

Modelling the Dividend Determinants: An Insight into Panel Data Analysis of Companies Indexed in Bse Sensex in India

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Abstract

This study investigates the determinants of dividend policy of companies listed in the BSE Sensex in India. The analysis examines how firm-specific financial factors influence three key dividend measures: Dividend Payout (DP), Dividend Yield (DY), and Dividend Per Share (DPS). The study utilizes panel data of Sensex companies covering the period from 2010–11 to 2024–25. Preliminary econometric diagnostics were conducted to ensure reliability of the model. The normality test confirmed that the residuals follow an approximately normal distribution. The correlation matrix revealed no serious multicollinearity among the explanatory variables. The heteroskedasticity test supported the assumption of homoskedastic errors, while the LM test indicated that pooled OLS is inappropriate, thereby necessitating a panel regression approach. The panel unit root test confirmed that all variables are integrated at first difference, and the Kao residual cointegration test revealed the presence of a long-run equilibrium relationship among the variables. The Granger causality analysis identified both unidirectional and bidirectional causal relationships between certain determinants and dividend per share. Based on the Hausman specification test, the Fixed Effect Panel Regression Model was found to be the most appropriate for estimating the determinants of dividend policy. The regression results indicate that firm size (SIZE) and price-to-book value (PB) have a positive and statistically significant influence on all three dividend measures. Return on assets (ROA) positively affects dividend yield and dividend per share, reflecting the role of profitability in dividend decisions. Conversely, debt–equity ratio (DE) and price–earnings ratio (PE) exhibit significant negative relationships with dividends, suggesting that firms with higher leverage or growth expectations tend to retain earnings rather than distribute them. Free cash flow variables (FCF and FCE) show negative but statistically insignificant effects on dividend measures. Market capitalization (MC) demonstrates mixed effects across the models, while earnings per share (EPS) exhibits limited statistical significance. The findings emphasize that firm size, profitability, market valuation indicators, and capital structure play significant roles in shaping dividend policy among major Indian firms. This study contributes to the empirical literature on dividend determinants by providing evidence from leading Indian companies and offers insights useful for investors, financial analysts, and corporate managers in understanding dividend behavior in emerging markets.

1. INTRODUCTION

Dividend policy is closely related to the broader objective of maximizing shareholder wealth. Corporate management must balance three important financial decisions: financing, investment, and dividend decisions. These decisions collectively determine how profits are allocated between reinvestment and shareholder payouts. Investors evaluate dividend-related indicators such as dividend yield and dividend payout ratio to assess investment opportunities. Ultimately, an effective dividend policy contributes to shareholder wealth by providing income to investors while ensuring sufficient retained earnings for the company's future growth. Dividend policy remains one of the most significant areas of corporate financial management, even after financial sector reforms and market liberalization. It determines the proportion of profits distributed to shareholders as dividends and the portion retained for reinvestment in the business. Because dividend decisions directly influence investors' income and the firm's future growth opportunities, companies consider dividend policy a crucial financial decision. According to financial economists, companies usually aim to maintain a stable dividend policy and a consistent payout ratio over time. Management determines the appropriate dividend payout by considering various factors such as earnings, investment opportunities, cost differences between retained earnings and external equity, cash flow position, shareholder preferences, taxation, and legal restrictions. Stability in dividend payments is particularly important because it helps shareholders meet their consumption needs and provides confidence about the firm's financial health. Many individual investors rely on dividends as a steady source of income, while institutional investors often view a stable dividend record as a positive signal of financial strength. Dividend stability is also associated with signaling theory. Changes in dividend payments may communicate information about the company's expected future earnings. A sudden

reduction in dividends may signal financial weakness, whereas stable or increasing dividends may indicate strong future prospects. Therefore, corporate managers often attempt to avoid frequent dividend changes to reduce uncertainty among investors and maintain investor confidence.

