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Which Firm Characteristics Drive Dividend Policy and Firm Value in the Consumer Goods Sector of the Nigerian Exchange Group?

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Abstract
This study investigates the influence of various firm characteristics— institutional ownership, turnover, return on assets, and equity to debt ratio—on firm value and dividend policy within the Consumer Goods Sector of the Nigerian Exchange Group (NGX). Employing a multivariate multiple regression (MMR) approach supplemented by robustness tests, this study leverages a dataset spanning 2013 to 2022 from 16 purposively selected firms. The results indicate that Return on Assets and Equity to Debt Ratio are the most significant and positive predictors for both firm value and dividend policy across the models used in this study. Institutional ownership substantially affects firm value under MMR but failed under simultaneous regression analysis. It is also not a significant dividend policy across models. Turnover, the log of annual sales, does not significantly impact either firm value or dividend policy across models. This study fills a methodological and geographical gap in the literature by adopting MMR, supplemented by robustness tests, and providing sector-specific insights in a developing market, thus offering implications for managers, investors, and regulators.
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1. Introduction

In the dynamic world of corporate finance, firm value and dividend policy are pivotal elements that govern an enterprise's strategic decisions. For businesses operating in the consumer goods sector, these metrics are especially crucial. This sector is characterized by intense competition, fluctuating demand, and a constant need for innovation. Against this backdrop, firm value serves as a comprehensive indicator of a company's financial health and future growth prospects. It aggregates various aspects such as profitability, asset management, and market reputation into a single quantifiable measure, often represented by metrics such as Tobin's Q (Alaeto, 2020; Olaoye & Olaniyan, 2022; Shuaibu et al., 2019).

Dividend policy, on the other hand, reflects a firm's approach to distributing earnings back to shareholders. It is a critical factor that influences investor sentiment and by extension, share prices. The strategic balance between retaining earnings for reinvestment and disbursing dividends directly impacts a firm's capital structure and its attractiveness to investors. In the consumer goods sector, where cash flow can be highly seasonal and subject to market trends, an effective dividend policy is not just a financial tool but also a strategic asset (Bello & Lasisi, 2020; Olaoye & Olaniyan, 2022).

Firm characteristics are the unique set of features or traits that significantly impact a firm's operational and financial performance. The key factors are size, age, ownership structure, leverage, profitability, growth opportunities, industry characteristics, and market conditions. Firm size, often measured by assets, revenue, or employee count, affects a firm's market influence and operational dynamics (Huang & Kisgen, 2012). Ownership structure, particularly institutional ownership, plays a critical role in determining control and strategic direction, affecting firm performance and decision-making processes. Leverage is another characteristic of a firm that could be proxied by the debt-to-equity ratio, among others. It is a crucial determinant of a firm's risk and financial strategy, impacting its potential for returns and financial stability (Frank & Goyal, 2009). Profitability is another attribute of a firm that can be proxied by return on assets (ROA), and it is a vital measure of operational efficiency and financial health.

Turning our focus to the economic context of Nigeria, the consumer goods sector occupies a significant position. In Nigeria, this sector has shown resilience and adaptability despite economic fluctuations and policy changes. Mwantok (2018) reported, quoting the National Bureau for Statistics (NBS), that the consumer goods sector accounted for 14.82 percent of the nation's gross domestic product. In addition, on the floor of the Nigerian Exchange Group (NGX), the consumer goods sector is one of the top-performing sectors, contributing

substantially to gross domestic product (LK et al., 2023). Across Africa, the burgeoning middle class, coupled with urbanization trends, has led to increased demand for consumer goods, thereby spotlighting the sector as a key driver of economic growth.

This paper takes a deep dive into the dynamic relationship between firm characteristics, firm value, and dividend policy in the context of the NGX consumer goods sector. Authors' selected firm characteristics, which are institutional ownership, turnover, ROA, and debt to equity (DER), will be regressed simultaneously against firm value and dividend policy such that the most significant firm characteristics will be identified and the implications of the same to investors, policy makers, and corporate managers will be discussed.

1.2 Statement of the Problem

Despite its critical importance, there is a noticeable lacuna in the academic literature specifically addressing the interplay between these variables in Nigeria's consumer goods sector. Existing studies have either focused on the relationship between firm characteristics and dividend policy (Alaeto, 2020; Taiwo et al., 2022) or between firm characteristics and firm value (Falade et al., 2021; Shuaibu et al., 2019). However, a comprehensive analysis that simultaneously examines the impact of firm characteristics on both firm value and dividend policy in the Nigerian context is conspicuously absent. This gap is particularly evident when compared with similar studies in other markets, such as Nasir's (2020) research in the Indonesian Sharia Stock Market, which explored these relationships in an integrated manner. This study aims to fill this critical gap by conducting an in-depth analysis of how various firm characteristics concurrently impact both firm value and dividend policy in the Nigerian consumer goods sector. By doing so, it seeks to provide a more nuanced understanding of these relationships in an African context, contributing to the global discourse on corporate finance and offering insights specific to emerging markets. This paper not only holds the potential to inform strategic decision-making in the corporate world but also to guide policy formulation and provide a framework for future academic inquiries in similar economic contexts.

