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Effect Of Dividend On Share Price Volatility In Frontier Exchanges: Kenya's Perspective

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Abstract

Equity investors are faced by very pertinent decisions in the course of their portfolio management such as how to manage the share price volatility. While the extent to which dividend influences volatility is not contentious, the most suitable proxy between the two measures: dividend yield or pay-out is especially in a frontier market is. This study using prices and company performance data of firms listed in Nairobi Stock Exchange performed a cross-sectional analysis for the period 2013-2014. Significant positive association between dividend and share price volatility has been found. Multicollinearity is present between dividend yield and dividend payout which is extended by low R^2 when yield is regressed against price volatility. The study not only confirms that dividend payout as a predominant determinant but the only credible determinant (as a proxy variable for dividends) of share price volatility in a frontier market. Evidence deduced confirms congruence to dividend relevance accompanied by weak market efficiency.

Keywords: share price volatility; dividend; dividend pay-out; dividend yield; proxy variable; technical and fundamental analysis

1. Introduction

Equity investors are faced with very pertinent decisions in the course of their portfolio management. On the initial stages to portfolio planning they have to decide the proportion of equity to hold across different listings while in the intermediate period they have to contend with keeping or offloading some shares. Central to this circumstances is the fact that prices will fluctuate. Fabozzi & Drake (2009) view this as an economic function of financial markets which they refer to as price discovery. Further, price discovery means that exchanges of buyers and sellers in a financial market determine the price of the traded financial assets. Equally, they define the required return that participants in a financial market demand in order to buy a financial instrument. Because the motivation for those seeking funds depends on the required return that investors demand, it is this function of financial markets that signals how the funds available from those who want to lend or invest funds will be allocated among those needing funds and raises those funds by issuing financial instruments which occurs in a structured manner in securities exchanges.

Securities exchanges render themselves to the trading of various financial assets otherwise referred to as instruments. Lee & Kumar (2006) defines financial asset as claims to the income generated by real assets or claims on income from the government. They range from ordinary shares to bonds to derivatives, a hierarchical formation which depicts the level of development of a particular exchange. Ordinary shares bestow voting rights to the holder, may exist perpetually except in liquidation, and earn a return relative to the firms return. These characteristics makes shares the most preferred instruments among investors yet the most risky, the fact that rational investors are risk averse notwithstanding (Parameswaran, 2011). The risk of the shares arises because prices at which they have been bought may rise or fall in the course of trading. On another front, the risk may present as failure by the issuer to pay the anticipated return in the form of dividend.

According to Holt & Laury (2002) risk aversion behaviour of investors has generated a lot of concern and interest leading to numerous inquiries on the determination of such risk especially the one associated in changes in prices. This risk has come to be referred to as share price volatility.

Muchina, Namusonge & Sakwa (2015) argue that prices guide investors' actions yet their reliability as a guiding factor depends on investors ability to predict share prices changes occurring in the future knowing that they are bound to vary from time to time. According to Guo (2003) share price volatility is a systemic risk faced by investors who possess ordinary share investments. Statistically, volatility is defined as the variation or dispersion

or deviation of an asset's returns from their mean (Hull & Alan, 1993). According to (Damodaran , 2012), volatility is the deviation of mean returns from expected returns and therefore represent either positive or negative volatility otherwise known as upside or downside risk. This portends that large values of volatility reflect returns fluctuating in a wide range hence more risk. Accordingly, the higher the volatility of prices, the lesser the attractive the shares to shareholders and so it is expected that in the long run, the valuation of company's shares will reduce.

Guo (2003) posits that share price volatility is a systemic risk faced by investors who possess ordinary share investments. Pandey (2005) considers that there are broadly four possible approaches for estimating and forecasting volatility thus traditional volatility estimators; extreme value volatility estimators; and conditional volatility models. Traditional Volatility Estimators assume that 'true' volatility is unconditional and constant. The estimation is based on either squared returns or standard deviation of returns over a period conversely extreme value volatility estimators are similar to traditional estimators except that these also incorporate high and low prices observed unlike traditional estimators which are based on closing prices of the asset. On another level conditional volatility take into account the time-varying nature of volatility. There have been quite a few extensions of the basic conditional volatility models to incorporate observed characteristics of asset returns. Parkinson (1980) following the work of Feller (1951) on the distribution of the trading range of a security following geometric Brownian motion (GBM), was the first to propose an extreme value volatility estimator for a security which is theoretically five times more efficient compared to traditional close to- close estimator. This remained the basis of estimating share price volatility in this study.

