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Abstract

Idiosyncratic volatility has always been ignored in asset pricing, this is due to capital asset pricing model's suggestion that idiosyncratic volatility is diversified away since investors hold a proportion of the well diversified market portfolio. In reality however, this is not always the case. Studies have shown that investors do not always hold well diversified portfolios and idiosyncratic risk is priced to compensate investors for their inability to hold the market portfolio, therefore the main objective of the study was to establish the effect of financial statement information on idiosyncratic volatility of stocks return among listed firms in Kenya. Idiosyncratic volatility was the dependent variable while independent variable was Book Value per Share(BVPS). Correlational and descriptive research design were used, the study also used census technique and target all 39 listed companies that existed and their shares were actively traded at the Nairobi Securities Exchange (NSE) from 1998 to 2017. Descriptive as well as inferential statistics were generated using STATA. The study employed a dynamic panel data regression model, the analysis of variance (ANOVA) was used to reveal the overall model significance, the calculated F-statistic was compared with the tabulated F-statistic and a critical p-value of 0.05 was used to determine whether the overall model is significant. The null hypotheses was rejected. Based on the findings, the study concluded that, book value per share has a significant relationship with Idiosyncratic Volatility of stock returns among listed firms in Kenya. The study recommended for management in the listed firms to focus book value per share on their strategic decision-making. These indicator

will further guide in expanding the interpretation of the financial dynamics in the listed firms at the NSE and other related firms.

Keywords: *Book value per Share, Idiosyncratic Volatility, Stock Returns, NSE & Kenya.*

1.1 Introduction

Audited statement of financial position, income statements, and statements of cash flow, along with supporting disclosures forms the foundation of the firm specific information set available to investors and regulators (Bushman & Smith, 2000). The value relevance of published financial statement has increased significantly over the last fifteen years; this can be attributed to the adoption and harmonization of accounting standards as from the year 2001. Studies by Zhou (2004), Sharma (2011), Halonen, Pavlovic and Persson (2013) have shown that there is correlation between accounting information and price movement in the equities market. Volatility is as a measure of dispersion around the mean or average return of a security. It is a measure of the range of an asset price about its mean level over a fixed amount of time (Abken and Nandi, 1996). Volatility is associated with the variance of an asset price. If a stock is labeled as volatile, then it is plausible that there will be a systematic variance of its mean over time. Conversely, a less volatile stock will have a price that will deviate relatively little over time. Idiosyncratic volatility is a risk that is specific to an asset or a small group of assets and has little or no correlation with market risk (Boloorforoosh, 2014).

The use of published financial statement information in making investment decision in the stock market and its subsequent impact on firm's market price volatility has not been studied widely in Sub-Saharan Africa (SSA), Studies elsewhere have resulted in mixed findings. After examining the impact of BVPS on the share price of listed companies, Halonen, Pavlovic and Persson (2013) found that accounting data explains a high portion of stock price movement in Swedish stock market. Wang and Chang (2008) noted that there was a positively significant relationship between book value and stock price as well as between earnings per share and stock price at the Taiwan SEC.

De Medeiros and Lago (2014) investigated if there is a relationship between accounting information and the volatility of stock returns of Brazilian firms, the empirical results obtained demonstrate that the level of disclosure of accounting information has a significant and negative effect upon stock's market risk measured by stock return volatility. Al-Farah, Almeri and Shanikat (2014) study indicated lack of significant correlation between accounting variables and the volatility in the stock prices explaining only 2.6% of the volatility in the stock prices. Research has also shown that due to some reasons, investors do not always hold diversified portfolio which eliminate idiosyncratic volatility as advocated by capital asset pricing model (CAPM) (Fazil, 2013). Other accounting studies document that investors appear to under-react to firms accounting information even when it leads to a drift in stock prices (Bushee & Noe, 2000); Gleason and Lee (2003). Therefore, investors who are unable to diversify their portfolios should take into consideration idiosyncratic risk beside systematic risk in predicting expected return. This paper therefore seeks to establish the effects of financial statement information on idiosyncratic volatility of stock returns among listed firms in Kenya.