2. REVIEW OF LITERATURE

Bodla, Pal and Sura (2007) applied Linter's Dividend Model to identify the factors influencing dividend policy in the Indian banking sector. The study was conducted on 38 commercial banks listed on the Indian stock exchanges as of 31st October 2006, and included a comparative analysis between 16 public sector banks and 14 private sector banks within the sample. The findings revealed that current-year earnings, lagged dividends, and cash flow have a positive relationship with current dividend payments. In contrast, ownership pattern, depreciation, and capital expenditure were found to have no significant relationship with dividend policy. **Sudhahar and Saroja (2010)** carried out a comprehensive study on the determinants of dividend policy in Indian banks, using ten years of data from 1997–98 to 2006–07 for banks actively traded on the Bombay Stock Exchange (BSE). The explanatory variables considered in the study included previous year dividend payout, natural log of sales, current ratio, debt ratio, return on investment, dividend tax rate, current year tax payable, and interest expense. The researchers employed a multiple regression model along with Linter's model to test the impact of these variables on dividend policy. The findings revealed that return on investment, previous year dividend payout ratio, and the logarithm of sales had a positive and significant influence on dividend policy. In contrast, current ratio, dividend tax rate, current year tax payable, and interest expense showed no significant relationship with dividend policy. **Gayathridevi and Mallikarjunappa (2012)** examined the factors influencing dividend decisions and the dividend trends of textile companies in India. The study analysed data from 114 textile firms over a 20-year period, from 1989 to 2009. The findings indicated that both profit-making and loss-making companies continued to pay dividends to their shareholders. The results further revealed that dividend-to-paid-up capital, earnings, profit after tax, cash flow, firm size, and lagged dividend all had a significant positive relationship with dividend policy. In contrast, the current ratio and capital structure were found to have no significant impact on dividend decisions. **Patra Poshakwale and Ow-Yong (2012)** applied the Generalized Method of Moments (GMM) to analyze the determinants of corporate dividend policy in Greece. The study covered 945 firms over the period 1993–2007 and used total assets, return on equity, leverage, current ratio, and year-to-year earnings volatility as independent variables. The findings revealed that firm size (measured by total assets), return on equity, and current ratio significantly increase the likelihood of dividend payment. In contrast, leverage and earnings volatility were found to reduce the probability of paying dividends. **Ayman Issa (2015)** examined the factors determining dividend policy among Malaysian companies. The study analyzed 284 firms listed on the Kuala Lumpur Stock Exchange across seven sectors: Consumer Products, Industrial Products, Construction, Finance, Technology, Properties, and Telecommunications. Using multivariate regression analysis, the researcher evaluated the influence of several variables—including profitability, firm size, growth opportunities, free cash flow, business risk, market-to-book value, market capitalization, return on assets, and return on equity—on dividend policy. The results revealed that free cash flow, return on assets, return on equity, earnings per share, market-to-book value, and market capitalization were all positively and significantly associated with dividend policy, whereas business risk (beta) showed a negative relationship with the dividend payout ratio. **Souvik Banerjee (2017)** conducted a comprehensive study to analyze the factors influencing the dividend policy of selected information technology companies in India. The study focused on data from the top four IT companies over a five-year period. Three key independent variables—leverage, price-to-earnings (P/E) ratio, and return on equity—were used to examine their impact on dividend payout. The findings showed that all three variables had a significant influence on dividend policy. **Gusni (2017)** conducted a comprehensive study on the determinants of dividend policy in the Indonesian financial industry. The study examined 17 listed companies on the Indonesia Stock Exchange over a five-year period from 2009 to 2015. The findings revealed that profitability, leverage, and institutional ownership had a significantly negative impact on firms' dividend pay-out ratios. In contrast, systematic risk, firm size, and board of directors were found to have no significant influence on dividend pay-out decisions. **Bassam Jaara, Hikmat Alashhab, and Osama Omar Jaara (2018)** conducted a comprehensive study on the factors influencing dividend policy in non-financial companies in Jordan over the period 2005–2016. The study examined dividend payout ratio, earnings per share, and dividend yield as dependent variables. The key findings indicated that firm size (measured by total assets), return on equity, and the previous year's dividend payout ratio all had a positive impact on the current year's dividend payout ratio, dividend yield, and earnings per share. **Peter Ayunku and Dumani Markjackson (2019)** conducted a comprehensive study on the determinants of dividend payout policy among listed corporations in Nigeria. Using purposive sampling, the researchers selected 94 companies listed on the Nigerian Stock Exchange and analyzed data spanning a 10-year period from 2007 to