In seeking to explain the determinants of share price volatility, empirical direction has been provided by return generating models. Researchers have sought to analyze the relative importance of economy-wide factors, industry-specific factors, and firm-specific factors on a stock's volatility. According to Islam et al (2014) this approach borrows from modern asset pricing theory and its emphasis on so-called factor models, or models that assume a firm's stock return is governed by factors such as the overall market return, the return on a portfolio of firms sampled from the same industry, or even changes in economic factors such as inflation, changes in oil prices, or growth in industrial production. If returns have a factor structure, then the return volatility will depend on the volatilities of those factors.

Firm specific factors that estimate the expected returns on risky securities are categorized as either fundamental or technical factors, as such the attendant analysis is also either fundamental or technical analysis. Fundamental analysis which posits that that price volatility can be explained by the financial performance of the firm at hand meaning that financial statements would be a one stop shop for predicting stock price movements including volatility and technical analysis whose stand point is that price volatility can be explained by studying patterns of prices and returns under the assumption that these patterns are discernible (Fabozzi & Drake, 2009).

Given, fundamental analysis is buoyed by valuation theories which seem to suggest that prices and attendant volatility can be explained by value drivers which can also regarded as financial performance indicators (Williams & Pfeifer, 1982) and (Baskin, 1989). Indeed Fama & French (1988) have vigorously confirmed that share price returns are explained more by factors such as dividends. Carhart (1997) and Chan, Chen, & Lakonishok (2002) have also lent credence to the usefulness of the Cahart Momentum factor in explaining asset prices, returns and associated volatility. Viebig & Poddig (2008) have clearly explained that fundamental valuation for equity will depend on several value drivers which have a strong impact on the value of equities, including sales growth, operating margins, capital expenditures and change in net working capital, among others.

Empirical, primal study by Black & Scholes (1974) using capital asset pricing model for testing the association between dividend yield and expected return found no significant association between dividend yield and expected return. Ben-Zion & Shalit (1975) also studied firm's dividend records on the risk of common stock. Their results showed that the firm's size and leverage and dividend have significant relationship with firm's risk measures and are important determinants of firm's risk. These two studies focused on the US stock markets which again were a loci for Baskin (1989) who while conducting a cross-sectional study based on fundamental models connected dividends to risk of shares.

Nazir , Nawaz, Anwar & Ahmed (2010) used 73 firms listed in Karachi Stock Exchange (KSE) as sample and studied the relationship between share price volatility and dividend for the period of 2003 to 2008 to which they reported that share price volatility has significant negative association with dividend yield and dividend payout. Allen & Rachim (1996) had carried similar studies in Australia while Hussainey et al. (2011) conducted their study in the United Kingdom.

A study by Hussainey et al. (2011) attributed the high volatility of equity returns in Nigeria Stock Exchange to

changes in key macroeconomic variables such as the credit to the private sector of the economy, inflation, exchange rate, international oil prices, interest rates, broad money supply as well as measure of real economic activity.

These goes to show that there is a paucity of empirical evidence on the interaction between fundamental variables identified in this study and share price volatility in emerging securities markets especially in Africa a gap this study intended to fill.

2. Statement of the problem

Studies focusing explicitly on share price volatility such as Hussainey et al. (2011) and Allen & Rachim (1996) pay attention to single factor models in their attempt to explain share price volatility. For instance Hussainey et al. (2011) found plausibly that there is negative correlation between share price volatility and dividend pay-out. On the other hand Nishat (2001) found evidence of correlation between dividend yield and stock price volatility whilst Allen & Rachim (1996) and Hussainey et al. (2011) reported contrary findings. Localised studies on share price volatility such as Ngunjiri (2010); Kenyoru , Simiyu, & Limo (2013); and Onsomu & Onchiri (2014) have found association between divinded payout or yield and share price volatility. The view taken by this study however is that dividend yield and dividend payuout are very much sides of the same coin. On the same vain, the study premises that either of this is a better proxy in so far as dividend policy's predection of share price volailty. It is this understanding that this study set out to demonstrate. Specifically the study sought to the effect of dividend on share price volatility for companies listed at the Nairobi Securities Exchange.

