

# FINANCIAL INDICATORS IN DETERMINING MARKET SHARE PRICES OF HEALTHCARE SECTOR COMPANIES LISTED ON BSE

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#### Abstract

The relationship over dividend policy and market share price is a highly contested topic within the realm of corporate finance. There exists a substantial body of literature both in support of and in opposition to this matter. The objective of this study is to assess the impact of dividend policy on the market prices of shares belonging to the healthcare sector firms that are listed on the Bombay Stock Exchange (BSE) during the period of 2013-2022. The data were analysed using various panel data regression models, including pooled regression, fixed effect model, and random effect model. The Hausman test has been employed to propose the regression model that is best suitable. The Hausman test suggests that the random effect model is better appropriate for explaining the relationship between the variables under consideration. The findings of the random effects regression model provide empirical support for the pertinent theories and frameworks pertaining to dividend policy. Therefore, it can be inferred that there exists a substantial impact of dividend policy on the stock price of companies.

**Keywords:** Dividend, Regression, Stock Price, Value of the Firm, Dividend yield, Retention Ratio, Profit after Tax, Return on Equity.

#### **INTRODUCTION**

The subject of dividend policy has garnered significant attention and extensive research within the realm of corporate finance. However, the issue of whether dividend policy has an impact on stock prices continues to be a subject of debate among managers, legislators, and researchers. Each company operating within a specific industry adheres to a dividend model or dividend policy, which is regarded as a metric for evaluating the financial performance of the company. The act of increasing dividend payments is often regarded as a favourable signal, while a drop-in dividend payment is viewed as an unfavourable signal regarding the future earnings potential of a company. Consequently, both signals can result in either an increase or decrease in the share prices of the firm. The corporation incurs a dividend distribution tax when it disburses dividends. Consequently, this leads to an escalation in the company's expenses, thereby diminishing the pool of cash that may be allocated towards future initiatives. The significance of dividend policy extends to several stakeholders, including investors, managers, lenders, and other relevant parties. Dividends hold significance for investors as they serve as both a means of generating income and a metric for evaluating corporations from an investing perspective. This assessment pertains to the company's ability to create cash flow. By possessing data on dividend yield (DY) and dividend pay-out ratio (DPO), an investor can





conduct a more comprehensive and precise evaluation of the company's financial performance. According to Al-Twaijry (2007), the pay-out ratio (POR) significantly influences the prospective earnings growth of a corporation. Given that Profitability of the firm (POR) and Dividend Yield (DY) are significant considerations for investors when making investment decisions, it is plausible that dividend policy could potentially impact the volatility of share prices. In the initial stages of corporate finance, the focus of dividend policy revolved around the decision-making process of distributing earnings to shareholders in the form of cash dividends or retaining the profits within the company. This factor establishes the frequency and magnitude of dividend disbursements. Nevertheless, within the realm of contemporary corporate finance, the concept of dividend policy encompasses a broader range of considerations. These include strategies for enticing investors across various tax rates, as well as methods for enhancing a firm's market value, among other pertinent factors. The subsequent part pertaining to the theoretical framework offers an elucidation of prevalent dividend theories and models.

## THEORETICAL BACKGROUND

This research focuses on the Gordon Dividend Model to analyze dividend policies of companies in the healthcare sector on the BSE, contrasting it with other theories like Modigliani and Miller's (MM) hypothesis and Walter's model. Gordon's model, known for its unique approach in valuing share prices based on future dividend projections, stands out despite criticisms of its assumptions. In contrast, the MM theory, introduced in 1961, advocates the dividend irrelevance hypothesis, suggesting that a company's dividend policy does not impact its share price or shareholder wealth. This theory posits that a firm's value is determined by its assets' earning capacity and investment strategy rather than its dividend distribution strategy, encompassing retained earnings and dividends. MM theory outlines three potential effects of dividend payments on business value: informational, clientele, and signaling.