2017. The Durbin–Wu–Hausman specification test was employed for the analysis. The findings revealed that liquidity and profitability showed a positive but insignificant relationship with dividend policy, while financial leverage had a significant negative impact. In contrast, firm size was found to have a significant positive influence on dividend policy. **Thi Thai Ha Le, Xuan Hung Nguyen, and Manh Dung Tran (2019)** used an Ordinary Least Squares (OLS) regression model to examine the impact of firm-specific and country-related factors on dividend payout decisions. The study analyzed five years of data (2012–2016) from 226 non-financial companies listed on the stock exchanges of Malaysia, Indonesia, and Thailand. The explanatory variables included firm size, free cash flow, financial leverage, liquidity, profitability, and growth opportunities. The results indicated that profitability had a significantly positive effect on dividend payout policy, while growth opportunities had a significantly negative effect. In contrast, firm size, free cash flow, financial leverage, and liquidity were found to have no significant impact on dividend decisions. **Elyasiani and Movaghari (2019)** applied the Least Absolute Shrinkage and Selection Operator (LASSO) method to identify the key determinants of dividend payout and dividend propensity in Iranian firms. The study examined several independent variables, including firm size, leverage, market-to-book ratio, return on assets, business risk, cash holdings, firm growth, effective tax rate, current ratio, collateral value of assets, firm age, life-cycle stage, and liquidity. The findings revealed that business risk, leverage, return on assets, and effective tax rate were the most significant variables influencing dividend payout propensities. **Garg and Bhargaw (2019)** employed Linter’s dividend model to analyze the factors influencing dividend policy in the Indian corporate sector. The study covered a 12-year period from 2002–03 to 2013–14 and included 200 companies listed on the BSE-500 index. The explanatory variables used in the analysis were current year profits, lagged dividends, investment demand, net debt flow, interest payments, and change in sales. The key findings revealed that current year earnings after tax and lagged dividends were the only variables that had a significant impact on dividend decisions, while the remaining variables showed no significant influence on dividend policy. **Suresh and Pooja (2020)** conducted a panel data analysis to examine the determinants of dividend policy in Indian listed firms and its impact on financial performance. The study covered 60 companies listed on the BSE over a 10-year period from 2009 to 2018. The findings revealed that four independent variables—asset turnover ratio, dividend per share, leverage, and the logarithm of total assets—had a significant influence on Return on Assets. **Emeka (2020)** investigated the factors influencing the dividend policies of companies listed on the Nigerian Stock Exchange (BSE) over a five-year period from 2013 to 2017. The study employed six explanatory variables—return on assets, firm size, debt ratio, growth opportunities, liquidity ratio, and asset tangibility—to identify the determinants of dividend policy. Using Ordinary Least Squares (OLS) regression, the research analyzed the relationship between these variables and dividend payouts. The key findings revealed that profitability, growth opportunities, and liquidity had a positive relationship with dividend payments, while firm size, debt ratio, and asset tangibility showed a negative relationship with dividend payouts. **Hitesh Kumar Keshaji Tank and Shailesh Kumar Pathak (2023)** employed regression analysis to identify the factors affecting the dividend payout ratio of companies in the metal, cement, and cement products sectors listed on the BSE Sensex 30 Index. The study analyzed 10 years of data from 2009 to 2019 and considered retained earnings and earnings per share as the independent variables. The key findings revealed that earnings per share had a significant impact on the dividend payout ratio in metal sector companies, whereas retained earnings significantly influenced the dividend payout ratio in the cement and cement product sector companies.

3. DATA AND METHODOLOGY

The present study relies on secondary data sources for the analysis. The BSE Sensex 30 has been used as a proxy for market return, which also serves as the basis for calculating residual returns. Relevant financial information, including financial ratios, dividend history, and company financial statements, was collected from various reliable sources such as the official website of the Bombay Stock Exchange of India, along with financial databases and portals like Moneycontrol, Capitaline, CMIE Prowess, and other financial information websites. For analytical purposes, the collected dataset was transformed into natural logarithmic form to improve data consistency and statistical reliability. The study covers a fifteen-year period, beginning on 1 April 2011 and ending on 31 March 2025. A purposive sampling technique was adopted to select companies included in the study. The final sample consists of 44 companies.

Empirical Model specification

The predictor variables are fitted into dividend determinants multivariate regression equations.

$$\begin{aligned}
 DP_{it} &= \alpha_{it} + \beta_1 SIZE_{it} + \beta_2 RMC_{it} + \beta_3 ROA_{it} + \beta_4 FCF_{it} + \beta_5 FCE_{it} + \beta_6 DE_{it} + \beta_7 PE_{it} + \beta_8 PB_{it} + \beta_9 EPS_{it} + \xi_{it} \\
 DY_{it} &= \alpha_{it} + \beta_1 SIZE_{it} + \beta_2 RMC_{it} + \beta_3 ROA_{it} + \beta_4 FCF_{it} + \beta_5 FCE_{it} + \beta_6 DE_{it} + \beta_7 PE_{it} + \beta_8 PB_{it} + \beta_9 EPS_{it} + \xi_{it} \\
 DPS_{it} &= \alpha_{it} + \beta_1 SIZE_{it} + \beta_2 RMC_{it} + \beta_3 ROA_{it} + \beta_4 FCF_{it} + \beta_5 FCE_{it} + \beta_6 DE_{it} + \beta_7 PE_{it} + \beta_8 PB_{it} + \beta_9 EPS_{it} + \xi_{it}
 \end{aligned}$$

Where α = Constant, $\beta_1 \dots \beta_9$ = Estimated coefficients, ξ = Error term, i = Sample, t = time period.