3. Theoretical and literature review

Muchina et al (2015) posit that key theoretical concern in dividends is whether they affect the shareholders' value in this case being a presentation of future expectations and the attendant price of the share. Different finance and economics scholars have advanced different theories some representing original thought and others being counteractions. Generally these theories can be categorized into two; those that premise that dividend is irrelevant and therefore would not affect investors' expectations hence the price and those that premise exactly the opposite.

3.1 Irrelevance of Dividend Policy

Miller & Modigliani (1961) proposed irrelevance theory suggesting that the wealth of the shareholders is not affected by dividend policy. It is argued in their theory that the value of the firm is subjected to the firm's earning, which comes from company's investment policy. The literature proposed that dividend does not affect the shareholders' value in the world without taxes and market imperfections. They argued that dividend and capital gain is two main ways that can contribute profits of firm to shareholders. When a firm chooses to distribute its profits as dividends to its shareholders, then the stock price will be reduced automatically by the amount of a dividend per share on the ex-dividend date. So, they proposed that in a perfect market, dividend does not affect the shareholder's return.

The premises by Miller and Modigliani (MM) have attracted their fair share of attention leading to a host of studies seeking to discount or support their claims such as Brennan, (1971); (Black & Scholes, 1974); (Håkansson, 1982) and (Uddin & Chowdhury, 2005). On this context it would be plausible to propose that since shareholders wealth not affected by dividend policy prices are bound to remain unchanged with the declaration and payment of dividends. The guiding proposition then becomes:

3.2 Relevance of Dividend Policy

Contrary to MM propositions other subsequent theorists have opined that dividends are relevant to the extent that they affect the value of the firm in return affecting investors' expectations, prices and their volatility. Relevance has been explained to arise from uncertainty of future dividends, information content of dividends, agency costs, and clientele effects.

Relevant dividend theory is intent on explaining the relationship between dividend earnings given to investors and their effect on the value of the firm and by extension share prices and attendant volatilities. Dividend theory posits that dividend of the firm which is dictated by firm's performance is either relevant or irrelevant in its effect on shareholders wealth. Since shareholders wealth is a futuristic element expressed as shareholders expectations, then if dividend is relevant, it will influence these expectations, the amount that the shareholder is willing to invest today which is the price and the attendant variability. It is against this background that Gordon (1962) posits that dividend yield and pay-out ratio both of which are dividend variables are capable of influencing share price volatility. Similar positions are held by (Jensen, Solberg , & Zorn , 1992) and (Uddin & Chowdhury, 2005).

The relevance of dividend has further been expounded to show the relationships with various dividend components. Asquith & Mullins (1986) found that relevance of dividend was based on information content of dividend. Jensen et al. (1992) identified relevance of dividend based on agency cost while Pettit (1977) provided that clientele effect does exist in support of dividend relevance. Consequently uncertainty of future dividends, information content of dividends, agency costs, and clientele effects cause shareholders wealth which in turn affect dividend policy. Hence the second premise:

3.3 Efficient Market Hypothesis Theory (EMT)

The second key theory under consideration will be the efficient market theory (EMT) and its derivative the efficient market hypothesis (EMH) Fama (1970). EMT espouses that there exists different form of market efficiencies in regard to information. For instance in a weak form of efficient market, prices do not incorporate all the relevant information. According to Annuar, Arrif & Shamsher (1992) and Fama & French (1992) reported or predicted earnings will affect share prices hence a direct relationship between earnings volatility and share price volatility. Damodaran (2012) espouses that as long as a fundamental analysis is being pursued towards valuation, then multiples arising from revenue, net income, invested capital or asset base among others may be used.

