Market Rewards to Earnings Smoothing: Evidence from Firms' Valuation in Nigeria

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Abstract

This paper documents evidence that the Nigerian market rewards low earnings per share volatility with higher share prices. Earnings smoothing was measured by the standard deviation of earnings stream over a five year rolling period in addition to the two traditional measures that relate variability of earnings and changes in accruals to cash flows. Multiple regression was employed on a sample of 48 firms from 2013 – 2015. The study found that Nigerian market rewards stable earnings over time, but are somewhat indifferent to the smoothness of past earnings in relation to cash flows. The practical implication of these findings is that managers of firms in Nigeria will take even "desperate" measures to report stable earnings to boost their firm valuations. The paper recommends that investors should not just reward stable earnings streams; they should be concerned with stable earnings and cash flows stability simultaneously. Failure to do so might result in earnings fraud that erodes their investments.

Key words

Earnings smoothing, share prices, firm value, stock investment, Nigeria

1. Introduction

This paper investigates the market rewards to earnings smoothness by listed firms in Nigeria. This paper is motivated by the fact that literature has documented managerial propensity to smooth earnings (Graham *et al*., 2005; Buckmaster, 2001). For instance, Welc (2014) found that firm values are determined largely by expected future earnings, which are in turn influenced by historical earnings patterns. Capital markets appreciate companies that report high stable earnings because they are easier and more accurately forecasted. Investors and analysts also perceive that smooth earnings are an indication that earnings of the reporting company will persist in future periods (Jiang *et al.*, 2005; Tucker and Zarowin, 2006). Similarly, firms reporting smooth earnings are considered less risky compared to firms with volatile earnings (Wang and Williams, 1994). Furthermore, institutional investors avoid companies that experience large variations in earnings (Badrinath *et al.*, 1989). Research in earnings management domain where earnings smoothness belongs, therefore, should be more fruitful if the focus is on firm valuation – a direct market consequence of earnings smoothness.

Earnings management refers to an attempt by the managers to dampen the fluctuations in reported earnings to mislead some stakeholders about the economic performance of the company or to influence the outcomes of contracts that may affect their compensation (Healy and Wahlen, 1999). Firms reporting smooth earnings are perceived to be attractive to institutional investors and analyst followings (Carlson and Bathala, 1997); reduce the cost of equity capital even after accounting for cash flow volatility (Francis *et al.*, 2004; Goel and Thakor, 2000); and reduce information risk about future earnings (Hunt, Moyer and Shevlin, 2000). Given the premium investors place on smooth earnings, prior studies in other markets, particularly developed markets, expect that volatility in earnings will be negatively related to share prices and smooth earnings will be positively related to share prices (Barth *et al.*, 1999; Hunt *et al.*, 2000; Allayannis and Simko, 2009; Rountree *et al.*, 2008; Chen, 2013; Makela, 2012).

Although evidence abounds in other jurisdictions to the effect those earnings smoothing affects stock prices; in Nigeria there is a dearth of this evidence in literature. Such a literature gap makes it quite

impossible to conclude whether earnings smoothing benefits investors in Nigeria. Thus, this paper follows Leuz *et al.* (2003) - the ratio of the variability of income to the variability of cash flows ($\sigma earnings/\sigma CFO$), and Myers *et al.* (2007) - the correlation of change in earnings and change in cash flows (ρ ($\Delta Accruals$, ΔCFO) to measure earnings smoothness to examine its impact on stock prices. In addition, the paper examines whether investors in the Nigerian capital market reward firms with time series earnings stability measured by absolute variability of earnings (σEPS). This is crucial since the market is not as sophisticated as their developed counterparts. In this situation, the investors are more likely to value stability of earnings level overtime but not necessarily in relation to cash flows.

2. Literature review

Theoretical foundation in the explanation of the firm value specifically, share prices to news information is traditionally the efficient market hypothesis and the random walk theory. These theories postulate that rational, profit-seeking investors in the marketplace react quickly to the release of new information. Thus, new information concerning stocks is disseminated randomly over time. Empirical studies support the efficient market hypothesis at the weak-form and to some extent at the semi-strong form. For, instance Ajekwe *et al.* (2017) find that the Nigerian Stock Exchange is informationally efficient in the weak-form. At the extreme strong-form, there is consensus in literature that even the most developed securities markets like America are not informational efficient (Russel and Torbey, 2017). Such findings call into question the validity of EMH and random walk theory.

