Dividend Policy and Firms' Value Nexus: Do Walter and Gordon Relevance Theories Hold Water?

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Abstract
This study is an attempt to join on the argument on whether dividend policy is either relevant or irrelevant on the firms' market value in Nigeria. To achieve this, the data were obtained from selected 20 quoted firms from ten sectors of the Nigeria economy spanning from 2015 to 2021, taking care of the variables; dividend per share, earnings per share, and market value proxied by market price per share obtained from Nigeria Exchange Group and the firms' annual and accounting reports for the periods. In testing the specified models, all the variants of the Panel data Analysis techniques; Pooled Regression, Fixed Effects and Random Effects were employed. In addition, the prepositions of the Pooled Regression versus Fixed Effects and Random Effects versus Fixed Effects were compared using Likelihood and Hausman test respectively. The results of Pooled Regression, Fixed Effects and Random Effects found dividend per share and earnings per share significantly impacted on market value. Again, both the Likelihood and Hausman tests favour the fixed effect that the unobserved factors in firm are significant or that the correlation between observed and unobserved factors are significant. In the light of the findings, the researchers recommended among others that investors should be consistent with their dividend payment (smooth dividend payment) to attract investors. Again, this study has added to the stream of knowledge that firms should consistently pay dividends to their shareholders as a form of shareholders wealth maximization. This is a form of financial signaling or dividend announcement that will attract investors.

Keywords: *Market Price Share, Earnings Per Share, Dividend per Share, Nigeria*

1.1 Introduction

Dividend policy, a decision on the portion of total profit that will be allocated to the shareholders of the firm as well as the portion to retain for management of the firms, has generated endless controversy on whether it enhances market value or not. For instance, Gordon (1959) and Walter (1963) argued that dividend policy is relevant to firms' market value. They argued that the choice of dividend policy wholly affects the value of the firm, whereas Miller and Modigliani (1961) posited that dividends payment policy is irrelevant and does not influence the market value of the firm rather what influences the market value of the firm is earnings which is a function of investment policy. There are also number of empirical studies that joined in the argument such as Emeni and Ogbulu (2015), Simon-Oke and Ologunwa (2016), Ejem and Ogbonna (2019),

Ogunseye, Omoniyi and Eniola (2020) and others, yet no end to the controversy. Dividend policy as a financial decision that determines the amount of the company's earnings to be distributed to shareholders as dividends and the amount to be retained by the company for investment purposes have also made many managers of the firms to be in dilemma on the payout ratio, that is the amount to be paid as dividend and the one to be retained. Retained earnings are the most significant internal source of financing as firms rely on retained earnings for the company's expansion. From the shareholders point of view, a dividend is considered desirable as they tend to increase their current returns, build their trust in the company, and likewise serve as good attraction to other potential investors if the dividend yield and payout ratios are good. High payout policy means more current dividends and less retained earnings, which may result in slower growth and perhaps lower market price per share while low payout policy means low current dividends, more retained earnings and higher capital gains and perhaps higher market price per share. Hence, the objective of a dividend policy should be to maximize shareholders' return so that the value of investment is maximized (Pandey, 2001; Akram, 2020).

This study is designed to buttress the arguments of the theorists and other researchers as well to take a stand on whether the relevance or irrelevance theories or both should be relied on firms' financial decisions. Many studies have been conducted on the relationship between dividend policy and market value, with those in developed capital markets relatively early. Recently, studies on the relationship between dividend policy and market value have been growing in volume in emerging markets, but such studies are scarcely found in Nigeria. Most studies in Nigeria concentrate on the relationship between the market value of a firm and dividend policy (i.e., shareholders' preference - dividend). Again, most of this empirical research aligned with the irrelevant school led by Miller and Modigliani (1961). However, the thrust of the study is to investigate on whether dividend policy is relevant or irrelevance on the market value of firms in Nigeria. This study is anchored on the prepositions of Gordon (1959) and Walter (1963) and is focus on determining the relationship between firms' dividend per share, earnings per share and market value (proxied by market price per share) in Nigeria as well to examine if long run relationship exists between dividend policy and market value.

The remaining sections of this study are organized as follows; section two will take care of review of related literature; section three addresses the materials and methods of analysis adopted; section four analyses the data, results, and interpretation while section five handles conclusion and recommendations.

2. Review of Related Literature

In section efforts were made to examine previous works that have been done by others in this area of dividends policy and firms' market value relationship, both in conceptual, theoretical, and empirical reviews.

2.1 Conceptual Review

The concept of dividend is a well-discussed and researched aspect of corporate finance, but dividend policy remains a source of controversy despite years of theoretical and empirical research. From Lintner (1956) to Gordon (1959) to Miller and Modigliani (M&M) (1961) to De

Anglo and Skinner (1996) to date; researchers have not been able to solve the dividend question. Black (1976) opined that the more one looks at the dividend picture, the more it seems like a picture with pieces that do not just fit together. Dividend policy can be described as a mirror in which the image of the dividend object does not resemble the object. What makes dividend policy difficult to settle in theory and in practice is that the demands of the investors operate in opposing directions. Pandey (2001), the objective of dividend policy should be to maximize shareholders' return so that the value of his investment is maximized. Hence firms adopt dividend policies that maximize their values and the shareholders' return consists of two components: dividend and capital gains. The dividend could be referred to as that part of the enterprise earnings that is given to shareholders as interest on their investment. Also, it represents the return to investors who put their money at risk in the company. The company pays dividends in the form of cash, shares or other to reward existing shareholders and encourage others that are prospective shareholders to buy new issues of the common stock at a high price. The dividend is decided by a company's board of directors and needs to be accepted by the shareholders. It is not a requirement to pay dividends to shareholders; however, it is traditionally a popular method of rewarding shareholders as part of the company's residual profit. Residual rewards refer to the funds that are left available after meeting other obligations such as paying creditors. Hence, the dividend is one of the most important policies not only to the firm but also to the shareholders, customers, regulatory bodies, and the government (Uwuigbe et al, 2012). The dividend policy, therefore, concerns a wide clientele that is related to the firm. The amount of the dividends the firm pays to the shareholders is determined using dividend policies (Nissim & Ziv, 2001. Lease et al., (2000), the practice followed by firm management in decision making concerning dividend payout is what is referred to as dividend policy. This includes the patterns and size of cash to be distributed to shareholders over a given timeframe. The policy on dividends is the total amount of profit that has been shared proportionately and paid out as dividends to the ordinary investors (Fumey & Doku, 2013). The dividend policy of the firm is the choice that the company makes on whether to make the payments of the dividends by using ash or other forms to investors. The crucial part of the policy is company decisions on whether to give or not to give dividends to shareholders, the frequency of payment and the amount of cash to be paid out. In the wide perspective, the dividend policy also comprises of the critical decisions that includes whether to distribute the cash to the company shareholders through use of the share repurchase or even specially chosen dividends rather than using method of regular payment of the dividends or relying on the stock rather than distribution of cash as demonstrated by (Lease et al., 2000).

The dividend is one of the ways a firm diverts its earnings to the shareholders. Dividend-paying companies normally pay out dividends at regular intervals, such as quarterly, semi-annually, or annually. Dividends can be paid in the form of cash or additional shares. In the case where a share dividend is paid, the total numbers of outstanding shares increase and generally reduce the price per share. On some occasions, companies do give out special dividends on top of the regular payout. Broyles (2003) simply defined cash dividends as payments by a corporation to its equity shareholders. Broyles further enlightened how corporate boards of directors like paying dividends at a sustainable level, and most believe that shareholders favor steady growth in dividend income. So, companies with highly variable earnings tend to pay out a lower proportion of earnings to shareholders. More so, firms tend to adopt dividend policies that maximize their values. But

coming up with a dividend policy is challenging because investors prefer both (Broyles, 2003). Dividend policy is the policy of the firm on how much is retained in Business. Dividends are usually decided by the board of directors and paid to the shareholders of record. Dividend payment is justified on the ground that dividends are cash in hand whereas capital gains are cash in the bank (Al-Malkawi, 2007).

