Dividend Policy and Market Value of Quoted Firms: A Test of MM Hypothesis from Nigeria Financial Market

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Abstract

This study tested the relevance and irrelevance of dividend policy hypothesis on quoted manufacturing firms in Nigeria. Panel data were collected from annual reports of 22 manufacturing firms from 2009- 2018. Market value was modeled as a linear function of dividend payout ratio, retention ratio, dividend yield and dividend per share. Ordinary least square method of multiple regressions was used as data analysis method. After cross examination of the models, the fixed and the random effect model was adopted. The study found that dividend yield, retained earnings and dividend payout ratio has negative effect while dividend per share has positive effect on market value. From the findings, the study concludes that dividend policy is relevant and rejects the MM irrelevant hypothesis. From the findings, the study recommend that the manufacturing firms should maintain constant dividend policy according to the signaling hypothesis, this will signal positive information to investors and affect positively value of the firms. Management should devise measures of managing shareholders to achieve shareholders wealth maximization through dividend policy and the operational environment of the quoted manufacturing firms should be integrated with the companies' operating objectives to achieve the objective of the shareholders.

Keywords: *Dividend Policy, Market Value, MM Hypothesis, Nigeria Financial Market*

Introduction

In a deregulated financial market, the market value is the value of an asset is determined by the forces of demand for and supply of the assets. It is the perceived or observed value of an asset on the market. It is also known as current value. It is in fact the mutually accepted worth (cost or price depending on the individual) of the asset after negotiation. Most assets that have market values have their values determined by specialized markets such as the stock exchange. An asset is undervalued or under-price or favorably priced if the market value of the asset is less than the intrinsic value. If the intrinsic value of the asset is less the market value, then the asset is overvalued, over-priced or favorably priced.

Market value volatility is an indicator that is most often used to find changes in trends in the market place. market value volatility tends to rise when new information such as dividend policy information is released into the market, however the extent to which it rises is determined by the relevance of that new information as well as the degree in which the news surprise investors. Some financial economists see the causes of volatility embedded in the arrival of new, unanticipated information that alter expected returns on a stock (Engle, 1982). Others claim that volatility is caused mainly by changes in trading volume, practices or patterns which in turn are driven by factors such as modifications in macroeconomic policies, shift in investors' tolerance of risk and increased uncertainty (Rajni and Mahendra, 2007).

Modigliani and Miller (1968) introduced dividend irrelevance theory which means that with no charge of tax or default cost, dividend policy is unimportant. They argue that dividend policy has no effect on firm's share value. Dividend irrelevance theory further explains that the investor could influence the return on a stock regardless of the stock's dividend. For instance, from an investor's point of view, if an organization's profit is too enormous then the investor can purchase more stock with the dividend as he desires. The theory presented by Miller and Modigliani suggested that the shareholders wealth is not increased by the dividend policy of the firm.

Shareholders wealth depends upon solely on the earning capacity of the firm. By giving dividends to shareholders the company is adding more risk as they increase the amounts of debt so the gain for shareholders is offset by the added amount of risk (Miller & Modigliani, 1961).

The assumptions of a perfect capital market necessary for the dividend irrelevancy hypothesis can be summarized as, no differences between taxes on dividends and capital gains, no transaction and flotation costs incurred when securities are traded, all market participants have free and equal access to the same information (symmetrical and costless information), no conflicts of interests between managers and security holders (no agency problem) and all participants in the market are price takers. The above assumption has been considered to be fallacy of composition as the assumptions are not attainable most especially the financial market of the developing countries like Nigeria. There are different strands of studies on the effect of dividend policy, some authors examined the effect of dividend policy on profitability (Ansar, Butt and Shah, 2015; Ehikioya, 2015, Anandasayanan and Velnampy, 2016). Findings on the effect of dividend policy on market value of quoted firms remain inconclusive as some authors found positive and others found negative effect of dividend policy on market value of quoted firms. Therefore, this study tests the MM hypothesis on dividend irrelevant theory in Nigeria financial market.

Theoretical Framework - Dividend Irrelevance Theory

Modigliani and Miller introduced dividend irrelevance theory which means that with no charge of tax or default cost, dividend policy is unimportant. They argue that dividend policy has no effect on firm's share value. Dividend irrelevance theory further explains that the investor could influence the return on a stock regardless of the stock's dividend. For instance, from an investor's point of view, if an organization's profit is too enormous then the investor can purchase more stock with the dividend as he desires. On the other hand, if an organization's profit is too limited then a potential investor can sell some of the organization's stock to reproduce the cash as he wants. In short, investor doesn't care about a firm's dividend policy which means that dividend is unnecessary from investor's perspective. The theory presented by Miller and Modigliani (M &M) suggested that the shareholders wealth is not increased by the dividend policy of the firm. Shareholders wealth depends upon solely on the earning capacity of the firm. By giving dividends to shareholders the company is adding more risk as they increase the amounts of debt so the gain for shareholders is offset by the added amount of risk (Miller & Modigliani, 1961). M&M demonstrated that under certain assumptions about perfect capital markets, dividend policy would be irrelevant. Given that in a perfect market dividend policy has no effect on either the price of a firm's stock or its cost of capital, shareholders wealth is not affected by the dividend decision and therefore they would be indifferent between dividends and capital gains. In other words, investors calculate the value of companies based on the capitalized value of their future earnings, and this is not affected by whether firms pay dividends or not and how firms set their dividend policies. M&M go further and suggest that, to an investor, all dividend policies are effectively the same since investors can create homemade dividends by adjusting their portfolios in a way that matches their preferences.