Behavioural finance theory contends that there are important psychological and behavioural variables involved in investing in the stock market that provide opportunities for smart investors to profit. The theory proposes that, when a certain stock becomes "popular" or "in vogue", its price increases substantially even without a change in the company's fundamentals. The theory is anchored on psychological factors that affect the expectations of capital market participants and a firm's valuation as a consequence. One psychological factor that affects expectation of market participants is earnings volatility which managers believe a firm should avoid because smooth earnings stream maximize its share price (Graham *et al.*, 2005; Eckel, 1981; Krischenheiter and Melumad, 2002).

In the Graham et al. (2005) study, an overwhelming 96.9% of the survey respondents indicated that they prefer a smooth earnings path based on the assumption that investors price smooth earnings with a premium in stock prices. Those same CFOs (sampled for the study) argued that smoother earnings are perceived as less risky by investors (88.7%), result in a smaller cost of debt or equity (57.1%), or are a way to achieve a higher credit rating (42.2 %) as information uncertainty is assumed to be removed. If earnings smoothing reduces information uncertainty and investors are rational, income smoothing should affect stock prices positively. They also argue that smooth earnings should make it easier for analysts and investors to predict future earnings (79.7 %) potentially boosting share prices. The CFO survey respondents in the study were even willing to sacrifice long-term company value in exchange for smooth earnings. Other studies proxy smooth earnings for predictability (Verdi, 2005; Welc, 2014) arguing that high earnings volatility increases the likelihood of negative earnings surprise (Allayannis *et al.*, 2005). At the same time, firms reporting smooth earnings are perceived to be in a better position to pay regular and relatively high dividends (Gordon, 1964; Ronen and Sadan, 1981; Tucker and Zarowin, 2005; Takasu and Nakano, 2012). Unpredictable and/or volatile earnings are thought to indicate risk leading to a lower share price compared to other firms with more stable earnings streams. Based on these arguments, the objective of an earnings smoothing strategy is either to produce a "steadily growing stream of profits for the firm" (Stolowy and Bretton, 2004); or a deliberately steady level of earnings which is considered normal for the firm (Albrecht and Richardson, 1990).

On the opposite side, Allayannis *et al*. (2005) failed to document an increase in firm value associated with earnings smoothing; also, McInnis (2010) argues that smooth earnings streams and average stock market returns are not associated. In other words, smooth earnings streams do not lead to a lower cost of equity nor an increase in firm value. Therefore, earnings smoothing might be exercised based on wrong beliefs without any prospects of achieving some concrete benefits for the company; yet earnings smoothing is the most prevalent form of earnings management (Goncharov and Zimmermann, 2006). Perhaps, earnings smoothing is the most prevalent form of earnings management because it is supposed to

improve the informativeness of a firm's current earnings about future earnings and cash flow prospects which in turn is reflected in the stock prices (Hunt *et al.*, 2000; Beneish, 2001). This enhances the information stakeholders can extract from reported earnings. By smoothing their earnings, firms borrow earnings from the future or save earnings to the future; Ronen and Sadan (1981) posit that it would only be possible for well performing firms with good future prospects to smooth earnings in this way. Poor performing firms will never be able to satisfy the earnings that were borrowed from the future (Tucker and Zarowin, 2006), nor would they be in a position to save earnings to the future. In other words, only firms with good future prospects report smooth earnings.

3. Methodology of research

3.1. Sample Selection

The study is based on data of the 79 real sector companies listed on the main board of the Nigerian Stock Exchange. Companies in the real sector have wider scope for smoothing earnings than service companies; such as finance, insurance and utility companies. The study considers only companies with complete data variables in all firm-year observations; and after excluding firms with negative equity; data from a workable sample of 48 firms were used for the years 2013 – 2015, yielding a panel data of 144 firm-year observations.

3.2. Variables and their measurement

Firm value: Predicted value in this study is firm value measured by the average share prices for the year. Generally, share prices are determined by the forces of supply and demand which are influenced in turn by factors within and outside the firms. Factors within the firm include earnings and other firm fundamentals; while factors outside the firm are macro-economic variables. This paper concentrates on the effect of earnings smoothness on share prices; hence, only earnings factors that influence share prices are used.