1.3 Research Objectives

1. Investigating the Influence of Institutional Ownership on Firm Value and Dividend Policy
2. Examining the influence of turnover on firm value and dividend policy
3. Assessing the Impact of Return on Assets on Firm Value and Dividend Policy
4. To Evaluate the Effect of Equity to Debt Ratio on Firm Value and Dividend Policy.

1.4 Hypotheses:

The null hypotheses for the study areas follows:

H_{01}: Institutional ownership does not significantly influence firm value or dividend policy.

H_{02}: Turnover, represented by annual sales, does not significantly influence either firm value or dividend policy.

H_{03}: Return on assets (ROA) does not significantly influence firm value or dividend policy.

H_{04}: Equity to Debt Ratio does not significantly influence firm value or dividend policy.

The significance of this study emanates from its unique focus on the Consumer Goods Sector of the Nigerian Exchange (NGX), a vital area in both Nigerian and broader African economies. This research fills a gap in the existing literature by exploring methodological and geographical gaps. Multivariate Multiple Regression and Simultaneous Equation were applied to two dependent variables, which makes it novel. Hitherto, this methodology approach has also not been used to study the interplay of firm characteristics, dividend policy, and firm value in the consumer goods sector of the NGX. Corporate managers will find the insights particularly useful for making informed decisions in areas such as financial management and dividend distribution. Investors, both institutional and individual, can leverage the findings to make enlightened investment choices. Additionally, the study can offer policymakers a robust empirical basis for regulatory improvements in corporate governance and the operation of financial markets. Finally, the academic community stands to benefit as this research contributes to existing literature and serves as a foundation for future studies.

The geographical scope of this research is confined to companies listed in the Consumer Goods Sector of the NGX, thereby limiting its reach the Nigerian context. In terms of time frame, this study examines data from the annual reports of these companies over a span of ten years. Thematically, the investigation focuses on four crucial firm characteristics: institutional ownership, turnover, return on assets, and equity to debt ratio. However, this study has limitations. One primary constraint is the availability and quality of financial data, which could impact the depth of the study. Another limitation is the generalizability of the findings; they may not be universally applicable to companies in other sectors or regions.

This paper is organized into several sections to offer a coherent and logical flow of the research process. Starting with the introduction, the Literature Review provides a detailed understanding of the existing literature relevant to the subject matter of this study. The Methodology section discusses the research design, data collection methods, and statistical techniques employed for analysis. The fourth session is the Results and

Discussion, which presents the findings of the study and discusses the findings and their implications in consonance with the research objectives and hypotheses. The final section is the summary, conclusion, and recommendations of practical benefits and suggestions for future research.

2. Literature Review

2.1 Conceptual Review

2.1.1 Firm Value (TobinQ)

Value is the intrinsic worth of a thing that is meant to be the same as the price paid to acquire it. In finance, firm value is the intrinsic worth of a firm, which can be derived from the determination of the market value of the equity shares plus the market debt. This represents the amount a willing buyer is willing to part with to take ownership of a firm, given that there is no information asymmetry between the buyer and the seller (Damodaran, 2016). TobinQ is one of the most used proxies for measuring firm value in finance. It measures the market value of a firm in relation to replacement costs of its assets. It is computed as

$$\text{TobinQ} = \frac{\text{Firm Value}}{\textit{Replacement Costs of Assets}}$$

where firm value is

Firm Value=Market Value of Equity+Market Value of Debt

2.1.2 Dividend Policy (DPS)

The principles, rules, and procedures that guide the determination of dividend amount, declaration, and distribution of the same are referred to as dividend policy (Ross, 1977). Dividend Per Share (DPS), Dividend Yield, and Dividend Payout Ratio are some of the comments proxies for dividend policy, and for this study, DPS is used as the proxy. DPS is an absolute measure compared to dividend yield and dividend payout ratio. DPS is calculated as follows:

$$\text{DPS} = \frac{\textit{Total Dividend Declared \& Paid}}{\textit{Number of Outstanding Shares}}$$

2.1.3 Institutional Ownership (INSTOWN)

Institutional ownership occurs in a firm's shareholding structure when a significant number of its shares are in the hands of other corporate bodies such as pension fund administrators, insurance companies, and mutual funds. Shleifer and Vishny (1986) showed that a higher level of institutional ownership is linked to strong corporate governance and enhancement of firm value.

2.1.4 Turnover (Annual Sales)

Turnover is another term used in place of the annual sales figure of a firm in monetary terms. It is a proxy used to measure firm size. Turnover is one of the measures of a firm's market share and operational efficiency. For the consumer goods sector and manufacturing sector in general, annual sales tend to correlate with costs such as costs of sales and selling and distribution costs , among others (Peter, 2022).

