Prediction of Consistent Stock Performance and Low Stock Price Movement in Nairobi Securities Exchange Using underlying Firm Characteristics

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Stock markets that are efficient generate prices in a random manner which causes high stock price movement or volatility. Low stock price movement implies consistent stock performance and the existence of anomalies in stock markets that are efficient. There are various types of consistent stock performance but the specific type that relates to low stock price movement in the NSE and the relevant underlying variables are unknown and hence the justification of the current research. The purposive sampling method was employed to select a sample of 31 stocks from a population of 56 stocks that were listed in the NSE during the study period from January 2001 to December 2010. The sample stocks were initially sorted into three portfolios consisting of high, medium and low price volatility stocks based on the standard deviation historical volatility metric. The portfolio with low stock price volatility was then compared with the different types of consistent stock performance in order to establish the specific type that was significantly associated with historical stock price volatility. The low stock price volatility portfolio was regressed against underlying firm characteristics to establish their prediction power. The results indicated that consistent positive stock returns type was significantly associated with low stock price volatility with Pearson's correlation coefficient being 63.9% and p-value being 0.047 at 95% level of significance. Book value, dividends per share and earnings per share predictor variables had significant prediction power over low stock price volatility and consistent stock performance. The implication of these results is that investors in the NSE can predict consistent stock positive stock returns and low stock price volatility by studying underlying firm characteristics of book value, dividends per share and earnings per share.

Key words: Low Historical Price Volatility, Consistent Stock Performance and Underlying Firm Characteristics

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INTRODUCTION

Stock price movement is commonly interpreted as risk by investors and it measures how current stock prices deviate from past prices (Cuthbertson, 2002). High stock price movement is associated with high risk and randomness in occurrence of stock priceswhich is a feature of efficient stock markets. The random occurrence of stock prices is a reflection of random occurrence of corporate news (Stefan, 2009). Low stock price movement is associated with low risk and non-randomness in stock price occurrence (Schwert, 1990). Low stock price movement is anomalous as it implies predictable stock returns that can generate significant profits in the form of abnormal returns despite the market being efficient (Watkins, 2003). Excess stock price movement cannot be justified by the random occurrence of news and it undermines the usefulness ofstock prices as a signal of intrinsic value (Karolyi, 2001).

Stock price movement may be caused by mispricing of stocks by actions of uninformed investorsand the subsequent correction of the mispricing by actions of informed investors (Vukas, 2012). Lowprice movement may be caused by a relationship between stock prices and dividend discounting rates and hencelow discounting rates cause consistent positive returns which are associated with low stock price movement (Watkins, 2003). A stock's dividend discounting rate may be caused by movement in risk free rates, market returns or the stock's beta (Cuthbertson, 2002).

Consistent Stock Performance

Consistent stock performance implies that realized stock returns have been less volatile and thus generates reliable signals of the stock's underlying or intrinsic value (Watkins, 2003). Consistent stock performance has the potential of yielding significant profits or abnormal returns (Watkins, 2003) and can be categorized into: longitudinal and cross sectional types. The longitudinal approach comprises of consistent positive or consistent negative returns (Grinblatt and Moscowitz, 2004). The cross sectional approach comprises of consistent top and bottom ranked stocks (Alwathainani, 2011).The NSE being weak form efficient (Mlamboand Biekpe, 2007), should not allow the existence of consistent stock performance which is associated with low stock price movement (Fama, 1991). The specific type of consistent stock performance that is associated with low stock price movement in the NSE is unknown.

Underlying Firm Characteristics

Fundamental analysts focus on deriving the intrinsic value of the firms using information outside the stock including underlying firm characteristics (Siqueiraet al., 2012). This involves studying economic, industry and company data in an attempt to identify the intrinsic or fundamental value of stocks although such efforts are in vain if stock markets are weak form efficient (Fama, 1991). This research sought to establish whether consistent stock performance and low stock price volatility are predictable by underlying firm characteristics.

METHODS

This research employed purposive sampling method to select a sample of 31 stocks from a population of 56 stocks that were listed in the NSE during the study period from January 2001 to December 2010. The reason for employing purposive random sampling was to avoid infrequently traded stocks which have the potential of distorting the results through numerous zero and large non-zero stock returns that are unrealistic and lead to non-normal distributions (Cowan and Sergeant, 1996). The closing average stock price data was chosen in the current research as it represented the most current valuation of firms before trading continues in the following day.