The theory assumes that market participants apart from being utility maximizing, also have rational expectations. This includes the assumption that even though individuals may be wrong, the population as a whole is correct; and that people adjust their expectations according to new information. When faced with new information, some investors will overreact and others will under react.In summary, reactions will be random, but will have a constant volatility, and a known distribution function. Thus, the net effect does not allow for abnormal profit to be realized especially when considering transaction costs and spreads.

In its weakest form, the EMH assumes that all information are already incorporated into the pricing of assets. Therefore, no excess profits can be earned by basing investment strategies on past returns. Muchina et al (2015) infer this to mean that in technical analysis, which studies formations in past prices, is of no use in predicting the future, since past movements already known to the market, the current situation remains unknown. Conversely fundamental analysis yields novel information on the extent to which value drivers explain price movements and may be rewarding for those keen investors who do their homework on companies' financial statements.

3.4 Effect of dividend on share price volatility

Finance theory and empirical practice signals that dividend policy be measured either considering dividend as a proportion of market price of equity share (dividend yield) or as a proportion of earnings thus dividend payout. Several studies have considered these measures as able determinants of share price volatility yet the stand point in this paper remains that both represent the same thing and only one not both is best suited as a measure.

Hobbs (2006) posits that dividend yield is the size of the dividend (per share) divided by the stock price on the date of the initiation announcement. This can be construed to mean that it is the yield which carries the information about company performance to the market. In line with the theoretical framework presented above, the dividend yield significance as a determinant is an indicator for strong market efficiency. On the other hand dividend payout may be used in valuations as a method of predicting future dividends, for analysis of earnings by using the retention ratio to predict future growth in earnings and to identify where a firm is in its life cycle. Firms tend to follow a certain pay-out policy dependent on its age and historical growth with mature firms paying higher dividends. It is this characteristic of dividend payout which makes it a possible construct for clientele theory. Of course debate still lingers on the sufficiency of this measures but empirical evidence has continued to show that they are the best proxies so far and this study considers them as such.

Pettit (1977) investigated on what extent transaction costs and taxes can affect the investor's portfolios in USA provided empirical proof supporting the clientele effect theory. He reported that investors' ages and their portfolios' dividend yield are positively related. He also reported that investors' incomes and dividend yield are negatively related. He also demonstrated that investors who have portfolios with low un-diversifiable risk prefer high-dividend stocks. His findings also supported the tax-induced clientele effect. In a similar study, Langrehr, Hexter , & Holder , (1998) stated that insider ownership and dividend payout have negative association. They also concluded that the number of shareholders and dividend payout are positively related.

In seeking to explain the relationship between dividends and firm's risk, Ben-Zion & Shalit (1975) studied 1000 largest US industrial corporations in 1970. They reported that firm's risk has significant negative relationship with both dividend yield. Eades (1982) studied the relationship between dividend yield and firm's risk in US stock market. The results of his study discovered a clearly significant negative relationship between dividend

yield and firm's beta showing that riskier firms may have lower dividend paid.

Conversely, Brennan (1971) supported the irrelevancy theory of Miller and Modigliani and concluded that any rejection of this theory must be based on the denying of the principle of symmetric market rationality and the assumption of independence of irrelevant information. He suggested that for rejection of latter assumption, one of these following conditions must exist: firstly, Investors do not behave rationally. Secondly, Stock price must be subordinate of past events and expected future prospect. Black & Scholes (1974) created 25 portfolios of ordinary shares in New York Stock Exchange for studying the impact of dividend on share price from 1936 to 1966. They used capital asset pricing model for testing the association between dividend yield and expected return. Their findings showed no significant association between dividend yield and expected return. They reported that there is no evidence that difference dividend policies will lead to different stock prices. Their findings were consistent with dividend irrelevance hypothesis. Håkansson (1982) supported the irrelevance theory of Miller and Modigliani and claimed that dividends, whether informative or not, is irrelevant to firm's value when investors have homogeneous belief and time additive utility and market is fully efficient.