1.2 Problem Statement

Idiosyncratic volatility has always been ignored in asset pricing. This is due to capital asset pricing model's suggestion that idiosyncratic volatility is diversified away since investors hold a

proportion of the well diversified market portfolio (Sandberg, 2005). In reality however, this is not always the case. Studies have shown that investors do not always hold well diversified portfolios and idiosyncratic risk is priced to compensate investors for their inability to hold the market portfolio (Fu, 2009; Eiling, 2008; Malkiel and Xu, 2006; Fazil, 2013; Boloorforoosh, 2014). With increasing number of empirical studies indicating that financial accounting information affect stock prices volatility (Yu and Huang, 2005; Sharma, 2011; Glezakos, 2012; Sibel, 2013), and with the growth of NSE over the last 10 years, especially that of active investors, equity turnover and market capitalization; which has led to increased stock price movement and market volatility (Kihara, 2011), there is need to investigate the effect of published financial statement information on equities price movement.

After examining the impact of BVPS on the share price of listed companies, Halonen, Pavlovic and Persson (2013) found that accounting data explains a high portion of stock price movement in Swedish stock market. Abo-Osba (2007) found that there was a statistically significant strong positive relationship between accounting variables and share prices volatility. Wang and Chang (2008) noted that there was a positively significant relationship between book value and stock price as well as between earnings per share and stock price at the Taiwan SEC. Wang and Luo (2013) analyzed the relationship between accounting information and stock price reactions in Shanghai stock exchange, the results showed a positive relationship between accounting information and stock price, but the significant degree varies; earnings per share and return on equity have the most significant correlation.

Studies have shown mixed and conflicting results on the effect of financial statement information on listed equities volatility. Razaq and Almeri (2014) studied the ability of accounting variables to explain volatility of stock prices at the Amman stock exchange, the study concluded that the accounting variables explained only 3.8% of the volatility in stock price while 96.2% of the volatility in stock price referred to other reasons. In his study, Hussainey (2011) found a significant and negative relationship between the payout ratio, dividend yield and the firm volatility of stock price at the UK stock market. Xing and Zhang (2008) found that there is a negative relationship between earning per share and idiosyncratic volatility in the G7 countries. Al-Farah, Almeri and Shanikat (2014) study indicated lack of significant correlation between accounting variables and the volatility with the financial information explaining only 2.6% of the volatility in the stock prices.

These mixed and contradictory results of studies done across different exchanges, located in diverse geographical places, characterized by diverse global economic and political factors form the research gap and basis of undertaking this study. Therefore, this study sought to establish the effect of BVPS on idiosyncratic volatility of stocks return listed at the NSE

1.3 Objective of the Study

To determine the influence of BVPS on idiosyncratic volatility of stock returns among listed firms in Kenya.

1.4 Research Hypothesis

H_0: BVPS has no significant influence on idiosyncratic volatility of stock returns among listed firms in Kenya.

2.1 Literature Review

2.1.1 Theoretical Literature: Modern Portfolio Theory

Modern portfolio theory was pioneered by Markowitz (1952) in his paper, Portfolio Selection, published by the Journal of finance. According to the theory, it is possible to construct an efficient frontier of optimal portfolios offering the maximum possible expected return for a given level of risk.

Modern portfolio theory assumes that investors are risk averse, meaning that given two portfolios that offer the same expected return, investors will prefer the less risky one. Thus, an investor will take on increased risk only if compensated by higher expected returns. Conversely, an investor who wants higher expected returns must accept more risk. The exact trade-off will be the same for all investors, but different investors will evaluate the trade-off differently based on individual risk aversion characteristics. An investor can reduce portfolio risk simply by holding combinations of instruments that are not positively correlated, In other words, investors can reduce their exposure to individual asset risk by holding a diversified portfolio of assets. Diversification may allow for the same portfolio expected return with reduced risk (Markowitz, 1959)