Summary of Expected Relationship between Dependent and Independent Variables

S.No	Independent Variable	Meaning / Proxy	Expected Relationship with DP / DY / DPS	Rationale
1	SIZE	Firm Size (Log of Total Assets / Sales)	+ Positive	Large firms usually have stable earnings, easier access to capital markets, and therefore tend to distribute higher dividends.
2	MC	Market Capitalization	+ Positive	Firms with higher market value are generally mature and financially strong, enabling them to pay higher dividends.
3	ROA	Return on Assets	+ Positive	Higher profitability increases available earnings, allowing firms to distribute higher dividends to shareholders.
4	FCF	Free Cash Flow	+ Positive	Firms with more free cash flow have excess funds after investments, making it easier to pay dividends.
5	FCE	Financing Cash Flow / Capital Expenditure Efficiency	- Negative	Firms with higher financing needs or higher capital expenditure may retain earnings rather than distribute dividends.
6	DE	Debt–Equity Ratio	- Negative	Highly leveraged firms prefer retaining profits to meet debt obligations instead of paying dividends.
7	PE	Price–Earnings Ratio	- Negative	High P/E often indicates growth firms that prefer reinvesting profits rather than paying high dividends.
8	PB	Price–Book Ratio	- Negative	High P/B firms are usually growth-oriented and may retain earnings for expansion instead of paying dividends.
9	EPS	Earnings per Share	+ Positive	Higher earnings per share increase the firm's ability to distribute dividends.

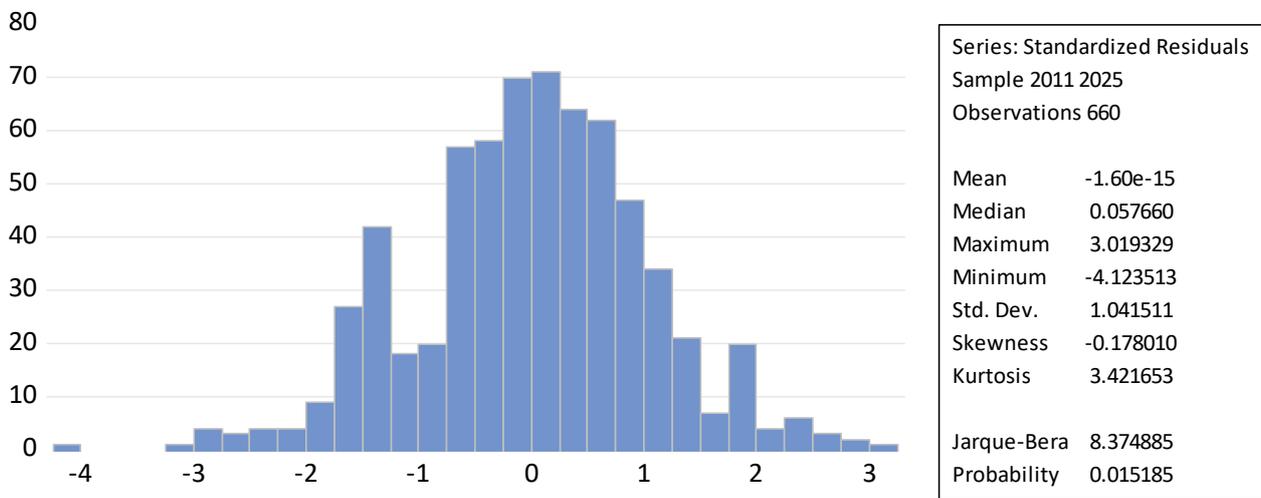
4. ANALYSIS AND DISCUSSION

This chapter presents the empirical analysis of the determinants of dividend policy of companies listed in the BSE Sensex in India. The analysis is carried out using panel data of selected companies for the period from 2010–11 to 2024–25. The main objective of this chapter is to examine the relationship between dividend measures such as Dividend Payout

(DP), Dividend Yield (DY), and Dividend Per Share (DPS) and various firm-specific determinants including firm size (SIZE), market capitalization (MC), return on assets (ROA), free cash flow to firm (FCF), free cash flow to equity (FCE), debt–equity ratio (DE), price–earnings ratio (PE), price-to-book value (PB), and earnings per share (EPS). To ensure the reliability and validity of the empirical results, several econometric tests have been employed. The analysis begins with diagnostic tests such as normality test, correlation analysis, heteroskedasticity test, and LM test to verify the assumptions of regression analysis. Further, panel unit root tests and cointegration tests are conducted to examine the stationarity and long-run relationship among the variables. In addition, the Granger causality test is used to identify the direction of causal relationships between dividend measures and their determinants. Finally, the panel data regression model is applied to evaluate the impact of the independent variables on the dividend measures. Based on the results of the Hausman test, the Fixed Effect Model is adopted for estimating the regression models. The results obtained from these analyses help in identifying the key factors influencing dividend policy among major Indian companies.

