

# Determinants of Dividend Payout-Level Decision in India: An Application of Tobit Model

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## Abstract

This research article investigates the determinants of the dividend payout-level decision of 703 National Stock Exchange (NSE) listed sample firms in India during the period from 1994–95 to 2017–18. Also, considering the different phases of liberalisation in India a sub-period wise analysis is carried out. The censored or Tobit regression analysis is utilised in order to examine the determinants of dividend payout-level decision (i.e. how much amount of dividend a firm distributes out of its total profits to the equity shareholders?). From the trend analysis the study finds that the dividend payout ratio (DivPayout) as well as the dividend yield (DivYield) show a volatile trend during the entire study period. Also, the number of dividend paying firms have declined by 20.36% during the study period but this decline is not consistent rather it depicts a volatile trend throughout the study period. The censored or Tobit regression analysis results indicate that the larger, mature firms and firms with high free cash flow have higher dividend payout-level on the other hand, the firms facing high business risk and the high dividend distribution tax imposed by the government tend the firms to have lower dividend payout-level. Overall, the findings of the study are in line with the agency, signalling and firm life-cycle theories of the dividend policy.

**Keywords:** Dividends, Dividend Policy, Dividend Policy Theory, Dividend Payout-Level Decision, Tobit Regression Model

**JEL Classification:** G35; G30

## Introduction

Dividends are commonly referred to as the distribution of firm's past or present profits in the real assets to the

common equity shareholders in the proportion of their ownership (Frankfurter et al., 2003). The dividend payout policy which a firm follows to decide the pattern and size of cash distributed to the common equity shareholders of a firm over time is termed as the corporate dividend policy. The corporate dividend policy has captured the utmost attention of financial economists for nearly hundred years and it has become an area for financial economists to extensively empirically investigate and theoretically model for nearly last 60 years. Researchers have put forward a number of contradicting theoretical frameworks in order to explain the current state of corporate dividend policy but none having any conclusive empirical support.

On the basis of certain assumptions prevalent in the perfect capital markets for example no corporate taxes, zero agency and transaction costs, information fully available to the common equity shareholders, the dividend irrelevance hypothesis has been put forward by Miller and Modigliani (1961) (hereafter MM). The dividend irrelevance hypothesis contends that the exclusive determinant of a firm value in an ideal world is the investment policy of a firm and the dividend policy should take care of itself when the reasonable investment choices are made by the managers. But the capital markets are not perfect in the real world and the firm's value and the common equity shareholder's wealth are influenced by the corporate dividend policy of a firm. The succeeding researchers after MM have relaxed one by one the unrealistic assumptions of the MM's perfect capital markets and proposed several but contradicting dividend policy theories for example tax clientele (Litzenberger & Ramaswamy, 1979), signaling (Bhattacharya, 1979; Aharony & Swary, 1980), agency costs (Jensen & Meckling, 1976; Rozeff, 1982; Easterbrook, 1984) and firm's life-cycle theory (DeAngelo et al., 2006) to explain why firm distributes dividends and why investors value them?

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The corporate dividend policy as coined by Black (1976) still remains a puzzle after several decades of research as no consensus has reached regarding the conflicting theoretical explanation of dividend policy. There are two types of corporate dividend policy decisions *first*, the dividend payment decision i.e. the decision referring to the probability of paying dividends and *second*, the dividend payout-level decision i.e. the decision relating to changes in the dividend payout-levels. While majority of early empirical studies have examined the determinants of likelihood of paying dividends i.e. the decision concerning whether to pay or not to pay dividends? (see, e.g., Fama & French, 2001; DeAngelo et al., 2006; Denis & Osobov, 2008; Labhane & Mahakud, 2016), few empirical studies have investigated the determinants of the dividend payout-level decision i.e. the decision pertaining to how much amount of dividend a firm distributes to the common equity shareholders out of its total earnings? (see, e.g., Al-Malkawi, 2007; Hamill & Al-Shattarat, 2012; Singhania & Gupta, 2012).