Dividend Relevance theory

Relevance theory explains that dividend policy has significant effect on shareholders wealth as well as firms' values. The proponents of this theory consider dividend decision to be an active variable in influencing shareholders' wealth. Examples of such proponents are Gordon and Lintner. The main idea of their theory is that even in perfect markets, the uncertainty of future situation is a sufficient reason to change the price of a share. Gordon (1959) argues that investors are generally risk averse and attach less risk to current as opposed to future dividends or capital gains. Therefore investors prefer to receive certain money today than to wait for gains from a questionable future investment. Hence, the dividend policy does matter. This forms the basis for the Bird in Hand theory propounded by Lintner (1956) and Gordon (1959).

The Bird in hand theory also referred to as the traditional view of the theory of dividends emphasized that dividends are the singular determinant of the value of shares and that the receipt of the share of profits now, in form of income rather than in the future, in form of capital appreciation, enhances the value of the share (ICAN, 2009). The payment of dividend helps to resolve the uncertainty in the mind of investors about the future earning potentials of the company. Investors place greater reliance on the ability of the firm to earn profits in the future and pay dividends, reduce the risk perception of the company and this increases the value of the company's shares, all things being equal. Linked to the present study, this theory presupposes that dividend payout impacts on shareholders' wealth because it reduces the uncertainty in the mind of the investors making them to discount the firm's return at a lower rate, thereby resulting into higher market values.

Literature Review

The Concept of Dividend Policy

Dividend Policy refers to a company's policy which determines the amount of dividend payments and the amount of retained earnings for reinvesting in new projects. This policy is related to dividing the firm's earnings between payments to shareholders and reinvestment in new opportunities. Dividend policy involves the determination of the payout policy that management follows in determining the size and pattern of cash distributions to shareholders over time (Lease *et al* 2000). In corporate finance, one of the most important decisions is concerned with the answer of this question that should the profits of firm be distributed to the shareholders as dividend or it must be reinvested in new opportunities and if it must be distributed, what proportion of profit must be paid to shareholder and what proportion must be returned to the business? For answering this question, managers must consider which dividend policy will lead to maximization of shareholder's wealth and they should not only concentrate on this question that how much of firm's income are required for investment. Instead, they also must consider the impact of their decision on stock's price. Dividend policy is also related to capital structure indirectly and different dividend policies may require different capital structures. Since both capital structure and dividend policy can have impact on the wealth of shareholders and dividend policy can affect capital structure too, it makes decision about dividend policy is more complex and sensitive.

Dividend Payout Ratio

Company should reinvest its earnings if the prospective returns are greater than its shareholders' cost of capital or required rate of return. Changes in dividend policy should reflect the company's investment opportunities. However, dividend policy can change in this way only if shareholders are indifferent to distinctions between dividends and capital gains. If capital markets are competitive, and there are no taxes, no transaction or flotation costs, then investors would be indifferent to the level of dividend payout. Any reduction in dividends would lead to a greater reinvestment of retained earnings and an equivalent increase in capital gains(Rafiu, Taiwo and Dauda, 2012). If a company has had a stable dividend payment policy and this policy is altered, shareholders could interpret this as a change in management's expectations of the future and the share price may adjust accordingly: for example, a reduction may be construed by the shareholders as indicating management's pessimistic view of the future, rather than greater investment opportunities. If there is stability in the dividend payment, investors may rely upon dividends as predictors of what is to come (Serrasqueiro and Caetano, 2015). However, it can be argued strongly that management should be able to persuade shareholders that lower dividends - that is, greater retention will lead to a more .profitable investment policy and will benefit future earnings and dividends. If shareholders accept this, the share price will not fall as a result of such a change in dividend policy.

Dividend Payout Policy

Dividend policy means the payout policy that managers follow in deciding the size and pattern of cash distribution to shareholders overtime(Baker et al, 2011; Lee, 2009).The term,policy, rejects the possibility of randomness and arbitrariness in determining its pattern and size and implies some consistency and predictability (Allen and Michealy, 2003). It is important to understand how the firm's profits are divided between dividend payment and retained earnings. Corporate managers in their daily routine of life are exposed to a number of crucial decisions regarding finance of a company. Among all such decision dividend payout policy is the one of the most important financial decision that came across (Baker and Powell, 1999). The firm's dividend policy and its capital structure are interrelated. The dividend payout policy is one of the most debated topics within corporate finance and many academics have been trying to find the missing pieces in the dividend puzzle for more than a half century (Baker, 2009). However, some of the most successful companies during the last years such as Apple and Google have chosen not to pay dividends (Ciaccia, 2012). This indicates that it is possible to be successful without paying dividends, so why do firms pay dividends at all? Since the publication of the original Miller and Modigliani (1961) irrelevance propositions, this question has puzzled financial economists. Traditionally, finance scholars emphasize explanations for dividends that are based on the desire to communicate information to shareholders or to satisfy the demand for payouts from heterogeneous dividend clienteles (Allen and Michaely, 2003).According to Forte (2007) although there is a polyphony of literature on the subject, researchers have merely contributed to the multiple paradoxes of corporate dividend policy, thereby adding more pieces to an enlarged puzzle rather than finding the final matching piece that would provide a more precise and complete understanding of the determinants of dividend policy.

