

Dividend Policy Determinants and Stock Price Volatility in Selected African Stock Markets

¹Mayowa Gabriel Ajao, ¹Fredrick Edosa Robinson

¹Faculty of Management Sciences University of Benin, Benin City, Nigeria.

ajao.mayowa@uniben.edu

Abstract

The study examined the impact of dividend policy determinants on stock price volatility in Sub Sahara Africa. Three (3) economies (Nigeria, Kenya and South Africa) were selected from among the 51 economies in the region, and data spanning 9 years (2011-2019) were obtained and subjected to econometric analyses. The Generalized Autoregressive Conditional Heteroskedacity (GARCH) was used to ascertain and generate the volatility properties of the stock prices, while the panel Autoregressive Distributed Lag (ARDL) technique was used to capture the relationship between dividend policy determinants and stock price volatility. The independent variables analyzed in this study are leverage (LEV), firm size (FSIZE), dividend yield (DY), earnings per share (EPS) and dividend payout (DPO) while the dependent variable was the volatility in stock price (SPV). Findings show that all of the variables considered have varying degree of relationships with stock price volatility both in the long run and short run in the three countries. The pooled result indicated that DPO, LEV, FSIZE, DY and EPS had a significant relationship with stock price volatility within the study period in the long run but no short run relationship could be confirmed for the combined samples. The study concluded that dividend payout, dividend yield and earnings per share are significant factors that can be used for predicting the volatile movement in stock price in the African stock markets. The study recommended that dividend payment should be consistent and smoothed to disrupt volatility of stock prices since dividend payment is found to be significant determinant of stock price volatility.

Keywords: Dividends, Stock price, Volatility, ARDL, GARCH

JEL Classification: G12, G14, G35

How to Cite:

Ajao, M. G., and Robinson, F. E. (2022). Dividend Policy Determinants and Stock Price Volatility in Selected African Stock Markets. *International Journal of Finance Research*, 3(1). 27 - 48 DOI: <https://doi.org/10.47747/ijfr.v3i1.659>

1. Introduction

Aside financing and investment decision, the other essential function of a financial manager is decision on dividend payment. Dividend is seen as the reward for financing or investing in a project by the owners of the going concern. Whereas interest payment satisfies the interest of the creditors (both short term and long term), dividend payments is meant to satisfy the owners of the firms. Nishat & Irfan (2003), Echabi & Azouzi, (2016) posit that despite years of empirical investigations into the concepts of dividend decision, dividend policy still remains a source of controversy in corporate finance. The controversies are however upholding the dividend puzzle of Black (1976) where he argued that, “the harder we look at the dividend picture; it seems like a puzzle with pieces that do not fit together”.

Dividend policy has been examined by many scholars with divided opinions; whereas one group resolve that dividend payout is relevant to the firm well-being and thus reflects in its’ stock price, the other group opined that dividend payment is irrelevant to the firm’s value. Leading the pack of dividend irrelevances is the Miller and Modigliani (M & M) (1961) Dividend Irrelevance Theory. The M & M (1961) states that dividend payout of a firm has no impact neither on the investor’s decision nor on the firm’s value. That is, news of dividend payment and the aftermath of dividend payment do not reflect in the stock price of a firm.

To the dividend relevance team, dividend payment is important to the firm as well as to the investors. It is considered as a signal to the public, both to the investors and non-investors, that the firm is doing well and has a great prospect. Therefore, several firms allow a stable dividend payout while a decrease in dividend is termed as a weakness signal for investors. Therefore, an increase in dividend would be announced only if the firm can maintain it. With Dividend payments, stock prices of firms are being stabilized. That is, a consistent dividend paying firms tends to have growing value overtime devoid of high market oscillations. Investors seem to hold on to the stock of high paying dividend and this ensures that the market price is not that volatile. These attending benefits of dividend help a firm to have good public image in the long run especially where it is regular. Also, dividend payout is deemed relevant because it helps to resolve the principal-agent issues in the organization. Where there are less free cash flows in the organization, the agents (managers) tend to maximize the available resources, more so where debt is increasing in the firm’s capital structure.

Much study has examined the impact of dividend announcement on firms’ performance (Ikechukwu & Madubako, 2016; Kajola, Adewumi & Oworu, 2015; Simon & Ologunwa, 2016) and empirical results have established a link between these two. The perceived relationship between dividend payment and share price is dependent on the researcher’s school of thought. For example, the perceived impact of dividend payment on share price was challenged in the study of Miller and Modigliani (1961) theory commonly known as the MM theory of dividend irrelevance. The implication of this theory is that investors are not moved by dividend payment and would be indifferent if faced with the options to either accept a dividend now or sell the securities later to earn capital gain. This is so because under a perfect market condition, investors can create an “homemade” policy to suit their cash needs. Much study has empirically tested for

the validity of the MM theory of dividend irrelevance and has had conflicting results (Adesola & Okwong, 2009; Udobi & Iyiegbuniwe, 2018). Inconsistency in empirical findings has been attributed to flaws in dividend measurement (Amadasu, 2011; Toby, 2014). Contrary to the MM theory of dividend irrelevance, the dividend relevance theory as propounded by Lintner (1956) was first to establish a positive relationship between dividend payment and share price. Since then, other studies have tried to link dividend payment to share price movement in their various economies. For example, the studies of Musa (2009), Khan (2012) and Abubakhar (2012) have found a positive relationship between dividend payment and share price.

The relationship between dividend payment and share price fluctuations has rocked the center stage of empirical research. The study of Gordon (1963) suggested an inverse relationship between dividend payment and stock price volatility. This would imply that firms paying consistent and high dividends should face lesser volatility in stock prices. Recent empirical works like that conducted by Nguyen, Bui and Do (2019) has found a negative relationship between dividend yield, dividend payment and stock price volatility, hence affirming the earlier study of Gordon (1963). Nevertheless, the study of Jahfer and Mulafara (2016) has found a positive relationship between dividend yield, payout ratio and Stock Price Volatility (SPV).

Previous empirical studies conducted to examine the link between dividend payment and SPV have majorly been country specific (Ilaboya & Omoje, 2012; Lashgari & Ahmadi, 2014; Phan & Tran, 2019; Nguyen, Bui & Do, 2019; Cristea & Cristea, 2018). While country specific studies are important to identify common country specific effects, study outcomes cannot be used to make a generalization of economic policies for other economies. The stock market in Sub Sahara region is especially worth the research attention as movements in its stock price have been found to respond too rapidly to market or firm specific fundamentals (Uyaebo, Atoi & Usman, 2015). Hence, this study moves to consider whether dividend payment (firm specific) contributes to the volatility of stock price in Sub Sahara Markets between 2011 and 2019. The African market is selected because of the high volatility in the market. The study period (2011-2019) is suitable to examine the effect of dividend policy on stock price volatility bearing in mind the global value melt down as suffered in 2011.

The remainder of this study is organized as follows. Section two reviews the relevant literature and previous studies related to this study. Section three describes the methodologies adopted for the studies including the model formulation and data analysis techniques. In section four, the main empirical test results were presented and interpreted with summaries of the empirical findings and conclusion the study.