The market value on its own represents the value of a company according to the stock market. It is a generic term that represents the price an asset will get in the marketplace. Amollo (2016) defined firm value as a financial measure indicating the valuation by the market for the entire firm. It is the total of claims from all the investors that is secured and unsecured creditors and both preferred and common equality holders. Pandey (2001), the market value of an asset or security is the current price at which the asset or security is being sold or bought in the market. The market value per share is expected to be higher than the book value per share for the profitable, growing firm. Several factors influence the market value per share, and therefore, it shows wide fluctuations. What is important is the long-term trend in the market value per share. In an ideal situation, where the capital markets are efficient and in equilibrium, the market should be equal to the present (or intrinsic) value of a share. Furthermore, Singh (2010) defined market value as the equilibrium point on the supply and demand graph, where the demand and supply curves meet. Thus, market value is decided based on the number of people who demand a commodity and the number of commodities that the sellers are capable of selling. The international valuation standards went ahead to define market value as the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's - length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion. A firm value is established by the price that is currently quoted at which all shareholders use to either sell or buy shares at a given period i.e., shares are outstanding times price per share, this has nothing to do with the assets of the company. It is only what investors are willing to pay for, some companies sell at many times their value in assets while others sell at a discount to assets (Helfert, 1996).

Value can be estimated using dividend valuation models where present value from an expected future stream of dividend is computed. If the predictions are correct, the valuation will be reasonably accurate, but if the forecast were off target, such would not be the case. If a firm fails to pay dividends, then the dividend valuation makes little sense. If a firm were never to pay dividends, would the company cease to have value? Probably not! If the expectation exists that retained earnings were being reinvested to increase the asset base of the company, the firm will have some value (Hanlon et al, 2003). Al-Malkawi (2007) argues that in this environment, many investors prefer to have capital gains from appreciating stock prices rather than dividends. Nevertheless, there has always been the “bird-in-hand” philosophy that dividend earnings are valuable because, once paid to the shareholder, the company cannot take them away. While it is true that dividends do have information content and these influence expectations, raising dividends is a guarantee that the common stock will also rise in the short run. While increased dividends generally increase common stock value, this is not always the case. If a 4 company’s overall performance is questionable, then raising dividends may not encourage investors. On a market with many similar properties and many well-informed actors, it should be expected that the

demand curve is almost horizontal (up to a certain transaction volume) at the price that is rational to pay. The actors on the market know the market value of the property and no one would be willing to pay more than the expected market value, when new information arrives, the demand curve shifts, but still, all (active) participants on the market would be willing to pay about the same price. Moreover, it has been discovered that the dividend policy of a firm always has short-term or long-term effects on the market price of its shares. It is quite difficult to clearly identify the effects of payout on a firm's valuation. The valuation of a firm reflects so many factors that the long-run effect of payout is quite difficult to separate.

2.1.1 Financial Signaling

Cash dividends, then, may be viewed as a signal to investors. Presumably, firms with good news about their future profitability will want to tell investors. Rather than make a simple announcement, dividends may be increased to add conviction to the statement. When a firm has a target-payout ratio that is stable over time and it changes this ratio, investors may believe that management is announcing a change in the expected future profitability of the firm. The signal to investors is that management and the board of directors truly believe things are better than the stock price reflects. In this vein, investors draw inferences about the firm's internal operating cash flows from the dividend announcement. The notion is based on asymmetric information. Management knows more about the true state of the company's earnings than outside investors. Meanwhile, dividend signaling is a theory that suggests company announcements of an increase in dividend payouts act as an indicator of the firm processing strong prospects (Broyles, 2003). The rationale behind dividend signaling models stems from game theory. A manager who has good investment opportunities is more likely to 'signal' than one who doesn't because it is in his or her best interest to do so. However, over the years the concept that dividend signaling can predict positive future performance has been a hotly contested subject. Many studies have been done to see if the market's reaction to a 'signal' is significant in support of this theory.

2.2 Theoretical Review

The controversial nature of dividend and retention policies on firms' value has given rise to several theories with attempts to explain it. Some of these theories are even contradictory to one another.

2.2.1 Dividend Irrelevant Theory

Modigliani and Miller advocated that the dividend policy of a firm is irrelevant, as it does not affect the wealth of the shareholders. Thus, dividends are irrelevant, and the value of a firm is independent of its dividend policy. The value depends on the firm's earnings, which result from its investment policy. Once the investment policy of a firm is formulated, dividend decisions are of no significance in influencing the value of the firm. Since Miller and Modigliani (1961) developed the irrelevance theory, the controversy of dividend policy has lingered to date. They argued that in a world of perfect capital markets where the market price cannot be influenced, absence of personal (dividend) and corporate taxes (capital gain) or equal tax rate, fixed investment policy, absence of transaction costs, the rationality of investors, there is no relationship between dividend policy and market value. This theory argues that dividends policy does not have a significant effect on a firm's value and is therefore irrelevant (Okpara, 2012). Miller-Modigliani (1961) was able to advance the

model which proposed that the dividends policy of the company is not relevant to both stockholders and the shareholders' wealth because it remains to be unchanged because the aspects of the policies of investments are very fixed hence any alteration in the present structure is well financed by the very priced stock sales. The Modigliani–Miller (MM) theorem, the division of the retained earnings into the dividends and the new investments do not usually influence the firm's value. It is therefore only patterns of the investment and hence the firm's earnings that have an impact on the price of the share or even the firm's value. This theory continues to explain that the investors aren't even concerned with the dividends policy of the company because they can end up selling a portion of their investment portfolio if they are in needs of the cash (Fama & French, 2001). Miller and Modigliani (1961) were able to present a very strong argument saying the 12-company value won't be impacted by any policy of dividends all over the world without the transactional cost or taxation. It does not make any difference in the world that has no taxation, the dividend payout policy is delivered via value. Miller and Modigliani began by assuming that the two companies are synonymous in all aspects except when it comes to the current period timing of dividends payout. The streaming of their future flow of cash stemming from operating activities is similar, the investments outlays that were planned are also identical, and all dividends paid in future from the second period are also synonymous. The dividends policies are not very important to the shareholders' wealth in any world that lacks taxes, the transaction cost, and the information asymmetry. This is because in absence of taxes, the value delivery choices via either cash dividends or using the acquired cash to repurchase the other share is a matter of indifference to the investors. The Miller-Modigliani approach takes into consideration each of the following assumptions: the shareholders have access of free information that is available for them; the investors have the rational behavior that there is an existence of a perfect capital market; there is no existence of the time lag as well as the transactional cost; the securities can be able to be split into any desirable parts e.g. there is no floatation cost and taxes, the decisions of investments are firmly taken hence their profits are well known with a lot of certainty and the final one is that; their decisions are not affected by the dividend policies (Ross et al, 2009).