Retained Earnings

Retained earnings are the earnings ploughed back into the company for the purpose of expansion programme. The price at which equity shares are traded in the stock market is their market value. Generally the earnings and their distribution have positive reflection on the share prices. Every year a company retains a part of its earnings (Nunkoo and Boateng, 2009). The level of earnings before interest and tax, the rate of tax payable and the volume of dividend distributed influence the amount of retained earnings. This amount of retained earnings gets accumulated to form a significant source of internal finance. The amount of earnings retained represents a source of fund, which is relatively cheaper. Whenever there is requirement for fund, the company can safely bank upon the retained earnings. The amount retained by the company acts as a cushion that absorbs the adverse effects of the business. It also enables a company to maintain a stable dividend policy. Profit refers to the earnings of a company. The amount of earnings a company can generate depends not only on its efficient use of funds but also on factors like market for the product manufactured, state of competition, its quality, company's after sales service, government regulations, etc. The earning capacity of a company is an indicator of its continuity of existence (Nunkoo and Boateng, 2009). Higher the level of earnings, higher would be the value that the market attaches to the company. Sufficient amount of earnings enable a company to tide over adverse business conditions (Drobetz, Gruninger, 2007). A company that earns more can maintain a dividend policy that can satisfy the shareholders. Further, by capitalizing the earnings, expansion programme may also be taken up.

Modigliani-Miller Hypothesis

According to Modigliani and Miller (MM), under a perfect market situation, the dividend policy of a firm is irrelevant, as it does not affect the value of the firm.

$$r = \frac{Dividends + Capital\ gains\ (or\ loss)}{Share\ \mathrm{Pr}ice} \qquad (1)$$

$$r = \frac{DIV_1 + (P_1 + P_0)^n}{P_0} \quad (2)$$

$$r = \frac{DIV_1 + (P_1 + P_0)^n}{P_0} \quad (3)$$

$$P_0 = \frac{DIV_1 + P_1}{(1+r)} = \frac{DIV_1 + P_1}{(1+k)} \quad (4)$$

$$V = nP_o = \frac{n(DIV_1 + P_1)^n}{(1+k)} \quad (5)$$

If the firm sells m number of new shares at time 1 at a price of P_1, value of the firm at time 0 will be:

$$nP_0 = \frac{n(DIV_1 + P_1) + mP_1 - mP_1}{(1+k)} \quad (6)$$

$$= \frac{nDIV_1 + nP_1 + mP_1 - mP_1}{(1+k)} \quad (7)$$

$$= \frac{nDIV_1 + (n+m)\ P_1 - mP_1}{(1+k)} \quad (8)$$

MM's valuation Equation (18) allows for the issue of new shares, unlike Walter's and Gordon's models.

$$mP_1 = 1_1 - (X_1 - nDIV_1) = 1_1 - X_1 + nDIV_1 \quad (9)$$

By substituting Equation (19) into Equation (18), MM showed that the value of the firm is unaffected by its dividend policy, thus:

$$= nP_0 = \frac{nDIV_1 + (n+m)\ P_1 - mP_1}{(1+k)} \quad (10)$$

$$= \frac{nDIV_1 + (n+m)\ P_1 - (I_1 - X_1 + nDIV_1)}{(1+k)} \quad (11)$$

$$= \frac{(n+m)\ P_1 + P_1 - I_1 + X_1}{(1+k)} \quad (12)$$

The price of the share at the end of the current fiscal year is determined as follows:

$$P_0 = \frac{DIV_1 + P_1}{(1+k)} \quad (13)$$

$$P_1 = P_0\ (1+k) - DIV_1 \quad (14)$$

Market Value

Market value is defined as the price which the market assigns to the company's stocks. Stock price volatility represents the variability of stock price changes could be perceived as a measure of risk faced by investors. Shiller (1981) argued that stock prices are more volatile than what is justified by time variation in dividends. Numerous studies have documented evidence showing that stock returns exhibit phenomenon of volatility clustering, leptokurtosis and asymmetry. Volatility clustering occurs when large stock price changes are followed by large price changes, of both signs, and small price changes are followed by periods of small price changes (Mande 1963; Fama, 1965; Black, 1976).

Ajao (2012) noted that a number of recent studies have sought to characterize the nature of financial market return process, which has always been described as a combination of drift and volatility. Volatility may impair the smooth functioning of the financial system and adversely affect economic performance (Rajniand Mahendra, 2007; Mollah, 2009). Market value volatility is an indicator that is most often used to find changes in trends in the market place. Market value volatility tends to rise when new information is released into the market, however the extent to which it rises is determined by the relevance of that new information as well as the degree in which the news surprise investors. However, economists and financial experts have propounded theories on what causes volatility. Some financial economists see the causes of volatility embedded in the arrival of new, unanticipated information that alter expected returns on a stock (Engle, 1982). Others claim that volatility is caused mainly by changes in trading volume, practices or patterns which in turn are driven by factors such as modifications in macroeconomic policies, shift in investors' tolerance of risk and increased uncertainty (Rajni and Mahendra, 2007).

Empirical Review

Adesola and Okwong (2009) tested the relevance of Nigeria stock price dividend theories with cross-sectional data from twenty-seven companies over the period 1996-2006. They commented that they have discovered the positive and significant impact of dividends on stock prices. The A-sample activities of Nigerian companies indirectly call into question the empirical validity of the dividend insignificance.

Adeleke and Obademi (2013) showed that a positive relationship exist between the dividend policy mechanisms (DPS, PAYR, and EPS) and market price per share. The study in essence investigated the impact of dividend policy mechanisms on shareholder's value using 13 firms quoted on Nigerian Stock Exchange (NSE) from the banking and oil industries from 2008 to 2012. The variables included dividend payout, dividend per share and earnings per share as the independent variables and Market price per share as the dependent variable analyzed using on panel methodology that is based on OLS estimation.