DATA ANALYSIS

The stock performance was measured by rate of logarithmic stock return as follows (Copeland, 2005):

$$L_n R_t = L_n (R_t / R_{t-1}) - 1 \qquad (1)$$

Where: L_n = natural logarithm
$L_n R_t$ = stock return for current period
R_t = stock return for the current month
R_{t-1} = stock return for the previous month

Standard deviation stock historical volatility metric utilizes all the data under consideration and determines the dispersion from the mean and it summarizes the probability of seeing extreme values. It is ideally employed the distribution of stock returns is symmetrical or normal. The demerit of standard deviation metric is that of averaging data (Poon and Granger, 2003). Stock price movement emphasizes on ex-post measurement of stock price movement by using past stock return data (Andersen et al, 2005). The standard deviation of stock returns also a commonly employed measure of dispersion (Schwert, 1990) and is modeled as follows (Sweeney, 2006):

$$\sigma_i = \sqrt{[R_i - E(R_i)]^2 / n} \qquad (2)$$

Where: σ_i = historical volatility metric of stock $_i$

R_i = actual return of stock i
$E(R_i)$ = mean or expected return of stock i
n = number of periods

A significant association was sought between the different types of consistent stock performance and low stock price volatility by means of descriptive statistics that involved a comparison analysis. Upon establishing a significant association between a type of consistent stock performance and low stock price volatility using descriptive statistics, that association was further tested using inferential statistics. Pearson's correlation analysis was employed in which consistent stock performance was measured using dummy variables with 0 indicating inconsistent stock performance and 1 indicating consistent stock performance(Grinblatt and Moscowitz, 2004). The Pearson's correlation analysis of the two groups was measured as follows (Sweeney, 2006):

$$r = n\Sigma xy + \Sigma x \Sigma y / \sqrt{[n \Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]} \qquad (3)$$

Where: x = σ_i = standard deviation of stock $_i$

y = CRS_i = consistentreturnsof stock $_i$

Underlying firm characteristics were assessed for prediction power against low stock price volatility an associate of consistent stock performance using a multiple regression analysis. The predictor variables employed included: book value of assets, market returns, dividend per share, earnings per share and stock beta. The multiple regression analysis model employed was as follows (Sweeney, 2006):

$$\sigma_i = B_0 + B_1 BV + B_2\ RM + B_3\ DPS + B_4 EPS + B_5\ BT + \varepsilon \qquad (4)$$

Where: σ_i = standard deviation of stock $_i$

BV = book value
RM = market returns
DPS = dividend per share
EPS = earnings per share
BT = stock beta
ε = error term

RESULTS

The comparison of the types of consistent stock performance and low stock price volatility to establish their association was as follows: upon the comparison of12 consistently top ranked stocks as per the cross sectional definition with 10 stocks that exhibited low stock price volatility the findings revealed that only 3 out of 10stocks had both features as per Table 1. These results implied weak association of consistent top ranked stocks and low stock price movement.

Table 1: Comparison of Consistently Top Ranked Stocks and Low Stock Price Movement

S/N	Consistently Top Ranked Stocks	Low Stock Price Movement
1	CO.17	**CO.22**
2	CO.9	CO.13
3	CO.28	CO.11
4	CO.10	**CO.5**
5	**CO.22**	CO.7
6	CO.32	CO.30
7	CO.6	CO.31
8	CO.14	CO.19
9	**CO.21**	CO.18
10	**CO.5**	**CO.21**
11	CO.16	-
12	CO.1	-

Upon the comparison of 12bottom ranked stocks as per the cross sectional definition of consistent stock performance with 10 stocksthat had lowstock price volatility as per

the standard deviation metric, the findings revealed that only 1 out of 10had both featuresas per Table 2. This implied that there wasa very weakassociationof low stock price

movement and consistent bottom ranked stocks.

Table 2: Comparison of Consistently Bottom Ranked Stocks and Low Stock Price Movement

S/N	Consistent Bottom Ranked Stocks	Low Stock Price Movement
1	CO.3	CO.22
2	CO.23	CO.13
3	CO.26	CO.11
4	CO.4	CO.5
5	CO.30	CO.7
6	CO.1	CO.30
7	CO.27	CO.31
8	CO.14	CO.19
9	CO.22	CO.18
10	CO.10	**CO.21**
11	CO.15	-
12	**CO.21**	-

Upon the comparison of 12 stocks that had consistent positive returns as per the longitudinal definition with 10 stocks that had low stock price volatility as per the standard deviation metric, the findings revealed that 60% of the stocks exhibiting low price movement also had consistent positive returns as per Table 3. This implied that there was a strong association of low stock price movement and consistent positive stock returns.