Bhattacharya (1979), Miller and Rock (1985), and Williams (1988) interpret a dividend increase as a positive signal. While MM's hypothesis is logically consistent, its reliance on perfect market assumptions - like the absence of taxes, transaction costs, and hazards - limits its real-world applicability. In reality, internal financing often proves more cost-effective than external due to transaction costs. Additionally, the presence of taxes, with different rates for capital gains and dividends, affects investor preferences.

In the Indian context, the taxation pattern for dividends and capital gains differs significantly, influencing investment decisions. Jensen and Meckling (1976) introduced the concept of dividend distribution as a method to reduce agency costs. Jensen (1986) further argued that firms with surplus cash flows prefer dividend distributions to prevent wastage on unprofitable projects, highlighting the role of dividend policy in mitigating agency conflicts and enhancing shareholder value.

Walter's (1963) model establishes a link between a firm's dividend and investment policies, suggesting a joint impact on company value. This model focuses on the relationship between a firm's internal rate of return and its cost of capital, guiding optimal dividend policy based on





this interaction. Gordon's (1963) theory, aligning with Kirshman's 'bird-in-the-hand' principle, emphasizes the importance of current dividends in valuing a company and forms the basis for this study.

This research aims to assess the effect of dividend policy on market performance of share prices at the BSE, examining financial indicators like EPS, dividend yield, DPS, ROE, PAT, and retention ratio on the market price of shares. Despite criticisms, Gordon's model serves as a robust framework for this analysis, offering insights into the valuation of companies based on their dividend policies.

## **REVIEW OF LITERATURE**

The discourse on dividend policy and its influence on corporate valuation has been extensive, with a plethora of research since the mid-20th century exploring the effects of dividend policy on stock market valuations. Gordon's 1963 study, among others, suggests that regular dividend distributions significantly influence stock market values. This view contrasts with Miller and Scholes' 1978 assertion of dividend insignificance, proposing instead that dividends reduce the value of shareholder investments. While there has been abundant research in the field of dividend policy and market price, few studies have specifically delved into how dividend policy affects market price sensitivities (MPSs). This study aims to fill this gap by examining the impact of dividend policy on the market price of shares (MPSs) in Indian companies.

The exploration of dividend policy must acknowledge Linter's pivotal 1956 inquiry into the effects of managerial decisions on the size, structure, and timing of dividends. Following Linter, Miller and Modigliani in 1961 introduced the Dividend Irrelevance theory, suggesting that dividend policy does not affect stock prices. This viewpoint has been supported by various researchers like Black and Scholes (1974), Chen, Firth, and Gao (2002), Adefila, Oladipo, and Adeoti (2004), Uddin and Chowdhury (2005), Denis and Osobov (2008), and Adesola and Okwong (2009), who collectively uphold the notion that dividends don't significantly influence stock prices.

In contrast, Gordon's 1963 exposition on the dividend relevance theory offers a different perspective, emphasizing the impact of dividend policy on a firm's valuation and its share prices. Despite the extensive research in this field, the specific effect of dividend policy on market price sensitivities (MPSs) remains underexplored. Addressing this research gap, the current study investigates the influence of dividend policy on the market price of shares, with a particular focus on Indian companies, thereby contributing to the broader understanding in this field.

# **RESEARCH METHODOLOGY**

This section of the paper will include a comprehensive discussion of the data, variables, and research instruments and techniques employed in the present study.





## Data and variables

The objective of this study is to provide a scholarly contribution to the field of corporate financial management by examining the dividend policy in the context of the Indian stock market. This study focuses on examining the correlation between dividend policy and market price sensitivities (MPSs) of healthcare sector companies that are listed on the Bombay Stock Exchange (BSE) over the period of 2013-2022. The determination of the data period and sample size, specifically the number of selected companies, is contingent upon the accessibility of the necessary data. The data has been sourced from the Prowess database. The analysis of the relationship between dividend policy and the share price of a firm is conducted using the panel data methodology. In the context of panel data regression analysis, the dependent variable is represented by MPS, whereas the independent variables consist of DY, RR, EPS, DPS, ROE, and PAT.