More recently, Uddin & Chowdhury (2005) selected 137 companies which were listed on Dhaka Stock Exchange (DSE) and studied the relationship between share price and dividend payout. The results implied that dividend announcement does not provide value gain for investors and shareholders experience approximately 20 % loss of value during thirty days before the announcement of dividend to thirty days following the announcement. He suggested that current dividend yield can reimburse the diminished value to some extents. Generally, his findings supported the irrelevancy of dividend policy.

In studying direct relationship on the determinants of share price volatility, Baskin, (1989) studied he reported a significant negative correlation between dividend yield and stock price volatility which was greater than correlation between share price volatility and any of other variables. He suggested that dividend can be used for controlling the share price volatility. He reported that if dividend yield increases by 1 %, the annual standard deviation of stock price movement decreases by 2.5 %.

Nazir et al. (2010) used 73 firms listed in Karachi Stock Exchange (KSE) as sample and studied the relationship between share price volatility and dividend for the period of 2003 to 2008. They reported that share price volatility has significant negative association with dividend yield and dividend pay-out. Suleman, Asghar, Ali & Hamid (2011) studied the association of dividend with share price volatility in Pakistan. Contrary to Baskin, (1989) results, their findings showed that share price volatility has significant positive relationship with dividend yield.

Hussainey et al. (2011) examined the relationship between share price volatility and dividend in UK. Consistent to Allen & Rachim (1996) Australia results, Hussainey et al. (2011) found a significant negative relationship between share price volatility and payout ratio. They also found a negative relationship between share price volatility and dividend yield. Their findings discovered that the payout ratio is the predominant determinant of the share price volatility.

In analysing dividend payout Damodaran (2011) found that many firms in the U.S. paid out dividends to shareholders in excess of their earnings in January 2009. From this findings, he inferred that when firms pay out dividends in excess of earnings, it loses value in two ways. In the first instance, it creates a cash shortfall that has to be made up by issuing more securities, and the cash shortfall in turn creates capital-rationing constraints that limit new investments in value-adding projects. Secondly, Damodaran conjectures that this practice destroys firm value. This is yet another reason why in the context of this study high dividend payout means is inverse to share price volatility.

Da & Jagannathan & Shen (2014) using Gordon growth model reinforce the ability of dividend yields to predict future stock movements while again cautioning against relying on a single factor. They also imply that dividend yield does bear the information content a position this study agrees to entirely.

From the preceding review, evidence has put much weight on using a single dividend proxy to deliver whatever each of the studies may wish to achieve, such a stance ignores the complementary nature of the variables as well as the substitution effect of each. This study employs both dividend yield and payout in the hope that this gap was addressed. The study thus tested the null hypothesis:

H_1: There is no association between dividend and share price volatility

4. Methodology

The research design adopted for this study is inductive ex post facto cross sectional quantitative survey design. The study is inductive since it draws its basis from extant theory from which it derives a priori testable

empirically hence the quantitative nature of the study. Further, the design was a cross-sectional survey because respondents are expected to provide a snap shot of the determinants of share price volatility at a particular point in time. Again, it was emphasized that this was palatable because though price volatility is essentially a time dependent variable representing price changes given different time horizons, for fundamental analysis however, it is agreed and generally practiced among scholars that the time horizons may be ignored. This design was consistent with the design adopted by Allen & Rachim (1996); Nishat, (2001); Ngunjiri (2010) and Hussainey et al. (2011) among others. The target population for this study comprised of all company secretaries of companies listed in Nairobi Securities Exchange (NSE) an exchange in the frontier market. The NSE equity secondary market is divided into Main Investment Market Segment (MIMS), Alternate Investment Market Segment (AIMS) and Growth Enterprise Market Segment (GEMS). The MIMS is made up of companies listed in various sectors of the economy. At the time of the study about sixty companies had active counters which is fairly small size hence the ensuing census. However while the study pursued 61 company secretaries of companies listed in NSE, 4 of these companies were suspended for trading by during the NSE hence did not meet the selection criteria. Another company was dropped from the list because at the time of the study, was undertaking takeover negotiations and therefore did not satisfy the going concern principle as espoused by Fridson & Alvarez (2002). The reported findings are therefore based on 56 companies.