Building on the Markowitz framework, Sharpe (1964), Lintner (1965) and Mossin (1966) independently developed what has come to be known as the Capital Asset Pricing Model. CAPM describes how investors determine expected returns, and thereby asset prices of risky assets, based upon their volatility relative to the market as whole. Just like Markowitz's modern portfolio theory model, the CAPM is based upon several simplifying assumptions that make the model more tractable from a mathematical standpoint. Sandberg (2005) standard asset pricing theory suggests that idiosyncratic should not be priced, because firm-specific risk can be diversified away. In other words, under the assumption of capital asset pricing model (CAPM) investors should be compensated only for bearing systematic risk (Tran and Nguyen, 2015).Research has however shown that due to some reasons, investors do not always hold a diversified portfolio which eliminates idiosyncratic volatility as advocated by CAPM(Fazil, 2013).

2.2 Conceptual Framework

The independent variable in this study effect of financial statement information on idiosyncratic volatility of stocks listed at the NSE is BVPS, which affect the dependent variable namely; idiosyncratic volatility of listed stocks as shown in Figure 1.
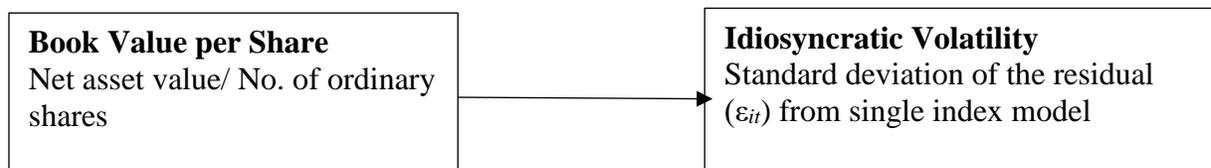
Book Value per Share Net asset value/ No. of ordinary shares	→	Idiosyncratic Volatility Standard deviation of the residual (ε_{it}) from single index model

Figure 1: Conceptual Framework

2.3 Empirical Review

2.3.1 BVPS and Idiosyncratic Volatility

In their study on whether accounting information contributes to stock volatility in the Nigerian Capital Market, Mgbame and Ikhatua (2013) specifically examined if BVPS, Dividend per share and Earnings per share have a sign effect on stock volatility. Using the simple random sampling technique, a sample size of 10 quoted companies was selected using the simple random sampling technique for the period the year 2000-2010 and this gives 100 company data points. The findings reveal that BVPS has a significant influence stock volatility Nigerian Capital Market, The study concludes that accounting information influences stock volatility and as such, the regulation of disclosures may be an area for consideration by the relevant agencies alongside the need to address volatility issues in the Nigerian capital market.

Khurana and Kim (2003) notes that the effect of book equity on stock movements is also a function of differences relating to the extent and accounting measurement of unrecognized intangible assets, However Francis and Schipper (1999) indicated that book value of equity is highly associated with stock prices movement. Collins. Maydew and Weiss (1997) suggest that a decline in the effect of earnings on stock movements and an increase in effect of book values. In other studies Ayers (1998), Radhakrishnan and Ronen (2004) documents that book values of equity are highly associated with stock prices volatility, these studies also show that the statistical association between stock prices and book equity is typically stronger than the association between stock returns and earnings.

In his study to establish the effect of financial performance indicators on shareholders' value among listed commercial banks in Kenya where shareholders' value was the dependent variable while independent variables were loans, deposits, core capital, borrowed funds and profit before tax moderated by interest rate. Macharia (2013) used Correlational and descriptive research design while target population of the study was 11 listed commercial banks. Secondary data from 2008 to 2012 was collected. The study established a significant influence from core capital, borrowed funds, and profit before tax, loan value, deposits value and interest rate

In their study, Ghosh and Ghosh (2015) found that BVPS positively influenced stock price movement at the Dhaka Stock Exchange. Carroll, Linsmeier, &Petroni (2003) in their study conclude that fair value estimates are more pervasive in affecting stock price movements. Abo Osba (2007) found that there was a statistically significant strong and positive relationship between share's book value and market price movement at Amman securities exchange. Ayzer and Cema (2013) examine the value relevance of financial statement information in Turkish Stock Markets during the period 1997-2011, using the Ohlson (1995) model. Their result shows that combined book values and earnings are significantly value relevant in explaining stock prices in the Turkish Stock Markets. Book values and earnings were individually significantly value relevant, with book values having higher explanatory power than earnings. In another study by Ohlson (1995) in Australia also found that book value was more significant than earnings of the organization in equity valuation.