Adesina, Uwuigbe, Uwuigbe, Asiriuwa and Oriabe (2017) investigated the impact of dividend policy on Nigeria stock price valuation. During ten years (2006-2016) four of the twenty-two banks were analyzed. In their study, they noted that earnings per share have a strong impact on stock prices, while dividend yields and a percentage of stock price stability have a significant impact. However, it was concluded that Nigerian companies need to consider other companies' dividend policies in order to increase their profits and future performance.

Al- Hasan, Asaduzzaman and Al Karim (2013) examined the effect of dividend policy on market price per share using 28 companies selected from 4 four industries in Bangladesh from 2005 to 2009. The analyses of the study involved descriptive statistics, correlation and multiple regression techniques. Market price per share was used as the dependent variable while dividend per share and retained earnings per share were the independent variables. The result showed that dividend policy has significant effect on market share price.

Amadasun (2011) tried to test the hypothesis that dividend would not increase the price of Nigerian equities using First Bank (Nig) plc as a case study. The study used a regression model that included share price per share as the explanatory variables, earnings per share, return on capital employed, retained earnings, and price-earnings ratio. The results of the study showed a statistically insignificant regression coefficient for both per-share dividend and earnings per share.

Emeni and Ogbulu (2015) conducted a study on 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. These financial statements were obtained from the NSE Fact Book. The Ordinary Least Square (OLS) statistical technique was used for the data analysis. From the results of the study, cash dividend, stock dividend and investment policy have a negative but not significant relationship with the market value of firms in the financial services sector of Nigeria, while earnings was found to have a positive and insignificant relationship with market value (though significant at 10% level of significance). Generally, the result is in tandem with the dividend irrelevant hypothesis of Miller and Modigliani, that dividend policy has no effect on market value of firms.

Iqbal, Ahmed and Shafi (2014) analyzed the effect of the dividend bubble on the stock prices of thirty Karachi listed companies over a period of eleven years. The time series of the thirty listed companies were analyzed using a linear regression model. The result showed that earnings per share, return on equity, holding ratio are positively correlated with share price, while dividend yield and price to earnings ratio have a negative impact on price activities. However, the study concluded that the dividend has a strong positive impact on KSE stock prices and therefore supports the theory of dividend significance. There are failures in the study resulting from the use of thirty company time series over eleven years. The data obtained by the panel would have been more accurate in reaching its conclusions and conclusions.

Jakata and Nyamugure (2014) employed data from selected firms on the Stock Exchange (ZSE) to investigate the effects of dividend policy on the share price of a firm. Share price served as dependent and dividend policy, earnings per share, turnover and net profit as independent variable. The study used Pearson's Correlation Coefficient and Linear Regression Analysis from a time serial data covering 2003 to 2011 and found that Dividend policy does not affect share price.

Lucky and Uzokwe (2019) tested Miller and Modigliani dividend policy irrelevant hypothesis in Nigeria. The objective was to examine the validity of the irrelevant hypothesis. Tobins Q measure of market value was modeled as the function of dividend payout ratio, retention ratio, dividend per share and dividend yield. 20 firms were selected on the basis of availability of information necessary for conducting the study and the readiness of annual financial reports for the period of 10 years from 2008-2017. Cross sectional data was sourced from financial statement and annual reports of the firms. Based on the analysis of fixed and random effect results, random effect was used. The study revealed that 75 percent variation on the market value can be predicted by variation on independent variables in the regression model. The beta coefficient of the variables found that all the independent variables have positive and significant relationship with market value of the selected quoted firms. The study concludes that dividend policy is relevant as oppose to the irrelevant hypothesis of Miller and Modigliani.

Literature Gap

The above studies did not investigate direction of causality between dividend policies in detail. And where efforts were made to do so, they were not based on the disaggregated components of dividend policies as we intend to do in this study (Uwuigbe, 2012; Osegbu, Ifurueze and Ifurueze, 2014; M'rabet and Boujjat, 2016; Yusuf, 2005; Peter and Lyndon, 2016). Most of the studies did not address the banking sector, the studies focused on the real sector of the economy, studies that attempt to examine the banking sector failed to capture the full details of dividend .Thus, and in this study we disaggregate dividend policy structure as determined in financial market.

Methodology

This study tests if dividend policy is relevance or irrelevance. Panel data were used. Ex-post facto research design was employed in obtaining, analyzing and interpreting the relevant data for hypotheses testing. The rationale for the variety is that ex-facto research design allows the researcher the opportunity of observing one or more variables over a period of time (Uzoagulu, 1998). Specifically, panel data were adopted in data analysis. The population of the study comprises all the quoted manufacturing firms in Nigeria firms in the Nigeria stock exchange. The study adopted stratified random sampling techniques to select 22 quoted manufacturing firms classified as consumer goods manufacturing firms. Panel data used in this study were collected from financial statement of the quoted firms and Stock Exchange Factsheet.