2.1.5 Return on Assets (ROA)

Return on assets (ROA) is one of the many ratios used to measure a firm's financial performance. It is usually measured as net income divided by total assets multiplied by 100. A higher ROA connoted that the firm is efficient in the use of organizational resources. An increase in ROA could send signals that positively impact the value of the firm. ROA is computed as follows:

$$\text{ROA} = \frac{\textit{NetIncome}}{\textit{TotalAseets}}$$

2.1.6 Equity to Debt Ratio (EDR)

Equity to Debt Ratio(EDR) is another financial metric used to measure the level of financial cover or exposure of a firm in relation to debt capital. An EDR figure that is greater than one provides more than enough cover for debt capital and the firm in question is considered a low-geared firm, whereas an EDR that is less than one might not provide enough cover for debt capital and is considered a high-geared firm. Furthermore, when a firm's EDR is much lower than one, it means that the firm is making much use of debt capital, and it could signal higher interest obligations that might hinder dividend distribution (Brealey et al., 2020; Frank & Goyal, 2009; Myers, 1977). It is computed as follows:

$$\text{EDR}=\frac{\textit{EquityCapital}}{\textit{Debt Capital}}$$

2.2 Empirical Review

Empirical works on firm characteristics dividend policy and firm value abound in various forms, and some of these works are reviewed here in relation to the study objectives and the research gap the study aims to fill:

2.2.1 Firm characteristics and dividend policy

Ugwu et al. (2020) studied the Consumer Goods Sector in Nigeria, using correlation and ex-post facto research designs for data from 2015 to 2019, and found a significant positive relationship between firm characteristics and dividend policy. Likewise, Sanyaolu et al. (2019), in their study of the Food and Beverage Sector of the Nigerian exchange, using panel data analysis on data from 2008 to 2016, reported a significant positive influence of firm characteristics on dividend policy. However, results from other climes contradict these findings. Mubaraq et al. (2021) conducted an inferential analysis on data from 2014 to 2018 in Indonesia and showed a positive significant relationship between firm characteristics and corporate governance.

Musa et al. (2020) investigated the effect of firm size, measured through annual turnover, on dividend policy among Nigerian firms. Their findings indicate that larger firms are more likely to pay dividends. Another study by Buigut (2023) in Kenya examined how institutional ownership affect dividend policy. The study concluded that institutional ownership has a significant positive effect on dividend payout. Within the consumer goods sector, a study by Margono and Gantino (2021b) in Indonesia found that firm size, represented by annual turnover, had no significant impact on dividend policy.

Furthermore, Yahaya et al. (2023) examined the effects of capital structure on dividend policy in listed manufacturing companies in Nigeria. This study adopted an ex-post facto research design and focused on variables such as total liability, debt-to-asset ratio, and debt-to-equity ratio to represent capital structure. The study found that total liability has a negative insignificant impact on dividend payout ratio, whereas debt-to-asset ratio has a positive significant impact. However, the debt-to-equity ratio had a negative insignificant impact on the dividend payout ratio.

2.2.2 Firm characteristics and firm value

Empirical evidence on firm value presents mixed results. Studies such as that by Osakwe et al. (2019) in Nigeria's Consumer Goods Sector found a significant positive relationship between dividend policy and stock price, using a panel least squares regression technique for data from 2011 to 2015. Conversely, Ejem and Ogbonna (2019) reported a negative insignificant relationship between dividend policy and firm value, employing fixed effects versus pooled regression techniques on a sample from the NGX from 2012 to 2017. Husna and Ibnu (2019) found a significant and positive relationship between return on assets (ROA) and firm value in manufacturing companies listed on the Indonesia Stock Exchange, implying that higher efficiency in asset utilization, as reflected by ROA, enhances a firm's value. Moreover, Usman (2019) analyzed how the equity-to-debt ratio influences firm value and dividend policy in Nigeria's consumer goods sector. Their research showed a positive and significant relationship between the equity-to-debt ratio and both dependent variables. Similarly, Mishra and Kapil (2017) explored how the structure of ownership and the composition of the board affect the value of firms in India, accentuating the significant role of ownership structure in this context.

2.2.3 Dividend Policy and Firm Value

Some studies, such as Rizqia and Sumiati (2013), directly investigated the relationship between dividend policy and firm value. They found a positive significant relationship in Indonesian manufacturing companies from 2006 to 2011 (Rizqia & Sumiati, 2013). Similarly, Eryomin et al. (2021) in Russia found a positive significant impact by applying regression analysis on data from 2013 to 2019 (Eryomin et al., 2021). Furthermore, Bon and Hartoko (2022), focusing on the Indonesian manufacturing sector, discovered that dividend policy does not significantly influence firm value. Their study, encompassing manufacturing firms listed on the Indonesian stock exchange from 2015 to 2019, also noted that leverage and profitability positively impact firm value. In a contrasting finding from Turkey's financial sector, Abdullah et al. (2023) observed a significant positive relationship between dividend policy and firm value. Meanwhile, Stereńczak and Kubiak (2022), studying the broader market across fourteen Central and Eastern European countries, identified a bidirectional and strong relationship between stock liquidity and dividend policy. Their findings suggest that liquidity not only influences but is also influenced by dividend policies, indicating a dynamic interplay that varies across different regional markets.

In summary, the empirical literature offers a complex yet insightful picture, with results varying according to geography, sector, and methodology. Most studies in the Nigerian context suggest a significant positive relationship between firm characteristics and both dividend policy and firm value, providing a robust backdrop for the current study.