2.2.2 Dividend Relevance Theory

The relevance theory was developed by Walter and Gordon's model. The theory argues that the choice of dividend policy wholly affects the value of the firm (Walter, 1963). It revealed the importance of the relationship between a firm's rate of return and its cost of capital in determining the dividends policy that maximizes the wealth of shareholders. Simply the theory informs that investors prefer higher dividends to lower dividends at any given time, assuming dividend level is held constant at every other period. That means, if the dividends per share for each date is held constant, the stock price will rise. Gordon's model contends that the dividend policy of the firm is relevant, and the investors put a positive premium on current incomes/dividends. He argues that dividend policy affects the value of shares even in a situation in which the return on investment of a firm is equal to the required/capitalization rate (i.e., r = ke) (Gordon, 1959) in support of the relevance of dividend, proposes that there are three possible reasons for buying dividends shares by investors: First, both the dividends and earnings: second, the dividends and third, earnings. He assessed the three hypotheses by deriving the relationships between variables that follow each hypothesis. Walter's model is of the view that the investors are indifferent between dividends and retention. Relevance of dividend policy based on the uncertainty of future dividends Gordon,

(1962) suggested a valuation model relating the market value of the stock with dividend policy. Gordon studied dividend policy and the market price of the shares and proposed that the dividend policy of firms affects the market value of stocks even in the perfect capital market. He stated that investors may prefer present dividends instead of future capital gains because the future situation is uncertain even in a perfect capital market. Indeed, he explained that many investors may prefer a dividend hand to avoid risk related to future capital gain. He also proposed that there is a direct relationship between dividend policy and market value of shares even if the internal rate of return and the required rate of return will be the same.

2.2.3 Bird in Hand Theory

Gordon (1962) and Lintner (1962), proposed a “Bird in Hand" theory in support of the relevance theory. This theory argues that investors always prefer to have current dividends (a bird in the hand) to capital gains (two in the bush) because capital gains relate to the future which is much riskier than present dividends. Gordon (1962) argues that outside shareholders prefer a higher dividend policy. They prefer a dividend today to a highly uncertain capital gain from a questionable future investment. Shareholders are risk averse, fear taking risks, and only preferring little risk or certainty where dividend reimbursement is much more assured than profits and gains that are solely reliant on the law of demand and supply in creating market prices. Al-Malkawi (2007) maintains that in the current world where the information is asymmetric, the valuation of the dividends is done in a different way from that of the retained earnings which is also known as capital gain. The future cash flow is an owing hence most of the investors will prefer to take 13 dividends than retain their earnings. This argument has the backing of (Gordon & Shapiro, 1956, despite the heavy criticism it has gathered with minimal hypothetical support coming it’s on way. Lintner (1962) maintained that investors seem to have imperfect knowledge concerning the profitability levels of the company. This is due to higher tax rates that are put into the cash dividends then the period when the gain on the capital is fully realized on the selling of the shares hence dividends can fully function as the cash flow signal. Walter (2006) makes an argument that despite the tax disadvantage that arises from the payment of the dividends, management is still able to pay even larger dividends so that it can send a positive signal on the company’s future dividend prospects. Some of the investors prefer to have capital gain used and remain with cash in hand. Al-Malkawi (2007) assumes that the assets that the management invests in always outlives managers’ stay in those positions hence asset ownership is transferred over a certain timeframe to newly placed management. This means that investors value dividends more than the unseen retained earnings. Hence investors will be willing to pay a higher price for firms with dividends payments and as a result, maximize the value of the firm (Gordon, 1959; Walter, 1963). One of the reasons why investors may prefer dividends over capital gains is due to the certainty of dividends, compared to capital gains which are uncertain. Though this argument has been widely criticized and has not received strong empirical support, the main assumptions are.

- Investors are taxed at a higher rate than when the capital gain is realized on the sale of a share.
- Also, dividends function as a signal of expected cash flows.

2.2.4 Tax Preference Theory

Tax preference theory believes that a higher dividend payout is pledged for the lower tax brackets and vice versa (Elton & Gruber, 1970). This theory was given by Litzenberger and Ramaswamy, (1979), in which they viewed that investors would like those firms who pay lower dividends which is due to tax evasion purposes. It is evident that when companies earn a profit, they have two options, whether to announce a dividend or retain this amount for future investments. When companies pay dividends, the shoulders in return must pay taxes at two levels, first, at the dividend income level and second in the shape of income tax. In this theory, the researchers assumed that investors prefer those companies which have low payments in the shape of the dividends because, in dividend share, the investors must pay taxes twice.

2.2.5 Clientele Effect Theory

This theory was advanced by Petit (1972). It states that preferences for dividends vary from one group of clients or shareholders to another, depending on their other sources of income levels. There is a higher preference by low-income earners to sustain their daily consumption whereas high income shareholders seeking to avert paying high taxes prefer low dividends. At the growth stage as affirmed by Al-Malkawi (2007), the firm tends to attract clients desiring capital growth as they pay low dividends, while at maturity, the firm is attractive to shareholders in need of immediate income from dividends due to the high dividend reimbursement at this stage. The clientele effect is categorized into those driven by tax effects and transaction cost. His argument was that shareholders in the upper tax brackets like companies paying no or little cash dividends to attract reward share price increases and vice versa. On the other hand, clients induced by transaction cost emerge with small investors relying on dividend compensation to meet their consumption and other needs, seeking firms that satisfy them due to their inability to foot high transaction costs in security selling. The shifting of shareholders in and out of the organization to achieve equilibrium occurs when the firm establishes a new dividend policy. High income clients will migrate to companies with low-rate dividend payments, as low-income investors move in the opposite direction, seeking high dividend paying firms. The dividend policy is consistent or constant with the number of shareholders the firm has acquired at equilibrium. At equilibrium, dividend policy decisions are rendered irrelevant due to their inability to cause any investor or shareholders movements and shifting (Pandey, 2009). Stocks of companies that meet certain needs tend to attract more investor preferences, because of varying tax treatment for capital appreciation and dividends that face different shareholders, and some transaction costs in trading in securities or shares. Miller and Modigliani (1961) argument, investors seek firms that offer desirable benefits to minimize costs. Also, the company's dividend policy would either attract or scare off different clientele depending on their preferences. The company's dividend policy can be changed by client effects; however, the dividend policy remains irrelevant because one client is as good as the other thus their shifting has negligible impact.

Clustering the shareholders in companies to match their investment appetite is defined as the clientele effect. Investors under the low tax bracket or tax-exempted organizations that need current cash flow tend to invest in companies that pay a high dividend. In general, dividend yields decrease as the tax disadvantages of dividends increase (Pettit, 1977). According to this theory, a company should make dividend policies that may attract maximum investors (clientele). The theory postulates that the company stock prices change according to the demand and goals of the

investors, in a reaction to the company's dividend policies, tax policies or any other related policies. This theory thus assumes that shareholders are attracted towards the company policy and make the investments accordingly. When a company changes its policy, shareholders also change its stock and hold stocks that would satisfy their needs. As a result of these changes, the stock price fluctuates in the market.

2.2.6 Signaling Theory.

Signaling theory posits that dividends are used to communicate firm profitability to outside shareholders since investors have asymmetric information (Bhattacharya, 1979). Ross (1977) argues that in any inefficient market, the dividend policy can be used by the management to throw a signal concerning very crucial information, known to them only, to the market. For instance, when firm management decides to pay more or huge dividends, it sends signals to the potential investors that the company is strong financially hence attracting more new investors in the future. Therefore, this automatically increases the price of the share. Though Modigliani and Miller (1961) assume that both management and investors have the full information about the company, many of the researchers have countered this argument because management is able to get timely information about the company than the external stakeholders, investors included. This argument thus results to a substantive parity between management and investors. Dividends are employed by management to secretly communicate important messages to company owners in a way to eliminate the parity or gap between the two parties (Al-Malkawi, 2007). The amount of dividend payment reveals the facts on the strength of the company financially, which is entirely proved by the market share price on the financial markets (Petit, 1972). The price increase of the shares can easily be interpreted as brighter prospects because of the good news. Management can only increase the dividend when they fully establish that the retained earnings have increased permanently by Lintner (1956).