2. Literature Review

2.1 Stock Price Volatility (SPV)

One of the essential features of a stock price of firm is it consistent movements, either appreciating or depreciating. Zainudin, Mahdzan and Yet (2018) posit that SPV explains the risk of a common stock, in which the risk increases with the common stock price volatility. That is the higher the volatility of prices of stock, the greater the attending risk of such stocks. Phan and Tran (2019) see SPV as a change in stock prices over time as a result of instability,

unpredictability, and risks. The understanding of SPV is essential for investors, the affected company and portfolio managers alike. Since investors are known to be rational and risk averse, they tend not to be appeased with return premium for high level of risk undertaking but rather prefer a low risk with certain level of returns.

There exist various methods of examining volatility. The most common methods include Variance and Standard Deviation. All other volatility measurements and methods rely mainly on these two standard methods. Various SPV measurements which have been severally used by scholars based on the research objectives includes close-to-close, exponentially weighed, Parkinson, German-Klass, Rogers-Satchell as identified by Bennett and Gil (2012) and the Auto-Regressive Conditional Heteroskedasticity (ARCH) with its family. The Autoregressive Conditional Heteroskedasticity (ARCH) models are specifically designed to model and forecast conditional variances. The variance of the dependent variable is modeled as a function of past values of the dependent variable and independent or exogenous variables. The ARCH models were introduced by Engle (1982) and generalized as GARCH (Generalized ARCH) by Bollerslev (1986). These models are widely used in various branches of econometrics, especially in financial time series analysis. The ARCH model as specified by Engle (1982) is given as

$$\hat{\varepsilon}_t^2 = \hat{\alpha}_0 + \sum_{i=1}^q \hat{\alpha}_i \hat{\varepsilon}_{t-i}^2 \quad \text{ARCH Model}$$

Eq one was later generalized by Bollerslev (1986) into GARCH i.e., Generalized ARCH. The basic difference here is that the GARCH allows past conditional variances to be included in Eq one. The aim of the GARCH is that it can parsimoniously represent a higher-order ARCH process. The GARCH (p, q) model can be represented in Eq two below

$$\hat{\varepsilon}_t^2 = \omega + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^p \beta_i \sigma_{t-i}^2 \quad \text{GARCH Model}$$

2.2 Dividend, Relevance and Irrelevance

According to Tariq (2015) dividend policy of a firm is the decision of firm managers about the payment of dividends to shareholders out of cash surplus. Lumapow and Tumiwa (2017) see it as the determination of the portion of the profit to be given to the shareholders. The determinants of dividend policy are the firm's specific factors. One major factor is the net earnings of profit of a going concern. Where a firm makes consistent profits, it is expected of such firm to give back to its financiers in form of dividend payment. The converse is also true.

Every dividend paid has its origin from the company's earnings. Earnings are used for different purposes within an organization. These purposes as given by Rehman and Takumi (2012) include retirement of the firm's debt, buying back its shares or distributing the earnings to shareholders in the form of dividend. Dividend payment is important to the firm as well as to the investors. It is considered as a signal to the public, both investors and non-investors, that the firm is doing well and has a great prospect. Therefore, many companies follow a consistent dividend payout policy and their management considers reduction in dividend as a weakness signal for investors and thus a higher dividend would only be announced if the company can sustain it in

future. Dividend payment also helps in stabilizing the market price of the firm. These attending benefits of dividend help a firm to have good public image in the long run especially where it is consistence.

Miller and Modigliani (1961) argued that under a perfect market a firm's dividend policy is irrelevant. They opined that investment decision as well as financing decision as well as optimal capital structure are the sole determinants of a firm's value not its' dividend decision. The underlining assumptions of this theory are: No tax differential (i.e on either dividend or capital gain), no market friction when securities are traded, free and same interpretation of information, no conflicts between interests of manager and shareholders and all participants in the market are price taker. According to Al-Shawawreh (2014), M&M theory has many supporters; for instance, Black and Sholes (1974) confirmed from their investigation of 25 portfolios of common stock in New York Stock Exchange from 1936 to 1966 that there is no significant impact of dividend yield (DY) on expected return. In the same vein, they argued that there is no evidence in support of diversity in dividend policies leading to change in stock prices. Their findings support dividend irrelevance hypothesis.

2.2.1 Dividend Payout and Stock Price Volatility

Dividend payout ratio is the ratio of dividend per share to earnings per share. Cozorici (2015) argue that the image of company viability is presented by its act of dividends payment and that a regular dividend payment increases public confidence which result to a rise in the market value of the firm. On the other hand, retention of investment profits can only lead to a rise in self-financing ability and improve the financial structure of the company. With this, the firm has strong capacity in financing other project and or stand better chance of obtaining loan where necessary.

2.2.2 Dividend Yield and Stock Price Volatility

However according to Zainudin, Mahdzan and Yet (2018) several investigations have inferred that DY is negatively associated with SPV especially in the developed economy while it has a mixed (positive and negative) influence on SPV in emerging markets. This view was obtained from the works of Baskin (1989), Nazir, Nawaz, Anwar and Ahmed (2010).

2.2.3 Firm Size and Stock Price Volatility

Lumapow and Tumiwa (2017) posit that "firm size is a measure that describes the size of the company that can be accessed from the total value of the company's assets. The size of a large company shows that the company is experiencing good growth. Firms with large growth will find it easy to enter the capital market as investors capture positive signals for companies that have large growth so that a positive response reflects the increasing firm value".

2.2.4 Leverage and Stock Price Volatility

Financial leverage of a firm can be arrived at by expressing the total amount of debt as a percentage of total assets at certain time. He argued that external debt adds economic value to a company especially where the return on investment is higher than the cost of debt. Although M & M (1961) claimed that financial leverage has no effect on the firms' value in the absence of corporate income taxes and distress costs. A highly levered firm with attending higher returns on

investments will always be the choice of portfolio investors knowing that the particular firm has future prospects. Where investors see the viability of projects of the levered firm, it is expected that the demand for such stocks will rise while the converse is also true. However, it is often reported that financial leverage has a negative relationship with dividend payout, since there will be need for the firm to meet maturing obligations of interest payments and principal repayment as they fall due. Hence the higher levered a firm is the lower the tendency of dividend payout.

2.2.5 Earnings Per Share and Stock Price Volatility

EPS which is define as profit after tax divide by number of ordinary shares represent the income of every share bought by investor overtime (Oyedeko & Adeneye, 2017). It can be refers to as the real gain of the investment activities. EPS is of regarded as the profitability ratio of a firm. That is, it showcases how profitable a company is in a particular period. EPS is arrived at by dividing net income by average outstanding common shares. Where there is stability or consistent rise in EPS, a firm is seen as a viable one and hence its share price becomes more liquid in the market and hence fluctuates with regards to demand and supply.