Table 4.1

Normality Test of Dividend Determinants of BSE Sensex in India



Normality test is used to check whether residuals in regression analysis follow a normal distribution. The histogram depicts bell shaped curve. But it has slighter longer tails. The mean value is -1.60e-15 which implies residuals are properly standardized. The median value of 0.057660 shows that distribution is not highly skewed. The standard deviation of 1.041511 is more than 1. The negative skewness of -0.178010 indicates that residuals are not extremely skewed.

Table 4.2

Multiple Correlation Analysis of Dividend Determinants of BSE Sensex Companies

VARIABLES	SIZE	MC	ROA	FCF	FCE	DE	PE	PB	EPS
SIZE	1								
MC	0.5642	1							
ROA	-0.3664	0.2462	1						
FCF	0.6959	0.5224	-0.1051	1					
FCE	0.5690	0.4913	0.2796	0.7080	1				
DE	0.3371	0.0221	-0.3600	0.3154	0.2232	1			
PE	-0.3144	0.1616	-0.1984	-0.2077	-0.2199	-0.0343	1		
PB	-0.5488	0.3123	0.5617	-0.2808	-0.1947	-0.3016	0.55574	1	
EPS	-0.0041	0.2181	0.4814	0.0705	0.0816	-0.1817	-0.3097	0.1876	1

The multiple correlation coefficients are metric that measures the strength of the association and it ranges between 0 to 1. A value closer to 1 denotes a stronger linear relationship. Exploratory data analysis requires a clear, methodical perspective of variable relationships. Multiple correlation is applied in multiple regression analysis to analyse many predictors. Multicollinearity in regression analysis occurs when two or more independent variables are strongly correlated. In severe multicollinearity, regression coefficients may become unstable, causing inaccurate estimates, and inflated standard errors. A correlation matrix is used to detect multicollinearity.

Table 4.2 exhibits the multiple correlation coefficients of dividend determinants of BSE Sensex Companies for the period from 2010-11 to 2024-2025. The pairwise correlations of the variables illustrate the merits of the linear link among them, and each variable denotes a different aspect of the dividend determinants. Significant positive correlations between SIZE, market capitalisation (MC), Free Cashflows to Firm (FCF), Free Cashflows to Equity (FCE) and Debt Equity (DE) are found. . Weak and negative correlation is found between Return on Assets (ROA), Price to Earnings Ratio (PE), Price to Book Value (PB) and Earnings Per Share (EPS) of the BSE Sensex companies. The correlation coefficients of dividend determinants are not showing multicollinearity, as indicated by their low correlation, and they could be involved in regression models without occurring a momentous risk of multicollinearity problems. Because of this, their predictive abilities in models used to evaluate the dividend determinants of BSE Sensex companies are unswervingly strong.

Table 4.3***Heteroskedasticity Test of Dividend Determinants of BSE Sensex Companies***

F-Statistics	87.55690	Prob.F	0.0000
Obs*R-squared	0.235259	Prob. Chi-Square	0.0000

Table 4.3 displays the outcomes of the heteroskedasticity test for dividend determinants of BSE Sensex companies. There is an observed R-squared value of 0.235259 and an F-statistic of 87.55690. There is no substantial evidence of heteroskedasticity because the chi-square p-value is not greater than the 0.05 significance level, which means that the null hypothesis of homoskedasticity cannot be rejected.

Table 4.4***LM Test of Dividend Determinants of BSE Sensex Companies***

Test	Statistic	p-value
Breusch-Pagan	741.7280	0.0000
Honda	18.11681	0.0000
King-Wu	12.11268	0.0000
Standardized Honda	14.29296	0.0000
Standardized King-Wu	8.312158	0.0000

The results of the LM Test of dividend determinants of BSE Sensex companies are depicted in Table 4.4. As P value of Breusch Pagan Test and other tests for cross section and time variant is less than 0.05, null hypothesis has been rejected. It implies that pooled OLS model is not stable. So, fixed effect model or random effect model has to be considered for regression analysis. As a result, dividend determinants of BSE Sensex companies can be accurately assessed using this model's efficient estimates and dependable standard errors in regression analysis. Consequently, this demonstrates that there is no serial autocorrelation, which makes it possible for these dividend determinants to be applied for model estimate. This, in turn, provides a hypothesis testing method that is both efficient and trustworthy.