2.2.7 Agency Cost Theory

Easterbrook (1984) introduces the agency theory of dividends proposing an inverse relationship between dividends and agency costs. The term agency cost is basically used to refer to the conflict of interest that has been in existence between the managers and investors for decades (Ross et al, 2009). This always occurs because of the management acting in favour of their personal interest at the expense of the company owner’s or shareholder’s interest. The conflict of interest between shareholders and managers never exists because managers are perfect agents of investors according to Miller and Modigliani (1961) assumptions. Most of the costs are bought in by the investors, hence the company shareholders with the excess free cash flow need a high level of dividend payment as eluded by Al-Malkawi (2007). The agency cost between the bondholders and the shareholders may arise because of shareholders demanding a high dividend payout than bondholders who decide to put a reasonable debt that enhance the availability of cash to enhance their debt repayment. Easterbrook (1984) came up with two major costs: the risk versing cost managers’ side and the cost of monitoring the managers. The firm’s value is positively impacted by the dividend policy in place because it’s technically deployed to minimize agency challenges between managers and shareholders through reduction of agency costs. The theory presents the implication that a company’s implementing high dividend outlay ratio has greater firm value as the agency costs are reduced (Gitman, 2010).

Agency costs arise when conflicts of interest exist between management and shareholders. The management may spend lavishly on prerequisites or over-invest to enlarge the size of their firms beyond the optimal size since executives' compensation is often related to firm size. Debt creation may reduce the agency's costs by reducing available cash flow for spending at the discretion of the managers. Default on making debt service payments would act as a motivating force to make organizations more effective (Jensen, 1986)

2.2.8 The Theory of Residual Dividend

The theory points out that a firm only pays dividends to shareholders from remnant of earnings after taking all projects with positive Net Present Value (NPV). The assumption here is that retained earnings form that best long-term capital source of financing in the firm due to its availability and economic status as compared to other sources of funding. Also, the absence of floatation cost in their utilization to fund new investment projects makes them more attractive to firms. Thus, reserve for financing investments emerges as the first claim on earnings after taxation and preference dividend payment. Dividend policy is depicted as a passive and irrelevant factor based on this theory's hypothesis. It has little or no effect at all on the value of the firm though firm's decisions to invest impact on the value of the company (Pandey, 2009).

2.3 Empirical Review

Finance and economic researchers have made frantic efforts to resolve the lingering controversy on whether the firm's choice of dividend and retention policy affects or does not affect its market value. For instance, Gabriel (2011) examined the impact of dividend policy on firm value. The aim of the paper is to investigate the impact of dividend policy on firm value. The sample consists of sixty-three non-financial firms listed on the Bucharest Stock Exchange over the period 2001-2011. Employing a fixed effect model, who found that dividend pay-out ratio positively influences firm value after controlling for other firm -specific variables. Furthermore, leverage and firm size were found to have a positive effect on firm value.

Okafor, Mgbame, and Chijoke-Mgbame (2011) studied Dividend Policy and Share Price Volatility in Nigeria. A multiple regression analysis was used to explore the association between share price changes and both dividend yield and dividend payout ratio. Of the two measures of dividend policy, dividend yield showed a generally negative impact on share price risk. The other measure of dividend policy, dividend payout ratio, showed negative influences in some years and positive influences on others though all were at lower significant levels. The study supports the fact that dividend policy is relevant in determining share price changes for a sample of firms listed on the Nigerian Stock Exchange.

Ashamu, Abiola, and Bbadmus (2012) in their study Dividend Policy as Strategic Tool of Financing in Public Firms: Evidence from Nigeria, investigated the effect of dividend policy on the value of the firm. It examined the relationship between dividend payment and payout ratio, found out the percentage of earnings to be retained or ploughed back into the company and identified the various factors that determine the pricing of shares. Secondary data obtained from

Nigeria Stock Exchange Factbook were used for the study. Data obtained were analyzed regression analysis with the aid of Statistical Package for Social Science (SPSS). The study finds out among other things that the changes in the payout ratio of a company significantly determine the changes in the value of the company. It was therefore recommended in the study that the policy of regular dividend payout should not be changed arbitrarily since it has a serious effect on the investor's attitude and the financial standing of the organization. The result has a clear implication for investing in the public, government policymakers, and the firm's management.

Ordu, Enekwe, Chinedu, and Anyanwaokoro (2014) studied the effect of dividend payment on the market prices of shares in Nigeria: A study of 17 quoted firms using time series on dividend per share, dividend yield, and dividend payout ratio that ranges between 2000 and 2011. The model specification for the analysis of data is ordinary least squares techniques applied as panel estimation. The results suggest a positive effect between market price per share and dividend per share confirming that a rise in dividend per share brings about an increase in the market price per share of quoted firms; that dividend yield does not have a significant positive effect on the market prices of shares of quoted firms in Nigeria; that there exists a direct relationship between market prices per share and dividend payout ratio of selected firms on the NSE.

Kiuru (2014) studied the relationship between Dividend and Firm's Performance. The study used 28 firms that are listed from the different sectors in the Nairobi Stock Exchange for the period 2006-2012. Audited financial statements were used to determine the relationship between dividends and firm performance. The data were analyzed by using descriptive statistics as well as inferential statistics. Descriptive statistics were useful for coming up with an understanding of the data and thus helped in organizing and summarizing the data while inferential statistics were to help in making valid conclusions from the data. Correlation and regression analysis were used to find the degree relationship and thus help in fulfilling the purpose of the study. The results of the relationship between dividends and firm performance showed that there exists a relationship between dividends and firm performance. There was a positive relationship between net profit after tax and total assets, revenues, and dividends as shown by the positive coefficients. The independent variable: total assets, revenues, and dividends all significantly affect firm performance. The results also showed that the extent of the relationship between dividends and firm performance was significant. This in fact shows that dividends have a significant influence on firm performance as do revenues and total assets.

Sew, Mohamed, and Ahmad (2015) in their study examined the relationship between dividend policy and share price volatility in the Malaysian market. A sample of 319 companies from the Kuala Lumpur stock exchange was studied to find the relationship between stock price volatility and dividend policy instruments using regression. Dividend yield and dividend payout were found to be negatively related to sharing price volatility and were statistically significant. Firm size and share price were negatively related. Positive and statistically significant relationships between earning volatility and long-term debt to price volatility were identified as hypothesized. However, there was no significant relationship found between growth in assets and price volatility in the Malaysian market.

Emeni and Ogbulu (2015) examine the relationship between dividend policy and market value of firms in the financial services sector of the Nigerian economy. The study used panel data constructed from the financial statements of firms listed on the NSE for a period of 10 years, from 2002-2011. The ordinary least squares (OLS) statistical technique was used for data analysis. The result of the study shows that cash dividend, stock dividend, and investment policy have a negative but not significant relationship with the market value of firms in the financial service sector of Nigeria, while earnings were found to have a positive and insignificant relationship with market value (though significant at 10% level of significance).

Oladipo (2015) examined the effect of dividend policy on the market price of shares in Nigeria; the methodology adopted was Pearson's product-moment correlation to evaluate the data collected from the fifteen companies. The study revealed among other things that both internal and external factors affect dividend policy and hence a holistic approach to dividend policy becomes inevitable if a generally acceptable decision is to be taken. On this note, the study recommends inter alia that policymakers should be well versed in the knowledge of those interactive forces within their environment, which must be considered to arrive at a sustainable dividend policy for the generality of the interest parties.