Model Specification

Pooled regression specification

$$MV = \alpha o + \alpha_1\ DPR_{1i} + \alpha_2\ RR_{2i} + DY_{3\,it} + \alpha_3 DPS_{4it\ 6} + \varepsilon 1_{it} \quad \textbf{(15)}$$

Fixed Effect Model Specification

$$MV = \alpha o + \alpha_1\ DPR_{1i} + \alpha_2\ RR_{2i} + DY_{3\,it} + \alpha_3 DPS_{4it\ 6} + \varepsilon 1_{it} \quad \sum_{i}^{9} = 1\ \alpha_i\ idum + \varepsilon 1_{it} \quad (16)$$

Random effect model specification

$$MV = \alpha o + \alpha_1\ DPR_{1i} + \alpha_2\ RR_{2i} + DY_{3\,it} + \alpha_3 DPS_{4it\ 6} + \varepsilon 1_{it} \quad + \mu i\ + \varepsilon 1_{it} \quad (18)$$

Where:

MV = Market Value of Quoted manufacturing firms proxy end of the year trading price
DPR = Dividend payout ratio
RR = Retention Ratio
DY = Dividend Yield

DPS = Dividend per Share
μ = Error Term
$\beta_1 - \beta_4$ = Coefficient of Independent Variables to the Dependent Variables
β_0 = Regression Intercept

Method of Data Analysis

To obtain the observed values on the expectation of the effect of dividend policy and market value, panel data survey over a ten year period was employed. Panel data structure allows us to take into account the unobservable and constant heterogeneity, that is, the specific features of each quoted firm. In addition the pooled Ordinary Least Square (OLS), Fixed Effects and Random Effects regression models were employed to test the various hypotheses. Pooled OLS regression technique is popular in financial studies owing to its ease of application and precision in prediction (Alma, 2011). These analytical techniques will enable the researcher attain justifiable and robust results.

$$Y = \beta_0 + \beta_{1Xit} + \mu \quad (27)$$

Where,
Y = Dependent Variable
β_{1Xit} = Independent variable
β_0 = Regression Intercept
μ = Error Term

Table 1**: Analysis of Variables and A-Priori Expectation**

Variable	Measurement	Notation	Expected relationship
Market value	End of the year share trading price	MV	Dependent variable
Dividend payout ratio	**Annual Dividend Paid per Share ÷ Earnings per Share**	DPR	+
Retention Ratio	1- DPR	RR	+
Dividend Yield	Dividend per share /market value per share	DY	+
Dividend per Share	Annual dividend / number of shares	DPS	+

Hausman Test

Since random effects model is invalid when heterogeneity exist, meaning that error term is correlated with explanatory variables, Hausman test is often used to test whether a variable can be treated as exogenous or whether that variable needs a separate structural equation. Hausman test refers to a test for whether a random effects approach to panel regression is valid or whether a fixed effects model is necessary (Brooks, 2014). We exercise Hausman test by E-views, with the null hypothesis that random effects model can be applied.

Panel Data Unit Root Tests

To introduce panel data unit root tests, consider the autoregressive model

$$y_{it} = \alpha_i + \gamma_i y_i t - 1 + \varepsilon_{it} \quad (28)$$

Which we can rewrite as

$$\Delta y_{it} = \alpha_i + \pi_i y_i t - 1 + \varepsilon_{it} \quad (29)$$

Where $\pi_i = \gamma_i - 1$. The null hypothesis that all series have a unit root then becomes $H_0 : \pi_i = 0$ for all *i*. a first choice for the alternative hypothesis is that all series are stationary with the same mean-reversion parameter, that is, $H_1 : \pi_i = \pi$ <0 for each country *i,* and is used in the approaches of Levin and Lin (1992) Quah (1994) and Harris and Tzavalis (1999). The combined test statistics is given by:

$$P = -2\sum_{i=1}^{N} \log\ p_i \quad (30)$$

For fixed *N*, this test statistics will have a Chi-squared distribution with 2*N* degrees of freedom as $T \to \infty$, so that large values of P lead us t reject the null hypothesis, while this test (sometimes referred to as the Fisher test) is attractive because it allows the use of different ADF test and different time-series length per unit.

Panel Data Co-integration Tests

A wide range of alternative test is available to test for co-integration in a dynamic panel data setting, and research in this area is evolving rapidly. A substantial number of these tests are based on testing for a unit root in the residuals of a panel co-integrating regression. The drawbacks and complexities associated with the panel unit root tests are also relevant in the co- integration case. Several additional issues are of potential importance when testing for co-integration: heterogeneity in the parameter of the co- integrating relationships, heterogeneity in the number of co-integrating relationship across countries and the possibility of co- integration between the series from different alternative estimators are available. With different small and large sample properties (depending upon the type of asymptotic that is chosen).

$$y_{it} = \alpha_i + \beta_i x_{it} + \varepsilon_{it} \quad (31)$$

y_{it} Where both and x_{it} are integrated or order one. Co-integration implies that ε_{it} is stationary for each i. Homogeneous co-integration. In addition Requires that $\beta_I = \beta$If

the co-integrating parameter is heterogeneous. And homogeneity is imposed. One estimate

$$y_{it} = \alpha_i + \beta_i x_{it} + \left[(\beta_i - \beta)x_{it} + \varepsilon_{it}\right] \quad (32)$$

And in general the composite error term is integrated of order one even if ε_{it} is stationary.

Granger Causality Test

Thus, Granger causality test helps in adequate specification of model. In Granger causality, test, the null hypothesis is that no causality between two variables. The null hypotheses is rejected if the probability of F* statistics given in the Granger causality result is less than 0.05. The pair-wise granger causality test is mathematically expressed as:

$$Y_t \pi_o + \sum_{i=1}^{n} x_1^{\ y}\ Y_{t-1} \sum_{i=1}^{n} \pi_1^{\ x}\ x_{t-1} + u_1 \quad (33)$$

and

$$x_t dp_o + \sum_{i=1}^{n} dp_1^{y}\, Yt-1 \sum_{i=1}^{n} dp1^{x} x_{y-1} + V_1 \quad (34)$$

Where x_t and y_t are the variables to be tested white u_t and v_t are the white noise disturbance terms. The null hypothesis $\pi_1^y = dp_1^y = 0$, for all I's is tested against the alternative hypothesis $\pi_1^x \neq 0$ and $dp_1^y \neq 0.$ if the co-efficient of π_1^x are statistically significant but that of $dp1y$ are not, then x causes y. If the reverse is true then y causes x. however, where both co-efficient of π_1^x and dp_1^y are significant then causality is bi –directional.