**MPS, or market price per share**, denotes the closing price of each company's shares at the conclusion of the specified sample period.

The dividend yield (DY) is a metric used to assess the rate of return on an investment. The calculation involves the division of DPS by MPS.

The dividend yield (DY) =  $\frac{\text{Dividend per share}}{\text{Price per share}}$ 

The retention ratio (RR) is determined by dividing the aggregate retained earnings by the total earnings at the conclusion of the fiscal year. Alternatively, it can be formulated as:

The retention ratio (RR) = 1 - Dividend Pay-out Ratio

**Earnings per share (EPS)** is a financial metric that is determined by dividing the total earnings of a company by the number of outstanding shares of its stock at the conclusion of the fiscal year.

Earnings per share (EPS) =  $\frac{\text{Dividends}}{\text{Number of share}}$ 

**Dividend per share (DPS)**, refers to the aggregate amount of declared dividends distributed by a firm for each outstanding equity share. The number of shares held by DPS. The calculation of dividends, also known as return on equity (ROE), is as follows:

Dividend per share (EPS) =  $\frac{\text{Dividends}}{\text{Number of share}}$ 

## Return on Equity (ROE) is calculated as:

Return on Equity (ROE) = <u>Earnings Available to Equity Shareholders</u> <u>Net Worth</u>

**Profit after tax (PAT)** refers to the net income obtained by a company entity after accounting for all expenses associated with taxation.

Profit after tax (PAT) = Operating Income \* (1 - tax rate)





## **Tools Employed for Analysis**

In this study, we have employed various statistical tests, including descriptive statistics, correlation analysis, unit root tests, and panel regression analyses, to examine the impact of dividend policy on the marginal propensity to save (MPS).

## **Descriptive Statistics and Test for Normality.**

Descriptive statistics encompass a range of measures that provide valuable insights into the characteristics of variables. These measures include the mean, median, mode, standard deviation, variance, kurtosis, and skewness. In the context of a normal distribution, it is expected that both skewness and kurtosis possess a value of zero. Additionally, the Jarque-Bera test of normality is employed, utilizing ordinary least squares (OLS) residuals. The null hypothesis posited in this test asserts that the residuals exhibit a normal distribution.

#### **Correlation Analysis**

Correlation refers to the statistical measure that quantifies the association or connection between two variables. The correlation coefficient provides insight into two fundamental aspects: firstly, it indicates the direction of the relationship between two variables, and secondly, it quantifies the magnitude of the association between the variables.

#### **Unit Root Test**

Prior to utilizing regression analysis, it is crucial to undertake a comprehensive examination of the unit root characteristics exhibited by both the spot and future series. In order to conduct the regression analysis, it is necessary to ensure that the variables are transformed into a stationary state if they exhibit non-stationarity. The present study employs the methodologies proposed by Levin, Lin, and Chu (LLC) (2006), the Breitung t-statistic, Im, Pesaran, and Shin (IPS) (2001), as well as the Augmented Dickey-Fuller (ADF) and Fisher chi-square tests to examine the unit root characteristics of the variables under investigation. The null hypothesis posited in this test asserts that the variables under consideration exhibit nonstationary. If the variables exhibit stationarity when differenced once, they are considered to be integrated variables of first order, as denoted by Equation (1). In the event of discordance among the outcomes of these tests, we make an inference based on the prevailing majority.

## Regression Analysis: Pooled Ordinary Least Square, Fixed and Random Effect.

The statistical methodology employed aims to assess the degree of correlation between the dependent variable, namely the Market Price per Share (MPS), and a set of independent variables, namely Dividend Yield (DY), Risk Ratio (RR), Earnings per Share (EPS), Return on Equity (ROE), and Dividends per Share (DPS), within the context of the BSE healthcare sector index. This relationship is quantified through the utilization of the equations provided.