The managers of a firm in practice are frequently faced with the decisions regarding the changes in dividend levels rather than the decisions concerning whether to pay or not to pay dividends? (Baker, 2009). Consequently, it is more significant to analyse the factors that affect the dividend payout-level decision of a firm. The present study, in this context, specifically investigates the determinants of dividend payout-level decision for a sample of 703 National Stock Exchange (NSE) listed firms in India during the period 1994–95 to 2017–18. In order to capture the robustness of the empirical results a period-wise analysis is carried out as well considering different liberalisation phases such as first post-reforms periods (i.e. 1994–95 to 2002–03) and second post-reforms periods (i.e. 2003–04 to 2017–18) in India. The Tobit regression model also referred to as the censored regression model is applied for the examination of the determinants of the dividend payout-level decision.

The rest of the research article is organised in the following manner: the empirical literature on the determinants of dividend payout-level decision is discussed in Section 2; Section 3 highlights the objectives of the study; the rationale of the studies is specified in Section 4; Section 5 describes the methodology; Section 6 discusses the analysis of the results and the last section concludes the research article.

## Review of Literature

The researchers have put forward a number of contradicting dividend policy theories with the intention of explaining the major determinants of the dividend policy of a firm. The outcome of these dividend policy theories (see, e.g., tax preference, signalling, agency cost, transaction cost, pecking order and the firm's life-cycle theory of dividend etc.) are the number of crucial factors that may affect the dividend payout-level decision of a firm. An empirical literature concerning the major determinants of a firm's dividend payout-level decision as well as an empirical evidence for and against the various dividend policy theories is reviewed in the present section of the research article. In this context, Gaver and Gaver (1993) by utilising the firm-level data discover that the firms with higher growth and investment opportunities distribute less dividends and have lower dividend yield and vice-a-versa. The firms that operate in more concentrated or less competitive industries comparatively distribute fewer dividends to equity shareholders than those firms operating in more competitive or less concentrated industries which support the outcome model prediction (Grullon & Michaely, 2007).

Al-Malkawi (2007) studies the Amman Stock Exchange publicly listed Jordanian firms during 1989–2000 to investigate the determinants of corporate dividend policy and encounters that the size, age, profitability and the proportion of stock held by state ownership influence the level of dividends distributed significantly directly on the other hand, the financial leverage and the proportion of stock held by insiders affect the level of dividends distributed significantly indirectly. Overall, his findings are in line with the pecking order and the agency costs hypothesis. Examining the factors influencing the Jordanian listed non-financial sample firms' corporate dividend policy during 1999–2003 Al-Najjar (2009) detects that the factors such as the size, profitability and investment opportunities of a firm are significantly positively associated with the dividend payout-level decision on the contrary, the factors such as the tangibility of asset, leverage and business risk of a firm are significantly negatively related with the dividend payout-level decision. The results suggest that the determinants of dividend payout-level decision of Jordanian listed firms follows the determinants similar to those in the developed capital markets.

Al-Ajmi and Hussain (2011) analyse the factors affecting the Saudi Stock Exchange (Tadawul) listed firms' dividend payout-level decision and notice that the key factor influencing the dividend payout-level decision of firms in Saudi Arabia is Zakat. Also, they identify that the factors such as the life cycle variable, profitability, cash flows and lagged dividend payments are the major determinants of dividend payout-level decision in Saudi Arabia. After studying the determinants of Amman Stock Exchange listed sample firms' dividend payout ratio from 1996–2002 Hamill and Al-Shattarat (2012) observe that the number of common shareholders, the level of institutional ownership and firm's size increase the dividend payout ratio Dividend Payout Ratio of a firm significantly at the same time, the level of insider ownership decreases the dividend payout ratio of a firm significantly. Overall, their findings are in line with the agency costs and the transaction costs hypothesis.