2.3 Theoretical Review

The finance and corporate governance domains have been inundated with several theories that explain the relationship between firm characteristics and their impact on dividend policy and firm value. Some of these theories form the basis of this paper and are discussedas follows:

2.3.1 Dividend Irrelevance Theory

Given a world of no taxes, transactional costs, information asymmetry, and a perfect market, Miller and Modigliani (1961) posit that dividend policy decisions are irrelevant and add no value to a firm; they further

stated that investors are indifferent between dividend payments and capital gains. However, as theoretically sound as the theory is, it has suffered several attacks because of the underlining assumptions that make it distant from real-world situations. Nevertheless, it serves as the foundation for understanding the dividend policy phenomenon.

2.3.2 Bird-in-Hand Theory

Dividends are viewed like the proverbial bird-in-hand saying that is worth more than two in the bush, which means that dividend payments are much more certain when compared to capital gains, which are futuristic and unpredictable. Gordon and Litner (1956) posit that investors have a preference for dividends over capital gains because is it a bird in hand while capital gains are considered to have the two birds in the bush. Because of the uncertainty in the world of business and market imperfections of the real world, this theory of the bird-in-hand becomes much relevant to the real world. It is an empirical theory.

2.3.3 Signalling Theory

According to signalling theory, because of the information asymmetry between management and investors, dividend policy could be used as a barometer to gauge a firm's health. An increase in dividend payments by a firm could connotes that the managers of the firm are positive about the firm's future earnings, and a decrease could also send a signal that the firm's future is looking gloomy, and it is likely that the firm's earnings are going through a decline moment. Bhattacharya (1979) argues that firms that are confident about the outlook are more likely to pay dividends, and the reverse is the case for firms with a pessimistic outlook. The implication, if this theory holds, is that dividend payments have an impact on a firm's value because an increase in dividend payments helps to drive the share price of the firm up.

2.3.4 Pecking Order Theory

Donaldson (1961) pioneered the Pecking Order Theory, which was later improved upon by Myers and Majluf (1984). The theory argues that a firm has a preferred order of financing investment needs; the first choice of financing is internal financing, which is basically retained earnings, the second choice of financing is debt capital, and the last is equity financing. This implies that equity is the least appealing and that a firm must have exhausted internal and debt financing before resorting to equity as the last resort. Another implication is that a firm with a high equity-to-debt ratio is more likely to pay dividends than a firm with a low equity-to-debt ratio because such a firm has less debt covenant obligation and high equity-to-debt could signal strength and less financial risk, which could in turn positively impact a firm's value.

2.3.5 Agency Theory

With the separation of ownership and control from management comes the agency problem, which is simply managers' inability to align their personal goals with those of the principal (Berle & Means, 1932; Jensen & Meckling, 1976). Jensen and Meckling (1976) posit that the conflict of interest between managers and principals leads to agency costs. To tame the costs, dividend payment is one of the mechanisms at the disposal of shareholders and institutional investors. Dividend payments help reduce a firm's free cash flow, which is at the disposal of managers who are susceptible to investing in projects that are less beneficial to the principal. Furthermore, the presence of institutional shareholding could also help to check the managers of firms because institutional shareholders are often closer to the management and actively monitor the behavior of managers. The implication of consistent dividend payout and institutional shareholding is that they help curtail agency costs, which ultimately enhance a firm's value.

These theories form the bedrock for this study and will help offer indispensable insights into the relationship between firm characteristics and the two dependent variables, dividend policy and firm value. The empirical findings from this study will be aligned with the theoretical framework for a better understanding of the phenomena.

3. Methodology

3.1 Research Design

This paper adopts an ex-post facto research design, using panel multivariate multiple regression (MMR) analysis to explore and bring forth insights from the observations on the impact of firm characteristics on dividend policy and firm value in the NGX. This panel MMR method enables a more nuanced approach that looks at both cross-sectional and time series dynamics among the variables and thus helps to check unobserved heterogeneity across firms (Baltagi, 2008; Hair et al., 2006)

3.2 Data Source and Sample Selection

This study uses publicly available secondary data sources from the published annual reports of quoted firms in the consumer goods sector of the NGX. 16 firms were purposively selected from a population of 20 listed consumer goods firms on the mainboard of the NGX, and these were the firms with complete 10-year financial data, starting from 2013 to 2022, thus giving 160 statistical observations.

3.3 Variables and Measurements

Dependent Variables

1. Firm Value (TobinQ, Y1): This is assessed using Tobin's Q ratio, which is the market value of assets divided by their replacement cost.
2. Dividend Policy (DPS, Y2): This is measured by the dividend per share (DPS) as disclosed in the annual reports.

Independent Variables

1. Institutional ownership (Instown, X1): Captured as the percentage of shares held by institutional investors.
2. Turnover (Turnover, X2): Calculated as the asset turnover ratio, defined as net sales over total assets.
3. Return on assets (ROA, X3): Measured as net income over total assets.
4. Equity to Debt Ratio (EDR, X4): Calculated as total equity divided by total debt.