Simon-Oke and Ologunwa (2016) evaluated the effect of Dividend Policy on the Performance of Corporate firms in Nigeria using time series data generated through the publications of Nigeria Stock Exchange and financial statements of the companies under review. The study employed OLS multiple regression analysis techniques to establish the relationships among the variables of dividend policy and the corporate performance of firms in Nigeria. The findings reveal that dividend policy in Nigeria remains a function of strong dynamic variables such as return on investment (ROI), earnings per share (EPS), and dividend per share (DPS). Evolving knowledge of the true determinants of dividend policy as a prerequisite should be a long-term solution to the inconclusive nature of the debate on the relevance of dividend policy to corporate performance in Nigeria.

Amollo (2016) aimed to discover the influence of dividend policy on firm value for commercial banks in Nigeria using regression and correlation analysis. The result found a strong positive correlation between dividend payout ratio and firm value among commercial banks in Kenya.

Egbeonu, Edori, and Edori, (2016) investigated the effect of dividend policy on the value of firms. The data employed in the study was computed as a weighted average of five-year summary extracted from the audited financial reports of firms selected at random from Nigeria stock exchange; in performing the analysis, rigorous econometric tools such as unit root stationarity test, multiple OLS regression, Granger causality test, impulse response innovation, and variance decomposition tests were all employed. The result of the study revealed that the dividend per share is significant and inversely related to the share value of the firm while earnings per share is both positive and significant to the share value of firms.

Anton (2016) in his study, the Impact of Dividend Policy on Firm Value. A Panel Data Analysis of Romanian Listed firms. The study consists of sixty-three non-financial firms listed on the

Bucharest Stock Exchange over the period 2001-2011. Employing a fixed-effects model, he found that the dividend payout ratio positively influences firm value after controlling for other firm-specific variables. Furthermore, leverage and firm size were found to have a positive effect on firm value.

Ozuomba and Ezeabasili (2017) examined the possible effects of dividend policy on the value of a firm with 10 quoted companies in Nigeria from 1995 to 2015. The study made use of multiple regressions on the secondary data (market price per share, earning per share, and dividend) as a signaling model and proves that firm value is greatly influenced by dividend policy.

Budasgaga (2017) examined the impact of dividend payment on the value of firms listed on the Istanbul Stock Exchange. The study adopted the residual income approach based on Ohlson's (1995) valuation model. By testing different statistical techniques, fixed effects are applied on panel data for 44 firms listed for the period of 2007 -2015, the findings show a positive significant relationship between dividend payment and the value of firms. The results tend to support agency cost rather than the signaling hypothesis explanation.

Bamidele, Iko, Lugman, and Olawele (2018), examined the effect of dividend policy on the market value of the common stock of firms listed on. the Nigeria Stock Exchange. The study is motivated by an unsolved issue on dividend policy in financial management. Panel data set over the period of 2010 - 2014 was obtained from the audited annual report and daily stock of the selected firms listed in the NSE. The results of the study revealed that the payout ratio (POR) has a positive effect on stock price, though not significant while earnings per share (EPS) and size have a significant positive relationship with a stock price though significant while, market to book value (MBV) has an insignificant positive effect on the stock price.

Odum, Odum, Omeziri, and Egbunike (2019) evaluated the impact of dividend payout ratio on the value of a firm with a listed firm on the NSE from 2002-2016. The study made use of panel's ordinary least square regression techniques. The result of the study revealed that the profitability ratio and leverage ratio positively and significantly impact the value of the firm.

Ejem and Ogbonna (2019) investigated dividend policy and firms' value in Nigeria. This study made use of 24 quoted companies selected from 10 sectors of the Nigerian economy from the firm's annual reports and accounts for the period of 2012 to 2017. The results of the descriptive statistics found that a few companies are paying high dividends, while the rest of the companies are paying very low or no dividends. The researchers fitted the three conventional models of panel data analysis and found dividend per share insignificantly impacts firms' value. Likelihood ratio and Hausman tests rejected the null hypothesis that unobserved variables have no significant relationship with observed variables.

Ogunseye, Omoniyi and Eniola (2020) studied the Impact of Dividend Policy on Shareholder's Wealth of Selected Quoted Firms in Nigeria. A sample of 20 companies from the Nigeria stock exchange for the period 2015 to 2019 was purposively selected. The study carried out descriptive

and inferential analysis including the Hausman test, fixed effect regression model to access the effect of dividend policy on the shareholder's wealth of listed firms in Nigeria. The regression results showed that dividend share per share (DPS) and retained earnings (RE), independently has a negative but insignificant relationship with market price per share which is used as a proxy to measure the shareholders' wealth while return on equity (ROE) has a positive but insignificant relationship with market price per share which is used as a proxy to measure the shareholders' wealth. The study concludes that there is a negative but insignificant relationship between dividend policy and the shareholders' wealth of Nigerian firms listed on the Nigeria Stock Exchange.

Akram (2020) examined the impact of cash dividends on the market value of banks listed in the Middle East and North African (MENA). The study adopted the residual income approach based on Ohlson's (1995) valuation model. By testing different statistical techniques, the fixed effect is applied on panel data for (144) banks listed on 11 MENA stock markets over the period 2000–2015. The results revealed that current dividend payouts and dividend yield do not provide information relevant to the establishment of market values in MENA emerging markets; thus, they have no material impact on MENA banks' market values. This lack of current dividend payment effect is consistent with Miller and Modigliani's (1961) dividend irrelevance assumption: there is no evidence of either an informational or real cash inflow effect of current dividend payments.

3. Materials and Methods

This section is the design, procedure for information gathering, and the methods of statistical analysis. The layout is as follows: sources of data, techniques for data analysis, model specification, and Operational Function (Apriori Expectation).

3.1 Type and Source of Data

The required data for this work is obtained from secondary sources, mainly from the annual reports and statements of accounts of various firms and Nigeria stock exchange (NSE) fact books. The secondary data will comprise 20 quoted firms from ten sectors of the Nigerian economy spanning from 2015 to 2021. The three basic variables in the data are earnings per share, dividend per share, and market value. Data for Market value (market price per share) and data for earnings per share were obtained from the Nigeria stock exchange statistical bulletin while data for dividend per share was got from firms' Annual Reports and Accounting for the periods. The study will make use of panel data spanning from 2015 to 2021.

3.2 Specification of the models

The emphasis of this study is to find out empirically the relationship between dividend policy and market value and selected variables to measure the relationship are dividend per share, earnings per share (control variable) and market value (proxied by market price per share). The relationships between the dependent variable (market value) and independent or explanatory variables are functionally and implicitly specified as follows.

Functional form.

Market Value = f (dividend policy) (1)

Market Value = f (dividend per share, earnings per share) (2)

Market value = f (DPS, EPS) (3)

Explicit form.

Pool regression model approach.

$MKTVAL_{it} = \alpha_0 + \alpha_1 DPS_{it} + \alpha_2 EPS_{it} + \varepsilon_{it}$ (4)

Fixed Effect approach.

$MKTVAL_{it} = (\alpha + Z_i) + \alpha_1 DPS_{it} + \alpha_2 EPS_{it} + \varepsilon_{it}$ (5)

$= \alpha_i + \alpha_1 DPS_{it} + \alpha_2 EPS_{it} + \varepsilon_{it}$ (6)

Random Effect approach.

$MKTVAL_{it} = \alpha_0 + \alpha_1 DPS_{it} + \alpha_2 EPS_{it} + (Z_i + \varepsilon_{it3})$ (7)

$= \alpha_0 + \alpha_1 DPS_{it} + \alpha_2 EPS_{it} + \mu_{it4}$ (8)

Where, α = Intercept,

MKTVAL = Market value of the firms, DPS = Firms Dividend per share, EPS = Firms earnings per share, ε_{it}, μ_{it} = error terms.