Utilising the Tobit regression analysis Komrattanapanya and Suntrauk (2013) investigate the determinants of dividend payout of all the Stock Exchange of Thailand enlisted sample firms during 2006–2010. Their findings suggest that the firm's size is positively related with the firm's dividend payout whereas, the firm's financial leverage, investment opportunities and sales growth are negatively associated with the firm's dividend payout. Ranajee et al. (2018) analyses the determinants of dividend payout by utilising all the sample firms enlisted on the stock exchanges in India during 2001–2015. Their results reveal that the firm's size and age have significant positive influence on the dividends level decisions of the firms in India which is in line with the life cycle theory. The firms with high profitability pay higher dividends whereas; the firms facing high investment opportunities are associated with decrease in dividends. The past dividends and the growth potential have significant positive and negative relationship with the payout levels respectively.

In an Indian context Reddy and Rath (2005) find that the dividend paying firms are larger and more profitable than the non-dividend paying firms and the growth opportunities have not influenced significantly the dividend policies of the firms in India. Examining the determinants of dividend policy for a sample of Nifty 50 firms enlisted on NSE, Singhania and Gupta (2012) contend that the major factors affecting the firm's dividend policy significantly are the firm's size, growth and investment opportunities. Overall, their findings

negate some of the contradicting corporate dividend policy theories in India and indicate that majority of the factors affecting the dividend policy of firms in developing as well as developed capital markets are similar. Manos et al. (2012) study the dividend policy of Indian listed sample firms during 2000–2006 and find that the factors like price volatility, cross-listing, dependency on external finance and holdings by non-institutional shareholders have significant negative association with the firm's dividend payout-level decision on the other hand, the firm's age has significant positive relationship with the firm's dividend payout-level decision.

The tangibility of assets, size and earnings are the major factors that affect the corporate dividend policies of the firms in India and during the post-reform periods the Indian firms follow unstable dividend policies (Kamat & Kamat, 2013). While analysing the trends and determinants of dividend policy of Indian listed firms Labhane and Mahakud (2016) find that the firms with high business risk, investment opportunities and financial leverage have lower dividend payout ratio on the other hand, the firms that are highly liquid, larger, more mature and more profitable have higher dividend payout ratio. Comparing the business group-affiliated firms with the standalone firms Labhane (2019) examines the determinants of dividend payout-level decision of NSE listed 781 sample firms during 1995–2015. His findings indicate that the factors affecting the dividend payout-level decision of firms affiliated with the business groups differ considerably from that of the standalone firms. The investment opportunities and business risk affect the dividend payout-level decision of standalone and business group-affiliated firms negatively and positively, respectively.

In the context of Indian firms, Dahiya et al. (2023) investigate the association between corporate social responsibility and dividend policy and find that the Company Social Responsibility has a positive impact on the firm's dividend payment decisions. They also find that the speed of adjustment towards the target dividend payout ratio is relatively faster for the firms having higher corporate social responsibility. While most of the previous empirical research studies in an Indian context have investigated the determinants of likelihood of paying dividends i.e. the decision concerning whether to pay or not to pay dividends? But in practice the firm managers are generally confronted with the decisions to change the

dividend levels rather than the decision regarding whether to pay or not to pay dividends? This research article fill this research gap by specifically investigating the factors affecting the dividend payout-level decisions of Indian listed firms.

## Objectives

The objectives of this study are (i) to analyse the characteristics of 703 sample firms utilised in this study (ii) to examine the determinants of dividend payout-level decision (i.e. how much amount of dividend a firm distributes out of its total profits to the equity shareholders?).

## Rationale of the Studies

The present study after taking into account the available literature on the factors influencing the firm's dividend payout-level decision observes that the determinants of firm's dividend payout-level decision are differing across the sample time frame, industries and countries. The findings of several previous research studies are contradicting in respect of the empirical validation of various corporate dividend policy theories. Accordingly, to formulate and update an appropriate corporate dividend policy, a further fresh empirical study on the determinants of the dividend payout-level decision of the firms operating in an emerging economy like India is warranted.