Earnings Smoothing: Three measures of earnings smoothing are employed. Two of the earnings smoothing measures (the volatility of earnings in relation to the volatility of cash flows, and the correlation between changes in discretionary accruals and changes in cash flows from operations) are consistent with Myers *et al.* (2007); Leuz *et al.* (2003) and Land and Lang (2002); and the third is a standard deviation of earnings.

Smooth 1: For the purpose of clarity, the first measure of earnings smoothing employed in this paper - ratio of variability of earnings to variability of cash flows (hereafter referred to as *DEV*) is referred to as smooth 1. Low values of this measure indicate that, all things being equal, earnings have been smoothened (Tucker and Zarowin, 2006). Hence, a lower value of *DEV* signifies a smoother earnings stream. A five year rolling window, t-4 to t, was used to calculate *DEV.* Following Markarian and Gill de Albornoz (2009), the reciprocal of *DEV* was used to ease the interpretation of the results. In this way, higher values of *DEV* indicate more earnings smoothing.

Smooth 2: The second measure of earnings smoothing employed in this paper is the correlation between changes in accruals and cash flows from operations (hereafter referred to as *COR*). This measure captures earnings smoothing effect through discretionary accruals, a feature highly priced by the market (Subramanyam, 1996). Because accruals reverse over time, accruals and cash flows tend to be negatively correlated. Land and Lang (2002) and Myers *et al.* (2007), among others, argue that a more negative correlation indicates earnings smoothing. Myers *et al*. (2007) verify the validity of this measure by showing that firms attempting to sustain a series of consecutive earnings growth that are hypothesized to have strong incentives to smooth earnings, have more negative correlation between changes in accruals and changes in CFO. Hence, the more negative the *COR,* the more it is assumed earnings smoothing has taken place. Like in the first measure, *COR* was calculated based on a five year rolling window t-4 to t. To ease interpretation, the sign of *COR* was reversed such that higher values of Smooth 2 indicate more income smoothing.

Smooth 3: the third measure of earnings smoothing employed in this paper is the absolute value of standard deviation in earnings (hereafter, σEPS). Although, it is not the degree of variability in the earnings time series (in any absolute sense) that the earnings smoothing hypothesis is addressing, it is the

assumption of this study that Nigerian market is a developing market lagging behind, in terms of degree of sophistication, for investors to pay attention to earnings variability in relation to cash flows. Investors are more likely to watch the absolute variability in earnings streams overtime. The σEPS was computed as standard deviation in earnings per share over five years rolling window.

Earnings (EPS): Previous studies found that there is a positive and significant association between stock price and levels of earnings or changes in earnings (Besely and Brigham, 2006; Kothari, 1992; Oh, Kim and Kim, 2006; Chang *et al.*, 2008). In this study, earnings calculated as total income after tax divided by number of shares ranking for dividend was used as a control variable. The research *a priori* expectation is that there will be a positive relationship between EPS and market value firms in Nigeria. These variables are summarised in Table 1.

Table 1. Summary of Variables in the Study

Variables	Acronym	Calculation	Expected Relationship
Dependent			
Share Price	SP	Average share price for year	
Independent			
Smoothing 1	DEV	$\sigma earnings/\sigma CFO$ measured over 5 years rolling period from t-4 to t.	**+**
Smoothing 2	COR	$\rho (\Delta Accruals, \Delta CFO)$ measured over 5 years rolling period from t-4 to t.	**+**
Smoothing 3	σEPS	The standard deviation of EPS measured over 5 years rolling period from t-4 to t.	**-**
Control			
Earnings per share	EPS	$$\frac{\text{Net Operating Profits}}{\text{Number of Oustanding Shares}}$$	**+**

3.3. Model

Miller and Modigliani (1966) valuation model provides the basis for assessing accounting earnings - share prices relationship. The model is:

$$SP = 1/ rE \tag{1}$$

Where: SP = share price, R = the discount rate, and E = permanent earnings.