Primary data was be collected using a structured questionnaire. The questionnaire was be used to elicit responses from company secretaries of listed companies in relation to determinant of share price volatility. Specifically, this questionnaire sought data on dividends- payout and earnings from which payout and yield were derived. Secondary data on was obtained from NSE. This data pertained to daily stock prices of all the companies listed in the main investment segment over a period of one year. In this study, 247 days of active trading day's data was collected between July 2013 and August 2014. The study extracted data showing high and low price recorded for counters that moved during this period. Data description and measurement of variables is given in table 1 below.

4.1 Model

Inferential statistics are important to this study and were used to determine the association between the independent and dependent variables that is the correlation through a correlation matrix. The correlation matrix was also show the direction of the relationship that is whether it is positive or negative especially in respect to the priori set in the theoretical framework.

This study also applied Ordinary Least Squares (OLS) regression analysis which will explain the causation between variables and the coefficients in respect of each variable. The main model in the study depicts the regression between share price volatility and earnings volatility, leverage, and value based on the standard OLS model. This is shown below.

$$SHARVOL = \alpha_1 + \beta_1 X - \mu_i \quad (1)$$

Where:

SHARVOL = dependent variable
X_1= predictor variables stated as either DIVPOUT & DIVYILD
$\beta_1 \ldots\ldots \beta_5$ = parameters
μi= stochastic term/ residual

The descriptions, measurement of this model depicted here are explained in the following section.

5. Results and discussion

Using spread sheet, raw secondary data of daily high and low share prices for 247 days of trading in 2013 obtained from NSE, share price volatility (SHARVOL) the dependent variable was computed based on Parkinson (1980). In addition primary company performance quarterly data spanning through the year 2013 consisting revenue, earnings, share capital, assets and liabilities was used to compute independent variables used in this study thus dividend yield (DIVYILD), dividend payout (DIVPOUT), which Damodaran (2006) categorizes as equity multiples. The data on dividends was specifically made to correspond with cum div prices. Descriptive statistics for NSE listing for entire sample is given in Table 2 below.

Regarding SHARVOL, the study found out that the maximum volatility was 42.84% while the minimum value for all the companies listed in NSE for the period under consideration was 3.77%. The mean volatility was 15.24%. Skewness is computed as 1.115 while kurtosis is 3.163. In respect to DIVYILD, the maximum rate is 53.68% while the minimum is 0. Its mean is 0.054% with a standard deviation of 0.08% accompanied by 3.74 and 18.65 as measures of Skewness and kurtosis respectively. For DIVPOUT the mean is 34.08%.

These results indicate that average share price volatility for companies listed in NSE is 15.24%. This compares

favourably to the findings by Baski (1989) and Allen & Rachim (1996) among others which is an interesting observation since these studies represent position of development securities markets as opposed to NSE which is a frontier exchange. In addition, the low share price volatility confirms the observations by Campbell, et al (2001) that stock prices move together more in low-income economies than in high-income economies. However, while the study does agree with their extrapolation that it is due to impediments of capitalization into stock prices, this study conjectures that lack of a derivative market through which assets spreads and any other form of risk premia can be concretized and realized. Another reason for this observation may be due to low liquidity presence in NSE given its order driven structure.

Skewness for SHARVOL is noted as near zero (0) which confirms the assumption that share price volatility follows a normal distribution. Further, since skewness is positive, it means that the investors in this market do not have to consider making a trade-off between positive and negative volatility (Damodaran, 2012). Excess kurtosis is 0.16 (3.163-3.0) which indicates that compared to a normal distribution, its central peak is somewhat higher and sharper, and its tails are longer and fatter. Put in perspective, fatter tails represent the likelihood of price jumps though in this case the jumps are more contained which again is favourable to the investors (Damodaran, 2012).

DIVYILD has a minimum value of 0 since some firms did not pay dividends since only cash dividends were considered in this study. A similar position is noted regarding DIVPOUT. Conversely, a maximum value of 99.16% regarding pay-out denotes that in some cases DPS is equivalent to EPS. On the other hand, if DIVYILD and DIVPOUT are considered proxies for shareholder return, then it is fair to infer that their positive means exhibit positive return for investors in the period under consideration. DIVYILD, and DIVPOUT, have positive skewness.