2.3 Empirical Review

Several studies in developed economies investigates the relationship between dividend policy and stock price volatility. Nishat and Irfan (2003) examined the effect of dividend policy on stock price volatility in the Karachi Stock Market of the Pakistan between 1981 and 2000 using the Panel Data method of analysis. They examined 160 listed firms stock price volatility in conjunction with Dividend Payout (DP) and Dividend Yield (DY) as the explanatory variables having size and leverage as control factors. It was observed that DY and DP have significant influence on Stock Price Volatility (SPV) in the Pakistan. Also, Nadeem, Arfan and Hazoor (2014) investigates the impact of DP on SPV in Pakistan. Using data of 17 banks on the KSE from 2007 to 2012, the variables considered were SPV, EPS, LEV and DPR. The findings from the panel analysis reveal that DPR EPS are seen to be positively significant in influencing SPV.

Dewasiri and Weerakoon (2014) investigated the effect of dividend policy on stock price volatility between 2003 and 2012 using Panel data and Granger Causality Test to arrive at their conclusions. Their variables of interest are the Dividend Payout (DP) and Dividend Yield (DY) as the explanatory variables while Stock Price (SP) of 40 firms serve as the response variable. The result of the analysis shows that while DY has no effect on SPV, DP exerts a significant positive effect on SPV of the 40 firms considered. However, the result from the Granger Causality Test shows that DY has a unidirectional influence from DY to SPV.

Syed and Umara (2016) examined the role of DP on SPV in the Pakistan between 2005 and 2012 using the multiple regression method of analyses to arrive at their conclusions. 50 firms listed on the Karachi Stock Market were used as the sample size with variables such as SPV, DY, DPR, EPS, FS and Asset Growth (AG). DP was seen to have significant negative relationship with SPV in the Pakistan while the control variables exert positive and significant effect on SPV.

Phan and Tran (2019) examined the relationship between DP and SPV in the Ho Chi Minh Stock Exchange and Hanoi Stock Exchange in the Vietnam between 2008 and 2015. With panel data analysis and the observation of non-financial firms' dataset, it was discovered from the findings

that DY has a negative effect on SPV in the Vietnam. This shows that DP is influential on the SPV in Vietnam.

Zainudin, Mahdzan and Yet (2018) investigates the effect of dividend policy on stock price volatility of industrial firms in Malaysia between 2003 and 2012. With the sample of 166 industrial listed firms in Malaysia and with Panel Data analysis it was observed that dividend policy is a strong predictor of SPV of industrial products firms in Malaysia, particularly during the post-crisis period. Of the dividend policy observed, DPR predominantly influences volatility.

Sewelen (2017) examined the determinants of stock price volatility in Sweden between 2004 and 2016. The sample size contains Large, Mid and Small Cap firms listed on the Swedish stock market. The variables considered are SPV, PR, Earnings Volatility (EV), FS and Debt Ratio. Using the panel data analysis, it was observed that PR, FS and EV have significant negative influence on SPV while Debt Ratio shows a positive effect.

Sugathadasa (2018) observed the data of 30 companies listed on the Colombo Stock Exchange in Sri Lanka in order to determine the impact of DP on SPV. Variables such as SPV, DY, DPR, FS, Debt were examined between 2014 and 2017 with the aid of Panel data analysis. It was observed from the findings that DY and DPR have negative effect on SPV in the Sri Lanka. While DY and DPR are the main independent variables, FS, Debt and Growth of Assets are control variables.

Prachaya and Mansur (2018) examined the influence of dividend policy on SPV in the USA using two data sets which include all the stocks listed on one hand and stocks of Islamic firms. With the advance GMM method of analysis and observing variables such as SPV, DY, DPR and some control variables, it was discovered that DP have low impact on SPV and it is becoming irrelevant in the aggregate economy. However, DY has positive impact on Islamic stocks signaling the clientele effect in the USA.

Nguyen, Bui and Do (2019) investigated the impact of Dividend Policy (DP) on Share Price Volatility (SPV) in the Ho Chi Minh Stock Market between 2011 and 2016 using the Panel data analysis. The sample consists of 141 listed non-finance companies. The variables considered are SPV, DY, DPS and control variable. It was observed that DY is the most essential determinant of SPV. It was however established that both DY and DPR have significant negative effect on SPV.

In Africa, Njeru (2015) examined the impact of Dividend Payout on Stock Prices of firms in Kenya. Using the 64 listed firms on the Nairobi Stock Exchange data from 2010 to 2014, the study established the negative impact of dividend payout on stock price of the firms. This was arrived at from the graphs of the Annual Average Returns and Cumulative Average Returns. Ofori – Sasu, Abor and Osei (2017) in Ghana examined the impact of dividend policy on shareholders' value in Ghana stock exchange. Time series data spanning 2009-2014 were subjected to empirical testing under the ordinary least square framework. Empirical findings revealed that dividend policy was better explained by ROE, firm age, tax, tangibility, GDP growth and interest rate. A significant positive relationship was found between dividend per share and shareholders' value. Higher dividend yield was found to inhibit shareholder's value.

Araoye, Aruwaji, and Ajayi (2019) in Nigeria examined firms' data on the Nigerian Stock Exchange between 2005 and 2014 to establish the effect of DP on SPV in Nigeria. With the random-effect panel analysis and variables such as SPV, DPR, DPS, Earnings after Tax (EAT),

Dividend Declared (DD), it was observed that DPS is the main factor that impact SPV and it impact it positively whereas, DPR and EPS negatively impact SPV.

Agbatogun, Kajola and Akinbola (2019) investigated the impact of DP on SPV in the non-financial sector of the Nigerian economy. Using the Panel Auto Regressive Distribution Lag and variables such SPV, DY, DPR, Earnings Volatility (EV) and control variable of FS, the result of the findings reveals that in the long run DY and DPR have significant positive effect on SPV while FS has a negative effect on SPV.

From the empirical literature reviewed, it can be deduced that there is paucity in empirical study as to the link between dividend payout determinants and stock price volatility with particular reference to the African Stock market. Previous studies on dividend payout and stock volatility have been either sector or country specific. Selecting some markets in Africa is intended to widen the geographical scope of the subject matter so as to make robust economic and financial interpretations. This study conducted a panel based study to link dividend payment determinants and stock price volatility in the Africa markets.

3. Research Method

The nature of the study entails a cause-effect investigation. Therefore, the researcher employs a causal research design, where the independent variables are examined in other to determine the relative impact on the dependent variable. The population of the study is the total number of listed firms on the three selected stock exchange markets. Where 168 are listed on the Nigeria Stock Exchange, 64 on the Nairobi Stock Exchange while 379 on the Johannesburg Stock Exchange as at 2019 (All African Market, 2020). The judgmental sampling technique is used to select five (5) dividend paying firms listed in the exchanges of the different sampled economies. Listed firms that has paid dividend from 2011-2019 is selected for the study. This study employs secondary data which were sourced from the mandatory annual financial report of the firms selected which are available on the Exchanges websites.