Table 3: Comparison of Consistent Positive Stock Returns and Low Stock Price Movement

S/N	Consistent Positive Stock Returns	Low Stock Price Movement
1	**CO.5**	**CO.22**
2	**CO.7**	**CO.13**
3	CO.28	**CO.11**
4	**CO.11**	**CO.5**
5	CO.16	**CO.7**
6	CO.17	CO.30
7	**CO.22**	CO.31
8	CO.9	**CO.19**
9	**CO.13**	CO.18
10	**CO.19**	CO.21
11	CO.6	-
12	CO.12	-

Upon comparison of 12 stocks that exhibited consistent negative returns as per the longitudinal definition of consistent stock performance with 10 stocks exhibiting low

stock price volatility as per the standard deviation metric, the findings revealed that only 1stock had both features as per Table 4.

These results imply that there was very weak association of low stock price movement and stocks with consistent negative returns.

Table 4: Comparison of Consistent Negative Stock Returns and Low Stock Price Movement

S/N	Consistent Negative Stock Returns	Low Stock Price Movement
1	CO.26	CO.22
2	CO.23	CO.13
3	CO.14	CO.11
4	CO.1	CO.5
5	CO.2	CO.7
6	CO.3	CO.30
7	CO.15	CO.31
8	**CO.21**	CO.19
9	CO.25	CO.18
10	CO.6	**CO.21**
11	CO.12	-
12	CO.10	-

The significant association of consistent positive stock returns and low stock price volatilityas per the standard deviation metric as per Table 3 was further tested using inferential statistics that involved Pearson's correlation coefficient. The results indicated the there was a significant positive association between low stock price volatility and consistent positive stock returns with the correlation coefficient being 63.9% and p-value being 0.047 at 95% level of significance as per Table 5. The results implied a significant association of consistent positive stock returns and low stock price volatility.

Table 5: Results of Correlation between Low Stock Price Movement and Consistent Positive Stock Returns

Correlations			
		Standard deviation	Consistent positive returns
Standard deviation	Pearson Correlation	1	**.639**[*]
	Sig. (2-tailed)		.047
	N	10	10
Consistent positive	Pearson Correlation	**.639**[*]	1
	Sig. (2-tailed)	.047	

returns	N		10	10
*. Correlation is significant at the 0.05 level (2-tailed).				

The underlying firm characteristics with significant prediction power over low stock price volatility were established using a multiple regression analysis model whose results as indicated in Table 5 and equation 6 were as follows:

$$\sigma_i = 0.134 – 8.7^{-0.7}BV - 0.005\ DPS + RM + 0.001\ EPS + 0.001\ BT + \varepsilon \qquad (6)$$

(0)   (0.01) (0)   (0.651)   (0)
        (0.557)

$$R^2 = 0.593$$

The results implied that book value, dividends per share and earnings per share predictor variables had significant prediction power over low historical stock price volatility with p-values of 0.01, 0.0 and 0.0 respectively as per Table 5 and equation 6. The negative but significant relationship between low stock price volatility and book value and dividends per share implied that investors felt more assured about their stock investments and hence low stock price volatility when stocks had high book value and when dividends per share were high. The positive and significant relationship between low stock price volatility and earnings per share implied that investors felt more assured about their stock investments with low earnings in the firm.

Table 6: Results of Regression of Consistent Positive Stock Returns and Underlying Firm Variables

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.770[a]	.593	.571	.01150		
a. Predictors: (Constant), BT, DPS, BV, EPS, RM						
Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.134	.002		57.030	.000
	BV	-8.279E-07	.000	-.282	-3.472	.001
	DPS	-.005	.001	-.806	-8.287	.000
	RM	.000	.001	-.031	-.454	.651
	EPS	.001	.000	.420	4.536	.000
	BT	.001	.001	.041	.589	.557
a. Dependent Variable: STD_DEV						

CONCLUSIONS

These results implied that stocks with consistent positive returns which are associated with low stock price volatility can be predicted be observing book value, dividends per share and earnings per share variables.

IMPLICATIONS OF THE STUDY

These results implied that stock investors who are interested in exploiting trends and patterns including consistent stock performance in the NSE can study low stock price movement as an indicator and can study book value, dividends per share and earnings per share variables. This is despite the NSE being weak form efficient as it may not be efficient all the time (Fama, 1991).

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