5.1 Pairwise correlation matrix and multicolinearity for variables

To empirically assess the associations between the dependent and independent variables and further, the associations between the predictor variables, the study performed Spearman's pairwise correlation analysis. The analysis also presents the sign of the direction of movement of the variables which presents a basis of comparison to the priori.

The results of the correlation analysis seen in table 3 below indicate that high correlation has been witnessed in relation SHARVOL, DIVYILD, DIVPOUT, with the reported co-efficient being 0.7472 and 0.8046 being significant at 5% significant level, which further strengthens the case for association and empirical consideration. However, degree of association between DIVYILD and DIVPOUT has a ρ=0.6328 which marks moderate positive correlation and a potential for multicolinearity which is confirmed by computed variance inflation factor (VIF) which is a measure of how much the variance of an estimated regression coefficient increases if the explanatory variables. As a rule of thumb, a variable whose VIF values are greater than 10 may merit further investigation as is with the case dividend yield whose VIF in table 2 is reported as 10.28.

The high correlations observed above represent a case of association meaning that causation can be pursued to a logical conclusion as it will happen in a latter section in this chapter. These findings are congruent indications by Allen & Rachim (1996); and Hussainey et al, (2011) to some extent. The variable sign test performed fails to agree with the priori set by the theoretical framework and the methodology as regards to DIVYILD, DIVPOUT which posts a positive (+) sign as opposed to an expected negative(-). A positive relationship between yield, payout and volatility generally solidifies the observations that dividend measures of performance are quite low among the companies surveyed. These points to high investment opportunities and incentives which in turn increase investors' expectations leading to higher volatility. Another important finding is association between DIVYILD and DIVPOUT both of them being predictor variable could be an indication of multicolinearity, owing to the fact that both variables are proxies of the same thing- dividend, hence the potential of this study making a stand point for which one of the two is best suited as a proxy.

5.2 Regression analysis and hypothesis testing

Dividend measured as dividend yield (DIVYILD)

To determine whether there is association between dividend and share price volatility, the study regressed the dependent variable SHARVOL and predictor variables DIVYILD and DIVPOUT. The two predictor variables were used interchangeably as proxy variables for dividend. The effort gave rise to the two models presented in tables 4 and 5 below. Table 4 shows the regression results for versus DIVYILD on SHARVOL. The sign returned by analysis is positive contrary to expectation. The R2 is determined as 3.46%. The F statistic is given as 4.13 with an accompanying p value of 0.2209. The p value for while the resultant model is stated below:

$$SHARVOLj = 2.985 + 3.047\ DIVYILD \quad (2)$$

The results above indicate that the R^2 is fairly down sided by dividend yield as a proxy for dividend. This is because according to the model, DIVYILD is only responsible for explaining 3.46% of the variations occurring to share price volatility. Consistent to this observation is the p value which is higher than α=0.05, meaning the model is insignificant. These findings further affirm the multicolinearity tests above which indicate that this variable should may not be an adequate predictor of the response variable. Another justification for omitting this proxy variable is the high t test p value which denotes insignificance at 5% or 10%. As such this study does not find a place for dividend yield as a proxy for dividend which could be explained by Rozef (1984) showed that dividend yield forecasts short-horizon stock returns. Fama and French (1988) use dividend yield to forecast returns on the value-weighted and equally weighted portfolios of NYSE stocks for horizons from one month to several years. The removal of dividend yield could also signify long holding periods by majority of shareholders meaning that the volume of shares are traded is not big enough to carry the yield effect across the market, a feature that is prominent in frontier markets in NSE category.