Table 4.5

Panel Data Unit Root Test of Dividend Determinants of BSE Sensex Companies

Variables	Level	First Difference	Order Of Integration
DP	4.7191	-13.3493	I(1)
DY	2.7821	-12.1436	I(1)
DPS	2.6194	-11.4334	I(1)
SIZE	1.1303	-6.45797	I(1)
MC	3.6109	-9.6620	I(1)
ROA	3.7804	-10.1156	I(1)
FCF	3.9136	-10.4727	I(1)
FCE	4.0722	-10.8970	I(1)
DE	5.2644	-14.3258	I(1)
PE	0.2350	-14.0872	I(1)
PB	-0.8249	-10.0034	I(1)
EPS	-1.5580	-9.6216	I(1)

Time series data must be checked for existence of stationarity to confirm accurate statistical examination. Applying the Augmented Dickey Fuller Test, also known as the ADF test, is a common method for accomplishing this. The statistical characteristics of a variable, such as its mean and variance, do not change throughout the course of time if the variable is stationary. When dealing with non-stationary data, regression models have the potential to provide results that are either misleading or invalid.

Table 4.5 shows the results of the Augmented Dickey Fuller Unit Root test on factors associated with the dividend determinants of BSE Sensex companies. Stationarity of the variables is critical for the construction of a regression model. Some variables were found to be non-stationary, according to the results of level testing. A strong regression model is applied using first differencing. However, because of this, the ADF test scores drastically decrease, frequently falling below the critical cutoffs. This suggests that the data is stationary. This allows us to exclude the possibility that there is unit root in the differenced data.

Table 4.6

Kao Residual Cointegration Test of Dividend Determinants of BSE Sensex Companies

Null Hypothesis: No Cointegration	T-Statistics	Prob.	
ADF	-2.836196	0.0023	
Residual Variance	0.277332		
HAC Variance	0.123025		
Augmented Dickey-Fuller Test Equation Dependent Variable: D(RESID)			

Method: Least Squares				
Variable	Coefficient	Std.Error	t-Statistics	Prob.
RESID (-1)	-0.563315	0.046190	-12.19571	0.0000
D (RESID (-1))	-0.042851	0.041372	-1.035732	0.3008
R-Squared	0.286020	Mean dependent var		0.004800
Adjusted R-Squared	0.284767	S.D. dependent var		0.540217
S.E. of regression	0.456870	Akaike info criterion		1.274653
Sum squared resid	118.9760	Schwarz criterion		1.289859
Log likelihood	-362.5507	Hannan-Quinn criterion		1.280585
Durbin-Watson stat	2.009739			

The Kao residual cointegration test is a statistical approach designed to recognize the number of cointegrating relationships within a set of time series data. This technique is especially supportive for multivariate time series analysis, as it allows for the simultaneous evaluation of multiple variables. It is widely employed in economics and finance studies to examine long-term associations between variables that are individually non-stationary but exhibit constant and firm correlations over an extended period.

Table 4.6 presents the results of the Kao Residual Cointegration Test, which scrutinizes the presence of cointegration between dependent and independent dividend determinants of BSE Sensex companies. The statistical inference derived from the test suggests a rejection of the null hypothesis, which assumes no cointegration. The ADF t-statistic is highly significant, with a value of -2.836196 and a probability of 0.0023, demonstrating strong evidence of cointegration. Within the regression parameters, RESID (-1) displays a substantial negative coefficient of -0.563315 with a t-statistic of -12.19571 and a highly significant p-value (0.0000). The variable D(RESID (-1)) has a negative coefficient of -0.042851 with a t-statistic -1.035732 and a p-value of 0.0000, signaling statistical significance at conventional levels.

The results showed a strong evidence of cointegration among the dividend determinants, as indicated by the ADF test statistic -2.836196 and its associated probability (0.0000). The regression model demonstrates a satisfactory fit, reflected in the R-squared value of 0.286020 and adjusted R-squared of 0.284767, while the Durbin-Watson statistic (2.009739) highlights no autocorrelation concerns. These findings highlight the interdependent relationship between the examined variables.

Table 4.7

Granger Causality Test of Dividend Determinants of BSE Sensex Companies

Null Hypothesis	F-Statistic	Prob.	Conclusion
SIZE does not Granger Cause DPS	0.47426	0.6226	Accepted H_0
DPS does not Granger Cause SIZE	8.74544	0.0002	Rejected H_0
MC does not Granger Cause DPS	7.87504	0.0004	Rejected H_0
DPS does not Granger Cause MC	1.75838	0.1733	Accepted H_0
ROA does not Granger Cause DPS	0.62083	0.5379	Accepted H_0
DPS does not Granger Cause ROA	6.42061	0.0017	Accepted H_0
FCF does not Granger Cause DPS	0.62346	0.5365	Accepted H_0
DPS does not Granger Cause FCF	0.21744	0.8046	Accepted H_0