3.1 Methodology

This study employs positivistic epistemology. Under positivist perspective, the concepts need to be operationalized in a way that enables facts to be measured quantitatively; static design categories isolated before study. This study employed correlational and descriptive research design

because it is based on the premise that if a statistically significant relationship exists between two variables, then it is possible to predict one variable using the information available on another variable. Target and accessible population for this study comprised of the 39 listed companies that existed and their shares were actively traded at the NSE from 1998 to 2017. In this study, the researcher used census study, a census study is any inquiry of the entire population of a particular set of 'objects', it is a complete enumeration of all items in the population. The researcher collected annual published financial statements for all 39 sampled listed companies for the twenty-year period under study (1998 to 2017). The financial statements were obtained from specific listed company's websites and NSE handbook. A research assistant was engaged to extract the required accounting data (BVPS) for all companies in all the financial years under review. The extracted data was input to pre-structured work sheet and then converted into STATA format.

The secondary data extracted from the financial statements was used to compute the relevant ratios. The secondary data encompassed panel data which consists of time series and cross-sections. The panel data obtained was analyzed using descriptive statistics, correlation analysis, and panel regression analysis.

Autocorrelation, heteroscedasticity, and panel unit root tests were conducted to ensure proper specification. The panel methodology was supported by STATA software. Feasible Generalized Least Square estimation was performed after accounting for various violations of classical linear assumptions. The analysis of variance (ANOVA) was checked to reveal the overall model significance.

To estimate idiosyncratic volatility for sampled stocks at the NSE, the researcher employed the standard deviation of the regression residual (ε_{it}) from Single Index Model as outlined in Malkiel and Xu (2003).

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i(R_{m,t} - R_{f,t}) + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots(3.1)$$

Where: i = Specific stock,
R_m = Return on the all ordinaries index
t = Time interval
$R_{i,t} - R_{f,t}$ = Excess return of firm i in month t
$R_{m,t} - R_{f,t}$ = Excess market return in month t
ε_{it} = regression residual.
The specific model used in the study is defined as follows:
$$Y_{it} = \beta_0 + \beta X_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.\ldots\ldots..\ldots(3.2)$$

Where;
Y_{it} = Idiosyncratic volatility of firm i at time t;
X_{it} = BVPS of firm i at time t;
β_0 = the constant term
β_s = The coefficients for the independent variable
Subscript i = Firms (cross-section dimensions) ranging from 1 to 39;
Subscript t = Years (time-series dimensions) ranging from 1998 to 2017;
ε_{it} = error term of the model.

4.1 Results and Findings

Table 1 shows the mean, minimum, and maximum values with standard deviation of various variables used in the model for period 1998-2017.

Table 1: Descriptive Statistics

Variables	Obs	Minimum	Mean	Maximum	Std. Deviation
BVPS	780	0.001	1.833	69.598	9.495
Idiosyncratic Volatility	780	2.044	26.000	28.890	4.251

Table 1 shows all the variables share the same sample size of 780 observations. The results showed that the mean of BVPS was 1.833 with a minimum of 0.001 and a maximum of 69.598. The standard deviation of BVPS was 9.495 indicating variability in BVPS over time.

4.2 Correlation Analysis

The study conducted correlation analysis for the BVPS on Idiosyncratic Volatility in order to examine the nature of the statistical relationships between the variables. Table 2 shows the correlation matrix the variables included in the study.

Table 2: Correlation Matrix Results

Variables	Idiosyncratic Volatility	BVPS
Idiosyncratic Volatility	1.000	
BVPS	-0.8837** 0.000	BVPS

The results showed that BVPS (-0.8837, 0.000) had a negative and significance relationship with Idiosyncratic Volatility of stock returns among listed firms in Kenya.