Taking accounting earnings as a proxy for permanent earnings in (1) leads to the following relation:

$$SP_{i,t} = \alpha + \lambda(EPS)_{i,t} + \varepsilon_{i,t} \tag{2}$$

To determine whether firms with smooth earnings have higher earnings multiples than other firms, model (3) was employed:

$$SP_{i,t} = \alpha + \lambda(EPS)_{i,t} + \beta_i^k (Smooth_{i,t}^k) + \varepsilon_{i,\ t} \tag{3}$$

Where:

$Smooth_{i,t}^k$ = firm *i's* value of k earnings smoothing measure in time t.

$k \in \{DEV, COR, \sigma EPS\}$

α = is the intercept of the regression line;

β = is the slope coefficient of independent variable;

λ = is the slope coefficient of control variables;

ε = is the random error.

i = refers to the number of cross-sectional units;

t = refers to the number of observations over time;

All other variables are as defined in Table 1.

Five regression estimates based on the traditional price-earnings regression, three regressions corresponding to the three smoothing measures and a full regression that combined all the variables were run to assess the impact of earnings smoothing on firm value. The regressions were run on panel data set with 144 observations. Data for three years (2013 – 2015) were used; however, five years rolling data was used for estimating the earnings smoothing measure. The coefficient of primary interest is β(s) the incremental coefficient(s) on EPS for earnings smoothing.

4. Analysis and results

4.1. Descriptive Statistics

Table 2 summarises the descriptive statistics of the dependent and the four independent and control variables. According to the table, the mean Share Prices was ₦57.67 with a standard deviation of ₦149.63. Earnings smoothing measures: *DEV* and *COR* have mean values of 4.946 and 0.783 respectively, with standard deviations of 9.084 and 0.352 respectively.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
SP	144	.50	1046.57	57.669	149.628
EPS	144	-12.10	29.95	2.447	5.424
DEV	144	0.060	85.470	4.946	9.084
COR	144	-.7427	.999	0.783	0.352
σEPS	144	-8.225	-0.014	-1.354	1.858

Source: Stata SE/12.0 version

4.2. Validity and Reliability

Before employing pooled OLS in testing hypotheses about the values of model parameters, the linear regression model assumes that the error term has a normal distribution with a mean of 0; the variance of the error term is constant across cases and independent of the variables in the model; and the predictor variables are not inter-correlated.

A histogram and P-P plot of the residuals in Fig.1 was drawn to check the assumption of normality of the error term. The shape of the histogram approximately follows the shape of the normal curve. The P-P plotted residuals also follow the 45-degree line. Neither the histogram nor the P-P plot indicates that the normality assumption is violated.
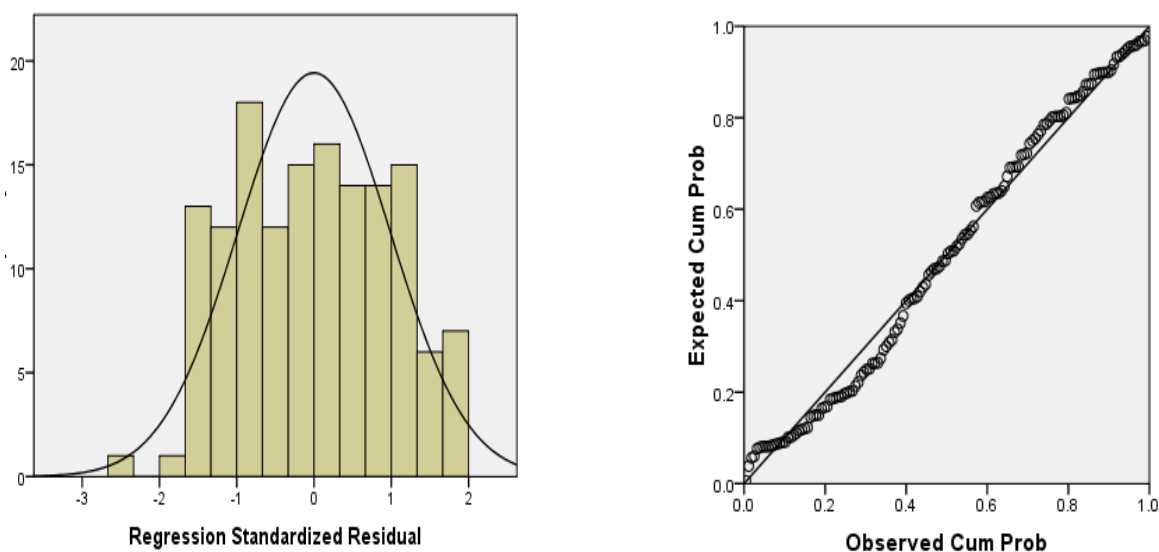