FCE does not Granger Cause DPS	1.15858	0.3147	Accepted H_0
DPS does not Granger Cause FCE	1.19974	0.3020	Accepted H_0
DE does not Granger Cause DPS	1.25880	0.2848	Accepted H_0
DPS does not Granger Cause DE	3.66569	0.0262	Rejected H_0
PE does not Granger Cause DPS	1.84319	0.1593	Accepted H_0
DPS does not Granger Cause PE	1.89210	0.1517	Accepted H_0
PB does not Granger Cause DPS	4.73892	0.0091	Rejected H_0
DPS does not Granger Cause PB	0.57106	0.5653	Accepted H_0
EPS does not Granger Cause DPS	3.71973	0.0248	Rejected H_0
DPS does not Granger Cause EPS	9.45888	0.0000	Rejected H_0

The Granger causality test is used to determine whether one variable can predict changes in another over time. It analyzes the hypothesis that short-term fluctuations in one variable lead to variations in another, portentous a causal link. This test can detect both unidirectional and bidirectional causality. In bidirectional causality, both variables can predict changes in each other, whereas in unidirectional causality, only one variable has predictive power over the other. In the fields of economics and finance, this method is frequently applied in time series analysis to identify interdependent variables, supporting in decision-making and forecasting. It is imperative to note that while the Granger causality test can reveal predictive relationships between time series variables, it does not establish direct causation but rather the existence of predictive linkages.

Table 4.7 describes the results of a pairwise Granger causality analysis concerning Dividend Per Share (DPS) and various dividend determinants of BSE Sensex companies. The analysis shows that Return on Assets (ROA), Free Cashflows to Firm (FCF), Free Cashflows to Equity (FCE) and Price to Earnings Ratio (PE) have neither unidirectional nor bidirectional causality relationship with Dividend Per Share (DPS), as the null hypotheses for these variables are accepted when p values are more than 0.05. Dividend determinants such as Size of the firm (SIZE), Market Capitalisation (MC), Debt to Equity Ratio (DE) and Price to Book Value (PB) are having unidirectional causality relationship with Dividend Per Share (DPS). Apart from this, Earnings Per Share (EPS) has bidirectional causality relationship with Dividend Per Share (DPS).

4 PANEL DATA REGRESSION MODEL OF DIVIDEND DETERMINANTS

Panel data is also known as longitudinal data. It may refer to a dataset that follows the same cross section units (such as individuals, firms, states or countries) over multiple time periods. It has the features with the combination of both time series data and cross sectional data. Normally, regression model is constructed to examine the impact of predictor variables on predicted variables. Regressions coefficients of explanatory variables explain the relationship with explained variables. Regressors with high beta values contribute maximum to the model. In this study, Panel Data Regression Model with Fixed Effect has been applied based on the results of Hausman test. The fixed effect model assumes that individual specific effects exist and may be correlated with the predictor variables. These variables capture all time variant characteristics of each entity that could bias the regression results if neglected.

Table 4.8

Hausman Test of Dividend Determinants of BSE Sensex Companies

Dependent Variable	Test Summary	Chi sq Stat	Chi.Sq df	P Value	Effect
DP	Cross Section random	49.740847	9	0.000	Fixed
DY	Cross Section random	62.789584	9	0.000	Fixed
DPS	Cross Section random	80.461066	9	0.000	Fixed

Table 4.8 represents the results of the Hausman test conducted to determine the appropriate model for predicting Dividend Payout (DP), Dividend Yield (DY) and Dividend Per Share (DPS) of BSE Sensex companies. The analysis reveals that the association between Dividend Payout (DP), Dividend Yield (DY) and Dividend Per Share (DPS) and its independent variables i.e, dividend determinants can be better predicted using the Fixed Effect Model. This is evident from the p- value of 0.0000, which is less than the 0.05 significance level, signifying that the test rejects the null hypothesis i.e., random effect is appropriate. The result leads to the recommendation of the Fixed Effect Model for all the 3 models.

Table 4.9

Panel Data Regression Model of Dividend Determinants of BSE Sensex 30 Companies

Variables	Model 1		Model 2		Model 3	
	DP		DY		DPS	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
C	0.666672	1.312037	-1.336832	-2.792465	-10.09265	-20.40266
SIZE	0.628382	4.283270 *	1.017627	7.363617 *	0.877455	6.144667 *
MC	-0.457949	-3.432224 *	-0.887728	-7.061913 *	0.196646	1.513902
ROA	-0.098107	-1.499527	0.183259	2.972032 *	0.153985	2.416784 **
FCF	-0.018914	-0.779884	-0.008239	-0.360928	-0.026338	-1.116562
FCE	-0.003728	-0.178875	-0.003492	0.178904	-0.001680	-0.083322
DE	-0.033477	-1.467853	-0.068630	-3.192924 *	-0.078894	-3.552108 *
PE	0.324275	5.373551 *	-0.103533	-1.820578 ***	-0.189523	-3.225255 *
PB	0.359215	2.853064 *	0.427262	3.603663 *	0.378549	3.087267 *
EPS	-0.001781	-0.049796	-0.002904	-0.086146	-0.059986	-1.722360 ***
Statistic						Value
R-squared		0.668175		0.789788		0.880260
Adj R- Squared		0.639654		0.771780		0.870002
F-statistic		23.42786		43.85702		85.81376
Prob(F-statistic)		0.0000		0.0000		0.0000