3.4 Econometric Model

A multivariate multiple regression model (MMR) is employed to estimate the dependent variables simultaneously. MMR is applicable in situations where two or more outcome variables, i.e., dependent variables, are regressed against one or the same set of predictor variables (Fox & Weisberg, 2011; Johnson & Wichern, 2007). The key benefit of this approach is that it allows simultaneous analysis of the impact of the set of predictors on the dependent variables. The model equations are as follows:

$$\text{TobinQ } (Y_1) = \beta_{0,1} + \beta_{1,1}X_1 + \beta_{2,1}X_2 + \beta_{3,1}X_3 + \beta_{4,1}X_4 + \epsilon_1 \ldots\ldots\ldots(1)$$

$$\text{DPS } (Y_2) = \beta_{0,2} + \beta_{1,2}X_1 + \beta_{2,2}X_2 + \beta_{3,2}X_3 + \beta_{4,2}X_4 + \epsilon_{2\ldots} \ldots\ldots\ldots(2)$$

These can also be expressed in matrix form :

$$\begin{bmatrix} Y1 \\ Y2 \end{bmatrix} = \begin{bmatrix} TobinQ \\ DPS \end{bmatrix} \begin{bmatrix} Y1 \\ Y2 \end{bmatrix} = [1\ X_1\ X_2\ X_3\ X_4] \begin{bmatrix} \beta 0,1 & \beta 0,2 \\ \beta 1,1 & \beta 1,2 \\ \beta 2,1 & \beta 2,2 \\ \beta 3,1 & \beta 3,2 \\ \beta 4,1 & \beta 4,2 \end{bmatrix} + \begin{bmatrix} \varepsilon 1 \\ \varepsilon 2 \end{bmatrix}$$

Where:

- $Dependent\ Variables (Y1\ \&\ Y2) = \begin{bmatrix} Y1 \\ Y2 \end{bmatrix} = \begin{bmatrix} TobinQ \\ DPS \end{bmatrix}$
- For the explanatory variables with intercept:
  $X = [1\ X_1\ X_2\ X_3\ X_4] = [1$ Instown Turnover
- βj,k is the coefficient for the j-th predictor variable for the k-th dependent variable.
- ε_1 and ε_2 are the error terms for Tobin's Q and DPS, respectively

Below is a graphical representation of the MMR model:

The model diagram is shown in Figure 1.

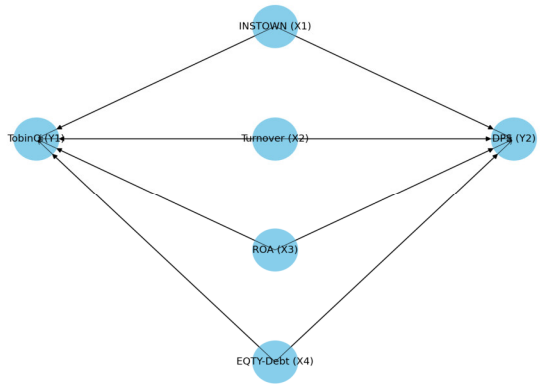

Figure 1. Model diagram

3.5 Statistical tests and diagnostics

1. Significance Level: A 5% significance level was adopted for hypothesis testing.
2. Multicollinearity: The variance inflation factor (VIF) was used to assess multicollinearity among the predictors.
3. Heteroskedasticity: White's test was conducted to examine the assumption of homoskedasticity.
4. Model Fit: Overall model fit was assessed using the F-statistic and R-squared values.

4. Results and Discussion

4.1 Descriptive Statistics

This study examined a panel dataset comprising 160 observations from 16 firms in the Consumer Goods Sector of the NGX over a 10-year period, from 2013 to 2012. The variables under consideration exhibited the following descriptive statistics:

Table 1: Descriptive Statistics

Variable	Observations	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
TobinQ (Y1)	160	160	0.408	9.414	1.919	1.640
DPS (Y2)	160	160	0.000	68.197	2.872	9.759
INSTOWN (X1)	160	160	9.000	95.000	63.381	18.250
Turnover (X2)	160	160	5.474	9.066	7.562	0.839
ROA (X3)	160	160	-18.280	26.490	4.992	7.241
EDR (X4)	160	160	-2.983	47.923	2.379	4.610

4.2 Pairwise correlation analysis

Table 2 is a pairwise correlation matrix showing the correlation between the variables for the study. Institutional ownership is positively correlated with firm value, supporting the regression findings. However, its correlation with dividend policy is not significant, which aligns with the hypothesis. Return on Assets and Equity to Debt Ratio show positive correlations with both dependent variables, corroborating their significance in the regression models. The strongest correlation involves TobinQ, DPS, and ROA, which underscores the vital role of profitability in the determination of dividend policy and firm value. Second, a weak correlation between EDR and other variables suggests that EDR, a proxy for capital, is not a strong force to reckon with in this study. Finally, institutional ownership shows a stronger relationship with turnover than that of firm value and dividend policy.

Table 2: Pairwise correlation matrix

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	tobinqy1	dpsy2	instownx1	turnover	roax3	EDR
tobinqy1	1					
dpsy2	0.6698	1				
instownx1	0.1123	0.0768	1			
Turnover	0.2321	0.2710	0.3502	1		
roax3	0.5784	0.4569	-0.1273	0.2737	1	
EDR	0.0385	0.1320	0.0372	0.0386	-0.1680	1

4.3 Regression Analysis and Interpretation

4.3.1 Regression Analysis:

The multivariate regression model (MMR) was employed to estimate the relationships between the independent and dependent variables simultaneously. For Tobin's Q, the model had an R-squared value of 38.79%, indicating that approximately 38.8% of the variability in firm value can be explained by the independent variables. Similarly, for dividend per share (Y2), the R-squared value was 27.88%, implying that the model accounts for approximately 27.9% of the variability in dividend policy.