Dividend measured as dividend payout (DIVYPOUT)

The results for regressing DIVPOUT on SHARVOL are shown in table 5 below. The coefficient sign returned is positive contrary to expectation. The R squared is 14.65% with the Adjusted R squared being 12.43%. The F statistic is 2.10 with an accompanying p value of 0.0044. The resultant model is given as:

$$SHARVOLj = 1.183 + 0.944\ DIVPOUT \quad (3)$$

The R squared results indicate that DIVPOUT explains 14.65% of the variations in share price volatility. These results therefore indicate that the co-efficient of determination is strong enough to justify the inclusion of DIVPOUT in the model as a proxy for dividend which is further weighed in by its significance at α =0.05 in tandem to the findings by Allen and Rachim 1996, Hussain et al 2011 among others. DIVPOUT t test reveals a p value of 0.005 which is less that the pe, another reason for passing the model.

The expected negative sign would have arisen according to Damodaran (2011) if high dividend payout was present occasioning decrease in value. On the basis of this, the study surmises that dividend payout made by firms studied were only moderate or low enough to occasion a positive relationship with share price volatility. The favourable F statistics serves as a basis to test the first hypothesis of the study stated below. Since the p value is 0.044, at α =0.05 at the study finds that there is significant association between dividend and share price volatility. The null hypothesis is therefore rejected.

In so far as the significant association between dividend and share price volatility is concerned, this findings are in agreement with studies by Baskin (1989); Allen & Rachim (1996); Nazir et al. (2010); and Hussainey et al. (2011). However the significant positive association found in this study only confirms findings by Suleman, et al (2011) which may infer market structure and liquidity similarities between Karachi and Nairobi as frontier market exchanges. Similar to conclusions by Allen and Rachim (1996) and Hussainey et al. (2011) this study not only confirms that dividend payout as a predominant determinant but the only credible determinant (as a proxy for dividends) of share price volatility in a frontier market. Evidence deduced confirms dividend relevance accompanied by weak market efficiency since the theoretical information carrier- dividend yield is ignored.

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Table 1. Variable Description and Measurement

Variable	**Proxy Variable (s)**	**Symbol**	**Computation Basis**	**Expected sign**
Share price volatility	Dependent variable	SHAPVOL	$SHAPVOL=\sqrt[2]{\frac{\sum_{i=1}^{4}\left((H_i-L_i)/\left(\frac{H_i+L_i}{2}\right)\right)^2}{4}}$ Where: H_i =Highest price during period *i* L_i= lowest price during period *i*	
Dividend	Dividend yield	DIVYILD	$DIVYILD=\sum_{i=1}^{n}\left(\frac{D_i/MV_i}{n}\right)$	Negative(-ve)
	Dividend Payout	DIVPOUT	$DIVPOUT=\sum_{i=1}^{n}\left(\frac{D_i/E_i}{n}\right)$	Negative (-ve)

Table2. Variable Description and Measurement

	SHARVOL	DIVYILD	DIVPOUT
n	56	56	56
Maximum	42.8402	.5368	.9916
Minimum	3.7733	0	0
Mean	15.2421	.05471	.34078
Std dev	3.7669	.08814	.2722
Skewness	0.1149	3.7494	.69417
Kurtosis	3.1636	5.6545	2.5862

Table 3. Pairwise correlation matrix and variance inflation factor for variables

Variable	SHARVOL	DIVYILD	DIVPOUT	VIF	1/VIF
SHARVOL	1.0000			-	-
DIVYILD	0.7472*	1.0000		10.28	0.01229
DIVPOUT	0.8046*	0.6328	1.0000	1.18	0.84394
Mean VIF				2.655	

*significant at α= 0.05

Table 4. Regressing DIVYILD on SHARVOL

Number of obs = 56					
F(1, 54) = 4.13					
Prob > F = 0.2209					
R-squared = 0.0346					
Adj R-squared = 0.0122					
SHARVOL	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]
DIVYILD	3.04767	2.4578	1.24	0.221	7.9753 1.1879
Cons	2.98587	3.277198	3.96	0.000	6.376774 9.59497

Table 5. Regressing DIVPOUT on SHARVOL

Number of obs = 56					
F(1, 54) = 2.10					
Prob > F = 0.0044					
R-squared = 0.1465					
Adj R-squared = 0.1243					
SHARVOL	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]
DIVPOUT	.9449741	.6526961	1.45	0.005	-.37131 2.2612
Cons	1.18378	.116113	7.18	0.000	.91623 2.4513

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