3.3 Method of Data Analysis

The method of analysis adopted for this study is panel data analysis with its variants; pool regression, fixed and random effects. To compare the pooled regression model with the fixed effects model, the likelihood ratio will be used while the Hausman test will be used to compare the random effect model with the fixed test model. If the null hypothesis favors the pooled model, i.e., unobserved factors, sectoral differences are not significant. Also, if the null hypothesis favors the random effects model i.e Z_i, it means the unobserved factors are uncorrelated with the explanatory variables.

3.4. Operational Function or Economic (Apriori) Expectation

From the model stated in the explicit stochastic form in 3.2 above, the expected relationship between the variables is as follows. α_1, α_2 >0, <0. α_1, α_2 are coefficients of DPS and EPS, recognizing both dividend relevance and irrelevance theories. It is expected that EPS and DPS will either positively or negatively influence the firm's market value.

4. Data Presentation and Analysis

Data on Market price per share, a proxy of Market value (MKTVAL), Dividend per share (DPS) and Earnings per share (EPS) are analyzed and interpreted in this section.

4. 1. The cross-sectional trend analysis.

Figures 1, 2 and 3 depict the cross-section trend of the variables employed in this study. Figure 1 shows that the financial services sector recorded the highest market price per share the Nigerian Exchange group followed by consumer goods and construction/real estate, within the scope of the study. In figure 2, it is observed that the services sector and oil and gas paid higher dividends within scope of the study. This is followed by agricultural and natural resources sectors, whereas

health care paid the least. In figure 3, oil/gas and services sectors recorded higher earnings per share followed by the agriculture sector, while paraded with negative earnings per share.

Figure 1, 2 and 3: Trend analysis of the cross-sectional data employed.

Figures 1,2 and 3 are separately presented below.

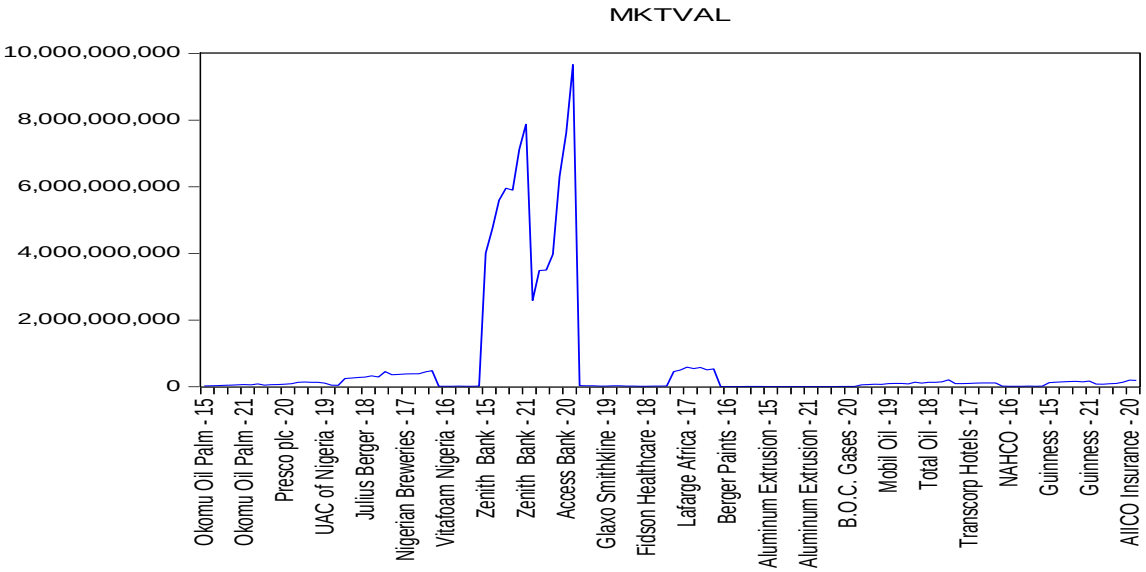

Figure 1: Cross sectional trend of Market price per share

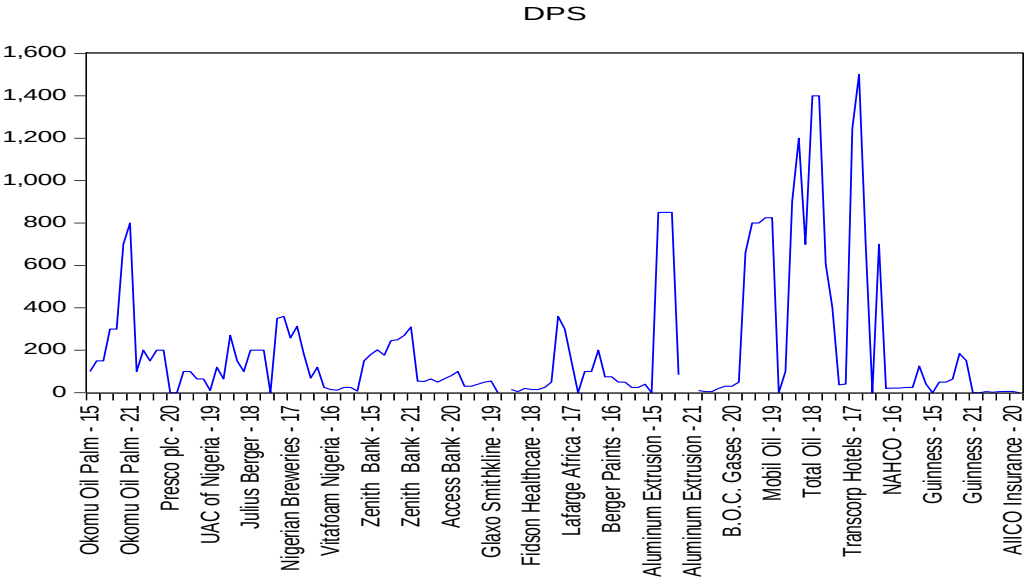

Figure 2: Cross sectional trend of Market Dividend per shar

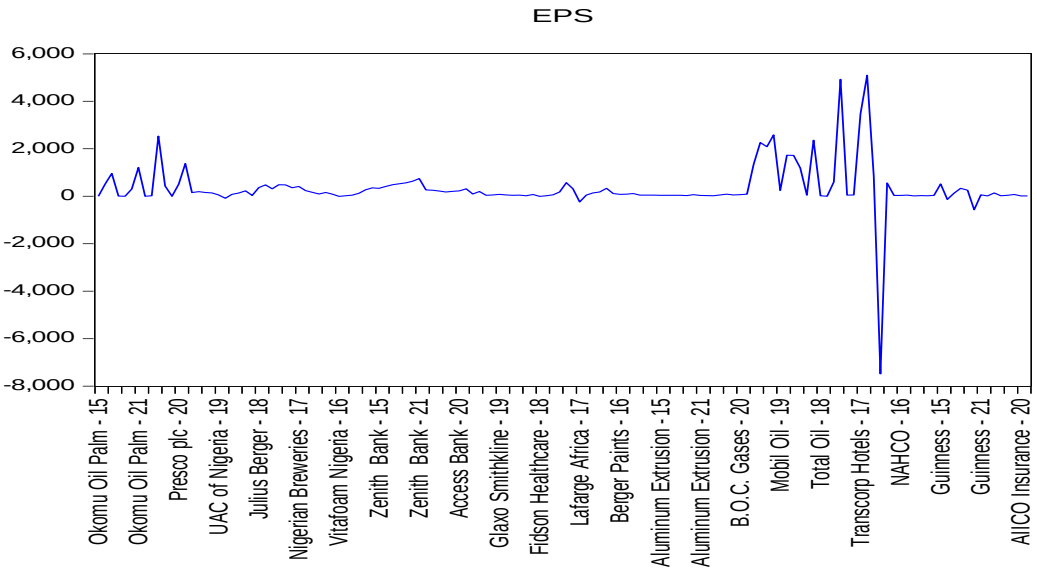

Figure 3: Cross sectional trend of Earnings per share

4. 2 Test of Long Run Equilibrium among Variables

Table 4.1 below showed the test of cointegration among variables of dividend policy and firm's market value using Kao Residual Cointegration. The table revealed that the Kao 't 'statistic recorded a coefficient of 1.787960 with P-value of 0.0369. This shows rejection of the null hypothesis of no cointegration among the variables, and it is sufficient evidence that long run equilibrium relationship exists between variables of dividend policy and firm's market value.