The study employed a panel Autoregressive Distributed Lag (ARDL) technique to capture and provide empirical evidence on the effects of dividend policy determinants and stock price volatility in selected Africa countries. On the other hand, the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model would be used to determine the volatility of stock prices and its response to dividend policy. The functional form of our study is given as;

$$SP = f(DPR, DY, FS, LEV, EPS) \quad (I)$$

Where Equation I is adapted from the studies of Nguyen, et al (2019), Sugathadasa (2018). Both studies modeled dividend payout and stock price volatility to be;

$$SPV = f(DPR, DY, FSZ, EV, LTD, GAS) \quad (II)$$

Where SPV which is the response variable in Stock Price Volatility being explained by Dividend Payout Ratio (DPR), Dividend Yield (DY), Firm Size (FSZ), Earnings Volatility (EV), Long Term Debt (LTD) and Growth in Assets (GAS).

The aim of the study is to determine the role dividend policy determinants plays not just on stock prices but in instabilities or volatility of stock price. On this note, the GARCH model better captures the essence of this purported relationship. Thus, The GARCH technique would first be

used to generate the variance in stock prices (volatility) before subjecting it to further empirical tests. Premise on the above, our new functional and empirical models would take the form;

$$SPV = f(DPR, DY, FSZ, LEV, EPS) \quad (III)$$

In developing an ARCH model, two distinct specifications are considered - one for the conditional mean and one for the conditional variance. Moreover, a model with a first-order GARCH term and a first-order ARCH term (i.e. GARCH [1, 1]) is specified in this study because of its simplicity.

$$SP_t = X_t\gamma + \varepsilon_t \quad (IV)$$

$$\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 \quad (V)$$

Equation (IV) is the mean equation and (V) is the variance equation. The stock price is written as a function of exogenous variables (in this case, the major factors in stock prices) with an error term. While σ_{t-1}^2 is the conditional variance because it is the one-period ahead forecast variance based on past information. The conditional variance equation specified in (V) is a function of three terms:

- The mean: ω .
- News about volatility from the previous period, measured as the lag of the squared residual from the mean equation: ε_{t-1}^2 (the ARCH term).
- Last period's forecast variance: σ_{t-1}^2 (the GARCH term).

After generating the volatility properties of stock price, the ARDL technique were used to capture its response to dividend policy determinants. The generalized form of an ARDL model is given as;

$$\Delta Y_t = \beta_0 + \sum_{i=1}^p \theta \Delta Y_{t-i} + \sum_{i=0}^q \beta_1 \Delta X_{t-i} + \varepsilon_{it} \quad (VI)$$

Adapting equation (VI) to our study we obtain equation (VII) which is given as;

$$\begin{aligned} SPV_{it} = & \beta_0 + \sum_{i=1}^p \theta_1 \Delta SPV_{it-i} + \sum_{i=1}^p \beta_2 \Delta DPR_{it-i} + \sum_{i=0}^q \beta_3 \Delta DY_{it-i} + \sum_{i=0}^q \beta_4 \Delta EPS_{it-i} \\ & + \sum_{i=0}^q \beta_5 \Delta LEV_{it-i} + \sum_{i=0}^q \beta_6 \Delta FSZ_{it-i} + \varepsilon_{it} \end{aligned} \quad (VII)$$

Where:

- SPV_{it} = Stock price volatility
 DPR_{it} = Dividend payout ratio of listed firms i in time t.
 DY_{it} = Dividend Yield of listed firms i in time t.
 FSZ_{it} = Firm size of listed firms i in time t.
 LEV_{it} = Leverage of listed firms i in time t.

EPS_{it} =	Earnings Per Share of listed firms i in time t.
Δ =	Difference Operator
B_0 =	Slope or intercept of the equation
p, q =	Lag length of dependent and independent variables respectively
θ =	Coefficient of lagged dependent variable
β_1 =	Co-efficient of explanatory variables
ε_{it} =	Error term of listed firm i in time t.
i, t =	Cross section and time respectively

Apriori expectations: $\beta_2, \beta_3 < 0, \beta_4 - \beta_6 > 0$

Apriori expectation for the model is considered so because it is believed that any action of managers on each of the main independent variables (DY and DPR) is likely to cause fluctuation in the share price of the firm; which means stock price will be less volatile, an inverse relationship. However, since the control variables areas a result of the activities/performance of the firm and not necessarily because of decision of the managers, the result can go either way.

Table I: Measurement of Variables

Variables	Abbreviations	Measurements
Stock Price Volatility	SPV	ARCH & GARCH
Dividend Payout Ratio	DPR	$\frac{\text{Dividend paid}}{\text{Profit After Tax}}$
Dividend Yield	DY	$\frac{\text{Dividend per share}}{\text{Market price per share}}$
Firm Size	FSZ	Natural logarithm of total asset value
Leverage	LEV	$\frac{\text{Total Debt}}{\text{Total Assets}}$
Earnings Per Share	EPS	$\frac{\text{Net Income}}{\text{Number common share outstanding}}$

Source: Authors' compilation (2021)

3.1 Panel Unit Root Test

Two different unit root test is employed to test for the stationarity of the dataset. These two-unit root test are based on two different assumptions. The Levin, Lin and Chu (LLC) test is based on the assumptions of common unit process. However, the Im, Pesaran and Shin (IPS) test is based on the assumption of individual unit root process. The panel unit root test of the individual

countries is first reported before pooling the entire sample. In Nigeria, majority of the variables are observed to be stationary at levels given the assumption of a common unit root process. However, holding to the assumption of individual unit root process, it is observed that all variables are only stationary after first difference. In Kenya, the finding is observed to be mixed, as some variables are found to be stationary at levels given both assumptions (DPO, LEV & FSZ). However, variables that were non stationary at levels given both assumptions were subjected to first difference to bring them to stationarity.

Table II: Panel Unit Root Test (Country-specific)

Nigeria										
	Levin, Lin and Chu Test (assuming common unit root process)					Im, Pesaran and Shin (assuming individual unit root process)				
	Levels		1 st Diff			Levels		1 st Diff		
	Stat	Prob	Stat	Prob	Order	Stat	Prob	Stat	Prob	Order
Nigeria										
SPV	-2.67	0.00	-2.19	0.01	I(0)	-0.11	0.45	-2.39	0.04	I(1)
DPR	-3.57	0.00	-2.69	0.00	I(0)	-1.22	0.11	-3.52	0.00	I(1)
DY	-1.87	0.03	-6.07	0.00	I(0)	-0.95	0.17	-3.26	0.00	I(1)
FSZ	-0.55	0.29	-2.36	0.00	I(1)	0.90	0.81	-3.20	0.00	I(1)
LEV	-1.36	0.08	-2.26	0.00	I(1)	-0.91	0.17	-4.13	0.00	I(1)
EPS	-3.32	0.00	-5.29	0.00	I(0)	-0.44	0.32	-3.87	0.00	I(1)
Kenya										
SPV	-0.23	0.40	-8.59	0.00	I(1)	0.69	0.75	-5.70	0.00	I(1)
DPR	-4.99	0.00	-2.65	0.00	I(0)	-1.84	0.03	-3.13	0.00	I(0)
DY	-3.24	0.00	6.09	0.00	I(0)	-0.10	0.45	-3.59	0.00	I(1)
FSZ	-10.49	0.00	-14.44	0.00	I(0)	-3.74	0.00	-4.39	0.00	I(0)
LEV	-0.14	0.44	-4.01	0.00	I(1)	1.09	0.86	-3.86	0.00	I(0)
EPS	-4.27	0.00	-4.80	0.00	I(0)	-1.55	0.06	-3.56	0.00	I(1)
South Africa										
SPV	-537.94	0.00	-30.10	0.00	I(0)	-166.8	0.00	-13.1	0.00	I(0)
DPR	-1.45	0.07	-5.28	0.00	I(1)	-0.74	0.22	-3.41	0.00	I(1)
DY	2.63	0.09	4.97	0.00	I(1)	-0.37	0.35	-6.42	0.00	I(1)
FSZ	-5.13	0.00	-2.66	0.00	I(0)	-1.19	0.11	-1.23	0.04	I(1)
LEV	-0.25	0.39	-4.12	0.00	I(1)	0.93	0.82	-3.89	0.00	I(1)
EPS	-13.28	0.00	-6.92	0.00	I(0)	-2.92	0.00	-3.69	0.00	I(0)