4.3 Diagnostics Test

4.3.1 Panel Unit Root Tests

Unit root tests was conducted using the LLC test to establish whether the variables were stationary or non-stationary. The purpose of this is to avoid spurious regression results being obtained by using non-stationary series. Results in Table 3 indicated that the variables are stationary (i.e. absence of unit roots) at 5% level of significance.

Table 3: Unit root

Variable name	Statistic(adjusted)	P-value	Comment
Idiosyncratic Volatility	6.0376	0.010	Stationary
BVPS	3.1016	0.009	Stationary

The study therefore concludes that the two variables under consideration do not have unit root and are therefore used in levels. This means that the results obtained are not spurious (Gujarati, 2003

4.3.2 Heteroskedasticity Test

Heteroscedasticity test was run in order to test whether the error terms are correlated across observation in the time series data. The error terms from a regression model must have a constant variance called Homoscedastic and to ensure whether the residuals meet this criterion of the study used the Breusch-Pagan test for Heteroscedasticity where the null hypothesis under this test is that residuals are Homoscedastic. If the p-value is >0.05, there is constant variance. The null hypothesis was therefore not rejected at a critical p value of 0.05 since the reported value was 0.889. Thus, the data did not suffer from statistically significant heteroscedasticity as shown in Table 4.

Table 4: Heteroskedasticity Test Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Ho: Constant variance

Variable: fitted values		Idiosyncratic Volatility
chi2(39)	=	59528.65
Prob > chi2	=	0.889

4.3.3 Test for autocorrelation

The study employed the Wooldridge test for autocorrelation to detect the existence of autocorrelation in the data, that is, whether or not the residual is serially correlated over time and the results are shown in Table 5. The null hypothesis of this test was that there is no first order serial/autocorrelation existed in the data. The test statistic reported is F-test with one and 38 degrees of freedom and a value of 438.94. The P-value of the F-test is 0.260 indicating that the F-test is not statistically significant at 5% level. Hence, the null hypothesis of no autocorrelation is supported and the study concludes that residuals are not auto correlated.

Table 5: Serial Correlation Tests

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 38) = 438.94

Prob > F = 0.260

4.3.4 Hausman Test

When performing panel data analysis, one has to determine whether to run a random effects model or a fixed effects model (Baltagi, 2005). In order to make a decision on the most suitable model to use, both random and fixed effects estimate coefficients. The study used the Hausman's specification test (1978) to choose between fixed and random effect models. Table 6 shows the results of Hausman test.

Table 5: Hausman Test for Idiosyncratic Volatility

	(b)	(B)	(b-B)	Sqrt (diag(V_b-V_B))
	fixed	random	Difference	S.E.
BVPS	0.01344	0.01235	0.00109	0.00177
chi2(4)	0.77			
Prob>chi2	0.942			

The null hypothesis of the Hausman test is that the random effects model is preferred to the fixed effects model. Hausman test reveals a chi-square of 0.77 with a p-value of 0.942 indicating that at 5 percent level, the chi-square value obtained is statistically insignificant. Thus, the researcher did not reject the null hypothesis that random effects model is preferred to fixed effect model for Idiosyncratic Volatility. Therefore, random effects model for Idiosyncratic Volatility was therefore adopted.

4.4 Regression Analysis

4.4.1 Effect of BVPS on Idiosyncratic Volatility

Regression analysis was conducted to determine whether there was a significant relationship between BVPS and Idiosyncratic Volatility of stock returns among listed firms in Kenya. Table 7 presents the regression model on BVPS versus Idiosyncratic Volatility. As presented in the table, the coefficient of determination R Square is 0.781. The model indicates that BVPS explains 78.1 % of the variation in Idiosyncratic Volatility. This means 78.1% of the Idiosyncratic Volatility is influenced by BVPS.