From Table 3 in the appendix, Firm value, proxied by Tobin's Q (tobinqy1), the study shows that Return on Assets (ROA) and Equity to Debt Ratio (EDR) are significant predictors. Specifically, ROA was the most significant factor (coefficient = 0.1426, $p < 0.001$). This underscores the notion that profitability is an important determinant of firm value, which aligns with the economic theory that firms with higher profitability are likely to be valued more highly in the market (Fama & French, 2006). Secondly, the EDR shows a significant and positive relationship (coefficient = 0.0490, $p = 0.033$) with firm value, meaning that firms with lower leverage tend to have higher firm valuations. Furthermore, institutional ownership (instownx1) also presented a positive association with firm value (coefficient = 0.0172, $p = 0.006$), though with a low effect going by the coefficient value. The implication being that the presence of institutional ownership could be perceived as better governed or more stable, thereby attracting a higher valuation. Remarkably, turnover, as measured in its logarithmic form (Turnover_log), did not exhibit a significant impact on firm value ($p = 0.861$), which means that the size or scale of operations, as captured by turnover, may not be a primary driver of firm valuation within the context of this study.

In the context of dividend policy, the second dependent variable, as shown in Table 3, the analysis shows that ROA and EDR are significant factors. ROA, under the second regression equation, also shows a strong positive relationship with DPS (coefficient = 0.6417, $p < 0.001$), buttressing the notion that more profitable firms have greater capacity or propensity to distribute dividends. Equally, the EDR (coefficient = 0.4331, $p = 0.004$) exhibits a significant and positive relationship with DPS, suggesting that firms with a lower debt profile have greater financial flexibility that allows them to distribute dividends. In contrast, institutional ownership did not demonstrate a statistically significant impact on dividend policy ($p = 0.209$), meaning that the type of ownership is not a relevant factor in the determination of dividend policy. Similarly, turnover was not statistically significant in predicting dividend policy ($p = 0.203$).

Overall, ROA is the most significant predictor of outcome variables, firm value, and dividend policy. Next is the equity-to-debt ratio (EDR), which is also statistically significant across both dependent variables. This underscores the relevance of capital structure in corporate finance.

4.3.2 Robustness Tests

To validate the robustness of the regression models, several diagnostic tests were conducted. Variance inflation factor (VIF) values were well below the commonly used threshold of 10, indicating that multicollinearity is not a concern(Table 4. White's test was employed to examine the assumption of homoscedasticity. The test indicated that heteroskedasticity is present, justifying the use of robust standard errors in the regression models.

4.3.3 Heteroskedasticity Test

The regression analyses for both dependent variables, Tobin's Q (tobinqy1) and DPS (dpsy2), exhibited signs of heteroskedasticity, as evidenced by White's test. For Tobin's Q, a chi-square statistic of 72.11 ($p < 0.0001$) and for DPS, a chi-square statistic of 78.94 ($p < 0.0001$), both reject the null hypothesis of homoskedastic residuals. This suggests that the variance of the error terms is not constant across observations for either model. To address this, it is recommended to use robust standard errors, which can provide more reliable significance tests in the presence of heteroskedasticity. These findings underline the importance of checking assumptions in regression analysis and taking corrective measures to ensure accurate interpretation of the results.

4.3.4 Simultaneous Analysis

Further to the MMR conducted, a simultaneous regression analysis was conducted with the aim of bringing additional insights into the MMR results. The presence of heteroskedasticity in the MMR justifies the need for this analysis.

Model 1 (Tobin's Q as the Dependent Variable): under this simultaneous model, ROA (coefficient of 0.1425805 and a p-value less than 0.0001) and EDR (coefficient of 0.0489512 and a p-value of 0.033) are statistically significant and positive in relation to firm value.

Model 2 (Dividend Per Share as the Dependent Variable): similarly, under this simultaneous model, ROA (coefficient of 0.6416803 and a p-value of 0.000) and EDR (coefficient of 0.433083 and a p-value of 0.004) are statistically significant and positive in relation to firm value. Institutional ownership and turnover are not significant variables under the two models.

In sum, ROA and EDR are consistent predictors in both models and even under the MMR model. This emphasizes the importance of profitability and capital structure as significant predictors of both market valuation and dividend policy. Another implication of this is that profitability and low-gear capital structure command a premium in the market, which also implies that such firms are more likely to distribute higher dividends.

4.3.4 hypotheses Revisited

Institutional ownership, which was tested under the, H01 returned a mixed outcome. It is significantly and positive on firm value under the multivariate multiple regression model, but insignificant under simultaneous regression analysis, suggesting that the impact is model dependent. Again, institutional ownership has no effect on dividend policy across either model. H02 on turnover is accepted across models for both outcome variables, meaning that turnover does not significantly influence either firm value or dividend policy.