Source: Authors computation (2021)

In South Africa, it is observed that majority of the variables are stationary only after first difference. However, some variables were observed to be stationary at levels (SPV, FSZ & EPS). Given the assumption of individual unit root process, finding is also found to be mixed as some

variables are found to be stationary at levels while others became stationary only after first difference.

Table III: Panel Unit Root Test (Pooled Data)

Variables	Levin, Lin and Chu Test (assuming common unit root process)					Im, Pesaran and Shin (assuming individual unit root process)				
	Levels		1 st Diff		Order	Levels		1 st Diff		Order
	Stat	Prob	Stat	Prob		Stat	Prob	Stat	Prob	
SPV	-670.4	0.00	-35.64	0.00	I(0)	-142.9	0.00	-8.44	0.00	I(0)
DPR	-6.30	0.00	-3.67	0.00	I(0)	-2.19	0.01	-3.00	0.00	I(0)
DY	-3.34	0.00	15.21	0.00	I(0)	-6.82	0.00	-5.34	0.00	I(0)
FSZ	-6.60	0.00	-11.98	0.00	I(0)	-2.18	0.01	-2.61	0.00	I(0)
LEV	-1.34	0.08	-3.31	0.00	I(0)	0.64	0.74	-2.25	0.01	I(1)
EPS	-11.8	0.00	-1.62	0.05	I(0)	-2.81	0.00	-4.79	0.00	I(0)

Source: Authors computation (2021)

For robustness, the panel unit root of the samples pooled together is presented in Table III. The LLC which assumed common unit process indicates that all variables are stationary at their levels. However, the IPS indicates that most of these variables are stationary at levels although the IPS confirms that some variables are non-stationary at levels (LEV). These results indicate that some variables are stationary given both assumptions while others are not. All series were subjected to their first difference and the two test result indicated that all series remained stationary after first difference. Given that the variables are integrated of I(0) and I(1), the ARDL technique was used to estimate the long run relationship between various variables.

3.2 Volatility Testing

In this section, we test for the presence of volatility in the series (stock price) to ensure that there is volatility in the series before proceeding to estimate a GARCH model already specified. The Autoregressive Heteroskedasticity test (ARCH-Test) was used to perform this test with the null hypothesis of no ARCH effect. The test result for the individual country and the pooled are reported concurrently. The result is presented in Table IV

Table IV: ARCH Test (Country-specific and Pooled)

Heteroscedasticity Test				
Null Hypothesis: No ARCH Effect				
Market	F-Stat	Obs-squared	Prob	Decision
South Africa	71.18	56.19	0.00	Reject
Nigeria	54.21	21.22	0.00	Reject
Kenya	50.69	37.24	0.00	Reject
Pooled	78.66	72.22	0.00	Reject

Source: Authors computation (2021)

Findings from Table IV show the presence/absence of volatility in stock prices for the sampled countries. Volatility is found to be present in all sampled countries. Specifically, the null hypothesis of no ARCH effect is rejected for all countries. This indicates that we can correctly estimate a GARCH model. Result findings from Table IV also confirm the presence of volatility in the combined stock price (pooled) as the F-stat is found to be significant at the 1% level thus evidencing the rejection of the null hypothesis.

3.3 Volatility Analysis

Herein, the GARCH model is being estimated and insight provided as to the model parameters provided in the estimation output. The essence of this is to analyze and ascertain the volatility properties of stock price as well as the persistence of volatility in the series. The GARCH result is shown in Table V

Table V: Summary of the GARCH Model (Country-specific)

Method: ML ARCH-Normal Distribution			
Parameters	Nigeria	South Africa	Kenya
ω	0.07 (0.00)	66.7 (0.33)	0.14 (0.27)
δ	-0.24 (0.00)	-0.10 (0.00)	0.35 (0.31)
β	1.17 (0.00)	0.79 (0.01)	0.59 (0.05)

Source: Authors computation (2021)

The result findings from Table V summarize the GARCH model for the individual countries. The ARCH term(δ) shows the extent to which past volatility impacts on current volatility in the market. Findings from Table V shows the ARCH term to be negative indicating that there is a negative relationship between past volatility and current volatility in Nigeria. The implication of this is that an upward spiraling of stock price in the previous period will negatively affects current volatility. Similar trend is observed in South Africa as the ARCH term is equally found to be negative and significant at the 5% level. This suggests that past volatility has a significant negative impact on current volatility in South Africa. In Kenya however, no relationship is found between past volatility and current volatility. Findings from Table V also suggest that among the sampled countries, Nigeria records the highest volatility persistence followed by Kenya and lastly South Africa.

Table VI: Summary of GARCH Model (Pooled)

Method: ML ARCH-Normal Distribution			
Parameters	Co-efficient	z-stat	p-value
Mean Equation			
SP(-1)	0.76	22.23	0.00
Variance Equation			
ω	0.04	0.61	0.53

δ	0.15	13.55	0.00
β	0.83	32.34	0.00

Source: Authors computation (2021)

Table VI presents the volatility behavior when the samples are pooled. As seen from the mean equation, lagged stock price (SP) has a positive impact on current stock price. This relationship is found to be significant, signifying that past period SP reinforces current stock price in the market. The particular focus is on the variance equation which presents the volatility properties of stock returns. Indeed, the results of the conditional variance equation are rather interesting. The mean term in the result (ω) is positive but fails the significance test at the 5 percent level. This shows that generally, the position of stock prices at any given period has a strong positive effect on its pattern of volatility although not significant. Thus, apart from the external factors, many internal factors may actually be responsible for the inherent movements in stock prices.