## MPS = f(DY, RR, EPS, DPS, ROE, PAT)(1)

Various techniques are employed to assess the static models, including pooled ordinary least squares (OLS), fixed effects (FEs), and random effects (REs). The pooled ordinary least squares (OLS) approach is a statistical technique used for regression analysis, which aims to





determine the optimal line of fit for a given dataset. This method allows for the visualization and examination of the relationship between individual data points within the dataset. Fixed effect models are employed to examine the associations between independent factors and dependent variables in distinct entities, under the assumption that individual entities possess unique properties that impact the relationships between these variables. In this context, it is assumed that the intercept varies among different cross-sections, but remains constant inside a certain cross-section, without any temporal changes. Random effect models are characterized by the presence of random variations among companies that are not connected with explanatory variables. In this context, it is assumed that the intercept is subject to random variation. The Hausman test is employed to determine the superior model among the latter two options, making it a valuable tool for selecting the proper panel regression. The null hypothesis posits that the random effects (RE) model is suitable, whereas the alternative hypothesis posits that the fixed effects (FE) model is more suitable.

## **EMPIRICAL FINDINGS**

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## **Descriptive Statistics and Jarque Bera**

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	MPS	EPS	DPS	DY	RR	ROE	PAT
Mean	1006.48	56.75	14.53	3.25	76.71	20.30	4317.09
Std. Dev.	2867.90	79.09	25.11	7.12	116.13	13.86	5292.0
Skewness	6.38	3.67	5.78	6.41	19.76	1.38	1.84
Kurtosis	46.29	17.89	46.76	71.31	411.09	7.87	7.32

0.00

**Table 1: Descriptive Statistics** 

Table 1 displays the descriptive statistics for the variables. The observed distributions exhibit non-normal characteristics, as evidenced by the presence of non-zero skewness and kurtosis values. The variables provided exhibit a positive skewness. Additionally, it should be noted that all of the variables exhibit leptokurtic characteristics. According to the data presented in Table 1, it is evident that the probability values associated with the JB test are zero. Therefore, based on the rejection of the null hypothesis for residual normality, it can be inferred that the variables under consideration do not exhibit a normal distribution.

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#### **Correlation Analysis**

Table 2:	Correlation	Matrix
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	MPS	EPS	DPS	DY	RR	ROE	PAT
MPS	1						
EPS	0.67	1					
DPS	0.40	0.71	1				
DY	-0.12	0.34	0.58	1			
RR	0.00	-0.02	0.06	-0.04	1		
ROE	0.17	0.28	0.31	0.05	-0.13	1	
PAT	-0.07	0.04	0.05	0.03	-0.06	0.14	1





Table 2 displays the correlations among the chosen variables. The obtained correlation data demonstrate a negative relationship between DY and PAT with MPS, whereas EPS, DPS, ROE, and RR exhibit a positive association with MPS.

The results indicate a positive correlation between ROE and all other variables, with the exception of RR, which exhibits a negative correlation. Additionally, it can be observed that earnings per share (EPS) exhibits a strong positive correlation, whilst dividends per share (DPS) displays a moderate positive association with market price of stocks (MPS).

There exists a strong positive correlation between DPS and EPS, while a negative correlation is shown between RR and EPS. There exists a positive correlation between dividend yield (DY) and return on equity (ROE) with dividends per share (DPS).

## **Unit Root Test**

	P - Value						
	LLC	Breitung	IPS	ADF	РР	ROE	Inference
MPS	0.00	1.00	0.70	0.01	0.00	0.00	Stationery
EPS	0.00	1.00	0.00	0.07	0.00	0.03	Stationery
DPS	0.00	0.78	0.00	0.00	0.00	0.01	Stationery
DY	0.00	0.03	0.33	0.00	0.00	0.00	Stationery
RR	0.00	1.00	0.02	0.00	0.00	0.00	Stationery
ROE	0.00	0.93	0.04	0.00	0.00	0.00	Stationery
PAT	0.00	0.38	0.05	0.04	0.00	0.30	Stationery

Table 3: Results of Unit Root Test

Source: Computed.

Notes: LLC: Levin, Lin and Chu; Breitung: Breitung t-stat; IPS: Im, Pesaran and ShinW-stat; ADF: Augmented Dickey– Fuller; and PP: Fisher chi-square.