In contrast, H03 and H04 for Return on Assets (ROA) and the Equity to Debt Ratio were rejected, paving the way for the alternate. Both variables demonstrate a significant and positive influence on firm value and dividend policy across the various models employed in this study.

5. Conclusion and Recommendations

5.1 Conclusion

This study sought to investigate the impact of various firm characteristics—institutional ownership, turnover, return on assets, and equity to debt ratio—on firm value and dividend policy in the consumer goods sector of the NGX. Employing a multivariate regression model and simultaneous analysis for robustness on a dataset comprising 160 observations from 16 firms over 10 years (2013-2022), the study finds that ROA and EDR are significant predictors of firm value and dividend policy across all models, whereas institutional ownership was only significant under the MMR model for firm value. Turnover (log of Annual Turnover) interestingly is not a significant predictor of firm value and dividend policy across the models adopted for the study.

5.2 Recommendations

Following the outcome of this study, it is recommended that

I. Managers of firms in the consumer goods sector of the NGX should ensure a higher return on assets (ROA) to sustain firm value, which in turn signals the flow of dividends to investors.

II. Managers in the sector should optimize their capital structure in favor of retained earnings and equity and use less debt to boost value and ensure a sustainable dividend policy.

III. Firms in the sector might also consider increasing institutional ownership to improve firm value. Doing so will be consistent with the Agency theory and has a signaling effect on the investing community, which will ultimately help enhance value. However, they should note that it may not have a significant impact on dividend policy.

IV. While turnover did not have a significant impact, firms should still strive for efficient asset use as it could have other benefits not captured in this study.

Further research

This study focused mainly on the individual impacts of various firm characteristics on dividend policy and firm value, operating under the assumption of exogenity. However, it did not explore the potential bidirectional effect. This occurs when dividend policy affects firm value and firm value affects dividend policy. This form of interaction could provide further insight into the predictors and outcome variables.

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Appendix

Table 3: Multivariate Multiple Regression

Equation	Obs	Parms	RMSE	"R-sq"	F	P>F
tobinqy1	160	5	1.299821	0.3879	24.55994	0.0000
dpsy2	160	5	8.39345	0.2788	14.98205	0.0000

	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
tobinqy1						
instownx1	.0172241	.0062256	2.77	0.006	.0049262	.0295221
Turnover_log	-.0245443	.1402526	-0.18	0.861	-.3015976	.252509
roax3	.1425805	.0155466	9.17	0.000	.1118699	.173291
EDR	.0489512	.0227813	2.15	0.033	.0039494	.093953
_cons	.1841999	.954625	0.19	0.847	-1.701554	2.069954
dpsy2						
instownx1	.0507465	.0402012	1.26	0.209	-.0286664	.1301594
Turnover_log	1.15876	.9056656	1.28	0.203	-.63028	2.9478
roax3	.6416803	.1003905	6.39	0.000	.4433703	.8399904
EDR	.433083	.1471074	2.94	0.004	.142489	.723677
_cons	-13.34004	6.164384	-2.16	0.032	-25.51709	-1.162999

Table 4: Multicollinearity statistics:

	INSTOWN (X1)	Turnover (X2)	ROA (X3)	EDR (X4)
Tolerance (TobinQ (Y1))	0.823	0.768	0.839	0.964
VIF (TobinQ (Y1))	1.215	1.302	1.193	1.038
Tolerance (DPS (Y2))	0.823	0.768	0.839	0.964
VIF (DPS (Y2))	1.215	1.302	1.193	1.038

Table 5: Heteroskedasticity Tests

. . estat imtest, white
White's test
H0: Homoskedasticity
Ha: Unrestricted heteroskedasticity
chi2(14) = 72.11
Prob > chi2 = 0.0000
Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	72.11	14	0.0000
Skewness	17.17	4	0.0018
Kurtosis	3.63	1	0.0568
Total	92.90	19	0.0000

. estat imtest, white
White's test
H0: Homoskedasticity
Ha: Unrestricted heteroskedasticity
chi2(14) = 78.94
Prob > chi2 = 0.0000
Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	78.94	14	0.0000
Skewness	21.60	4	0.0002
Kurtosis	2.64	1	0.1039
Total	103.18	19	0.0000

Table 6: Simultaneous results

. estimates store model1
. estimates store model2
. reg tobinqy1 instownx1 Turnover_log roax3 EDR

Source	SS	df	MS	Number of obs	=	160
				F(4, 155)	=	24.56
Model	165.97954	4	41.494885	Prob > F	=	0.0000
Residual	261.877964	155	1.68953525	R-squared	=	0.3879
				Adj R-squared	=	0.3721
Total	427.857504	159	2.6909277	Root MSE	=	1.2998

tobinqy1	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
instownx1	.0172241	.0062256	2.77	0.006	.0049262	.0295221
Turnover_log	-.0245443	.1402526	-0.18	0.861	-.3015976	.252509
roax3	.1425805	.0155466	9.17	0.000	.1118699	.173291
EDR	.0489512	.0227813	2.15	0.033	.0039494	.093953
_cons	.1841999	.954625	0.19	0.847	-1.701554	2.069954