The ARCH term (δ) measures the extent to which past volatility can lead to present volatility. The ARCH term is positive (0.15) and significant (0.00) indicating that past volatility amplifies current stock price volatility. This also shows that the tendency of stock prices gaining an upward movement at any given shock is high. Unexpected shocks in the market are expected to generate upward spiraling of the prices rather than downward movements most of the time. The parameter " β " measures the persistence in conditional volatility irrespective of anything happening in the market and the coefficient is found to be highly significant at the 1 percent level. The γ term is positive and quite large in size, i.e. 0.83 implying that volatility is persistent and does not quickly die out.

3.4 Regression Analysis

Table VIIa: (South Africa)

Method: ARDL Model Selection Criteria: AIC Model Selected: ARDL 1,1,1,1,1						
Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	-85.06762	-0.93	0.36	-5.50	2.34	0.03
FSZ	-0.778303	-0.49	0.62	1.99	24.08	0.00
EPS	-73.06114	-0.33	0.74	39.31	1.99	0.06
DY	-204.5371	-0.28	0.77	-179.96	-2.62	0.01
DPR	2.564789	0.50	0.14	3.23	2.56	0.01
ECM	-0.421435	-4.01	0.00			

Table VIIb: (Nigeria)

Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	-0.59	-2.06	0.05	-0.11	-4.53	0.00
FSZ	0.00	0.37	0.71	-0.00	-34.34	0.00
EPS	0.02	0.70	0.52	-0.13	-37.35	0.00
DY	0.21	0.84	0.26	-0.47	-4.74	0.00
DPR	0.42	0.70	0.48	0.21	8.54	0.00
ECM	-0.89	-3.50	0.00			

Table VIIc: (Kenya)

Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	-0.47	-1.04	0.30	0.44	9.95	0.00
FSZ	0.00	0.01	0.98	-0.01	-2.68	0.01
EPS	1.78	1.05	0.30	-0.34	-4.72	0.00
DY	3.72	1.02	0.25	0.14	2.92	0.02
DPR	1.72	1.18	0.12	0.52	4.10	0.00
ECM	-0.85	-2.66	0.01			

Source: Authors computation from E-views 9.

Table VII a,b,c summarizes the result of dividend policy determinants and stock price volatility in each of the three countries. The AIC was used to select the model and the ARDL 1,1,1,1,1 was the final selected model. The long run relationship reveals a negative relationship between leverage (LEV) and stock price volatility (SPV) in two of the three economies. The coefficient of LEV is found to be -5.50, -0.11 in South Africa and Nigeria respectively while it is 0.44 in Kenya. These relationships were observed to be significant at the 5% level. Firm size (FSZ) is observed to have a positive (South Africa), negative (Nigeria and Kenya) relationship with SPV in the long run and were observed to be significant at the 1% level. In contrast, a negative (South Africa) and positive (Nigeria and Kenya) relationship is found between FSZ and SPV in the short run.

Dividend yield (DY) is observed to have a negative relationship with SPV in the long run and short run in South Africa while it has positive and significant relationship in both short and long run in Kenya. However, only the long run relationship is observed to be positive and significant in the case of Nigeria. Dividend policy (DPO) is observed to be positive and significant in both short and long run in all the three countries analyses. This implies that a unit increase in the DPO will lead to an increase in SPV in both the short and long run. The error correction term (ECT) is observed to possess the expected sign and is statistically significant. The ECM (-0.42, -0.89 and -0.85) indicates that past period disequilibrium is corrected in the current period. This shows that the speed at which disequilibrium is corrected is moderately high.

Table VIII: Regression Summary (Aggregate Result)

Method: ARDL						
Model Selection Criteria: AIC						
Model Selected: ARDL 1,1,1,1,1						
Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	17.79	0.58	0.55	120.34	46.40	0.00
FSZ	-1.75	-1.51	0.13	-0.55	-5.96	0.00
EPS	-47.37	-1.70	0.09	-41.05	-13.66	0.00
DY	-1.28	-0.26	0.25	-12.82	-2.65	0.00
DPR	0.67	0.36	0.13	-10.07	-2.61	0.00
ECM	-0.25	-2.77	0.03			

Source: Authors computation from E-views 9.0

The result summary of the aggregate (pooled) of the three sampled economies (Kenya, Nigeria & South Africa) is presented in Table VIII. The AIC criteria are also used to select the optimal lag

length and the ARDL 1,1,1,1 was chosen for the study. Findings showed that there is a positive relationship between LEV and SPV in the economies pooled together. The result is also observed to be significant thus indicating that a unit change in LEV will lead to a change in SPV by 120.3 in the long run. Findings show that in the short run, LEV and SPV have a positive relationship although the relationship is not significant at any level. FSZ is observed to be negative which signifies that a unit increase in FSZ will lead to a reduction in SPV in the long run. A unit change in FSZ will lead to a change in SPV by -0.55. The relationship is also found to be significant at the 1% level. The relationship between FSZ and SPV is also found to be negative in the short run although the relationship is observed to be insignificant. Earnings per share (EPS) was found to predominantly negative in the long and short run. Specifically, a unit change in EPS will lead to a -41.05 change in SPV in the long run. However, the relationship between EPS and SPV is found to be insignificant in the short run. Similar pattern is found between DY and SPV in the long run. The coefficient of DY is observed to be negative and significant. A unit change in DY will lead to a -12.82 changes in SPV in the market combined (aggregate). However, the short run relationship is observed to be insignificant although a negative relationship is also recorded. Finally, DPO is observed to be positive and significant the regression. This implies that changes in DPO will further amplify SPV in the combined market (aggregate). A unit change in DPO will lead to a 10.07 change in SPV in the combined market. The ECM (-0.25) is observed to be negative and significant at the 5% level. This implies that there is convergence after short run disequilibrium. 25% of previous disequilibrium is corrected for in the current period.

4. Result and Discussion

The study was undertaken to investigate the impact of dividend payout determinants and firms value in Sub Sahara. The analysis of the stock prices using the GARCH modeling technique revealed the presence of volatility in the stock price of firms listed in Nigeria, Kenya and South Africa. Volatility was also found to be present after the data of the sampled firms were pooled. Specifically, in Nigeria previous period volatility was found to reinforce current period volatility and similar pattern was found in South Africa. However, no relationship was found between past period and current period volatility in Kenya. The implication of this is that high volatility in Nigeria and South Africa results in the inability to predict stock price as prices are not stable. Using the pooled data, findings showed that stock price is highly volatile and such volatility does not quickly die out.

On the determinants of dividend policy and stock price volatility, findings showed that leverage is negative for both South Africa and Nigeria while positive for Kenya. The implication of this is that higher leverage reduces stock price volatility in Nigeria and South Africa while it reinforces that of Kenya. However, the relationship was significant indicating that leverage is a strong determinant of stock price volatility given the respective countries. Similar pattern was found when the samples were pooled. Leverage was found to also be a significant determinant of stock price volatility in the combined market. In particular, leverage was found to be positive indicating that leverage reinforces volatility in the African Market.