It is imperative that all variables provided exhibit stationarity prior to doing regression analysis. In order to conduct an analytical assessment, several tests are utilized, including the LLC test, Breitung t-stat test, IPS W-stat test, ADF test, and Fisher chi-square test. The rejection of the null hypothesis of unit root (non-stationarity) is apparent in Table 4, as indicated by the majority of these tests at a significance level of 5 percent.

Nevertheless, discrepancies arise when comparing the outcomes of several examinations. Therefore, we make inferences based on the majority of results. Therefore, it can be deduced that all the aforementioned series, namely DY, MPS, EPS, DPS, RR, ROE, and PAT, exhibit stationarity at a significance level of 5%.





#### **Multiple Regression Analysis**

MPS – Dependent Variable						
	Coefficient—Beta (Prob.)					
Independent Variable	Ordinary Least Squares	Fixed Effects	Random Effects			
EPS	36.48 # (0.00)	32.22 # (0.00)	30.62# (0.00)			
DPS	4.82(0.31)	3.06 (0.66)	4.76 (0.42)			
DY	-161.01# (0.00)	-169.53# (0.00	-183.36# (0.00)			
RR	-0.13(0.69)	-0.04 (0.93)	-0.09 (0.78)			
ROE	-8.41* (0.05)	-12.30* (0.05)	-9.12# (0.03)			
PAT	-0.05# (0.00	-0.04(0.37)	-0.03# (0.02)			
Adj. R2	0.75	0.81	0.65			
F-stat. (Prob.)	229.15 (0.00	39.46 (0.00)	149.05 (0.00)			
Wald test Chi-square stat. (Prob.)	1652.73	568.98	771.45(0.00)			
Hausman p-value	0.76					

#### **Table 4: Multiple Regression Analysis**

Notes: 1. #Significance at the 5 per cent level.

2. \*Significance at the 10 per cent level

Table 4 displays the primary outcomes derived from several panel data regression models, including pooled ordinary least squares (POLS), fixed effects (FE), and random effects (RE) models. Given the perceived lack of reliability associated with POLS, it is customary to employ fixed effects (FE) and random effects (RE) regressions as alternative methodologies.

The regression analysis conducted on all three models reveals that earnings per share (EPS) has a statistically significant positive effect on market price of stock (MPS). Conversely, variables such as dividend yield (DY), return on equity (ROE), and profit after tax (PAT) have statistically significant negative effects on MPS, with significance levels of either 5 percent or the maximum 10 percent.

The Hausman test suggests that the random effects (RE) model is better appropriate for explaining the relationship between the variables under consideration, as the null hypothesis is not rejected. Therefore, we just consider the outcomes of the RE model and engage in a comprehensive analysis. The random model demonstrates a capacity to account for 68.25% of the overall variance in MPS.

Additionally, it has been observed that both F-statistics and Wald-test  $\chi^2$  statistics exhibit statistical significance. Therefore, in general, the model demonstrates a strong alignment. The findings shown in Table 5 clearly indicate that EPS exerts a statistically significant favourable influence on MPS, with a significance level of 5 percent. The findings align with the results documented in the studies conducted by Pushpa and Sumangala (2012) as well as Adesina et al. (2017).

Moreover, the study of the RE regression model reveals that the dividend per share does not have a statistically significant impact on the market price of the company. This finding aligns with the findings of Denis and Osobov (2008), Adesola and Okwong (2009), and Adesina et





al. (2017). Nevertheless, the null hypothesis, which suggests that there is no significant impact of RR on MPS, cannot be refuted. Therefore, it may be deduced that there is no statistically significant correlation between the RR and MPS. The findings presented here diverge from the findings documented in the studies conducted by Adesina et al. (2017), Taimur, Harsh, and Rekha (2015), and Mohammad (2013).