The Fixed Effects Model

The fixed effects model is simply a linear regression model in which the intercept terms vary over the individual units i.e.

$$y_{tt} = \alpha_j + x_{it}^{\ 1}\beta + \varepsilon_{it} \quad \varepsilon_{it} \approx HD\left(0.\sigma^2\right) \quad (35)$$

Where it is usually assumed that all x_{it} are independent of all ε_{it} . We can write this in the usual regression framework by including a dummy variable for each unit *i*in the model. That is

$$y_{t\,t} = \sum_{j=1}^{N} \alpha_j d_{ij} + x_{ij}\beta + \varepsilon_{it} \quad \varepsilon_{it} \tag{36}$$

Where d_{ij} = 1 if *i*= j and 0 elsewhere. We thus have a set of *N.* dummy variables in the model. Essentially, this implies that we eliminate the individual effects α_I first by transforming the data. To see this, first note that

$$\bar{y}_{t\,t} + \alpha_1 + \bar{x}_{ij}^{-1}\beta + \varepsilon_{it} \quad \bar{\varepsilon}_{it} \tag{37}$$

Where

$\bar{y}_{t\,t} = T^{-1}\sum_{t} y_{it}$ and similarly for the other variables. Consequently, we can write

$$y_{i\,t} - \bar{y}_{i\,t}\left(x_{it} - \bar{x}_{i\,t}\right)^{1}\beta + \left(\varepsilon_{it} - \bar{\varepsilon}_{it}\right) \tag{38}$$

The OLS estimator or fixed effects estimator, and it is exactly identical to the LSDV estimator described above. It is given by

$$\hat{\beta}_{FE} = \left(\sum_{i=1}^{N}\sum_{i=1}^{T}\left(x_{it} - \bar{x}_i\right)\left(x_{it} - \bar{x}_i\right)^{t}\right)^{-1}\sum_{i=1}^{N}\sum_{i=1}^{T}\left(x_{it} - \bar{x}_i\right)\left(x_{it} - \bar{y}_i\right) \tag{39}$$

If it is assumed that all X*it* are independent of all ε_{it} (compare assumption (A2) from chapter 2), the fixed effects estimator can be shown to be unbiased for β.

The Random Effects Model

It is commonly assumed in regression analysis that all factors that affect the dependent variable, but that have not been included as repressors, can be appropriately summarized by a random error term. In our case, this leads to the assumption that the α_t are random factors, independently and identically distributed over individuals. Thus we write the random effects model as

$$y_{it} = \mu + x_{it}\beta + x_{it}\beta + \alpha_i + \varepsilon_{it} \quad (40)$$

Where α_t + ε_{it} is treated as an error term consisting of two components: an individual specific component, which does not vary over time, and a remainder component, which is assumed to be uncorrelated over time.

Analysis of Results and Discussion of Findings

Table 1: Analysis of Panel Unit Root

Method: **Series: D(PBV)**	Statistic	Prob.**	sections	Obs
Levin, Lin & Chu t*	-7.89226	0.0000	21	126
Im, Pesaran and Shin W-stat	-3.76651	0.0001	21	126
ADF - Fisher Chi-square	93.8154	0.0000	21	126
PP - Fisher Chi-square	236.955	0.0000	21	147
Series: RR				
Levin, Lin & Chu t*	-4.87201	0.0000	22	176
Im, Pesaran and Shin W-stat	-4.31478	0.0000	22	176
ADF - Fisher Chi-square	101.359	0.0000	22	176
PP - Fisher Chi-square	213.534	0.0000	22	198
Series: D(DY)				
Levin, Lin & Chu t*	-1.27885	0.1005	22	154
Im, Pesaran and Shin W-stat	-2.30649	0.0105	22	154
ADF - Fisher Chi-square	74.9216	0.0025	22	154
PP - Fisher Chi-square	231.015	0.0000	22	176
Series: D(DPS)				
Levin, Lin & Chu t*	-11.5810	0.0000	22	154
Im, Pesaran and Shin W-stat	-5.12390	0.0000	22	154
ADF - Fisher Chi-square	111.302	0.0000	22	154
PP - Fisher Chi-square	219.108	0.0000	22	176
Series: D(DPR)				
Levin, Lin & Chu t*	-11.7519	0.0000	22	154
Im, Pesaran and Shin W-stat	-7.26747	0.0000	22	154
ADF - Fisher Chi-square	145.752	0.0000	22	154
PP - Fisher Chi-square	361.464	0.0000	22	176

Source: Computed From E-View Statistical Package 9.0

A number of investigators, notably Levin, Lin and Chu (2002), Breitung (2000), Hadri (1999), and Im, Pesaran an Shin (2003) developed panel-based unit root tests that are similar to tests carried out on a single series. Interestingly, these investigators have shown that panel unit root tests are more powerful (less likely to commit a Type II error) than unit root tests applied to individual series because the information in the time series is enhanced by that contained in the cross-section data. In addition, in

contrast to individual unit root tests which have complicated limiting distributions, panel unit root tests lead to statistics with a normal distribution in the limit (Baltagi, 2001).