*Figure 1.*Visual charts showing Normality of the Error term

Furthermore, Wald test (θ = 0.90, *p* = 0.3415) indicates absence of heteroskedasticity. This suggests that variance of the error term is constant across cases and independent of the other variables in the model. In terms of multicollinearity, Table 3 shows that there are no severe issues. The correlation coefficient between predictors is not high (the highest is -0.408) as to substitute one for the other. Only correlation coefficients of ≥ 0.8 are considered as being high (Field, 2009).

Table 3. Correlations Coefficients, Tolerances and Variance Inflation Factors

	EPS	*DEV*	*COR*	σEPS	Tolerance	VIF
EPS	1.000				0.800	1.251
DEV	0.007	1.000			0.914	1.094
COR	-0.009	0.197	1.000		0.821	1.219
σEPS	-0.408	0.171	0.341	1.000	0.716	1.397

The tolerance which is the percentage of the variance in a given predictor that cannot be explained by the other predictors is also quite large. From the analysis of the data, the tolerances indicate that only 5.5% - 29.2% of the variance in a given predictor can be explained by the other predictors. High tolerances also indicate that the standard errors of the regression coefficients are not inflated.

The collinearity diagnostics (not presented here) confirm that there are no significant problems with multicollinearity. No eigenvalue is close to 0, neither any condition index is close exceeds 6.7 indicating that the predictors are not highly intercorrelated and that changes in the data values may not lead to large changes in the estimates of the coefficients.

Since, the data employed in the paper is panel data, the F-test was employed to compare pooled OLS result with the panel-estimation (results not presented). The $F_{(4,92)} = 0.75$, $p = 0.5575$. Thus, the paper adopts a pooled OLS approach. Furthermore, the differences across units are uncorrelated with repressors. Result of correlation of errors and regressors in fixed effect is 0 suggesting that differences across units are uncorrelated with the regressors.

4.3. Regression Results and Discussions

Five regressions were run based on the traditional value relevance model and a test of incremental value relevance of each smoothing measure as well as a combined model comprising all the smoothing measures simultaneously. Results from pooled OLS are presented in Table 3.

Table 4. Regression Coefficients

DV = SP	EPS	*DEV*	*COR*	σEPS	Combined
Intercept	2.235	2.348	2.459	1.99	1.802
	(20.58)**	(19.51)**	(9.98)**	(17.09)**	(6.60)**
EPS	0.201	0.197	0.201	0.166	0.164
	(10.99)**	(10.83)**	(10.98)**	(8.87)**	(8.59)**
DEV	-	-0.138	-	-	0.017
		(-2.07)*			(1.64)
COR	-	-	0.285	-	0.101
			(1.01)		(0.35)
σEPS	-	-	-	-0.240	-0.266
				(-4.36)**	(-4.46)**
R^2	45.96%	47.56%	46.35%	52.38%	53.40%
Adjusted R^2	45.58%	46.81%	45.59%	51.71%	52.05%
ΔR^2	-	1.6%	0.39%	6.42%	7.8%
F-Value	120.77**	63.93**	60.90**	77.56**	39.81**
N	144	144	144	144	144

*Dependent Variable: SP; ** Significant at 0.01 level; * Significant at 0.05 level*

The F- statistic $F(4,139) = 39.81$, $p < 0.01$, indicates that the model is fitted and that the variation explained by the model is not due to chance. The regression sums of squares (197.72) is more than the residual sums of squares (172.58), indicating that over half of the variation in firm value is explained by the model. R-Squared (the coefficient of determination), shows over half the variation in firm valuation is explained by the model. Specifically, the R-squared of 0.5340 or 53.40% represents the variation in firm values as explained by the model. This implies that earnings smoothing and the earnings levels account for the majority of variations in firm values in Nigeria. Regarding the coefficients, only EPS and standard deviation of EPS (σEPS) significantly predict firm values in Nigeria.