Furthermore, the null hypothesis, which posits that there is no impact of DY on MPS, is rejected at a significance level of 5 percent. Dysfunctional youth (DY) has been observed to exert a deleterious influence on maternal parenting style (MPS). This finding is consistent with the findings reported by Baskin (1989). In a similar vein, the null hypothesis that there is no significant impact of return on equity (ROE) on market price of stock (MPS) is rejected with a level of significance of 5 percent. The research findings indicate that the return on equity (ROE) has a detrimental effect on the marginal propensity to save (MPS).

This finding contradicts the findings of Khan, Amir, Qayyum, Nasir, and Khan (2011), Bashir and Periyasami (2022). Similarly, the findings suggest that the control variable PAT exhibits a statistically significant negative impact on MPS. The findings of this study are inconsistent with the findings reported by Khan et al. (2011). Given that the majority of the explanatory variables exhibit significance with a moderate value of R2, and none of the explanatory variables demonstrate perfect or near-perfect correlation, it can be concluded that the random model does not exhibit multicollinearity.

Therefore, based on the findings of the regression analysis, it can be inferred that earnings per share (EPS) exert a positive influence on the market price of a stock (MPS). Conversely, dividend per share (DPS) and retained earnings (RR) do not exhibit any significant effects on the MPS. Furthermore, dividend yield (DY), return on equity (ROE), and profit after tax (PAT) are found to have a detrimental impact on the MPS. Therefore, it may be inferred that owners prioritize the dividend yield (DY) provided by a stock rather than solely considering the absolute amount of dividend paid per share.

This phenomenon occurs due to the positive correlation between dividend payment and the market price of shares, leading to a reduction in the dividend yield. In summary, it can be inferred that the distribution of dividends has an influence on the marginal propensity to save (MPS), hence indicating that the dividend policy exerts an effect on the price of stocks. The outcomes align with the research conducted by Baskin (1989), Chen, Huang, and Cheng (2009), and Khan et al. (2011), but differ with the findings of Ali and Chowdhury (2010). The findings of this study provide empirical support for the dividend relevance theories and models proposed by Gordon and Walter.

# FINDINGS AND SUGGESTIONS

This article examines the impact of dividend policy on market price sensitivities (MPSs) of BSE healthcare sector companies within a certain sample period. The correlation analysis reveals that there is a negative relationship between DY and MPS, but other variables such as EPS, DPS, return on profits, and RR exhibit positive correlations with MPS. The regression





analysis conducted on all three models reveals that there is a positive relationship between earnings per share (EPS) and market price of stocks (MPS). Conversely, variables such as dividend yield (DY), return on equity (ROE), and profit after tax (PAT) exhibit a negative impact on MPS, with statistical significance observed at either the 5% or 10% level. The Hausman test suggests that the random effects (RE) model is better appropriate for explaining the relationship between the variables under consideration, as the null hypothesis is not rejected.

Based on the study of the regression model, it can be inferred that there is a positive relationship between EPS and MPS. However, no significant impacts were observed between DPS and RR with respect to MPS. Conversely, DY, ROE, and PAT were shown to have a negative impact on MPS. Therefore, it may be deduced that shareholders do not primarily consider the exact amount of dividend paid per share, but rather focus on the dividend yield (DY) generated by the firm.

Dividend payment leads to a rise in the market value of the company, thereby leading to a decrease in the dividend yield. In summary, it can be inferred that the distribution of dividends has an influence on marginal propensity to save (MPS), hence indicating that the dividend policy exerts an effect on the valuation of stocks. The outcomes align with the research conducted by Baskin (1989), Chen et al. (2009), and Khan et al. (2011), but differ with the findings reported by Ali and Chowdhury (2010). The findings of this study provide empirical support for the dividend relevance theories and models proposed by Gordon and Walter.

The findings of this study hold significant value and relevance for several stakeholders, including investors, managers, lenders, and other involved parties. Investors attach significance to dividends as they see them to be not just a source of income, but also a means of evaluating corporations from an investing perspective.

The findings are crucial for management in order to develop a dividend policy that effectively maximizes the wealth of shareholders. Future research can potentially expand its scope by including a broader range of companies or by adopting a more industry-specific approach.

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