With the exception of the IPS test, all of the aforementioned tests assume that there is a common (identical) unit root process across the relevant cross-sections (referred to in the literature as pooling the residuals along the within-dimension). The LLC and Breitung tests employ a null hypothesis of a unit root using the following basic Augmented Dickey Fuller (ADF) specification:

Table 2: Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Pooled Regression Results for the Study				
RR	-12.08160	4.794345	-2.519969	0.0125
DY	0.506522	0.521367	0.971527	0.3324
DPS	1.108746	0.329388	3.366076	0.0009
DPR	-10.65196	4.502011	-2.366045	0.0189
C	-6.860621	2.955409	-2.321377	0.0212
R-squared	0.072108	Mean dependent var		1.245409
Adjusted R-squared	0.054845	S.D. dependent var		1.249162
S.E. of regression	1.214424	Akaike info criterion		3.248883
Sum squared resid	317.0877	Schwarz criterion		3.326010
Log likelihood	-352.3771	Hannan-Quinn criter.		3.280029
F-statistic	4.176990	Durbin-Watson stat		0.939776
Prob(F-statistic)	0.002806			
Fixed Regression Results for the Study				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RR	-7.760362	4.302604	-1.803643	0.0228
DY	-0.722144	0.622339	-1.860372	0.0273
DPS	0.210124	0.343051	0.612513	0.5409
DPR	-6.523490	4.013009	-1.925586	0.0057
C	-2.894092	2.682155	-1.079017	0.2819
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.670134	Mean dependent var		1.245409
Adjusted R-squared	0.588966	S.D. dependent var		1.249162
S.E. of regression	1.053329	Akaike info criterion		3.052383
Sum squared resid	215.2435	Schwarz criterion		3.453448
Log likelihood	-309.7622	Hannan-Quinn criter.		3.214344
F-statistic	4.560079	Durbin-Watson stat		1.126291
Prob(F-statistic)	0.000000			
Random Regression Results for the Study				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RR	-10.06291	4.229474	-2.379234	0.0182

DY	-0.003212	0.521909	-0.006155	0.9951
DPS	0.688386	0.311815	2.207677	0.0283
DPR	-8.688529	3.957698	-2.195349	0.0292
C	-5.034172	2.619497	-1.921808	0.0560
Effects Specification				
			S.D.	Rho
Cross-section random			0.357204	0.1031
Idiosyncratic random			1.053329	0.8969
Weighted Statistics				
R-squared	0.741014	Mean dependent var		0.849358
Adjusted R-squared	0.523172	S.D. dependent var		1.126171
S.E. of regression	1.113046	Sum squared resid		266.3575
F-statistic	2.298760	Durbin-Watson stat		1.000146
Prob(F-statistic)	0.059973			
Unweighted Statistics				
R-squared	0.561504	Mean dependent var		1.245409
Sum squared resid	320.7115	Durbin-Watson stat		0.875994
Correlated Random Effects - Hausman Test				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		29.069218	4	0.0000

Source: Computed From E-View Statistical Package 9.0

Interpretation of the Result

The fixed effects model is more appropriate than the random effects model. As the result found that the results of this test were significant (p-value = 0.0000). Hence, we reject the null hypothesis and conclude that the fixed effects model is the most appropriate of the three models.

Table 2 above, presents the effect of the dividend policy on the market value of quoted manufacturing firms in Nigeria. The regression summary produced adjusted R^2 of 0.588966 from the fixed effect regression model which implies that 58.8 percent variation on market value of the quoted manufacturing firms can be attributed to changes on the dividend police variables while the model is statistically significant by the value of F-statistics and F-probability. The Durbin Watson statistics is less than 1.00, which means the absence of serial autocorrelation. The effect of the independent variables found that dividend yield, retained earnings and dividend payout ratio has negative effect on market value of the quoted manufacturing firms while dividend per share has positive effect on market value. Furthermore, the p-value of the variables indicate that retained earnings, dividend yield and dividend payout ratio have significant relationship with market value of the quoted firms as the probability coefficient of the variables are less than 0.05 while dividend per share have no significant relationship with market value of the quoted manufacturing firms. The above enables us to test the long run relationship among the variables using panel cointegration test.

Table 3: Analysis of Cointegration Test

Series: MV RR DY DPS DPR

	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	0.222330	0.4120	-2.496483	0.0337
Panel rho-Statistic	3.685222	0.0099	4.476423	0.0000
Panel PP-Statistic	-1.301284	0.0466	0.473975	0.6822
Panel ADF-Statistic	2.083977	0.0014	1.175787	0.8802
	Statistic	Prob.		
Group rho-Statistic	6.672243	0.0000		
Group PP-Statistic	0.355004	0.0387		
Group ADF-Statistic	1.559292	0.9405		

Cross section specific results

Phillips-Peron results (non-parametric)

Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
Seven Bottling Co. Plc	-0.349	0.010598	0.002420	8.00	9
Cadbury Nig. Plc	0.157	0.034780	0.036667	1.00	9
Champion Breweries Plc	-0.648	0.006813	0.006813	0.00	9
Dangote Flour Plc	-0.131	2.511877	1.678102	4.00	9
Dangote Sugar RefinPlc	-0.076	0.010008	0.006807	1.00	9
DN Tyre& Rubbe	0.033	0.003299	0.002083	4.00	9
Flour Mills	0.135	0.027016	0.017993	4.00	9
Golden Guinea Brew. Plc	0.554	0.097611	0.119676	1.00	9
Guinness Nig. Plc	0.015	0.007766	0.003288	7.00	9
Honeywell Flour Mills Plc	0.103	0.101883	0.083451	1.00	9
Int'l Breweries Plc	0.217	0.038217	0.030636	3.00	9
MC Nichols Plc	-0.226	1.679918	1.128184	3.00	9
Mlti-Trex Integrated Food Plc	-0.079	0.001119	0.000506	8.00	9
Northern Nig. Flour Mills Plc	-0.212	0.012747	0.009358	3.00	9
Nascon Allied Ind. Plc	-0.249	0.015594	0.008463	5.00	9
Nestle Nig. Plc	0.454	0.015855	0.021547	1.00	9
Nigerian BrewriesPlc	0.297	0.010563	0.005978	4.00	9
PZ Cussons Nig. Plc	0.155	0.009839	0.009839	0.00	9
UTC Nigeria Plc	0.518	0.004274	0.003720	1.00	9
Union Dicon Salt Plc	0.280	0.067533	0.068428	2.00	9

Unilever Nigeria Plc	0.339	0.005228	0.005228	0.00	9
Vita Foam Nigeria Plc	0.347	0.001481	0.001730	1.00	9

Source: Computed From E-View Statistical Package 9.0

To determine whether a cointegrating relationship exits, the recently developed methodology proposed by Pedroni (1999a) is employed. Basically, it employs four panel statistics and three group panel statistics to test the null hypothesis of no cointegration against the alternative hypothesis of cointegration. In the case of panel statistics, the first-order autoregressive term is assumed to be the same across all the cross sections, while in the case of group panel statistics the parameter is allowed to vary over the cross sections. If the null is rejected in the panel case, then the variables function is cointegrated for *all* the sectors. On the other hand, if the null is rejected in the group panel case, then cointegration among the relevant variables exists for *at least* one of the sectors. The p-values reported in the table for each cross section suggest that a unit root can be rejected at least at the 5 percent level for models.

Table 4: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
RR does not Granger Cause MV	176	2.34923	0.0485
MV does not Granger Cause RR		0.85858	0.4256
DY does not Granger Cause MV	176	0.78430	0.4581
MV does not Granger Cause DY		1.34134	0.2642
DPS does not Granger Cause MV	176	0.27568	0.7594
MV does not Granger Cause DPS		3.18226	0.0440
DPR does not Granger Cause MV	176	3.28436	0.0398
MV does not Granger Cause DPR		0.42238	0.6562

Source: Computed From E-View Statistical Package 9.0

From the causality test presented in the above table, there is unidirectional relationship from retention ratio to market value of the quoted firms, a unidirectional causality from market value to dividend per share and unidirectional causality from dividend per share to market value of the quoted firms while other variables have no causality.

Discussion of Findings

The regression model found that dividend yield, retained earnings and dividend payout ratio has negative effect on market value of the quoted manufacturing firms while dividend per share has positive effect on market value. The positive impact of retention ratio and dividend per share confirm the a-priori expectation of the result and justifies the objective of constant dividend policies. Retention ratio is a source of internal investment. Increase in retention ratio makes the company to be less livered which means that significant proportion of corporate investment is financed by equity capital. This makes corporate organizations not to face leverage risk. It also makes the organization to grow as noted by Pandey (2005). The positive effect of the variables confirm the findings of Agyei and Marfo-Yiadom (2011) whose results found positive relationship between dividend policy and performance, Uwuigbe, Jafaru and Ajayi (2012) Whose result shows a significant and positive association between the performance of firms and the dividend pay-out. Merekefu and Ouma (2012) whose findings revealed positive strong relationship between Net profit after tax and dividends and the findings of Timothy and Peter (2012) findings indicated that dividend payout was a major factor affecting firm profitability measured by net profit

after tax. The negative impact of dividend yield is contrary to the expectation of the results and can be traced to monetary policy shocks that affect the performance of the commercial banks over the period. For instance, the treasury single account introduced by the present administration affected the liquidity of the banking industry; this affects the credit function of the industry and also affects the profitability because interest income is the most significant source of revenue to the banking industry. The negative impact is contrary to the findings of Gul (2012) who found that the market value of companies that pay dividends is well above the book value as compared to companies that do not pay dividends and the findings of Salehnezhad (2013) who found a positive relationship between financial performance (stock returns) and dividend policy.

Conclusion

This study tested the MM dividend irrelevant Hypothesis using panel data of quoted manufacturing firms for a period of ten years**.** The regression summary produced adjusted R^2 of 0.588966 from the fixed effect regression model which implies that 58.8 percent variation on market value of the quoted manufacturing firms can be attributed to changes on the dividend police variables while the model is statistically significant by the value of F-statistics and F-probability. the p-value of the variables indicate that retained earnings, dividend yield and dividend payout ratio have significant relationship with market value of the quoted firms as the probability coefficient of the variables are less than 0.05 while dividend per share have no significant relationship with market value of the quoted manufacturing firms. From the above the study concludes that dividend policy is relevant and rejects the irrelevant hypothesis of Modigliani and Miller (1958).

Recommendations

1. Constant dividend policy should be maintained among the quoted manufacturing firms, according to the signaling hypothesis, this will signal positive information to investors and affect positively value of the firms.

2. Retention forms should be properly invested and the investment environment should be well managed to increase value of the quoted manufacturing firms through the dividend policy channel.

3. The management should devise measures of managing shareholders to achieve shareholders wealth maximization through dividend policy and the operational environment of the quoted manufacturing firms should be integrated with the companies' operating objectives to achieve the objective of the shareholders.

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