Durbin-Watson stat		1.308111		1.106731		1.149725
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* Significant at 1 % Level ** Significant at 5 % Level *** Significant at 10 % Level

Table 4.9 expounds the Panel Data Regression model. The analysis delineates major dividend determinants influencing Dividend Payout (DP), Dividend Yield (DY) and Dividend Per Share (DPS) of BSE Sensex companies. The regression coefficient of Size of the firm (SIZE) shows positive and statistically significant relationship with Dividend Payout (DP), Dividend Yield (DY) and Dividend Per Share (DPS). As large firms tend to have strong assets base and tangibility, it is reflected in the stable dividend distribution. Large firms enjoy economies of scale, constancy in cashflows, and less vagueness. The regression coefficient of Market Capitalisation (MC) showed a positive relationship with Dividend Per Share (DPS). However, it showed a negative relationship with Dividend Payout (DP) and Dividend Yield (DY). Companies pertaining to less volatile industries tend to maintain stability in dividend policy. Large firms usually have high stock prices due to strong brand equity, investors' confidence and market momentum. If firms pay stable dividend, the yield becomes less. The regression coefficient of Return on Assets (ROA) has positive and significant relationship with Dividend Payout (DP) and Dividend Per Share (DPS). Return on Assets is the profitability measure which shows how a company is efficiently leveraging its assets in generating profits. The regression coefficients of Free Cash Flows to Firm (FCF) and Free Cashflows to Equity (FCE) have negative relationship with Dividend Payout (DP), Dividend Yield (DY) and Dividend Per Share (DPS). This implies that firms having expansion plans, requiring huge sum for capital expenditure, significant working capital requirements and growth prospects may retain the earnings. The regression coefficient of Debt Equity Ratio (DE) exhibits negative relationship with Dividend Payout (DP), Dividend Yield (DY) and Dividend Per Share (DPS) of BSE Sensex companies. It indicates the high financial risk and interest obligations for companies. The regression coefficient of Price to Earnings Ratio (PE) is having negative and statistically significant relationship with dependent variables. It confirms the strong theoretical perspective that firms with growth expectations tend to retain earnings. As a result, there will be low dividends. The regression coefficient of Price to Book Value (PB) is having positive and statistically significant relationship with Dividend Payout ratio (DP), Dividend Yield (DY) and Dividend Per Share (DPS). It is observed from this result that higher Price to Book Value may have influence on reflecting better market value and as a result higher stock returns. In contrast to the expected relationship, the regression coefficient of Earnings Per Share (EPS) showed a negative and statistically insignificant relationship with Dividend Payout ratio (DP) and Dividend Payout (DY) However, Dividend Payout (DY) is positively related with Dividend Per Share (DPS). It could be inferred from this result that investors' expect capital appreciation than regular dividend payouts.

The regression model shows strong explanatory power, with R square value 0.88026 and Adjusted R-square values of 0.8700 confirming the robustness of the model fit. The absence of autocorrelation, verified by the Durbin-Watson statistic, further validates the reliability of these findings. Overall, the analysis highlights the relevance and significant of dividend determinants such as Size of the firm (SIZE), Market Capitalisation (MC), Return on Assets (ROA), Price to Earnings Ratio (PE), Price to Book Value (PB) and Earnings per Share (EPS).

5. CONCLUSION

This study analysed the determinants of dividend policy of companies listed in the BSE Sensex using panel data for the period 2010–11 to 2024–25. Various econometric tests confirmed the suitability of the data and indicated that the Fixed Effect Panel Regression Model is the most appropriate for analysing the relationship between dividend measures and firm-specific variables. The empirical results reveal that firm size (SIZE), return on assets (ROA), and price-to-book value (PB) have a positive and significant influence on dividend payout, dividend yield, and dividend per share. In contrast, debt–equity ratio (DE) and price–earnings ratio (PE) exhibit a negative relationship with dividend measures, suggesting that highly leveraged and growth-oriented firms tend to retain earnings rather than distribute dividends. Other variables such as market capitalization (MC), free cash flows (FCF, FCE), and earnings per share (EPS) show mixed or insignificant effects. Overall, the findings highlight that firm size, profitability, market valuation, and capital structure are important determinants of dividend policy among major Indian companies. The study provides useful insights for investors and corporate managers in understanding dividend behaviour in the Indian stock market.

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