclusion that Earnings smoothness has a positive effect on the market performance of the commercial segment of the Nairobi Securities Exchange. This is in line with the capital asset pricing model (CAPM) of Fama and French (2004) which expects the market risk to be critical in affecting asset pricing. Apart from the confirmation of the Sharpe (1964)

expectations about market risk pricing, this study is in line with the findings of Oluoch, Namusonge and Onyango (2015) which indicate that there exists accruals quality market return premium at the Nairobi Securities Exchange (NSE).

The hypothesis test was also done on the construction segment. The findings are indicated in Table 6.

Table 6: Effect of EM on the Construction Segmental Market Returns

R Square	0.2879		
	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.02407	0.045521	-0.52874
R_m-R_f	-0.08053	0.021765	-3.70006
ES_{cn}	-0.001	0.010358	-0.09609

The output provides an earnings smoothness coefficient value of -0.001 an indicator that ES is negatively related to the performance of the companies listed in the Construction segment of the NSE. The null hypothesis that earnings smoothness has no effect on returns is however not rejected given that the coefficient of ES has a t statistic of 0.0961 which is less than the critical value of 2.000.ue of 0.05. These values are significant at 95% confidence interval which is 0.05 level of significance. The market risk premium however retains a statistically significant negative effect of the returns of this segment given that the t statistic of -3.70006 is statistically significant at the 95% confidence interval. This is also indicated by the p-value of 0.028915 which is less than the critical p-value of 0.05.

The findings in this segment of the NSE are in line with the capital asset pricing model (CAPM) of Fama and French (2004) and Sharpe (1964) which expects the market risk to be critical in affecting asset pricing. Apart from the confirmation of the Sharpe (1964) expectations about market risk pricing, this study is contradictory to those of Oluoch, Namusonge and Onyango (2015) which indicate that there exists accruals quality market return premium at the Nairobi Securities Exchange (NSE).

The final null hypothesis was tested for the energy segment. The findings are indicated in Table 7. The output provides an R-square value of 0.5669. This implies that the model fits the data well as given that it the changes in the independent variables (market risk premium and earnings smoothness) explain 56.69% of the changes in the Energy's segmental market return premium over the risk free rate of return.

The output provides an earnings smoothness coefficient value of 0.02736 an indicator that ES is positively related to the performance of the companies listed in the Energy segment of the NSE. The null hypothesis that earnings smoothness has no effect on returns is therefore rejected given that the coefficient of ES has a t statistic of 3.6995 which is more than the critical value of 2.000. The market risk premium also retains a statistically significant negative effect of the returns of

this segment given that the t statistic of -15.9494 is statistically significant at the 95% confidence interval

Table 7: Effect of EM on the Energy Segmental Market Returns

R Square	0.5669		
	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.9944	0.062346	-15.9494
R_m-R_f	0.481934	0.0307033	15.69652
SM_e	0.02736	0.007396	3.69949

The finding is in line with the capital asset pricing model (CAPM) of Sharpe (1964) which expects the market risk to be critical in affecting asset pricing. Apart from the confirmation of the Sharpe (1964) expectations about market risk pricing, this study is in line with the findings of Oluoch, Namusonge and Onyango (2015) which indicate that there exists accruals quality market return premium at the Nairobi Securities Exchange (NSE).

IV. CONCLUSION

The study sought to determine the effect of Earnings Smoothness on the market performance of the companies quoted in the various segments of the Nairobi Securities Exchange. Following descriptive and inferential statistics, several conclusions are arrived at.

One, the nature of the earnings smoothness in the various segments of the NSE is such that each segment has unique earnings smoothness. This is indicated by the statistically significant F-ratio that shows the variances and means of the ES are statically different from each other for each of the four segments analyzed in the study. The conclusion arrived at in this case is that the quality of earnings reported by public companies in Kenya is dependent on the segment into which the companies are quoted in.

Two, earnings smoothness affects market returns of companies quoted in the manufacturing, commercial as well as the energy segments of the NSE. It however has no effect of the construction segment of the NSE since the study failed to reject the null hypothesis for this segment at the 0.05 level of significance using the t-test.

Finally, the study was consistent with the CAPM expectations given that the market risk premium was a priced factor for the overall market as well as for each of the four segments tested in the study.

The study encountered some empirical limitations. It is in line with those that it is necessary to make the following recommendations for further studies. Firstly, the study focused on listed companies at the Nairobi Securities Exchange. It is not clear if non-public companies would exhibit the same behavior revealed by the listed companies in this study. It is therefore

recommended that s study be carried out to establish the effect of earnings smoothness on private companies in Kenya. Secondly, the study focused on listed companies at the Nairobi Securities Exchange. It is not clear if non-public companies would exhibit the same behavior revealed by the listed companies in this study. It is therefore recommended that s study be carried out to establish the effect of earnings smoothness on private companies in Kenya. Finally, the study focused on listed non-finance companies at the Nairobi Securities Exchange. It is not clear if finance companies like banks, insurance companies and investment companies would exhibit the same behavior revealed by the non-public listed companies in this study. It is therefore recommended that s study be carried out to establish the effect of earnings smoothness on public finance companies in Kenya.

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