. estimates store model1
. reg dpsy2 instownx1 Turnover_log roax3 EDR

Source	SS	df	MS	Number of obs	=	160
				F(4, 155)	=	14.98
Model	4221.94198	4	1055.48549	Prob > F	=	0.0000
Residual	10919.7493	155	70.4499955	R-squared	=	0.2788
				Adj R-squared	=	0.2602
Total	15141.6913	159	95.2307628	Root MSE	=	8.3934

dpsy2	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
instownx1	.0507465	.0402012	1.26	0.209	-.0286664	.1301594
Turnover_log	1.15876	.9056656	1.28	0.203	-.63028	2.9478
roax3	.6416803	.1003905	6.39	0.000	.4433703	.8399904
EDR	.433083	.1471074	2.94	0.004	.142489	.723677
_cons	-13.34004	6.164384	-2.16	0.032	-25.51709	-1.162999

. estimates store model1
. suest model1 model2
Simultaneous results for model1, model2 Number of obs = 160

	Coefficient	Robust std. err.	z	P>|z|	[95% conf. interval]	
model1_mean						
instownx1	.0507465	.0303649	1.67	0.095	-.0087676	.1102606
Turnover_log	1.15876	.5058339	2.29	0.022	.167344	2.150176
roax3	.6416803	.1994361	3.22	0.001	.2507928	1.032568
EDR	.433083	.2592091	1.67	0.095	-.0749574	.9411234
_cons	-13.34004	4.343532	-3.07	0.002	-21.85321	-4.826879
model1_lnvar						
_cons	4.254903	.3481619	12.22	0.000	3.572518	4.937288
model2_mean						
instownx1	.0507465	.0303649	1.67	0.095	-.0087676	.1102606
Turnover_log	1.15876	.5058339	2.29	0.022	.167344	2.150176
roax3	.6416803	.1994361	3.22	0.001	.2507928	1.032568
EDR	.433083	.2592091	1.67	0.095	-.0749574	.9411234
_cons	-13.34004	4.343532	-3.07	0.002	-21.85321	-4.826879
model2_lnvar						
_cons	4.254903	.3481619	12.22	0.000	3.572518	4.937288

. suest _est_model1 _est_model2
estimation result _est_model1 not found
r(111);
. . regress tobinqy1 instownx1 Turnover_log roax3 EDR

Source	SS	df	MS	Number of obs	=	160
				F(4, 155)	=	24.56
Model	165.97954	4	41.494885	Prob > F	=	0.0000
Residual	261.877964	155	1.68953525	R-squared	=	0.3879
				Adj R-squared	=	0.3721
Total	427.857504	159	2.6909277	Root MSE	=	1.2998

tobinqy1	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]	
instownx1	.0172241	.0062256	2.77	0.006	.0049262	.0295221
Turnover_log	-.0245443	.1402526	-0.18	0.861	-.3015976	.252509
roax3	.1425805	.0155466	9.17	0.000	.1118699	.173291
EDR	.0489512	.0227813	2.15	0.033	.0039494	.093953
_cons	.1841999	.954625	0.19	0.847	-1.701554	2.069954

. . estimates store model1
. . regress dpsy2 instownx1 Turnover_log roax3 EDR

Source	SS	df	MS	Number of obs	=	160
				F(4, 155)	=	14.98
Model	4221.94198	4	1055.48549	Prob > F	=	0.0000
Residual	10919.7493	155	70.4499955	R-squared	=	0.2788
				Adj R-squared	=	0.2602
Total	15141.6913	159	95.2307628	Root MSE	=	8.3934

dpsy2	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
instownx1	.0507465	.0402012	1.26	0.209	-.0286664	.1301594
Turnover_log	1.15876	.9056656	1.28	0.203	-.63028	2.9478
roax3	.6416803	.1003905	6.39	0.000	.4433703	.8399904
EDR	.433083	.1471074	2.94	0.004	.142489	.723677
_cons	-13.34004	6.164384	-2.16	0.032	-25.51709	-1.162999

. . estimates store model2
. . suest model1 model2
Simultaneous results for model1, model2 Number of obs = 160

	Coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
model1_mean						
instownx1	.0172241	.0049221	3.50	0.000	.0075771	.0268712
Turnover_log	-.0245443	.092222	-0.27	0.790	-.2052961	.1562075
roax3	.1425805	.0259286	5.50	0.000	.0917614	.1933995
EDR	.0489512	.0221811	2.21	0.027	.0054771	.0924253
_cons	.1841999	.7061034	0.26	0.794	-1.199737	1.568137
model1_lnvar						
_cons	.5244535	.1684086	3.11	0.002	.1943787	.8545283
model2_mean						
instownx1	.0507465	.0303649	1.67	0.095	-.0087676	.1102606
Turnover_log	1.15876	.5058339	2.29	0.022	.167344	2.150176
roax3	.6416803	.1994361	3.22	0.001	.2507928	1.032568
EDR	.433083	.2592091	1.67	0.095	-.0749574	.9411234
_cons	-13.34004	4.343532	-3.07	0.002	-21.85321	-4.826879
model2_lnvar						
_cons	4.254903	.3481619	12.22	0.000	3.572518	4.937288