Without prior knowledge of the EPS and earnings smoothing of firms in Nigeria, the best guess for the firm value would be about ₦57.67with a standard deviation of 149.628. With the linear regression model, the error of the estimate is considerably lower, about 1.11. Even though the model fit looks positive, earnings smoothing measures in relation to cash flows are not statistically significant in predicting firm values in Nigeria. The variables *DEV* and *COR* have non-significant coefficients, indicating that these variable do not contribute much to the model.

To determine the relative importance of the significant predictors, the standardized coefficients were considered. Even though EPS has a small coefficient compared to σEPS it actually contributes more to the model because it has a larger absolute standardized coefficient. Regarding the signs of coefficients it is deduced from the results that EPS and firm values are positively correlated. As a firm's EPS increases, firm value (Share prices) also increases. On the contrary, σEPS has a significant negative relationship with firm's value in Nigeria $t(144) = -4.46$, $p < 0.01$. The implication of this result is that low earnings per share volatility are rewarded by the investors in Nigeria with higher share prices. In other words stable earnings stream are rewarded while volatile earnings streams are punished by the market through firm's valuation. The other two variables *DEV* and *COR* are insignificant depicting that due to the less sophisticated nature of the NSE market investors pay less attention to earnings volatility in relation to volatility in cash flows. Considering that it is very difficult to misrepresent cash flows, an understanding of stable earnings stream without reference to stability of cash flows is capable of inducing managers to opportunistically smoothen earnings.

According to the regression results, the expected firm value is equal to:

$$SP = ₦1.802 + ₦0.164*EPS + ₦0.017*DEV + ₦0.101*COR - ₦0.266*\sigma EPS \qquad (4)$$

Accordingly, if a Nigerian firm has ₦1 EPS, all other things being equal, the predicted firm value would be ₦1.966 (1.802 + 0.164*1) or about ₦1.97. These findings are largely consistent with extant literature and *a priori* expectations. There is a positive relationship between *DEV and COR* and share prices as noted in Thomas and Zhang (2002); Francis *et al.* (2004) Graham *et al.* (2005); Eckel, (1981); Krischenheiter and Melumad (2002). However, the relationship is not statistically significant. Similarly, the relation between earnings (EPS) is positive as stated in the *a priori.*

The study findings suggest that the Nigerian capital market investors seem to be somewhat indifferent to the earnings smoothness quality (*COR* and *DEV*) in their valuation of firm. This could be as suggested that the market is not well developed. On the other hand investors reward firms with higher EPS and stable EPS overtime with higher share prices. The key to the analysis is that shareholders in Nigeria abhor earnings volatility and pays less for firms with higher earnings volatility.

The important question to consider from the ensuing is: "What is the implication of Nigerian investors paying attention to absolute variations in earnings but not the quality of smooth earnings?" This paper suggests that such a single minded attention on stable earnings overtime without any reference to cash flow realisation could pose a serious danger. For instance, management will be tempted to manage earnings using flexibilities enshrined in accounting in other to impress the market. When this happens, investors will pay the ultimate price since the management of earnings is likely to follow a slippery slope to absolute earnings fraud as suggested by Ajekwe (2017).

5. Conclusions

This study provides empirical evidence that the Nigerian market rewards earnings stability over time. Income smoothing, which is a form of earnings management, can enhance firm values in Nigeria. The study extends previous income smoothing studies by focusing on the market tendency to reward a smooth

earnings pattern with higher values. The study argues that although the low variability of earnings is rewarded, the quality such smooth earnings is not guaranteed; smooth earnings should be stable and related to cash flow simultaneously.

Regressions are performed to assess the incremental value-relevance earnings smoothing over reported earnings. Results show that earnings stability is incrementally value relevant. Nigerian capital market investors reward stable earnings over time, but are somewhat indifferent to the smoothness of past earnings in relation to cash flows. Earnings stability in relation to cash flows stability is statistically insignificant at 0.05. The practical implication of these findings is that managers of Nigerian firms could take even "desperate" measures to report stable earnings to boost their firm valuations. The paper recommends that investors should not just reward stable earnings streams; they should be concerned with stable earnings and cash flows stability simultaneously. Failure to do so might induce earnings management that could result to fraud.

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