Dividend payout is found to reinforce stock price volatility in Nigeria, Kenya and South Africa. And the relationship was significant in Nigeria, Kenya and South Africa. Using pooled data, it was also observed that dividend payout was negative and significant. By implication, variations

in dividend payout can either amplify or tamper rapid movement of stock prices depending on the direction of dividend payout. Finance managers must therefore smooth dividend or maintain a constant or regular policy so as to avoid the downward movement of dividend payout thus triggering volatility in stock price. This finding is in line with *apriori* and follows the submission of Al-Shawawreh (2014), Phan and Tran (2019) whose studies found a negative and significant relationship with stock price volatility. The result also negates the findings of Khan (2012) that found a positive relationship between dividend payout and stock price volatility.

Dividend yield was observed to have had a positive impact on stock price volatility in Kenya, while a negative relationship was recorded in Nigeria and SA. However, it was observed that dividend yield is a strong determinant of stock price volatility in these countries given its level of significance. Findings from the pooled estimate indicated that dividend yield (DY) was negative and significant. This implies that higher dividend yield can be used to regulate and reduce rapid movements in firm's stock price. This implies that finance managers must make investments to create more profits that can be distributed to shareholders so as to increase the dividend yield. This result confirms the earlier submission of Nishat and Irfan (2003) and Kenyuru, Kundu & Kibiwott. (2013) where their studies found a negative relationship between dividend yield and stock price volatility. However, this finding is in contrast to the findings of Al-Shawawreh (2014) that found a significant positive relationship between dividend yield and stock price volatility.

The relationship between earnings per share and stock price volatility is found to be negative for Nigeria and Kenya while positive for South Africa. This implies that earnings per share reinforce stock price volatility in South Africa while it reduces volatility in Kenya and Nigeria. Using pooled data, earnings per share was found to be negative and significant. By way of implication, higher EPS stabilizes stock prices and reduces volatility. Higher EPS is expected to reinforce investor's confidence leading to more demand for the firm's stock. This result is in line with *apriori* and follows the submission of Sewelen (2017) whose study established a negative relationship between EPS and stock price volatility. However, this finding negates the study outcomes of Khan (2012), Nadeem *et al.* (2014) and Sulaiman & Migiro (2015) which found a significant positive relationship between earnings per share and stock price volatility.

Lastly, the coefficient of firm size is found to be positive in South Africa and negative in Nigeria and Kenya. For the pooled data, firm size was also negative and significant. By implication, bigger firms are more likely to experience lower volatility in stock price than smaller firms. The rationale for this could be as a result of the ability of bigger firms to instill trust among investors because of their efficient and effective way of doing things. This result is in line with *apriori* and follows the submissions of Agbatogun, *et al* (2019) where a significant negative relationship between firm size and stock price volatility was reported in their study.

4. Conclusion

Dividend payout of firms affects the movement of its stock price and inconsistent dividend payment has been found to lead to rapid movement and fluctuation of stock prices. Other factors apart from dividend payout have been theorized to impact on the rapid movement of stock prices. This study examined just few of these factors so as to access the significance of these factors on stock price movement in the major African markets. Factors like leverage, firm size, earnings per

share and dividend yield were considered in this study and findings varied for each of the factors examined and across sampled economies. Based on research findings, this study concludes that leverage has a significant impact on stock price volatility in Kenya, Nigeria and South Africa and by extension the African market. It is also the conclusion of this study that firm size is a strong determinant of stock price volatility in Africa market with peculiarity to the Kenya and South African Market. And finally, this study confirms that earnings per share, dividend payout and dividend yield are a strong determinants of stock price volatility in the Africa market.

Premise on research findings, the study recommended that dividend payment should be consistent or rather smoothed so as to temper volatility of stock prices especially since dividend payment is found to be significant and has the ability to either amplify or temper stock price volatility. Dividend when smoothened is expected to improve corporate performance as firms will have increased value in share price since their share will become competitive in the market hence a reduction in its volatility. Secondly, in order to stabilize stock price, higher dividend should be paid out so as to increase the dividend yield curve. This is especially important as dividend yield is found to be a determining factor in the volatility of stock price.

Since higher earnings per share indicate higher firm value, it is recommended that firms engage in investment with positive net value so as to increase net profits thus increasing the earnings per share. Since higher earnings per share will translate into higher dividend payment, corporate performance is expected to be engendered and improved. Firms should also do well to cut down on debt especially as it has been found to amplify stock price volatility. Firms should rather look to internal source of financing or equity to finance investment and consider debt only as the last resort. However, an optimal capital mix should be adopted such that the level of equity does not lead to higher cost of financing so as to improve corporate performance. Lastly, firms should engage in economies of scale especially as enjoyed by bigger firms since bigger firms are found to have lesser stock price volatility. Firms should be more efficient and effective in carrying out operational activities so as to lower marginal cost of production/service.

References

- Abubakhar, S. (2012). Dividend payout ratio and share price movement of listed non-service firms in Nigeria: Empirical study. Retrieved from www.abu.edu.ng/publications/2021-04-11-163138_1156.docx
- Adesola, W.A., & Okwong, A.E. (2009). An empirical study of dividend policy of quoted companies in Nigeria. *Global Journal of Social Sciences*, 8(1), 85-101.
- Agbatogun, T.O., Kajola, S.O., & Akinbola, O.A. (2019). Influence of dividend policy on stock price volatility of non-financial firms listed Nigerian stock exchange. *Izvestiya Journal of Varna University of Economics* 63(1), 35-49.
- Al-Shawawreh, F.K. (2014). The impact of dividend policy on share price volatility: Empirical evidence from Jordanian stock market. *European Journal of Business and Management*, 6(38), 133-143.

-
- Amadasu, D.E. (2011). Dividend is relevant: A restatement. *African Research Review Journal*, 5(4), 60-72
- Araoye, F.E., Aruwaji, A.M., & Ajayi, E.O. (2019). Effect of dividend policy on stock price volatility in Nigeria stock exchange. *International Journal of Accounting and Financial Reporting*, 9(2), 219-231.
- Baskin, J. (1989). Dividend policy and the volatility of common stocks. *The Journal of Portfolio Management*, 15(3), 19-25.
- Bennett, C. & Gil, M.A. (2012). Measuring historical volatility. *Santander Investment Bolsa, Sociedad de Valores, S.A*, 1-11.
- Black, F. (1976). The dividend puzzle. *Journal of Portfolio Management*, 2, 5-8.
- Black, F., & Scholes, M. (1974). The effects of dividend policy on common stock prices and returns. *Journal of Financial Economics*, 2, 1-22.
- Bollerslev, T. (1986). Generalized autoregressive conditional heteroskedascity. *Journal of Econometrics*, 31(3), 307-327.
- Cozorici, A.N. (2015). Dividend policy, signal information for the capital market. *The USV Annals of Economics and Public Administration*, 15, 87-94.
- Cristea, C., & Cristea, M. (2018). The influence of dividend policy on the volatility of shares in the Romanian equity capital market. *Annual Session of Scientific Papers IMT ORADEA*, 1-4.
- Dewasiri, N.J., & Eerakoon, Y.K. (2014). Impact of dividend policy on stock price volatility: Evidence from Sri Lanka, 11th *International Conference on Business Management*, 15 27.
- Echabi, A., & Azouzi, D. (2016). Determinants of dividend payout ratios in Tunisia: Insights in light of the jasmine revolution. *Journal of Accounting, Finance and Auditing Studies*, 2(1), 1-13.
- Engle, R. F. (1982) Autoregressive conditional heteroscedasticity with estimates of the variance of United Kingdom inflation. *Econometrica*, 50(4), 987-1007.
- Gordon, M. J. (1963). Optimal investment and financing policy. *Journal of Finance*, 18(2), 264-272.
- Ikechukwu, O., & Madubuko, U. (2016). Effect of consistent dividend payout on business value in Nigeria oil and gas sector. *International Journal of Managerial Studies and Research (IJMSR)* 4(7), 57-66.
- Ilaboya, O. J., & Omoye, A. S. (2012). Earnings, dividend and share price volatility in Nigeria. *The Pakistan Journal of Social Science* (3), 149-160.
- Jahfer, A., & Mulafara, A. H. (2016). Dividend policy and share price volatility: Evidence from Colombo stock market. *International Journal of Managerial and Financial Accounting*, 8(2), 97–108. doi:10.1504/IJMFA.2016.077947.