Table 7: BVPS on Idiosyncratic Volatility

Idiosyncratic Volatility	Coef.	Std. Err.	T	P>|t|	[95% Conf.	Interval]
BVPS	-0.0295	0.1012	-3.43	0.0054	-0.0937	0.004
Cons	26.06	0.0341	764.09	0.000	25.993	26.127
R-sq:	0.781					
F(1,779)	3.71					
Prob	0.0054					

Y = 26.06 - 0.0295X

Where: Y   = Idiosyncratic Volatility

        X = BVPS

The findings showed that the regression model of Idiosyncratic Volatility on BVPS index is negative and significant with a coefficient of (r= -0.0295, p=0.0054) supported by F=3.71. This is also confirmed by the t-statistic value of 3.43 which was greater than the t-critical of 1.96. This

implies that there exist a negative and significant relationship between BVPS and Idiosyncratic Volatility since the coefficient value was negative and the p-values was 0.0054 that is less than 0.05. This means that a unitary increase in BVPS leads to a decrease in Idiosyncratic Volatility by 0.0295 units holding other factors constant.

This findings agree with Mgbame and Ikhatua (2013) who established that BVPS has a significant influence stock volatility Nigerian Capital Market, and Francis & Schipper (1999) indicated that book value of equity is highly associated with stock prices movement. Collins. Maydew and Weiss (1997) suggest that a decline in the effect of earnings on stock movements and an increase in effect of book values. In other studies Ayers (1998), Radhakrishnan and Ronen(2004) documents that book values of equity are highly associated with stock prices volatility, these studies also show that the statistical association between stock prices and book equity is typically stronger than the association between stock returns and earnings.

4.5 Hypotheses Testing

The hypothesis to be tested was:

H_0: **BVPS has no significant effect on idiosyncratic volatility of stock returns among listed firms in Kenya.**

The hypothesis was tested by using multiple linear regression and determined using p-value. The acceptance/rejection criteria was that, if the p value is less than 0.05, we reject the H_0 but if it is more than 0.05, the H_0 is not rejected. Regression results revealed that there was a negative and significant relationship between BVPS and Idiosyncratic Volatility of stock returns among listed firms in Kenya (r= -0.0295, p=0.0054. This was supported by a calculated t-statistic of 3.43 that is larger than the critical t-statistic of 1.96. The study therefore adopted the alternative hypothesis that BVPS has a significant effect on Idiosyncratic Volatility of stock returns among listed firms in Kenya.

5.1 Conclusions

Based on the findings, the study concluded that BVPS has a negative and significant effect on Idiosyncratic Volatility of listed firms in the NSE. BVPS is therefore crucial as it relate shareholders' equity to the number of shares of common stock outstanding. When the market value of a company is trading for less than its stated value or book value, it could be an indication that the market has lost confidence in the company. The market does not consider that the company is worth the value on its books or that are enough assets to generate future profits and cash flows. When the market value exceeds the book value, the stock market is assigning a higher value to the company due to the earnings power of the company's assets.

It is also concluded that, in order to minimise firms Idiosyncratic risk, the management needs to increase the book value through various means like retain earnings, Acquisition more financial assets, reduction of liabilities or merger with another company with many tangible assets and reviewing the company's capital structure. Consistently profitable companies typically should have market values greater than book values. If a share's market value is significantly higher than its book value per common share, this will indicate investors consider the company has excellent future prospects for growth, expansion and increased profits that eventually raise the book value of the company.

5.2 Recommendations

The study recommends that management of listed firms listed should focus on developing financial accounting systems and processes that will result in realization of financial statements that reflect true and fair representation of the listed companies' financial position, they should also disclose all material information that is relevant for stakeholder's decision making.

Additionally, the managemnt should regulate the cash flow as it strengthens the bond between the company and its owners. Strong cash flow also makes the firm more appealing to a lender if it desires to take on new debt at some point. It also has the ability to offer favorable credit terms to attract new buyers if it is less desperate for cash. Market investors and analyst needs to review their investment strategies and take into consideration financial statement information in pricing firm specific risk. They need to remain innovative in technology front in order to deliver efficient as well as highly customized asset pricing tools that consider idiosyncratic volatility, this will enable them make a sound investment decision that suit customers investment preference.

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