Table 4.1 Kao Residual Cointegration

			t-Statistic	Prob.
ADF			1.787960	0.0369
Residual variance			0.031854	
HAC variance			0.040385	

Source: researchers' computation

4.3 Estimation of Models using the Variant of Panel Data Analysis

Table 4.2 below shows the summary of results of the various panel data analysis methods. Pool regression, fixed effect, and random effect coefficients and P-values in bracket are for MKTVAL (-1) 1.013869 (0.0000), 0.821145 (0.0000) and 1.012713 (0.0000) respectively, statistically confirmed evidence suggesting that market price per share in the past can predict future market value in Nigerian firms. DPS has the following 0.023063 (0.0763), 0.051580 (0.0369) and 0.026669 (0.0576) respectively, whereas EPS has -0.027426 (0.0443), -0.030646 (0.0356), and -0.029498 (0.0263) respectively. The above results show that both DPS and EPS have a significant relationship with market price per share (MKTVAL), though EPS has a negative impact. The constant value of the fixed effect, 3.232106 (0.0193) indicated positive and significant entrance into the firm's value, suggesting that there are other variables that influence the value of the firm in Nigeria within the scope of the study. The Durbin Watson has 2.030980, 2.348298 and 2.214474

respectively**,** indicating absence of autocorrelation in all the models. This means that the results of the analysis are reliable and valid for policy formulation and implementation, hence can boldly contribute to knowledge therein. The models were respectively fitted at R-Square 0.924 (92.4%), 0.926 (92.6%) and 0.911 (91.1%). The Adjusted R-squared have coefficients of 0.904275, 0.914911, and 0.931138**,** implying that dividend policy variables jointly explained about 90.4%, 91.4% and 91.1% of the variation in market value in Nigeria within the scope of the study. The F-statistic and associated probability values are 5557.159 (0.000000), 880.8226 (0.000000) and 3691.890 (0.000000). showing the overall significance of the various models.

Table 4.2 Panel Regression Results

Variables	Pool Regression	Fixed Effects	Random Effects
MKTVAL (-1)	1.013869 (0.0000)	0.821145 (0.0000)	1.012713 (0.0000)
EPS	-0.027426 (0.0443)	-0.030646 (0.0356)	-0.029498 (0.0263)
DPS	0.023063 (0.0763)	0.051580 (0.0369)	0.026669 (0.0576)
Constant	-0.145164 (0.3170)	3.232106 (0.0193)	-0.132215 (0.4431)
R-Square	0.924096	0.926042	0.911407
AdjR-Square	0.904275	0.914911	0.931138
F-Statistic	5557.159 (0.000000)	880.8226 (0.000000)	3691.890 (0.000000)
Durbin-Watson	2.030980	2.348298	2.214474

Source: Researchers' computation*Probability values are inside bracket

4.4 Comparing Pool Regression, Fixed Effects and Random Effect

Table 4.3 below showed whether unobserved variables have significant influence on market value in Nigeria. The non-rejection of null hypothesis favours pool regression which states that the unobserved effects are insignificant while rejection of null hypothesis favours fixed effect that the unobserved and estimated factors are correlated. For Hausman, non-rejection of null hypothesis favours random effect that, correlation between observed and unobserved factors is insignificant. In table 4.3 both the Likelihood Ratio and Hausman tests rejected the null hypothesis that unobserved variables have no significant relationship with observed variables, which would have favoured both pool regression and random assertions. Therefore, the two tests favoured fixed effect that unobserved variables are important explanatory variable for firm's value.

Table 4.3 Model specification test

Specification test	Statistics
Likelihood test	1.809875 (0.0364)
Hausman test	8.393332 (0.0385)

Source: researchers' computation*Probability values are inside bracket

Having observed the effect of the factors, the researchers proceeded to check the unobserved cross effects of the firms as shown in table 4.4 below.

Table 4.4 The unobserved firms' cross effects

	COMPANY	SECTOR	EFFECT
1	Okomu Oil Palm	Agriculture	-0.083815
2	Prescoplc	Agriculture	-0.118557
3	UAC of Nigeria	Conglomerate	-0.038296
4	Julius Berger	Construction/R.estate	0.180666
5	Nigerian Breweries	Consumer goods	0.249041
6	Vitafoam Nigeria	Consumer goods	-0.303664
7	Zenith Bank	Financial services	0.801736
8	Access Bank	Financial services	0.902829
9	GlaxoSmithkline	Healthcare	-0.378371
10	FidsonHelathcare	Healthcare	-0.234517
11	Lafarge Africa	Industrial goods	0.284762
12	Berger Paints	Industrial goods	-0.511349
13	Aluminum Extrusion	Natural resources	-0.754864
14	B.O.C. Gases	Natural resources	-0.432896
15	Mobil Oil	Oil and gas	0.007322
16	Total Oil	Oil and gas	0.110142
17	Transcorp Hotels	Services	-0.008468
18	NAHCO	Services	-0.362121
19	Guinness	Consumer goods	0.119497
20	AIICO Insurance	Insurance	0.265726

Source: researcher's computation

5. Conclusion and Recommendations

This study on Dividend Policy and Firms' Market Value Relations employed 20 cross sectional units of firms' annual reports and accounts from 2015 to 2021. The panel data models as fitted, found that Dividend per share and Earnings Per Share significantly impact market value. These results corroborate with the prepositions of Gordon (1959) and Walter (1963) that dividend policy is relevant to firms' market value and that the choice of dividend policy wholly affects the value of the firm. These results contradict the postulations of Miller and Modigliani (1961), who are of the opinion that the value of firms is determined solely by the earning power or potential of the firm's assets or its investment policy. Miller and Modigliani (1963) proceed to assert that the way the earning stream is divided between dividends and retained earnings does not affect the firm's value. It disagrees with the findings of Emeni and Ogbulu (2015) whose findings are on inverse relationship between earnings and market value. It also contradicts the study of Ejem and Ogbonna (2019), that the dividend policy is irrelevant to market value and under a perfect market condition, earnings influences market value which is a function of investment policy.

In real terms, the result found in this study is aligned with the Shareholder's Wealth Maximization (SWM), which entails the maximization of the present value of all future benefits that the owners of a firm can anticipate or expect to get. If a decision made by a firm has the effect of increasing the long-term market price of the firm's share, then it is acceptable or otherwise it will be discarded. However, it is worth noting that the maximization of the wealth of shareholders translates into the maximization of the price of the common stock, thus maximizing the market value. If the price of the common share is attractive, it makes such a security marketable. Security

is marketable if there exists a ready market through which investors can transfer ownership of the security to another quickly and inexpensively (Ejem et al, 2020). Furthermore, the researcher discovered that unobserved variables are important explanatory factors that lead to differences in firms' value (performance) as confirmed by favorable output for fixed effect model. That shows that unobserved factors inherent in a firm account for its unique performance in the industry. For instance, firms' discretionary policies such as management styles can make them perform superior to their competitors in the same company. Again, the coefficient and probability values of the autonomous components (C) for the fixed effect model shows significance, suggesting that there are other factors apart from the variables employed in this study accounting for enhancement of firms' value if efficiently and effectively employed.