- Kajola, S., Adewumi, A., & Oworu, O. (2015) Dividend pay-out policy and firm financial performance: Evidence from Nigerian listed non-financial firms. *International Journal of Economics, Commerce and Management*, 3(4) 1-13.
- Kenyoru, N., Kundu, S., & Kibiwott, L. (2013). Dividend policy and share price volatility in Kenya. *Research Journal of Finance and Accounting*, 4(6), 115-120.
- Khan, K.I. (2012). Effect of dividends on stock prices: A case of chemical and pharmaceutical industry of Pakistan. *Journal of Management*, 2(5), 141-148.
- Lashgari, Z., & Ahmadi, M. (2014). The impact of dividend policy on stock price volatility in the Tehnran stock exchange. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 3(10), 273-283.
- Lintner, J. (1956). Distribution of income among dividends retained earnings and taxes. *American Economic Review*, 46(2) 97-113.
- Lumapow, L.S., & Tumiwa, R.A.F. (2017). The effect of dividend policy, firm size, and productivity to the firm value. *Research Journal of Finance and Accounting*, 8(22), 20-24.
- Miller, M. H., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *Journal of Business*, 34, 411-433. Doi: 10.1086/294442, Retrieved on 12/12/2019 from <http://dx.doi.org/10.1086/29444>
- Musa, I.F. (2009). The Dividend policy of firms quoted on the Nigerian stock exchange: An empirical analysis. *African Journal of Business Management*, 3(10), 555-566.
- Nadeem, N., Arfan, A., & Hazoor, S. (2014). Impact of dividend policy on stock price volatility: A case study of Pakistani capital market. *European Journal of Business and Management*, 6(11), 50-61.
- Nazir, M., Nawaz, M., Anwar, W., & Ahmed, F. (2010). Determinants of stock price volatility in Karachi stock exchange: The mediating role of corporate dividend policy. *International Research Journal of Finance and Economics*, 55, 100-107.
- Nguyen, D., & Bui, M., & Do, D. (2019). The relationship of dividend policy and share price volatility: A case in Vietnam. *Annals of Economics and Finance*, 20(1), 123-136.
- Nishat & Irfan (2003). Dividend policy and stock price volatility in Pakistan. 11th Pacific Basin Finance, Economics and Accounting Conference, 1-22.
- Njeru, R.L.M. (2015). The effect of dividend payout on the share prices of firms listed at the Securities Exchange. A research project submitted in partial fulfillment of the requirements for the award of the degree of master of business administration university of Nairobi.
- Ofori-sasu, D., Abor, J., & Osei, A. (2017). Dividend policy and shareholders' value: Evidence from listed companies in Ghana. *African Development Review*, 29(2), 293-304.
- Oyedeko, Y.O., & Adeneye, Y.B. (2017). Determinants of dividend policy: Controlling for political stability in pre-crisis, crisis and post-crisis periods. *American Journal of*

-
- Business, Economics and Management*, 5(5), 58-67. Retrieved on 6/12/2019 from <http://www.openscienceonline.com/journal/ajbem>
- Phan, T., & Tran, N. (2019). Dividend policy and stock price volatility in a emerging market: Does Ownership structure matter? *Cogent Economics and Finance*, 7(1), 1-29.
- Prachaya & Mansur (2018). Effect of dividend policy on stock price volatility in the Dow Jones U.S. index and the Dow Jones islamic U.S. index: Evidences from GMM and quantile regression. Retrieved on 30/11/2019 from <https://mp.ra.ub.uni-muenchen.de/93543/>
- Rehman, A., & Takumi, H. (2012). Determinants of dividend payout ratio: Evidence from Karachi stock exchange. *Journal of Contemporary Issues in Business Research*, 3(2), 20-27.
- Sewelen, J. (2017). Determinants of stock price volatility. A quantitative study on the Swedish stock market between 2004-2016. Retrieved on 19/11/2019 from <http://lup.lub.lu.se/student-papers/record/8935954>
- Simon, O., & Ologunwa, O. (2016). Evaluation of the effect of dividend policy on the performance of corporate firms in Nigeria. *FUTA Journal of Management and Technology Maiden Edition*, 111-120.
- Sugathadasa, D.D.K. (2018). The impact of dividend policy on share price volatility: Empirical evidence with Colombo stock exchange in Sri Lanka. *International Journal of Innovative Research and Development*, 7(8), 352-359.
- Sulaiman, L.A., & Migiro, S.O. (2015). Effect of dividend decision on stock price changes: further Nigerian evidence. *Investment Management and Financial Innovations*, 12(1), 330-337.
- Syed, A.S., & Umara, N. (2016). Stock price volatility and role of dividend policy: Empirical evidence from Pakistan. *International Journal of Economics and Financial Issues*, 6(2), 461-472.
- Tariq, A. (2015) The joint determinants of leverage and dividend policy: A balanced panel study of non-financial firms of Indian and Pakistan. *European Scientific Journal*, 11(10), 311-328.
- Toby, A. (2014). Empirical test of the dividend policy irrelevance hypothesis in the Nigerian context. *Research Journal of Finance and Accounting*, 5(6), 167-178.
- Udobi, P., & Iyiegbuniwe, W. (2018). A test of Miller and Modigliani dividend policy irrelevance theory in Nigerian stock exchange. *American Finance & Banking Review*, 2(2), 1-13.
- Uyaabo, S., Atoi, V., & Usman, F. (2015). Nigeria stock market volatility in comparison with some countries: Application of Asymmetric GARCH models. *CBN Journal of Applied Statistics*, 6(2), 133-160.

Zainudin, R., Mahdzan, N.S., & Yet, C.H. (2018). Dividend policy and stock price volatility of industrial products firms in Malaysia. *International Journal of Emerging Markets*, 13(1), 203-217.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>)