Based on the findings of the study the following recommendations are made:

i. The study has added to the stream of knowledge that firms should consistently pay dividends to their shareholders as a form of shareholders wealth maximization. This is a form of financial signaling or dividend announcement that will attract investors.
ii. Given the significant relationship between dividend per share, earnings per share and market value of firms within the scope of this study, firms should be consistent with their dividends payment to attract investors.
iii. Since earnings per share have a negative relationship between market value, the Nigerian government should put in place policies that will create investment friendly environment.
iv. Firms should enhance their operations by managing the resources of firms effectively and efficiently to enhance earnings per share.
v. Companies operating in the financial services sector of Nigeria should see dividend policy as a strategy towards increasing their market value.

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APPENDIX: PANEL ANALYSIS OUTPUTS

Kao Residual Cointegration Test
Series: LNMKTVAL LNDPS LNEPS
Date: 01/10/23 Time: 20:27
Sample: 2015 2021
Included observations: 140
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
User-specified lag length: 1
Newey-West automatic bandwidth selection and Parzen kernel

	t-Statistic	Prob.
ADF	1.787960	0.0369
Residual variance	0.031854	
HAC variance	0.040385	

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESID)
Method: Least Squares
Date: 01/10/23 Time: 20:27
Sample (adjusted): 2017 2021
Included observations: 67 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.401915	0.131676	-3.052302	0.0033
D(RESID(-1))	0.151389	0.118928	1.272950	0.2076

R-squared	0.001294	Mean dependent var	0.062279
Adjusted R-squared	-0.014070	S.D. dependent var	0.166201
S.E. of regression	0.167366	Akaike info criterion	-0.707873
Sum squared resid	1.820736	Schwarz criterion	-0.642062
Log likelihood	25.71376	Hannan-Quinn criter.	-0.681832
Durbin-Watson stat	1.739334		

POOL REGRESSION

Dependent Variable: LNMKTVAL
Method: Panel Least Squares
Date: 01/10/23 Time: 21:05
Sample (adjusted): 2016 2021
Periods included: 6
Cross-sections included: 20
Total panel (unbalanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMKTVAL(-1)	1.013869	0.008684	116.7533	0.0000
LNEPS	-0.027426	0.013456	-2.038115	0.0443
LNDPS	0.023063	0.012869	1.792101	0.0763
C	-0.145164	0.144304	-1.005964	0.3170

R-squared	0.924275	Mean dependent var	18.19023
Adjusted R-squared	0.944096	S.D. dependent var	2.172313
S.E. of regression	0.166919	Akaike info criterion	-0.703436
Sum squared resid	2.674753	Schwarz criterion	-0.599229
Log likelihood	39.17181	Hannan-Quinn criter.	-0.661262
F-statistic	5557.159	Durbin-Watson stat	2.030980
Prob(F-statistic)	0.000000		

FIXED EFFECT

Dependent Variable: LNMKTVAL
Method: Panel Least Squares
Date: 01/10/23 Time: 21:05
Sample (adjusted): 2016 2021
Periods included: 6
Cross-sections included: 20
Total panel (unbalanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMKTVAL(-1)	0.821145	0.075289	10.90659	0.0000
LNEPS	-0.030646	0.014329	-2.138693	0.0356
LNDPS	0.051580	0.024288	2.123668	0.0369
C	3.232106	1.352394	2.389914	0.0193

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.996042	Mean dependent var	18.19023
Adjusted R-squared	0.994911	S.D. dependent var	2.172313
S.E. of regression	0.154961	Akaike info criterion	-0.692647

Sum squared resid	1.849002	Schwarz criterion	-0.093458
Log likelihood	57.63235	Hannan-Quinn criter.	-0.450144
F-statistic	880.8226	Durbin-Watson stat	2.348298
Prob(F-statistic)	0.000000		

RANDOM EFFECT

Dependent Variable: LNMKTVAL
Method: Panel EGLS (Cross-section random effects)
Date: 01/10/23 Time: 21:06
Sample (adjusted): 2016 2021
Periods included: 6
Cross-sections included: 20
Total panel (unbalanced) observations: 100
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMKTVAL(-1)	1.012713	0.010107	100.1950	0.0000
LNEPS	-0.029498	0.013070	-2.256894	0.0263
LNDPS	0.026669	0.013875	1.922059	0.0576
C	-0.132215	0.171670	-0.770170	0.4431

Effects Specification	S.D.	Rho
Cross-section random	0.053540	0.1066
Idiosyncratic random	0.154961	0.8934

Weighted Statistics

R-squared	0.911407	Mean dependent var	14.32290
Adjusted R-squared	0.931138	S.D. dependent var	1.684692
S.E. of regression	0.159229	Sum squared resid	2.433966
F-statistic	3691.890	Durbin-Watson stat	2.214474
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.994268	Mean dependent var	18.19023
Sum squared resid	2.677916	Durbin-Watson stat	2.012743

LIKELIHOOD TEST

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.809875	(19,77)	0.0364
Cross-section Chi-square	36.921077	19	0.0081

Cross-section fixed effects test equation:
Dependent Variable: LNMKTVAL
Method: Panel Least Squares

Date: 01/10/23 Time: 21:06
Sample (adjusted): 2016 2021
Periods included: 6
Cross-sections included: 20
Total panel (unbalanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMKTVAL(-1)	1.013869	0.008684	116.7533	0.0000
LNEPS	-0.027426	0.013456	-2.038115	0.0443
LNDPS	0.023063	0.012869	1.792101	0.0763
C	-0.145164	0.144304	-1.005964	0.3170

R-squared	0.994275	Mean dependent var	18.19023
Adjusted R-squared	0.994096	S.D. dependent var	2.172313
S.E. of regression	0.166919	Akaike info criterion	-0.703436
Sum squared resid	2.674753	Schwarz criterion	-0.599229
Log likelihood	39.17181	Hannan-Quinn criter.	-0.661262
F-statistic	5557.159	Durbin-Watson stat	2.030980
Prob(F-statistic)	0.000000		

HAUSMAN TEST

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.393332	3	0.0385

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LNMKTVAL(-1)	0.821145	1.012713	0.005566	0.0102
LNEPS	-0.030646	-0.029498	0.000035	0.8450
LNDPS	0.051580	0.026669	0.000397	0.2114

Cross-section random effects test equation:
Dependent Variable: LNMKTVAL
Method: Panel Least Squares
Date: 01/10/23 Time: 21:07
Sample (adjusted): 2016 2021
Periods included: 6
Cross-sections included: 20
Total panel (unbalanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.232106	1.352394	2.389914	0.0193
LNMKTVAL(-1)	0.821145	0.075289	10.90659	0.0000
LNEPS	-0.030646	0.014329	-2.138693	0.0356
LNDPS	0.051580	0.024288	2.123668	0.0369

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.996042	Mean dependent var	18.19023
Adjusted R-squared	0.994911	S.D. dependent var	2.172313
S.E. of regression	0.154961	Akaike info criterion	-0.692647
Sum squared resid	1.849002	Schwarz criterion	-0.093458
Log likelihood	57.63235	Hannan-Quinn criter.	-0.450144
F-statistic	880.8226	Durbin-Watson stat	2.348298
Prob(F-statistic)	0.000000		