## Methodology

### Data Source

The data for the empirical study is retrieved from the PROWESS database provided by CMIE i.e. Centre for Monitoring Indian Economy. The PROWESS database is a leading business and economic database and the CMIE is the well-known research firm in India. The sample firms are selected from NSE in India which is a leading stock exchange in India. The chief reason for selecting sample firms from NSE is that the firms enlisted on NSE are required to comply with the regulatory and financial reporting norms set by Securities and Exchange Board

of India and also, it was established on the eve of new economic policy implementation in India.

## Sample Frame

The period of the empirical study is from 1994–95 to 2017–18 (i.e., during the fiscal year 1994–95 to 2017–18). In India the government considers its fiscal year from 1<sup>st</sup> April midnight to 31<sup>st</sup> March midnight. Thenceforth, the fiscal year 1994–95 will be indicated as 1995 and consequently the fiscal year 2017–18 as 2018. This time is selected as the study period because it pertains to the post economic reforms period in India and utmost possible information regarding the sample firms is available in the database during this period. Also, to examine the robustness of the results, the dividend payout-level decision of sample firms is also investigated during 1995–2003 and 2004–2018 sub-periods which connotes the first post-reforms period and the second post-reforms period in India respectively. At the beginning all the firms enlisted on NSE are considered for the empirical study. On the NSE there are around 1946 firms enlisted at present. Out of these total 1946 firms enlisted on NSE presently, 236 firms belong to financial services sector, 19 firms belong to utilities sector and 58 firms belong to public sector undertaking.

In their empirical study Fama and French (2001) and various other succeeding studies indicate that in comparison to other non-financial services and non-utilities sector firms the financial services and the utilities sector firms follow different accounting practices and regulatory norms. Also, the government financial considerations and social obligations highly influence the dividend payout-level decision of public sector undertaking firms. Therefore, the present study excludes the 236 - financial services firms, 19 - utilities sector firms and 58 - public sector undertaking firms from the sample. After excluding financial services, utilities sector and public sector undertaking firms from a total sample of 1946 firms, the present study gets continuous data for all the independent variables for 703 sample firms from the remaining 1633 non-financial services, non-utilities sector and non-public sector undertaking firms. As a result, in the present study the final sample firms for the empirical study comprises of 703 sample firms.

## Empirical Model

### Measure of Dividend Payout-Level Decision

The dividend payout-level decision is referred to as how much amount of dividend a firm distributes to the common equity shareholders out of its total earnings. In the present study two proxies namely dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) are utilised to measure the dividend payout-level decision. The annual dividend paid per share divided by earnings per share is defined as the firm's dividend payout ratio (*DivPayout*) whereas, the annual dividend paid per share divided by market price per share is defined as the firm's dividend yield (*DivYield*).

### Determinants of Dividend Payout-Level Decision

*Firm's Size (Size)*: Since, large sized firms comparatively have benefit to raise funds externally from capital markets they are less dependent on internally generated funds (Higgins, 1972). Additionally, the large sized firms face agency problem between managers and shareholders as they are more difficult to monitor as compared to small sized firms. In such situation, it is more likely for the large sized firms to distribute dividends. Hence, a positive association is expected between the firm's size and the dividend payout-level decision in this study. The firm's size is calculated as the natural logarithm of market capitalisation.

*Profitability (Profitability)*: The profitability of a firm is logically considered as the significant factor influencing the dividend payment decision of a firm as the dividends are directly distributed from the net profit after tax. Lintner (1956) after conducting survey contends that the crucial factor that have impact on the firm's decision to pay dividend is the net profits. In addition, the firm-specific characteristics like profitability affect the firm's decision to pay dividend significantly positively (Fama & French, 2001). The return-on-assets is utilised as a proxy to measure profitability of a firm which is calculated as the ratio of earnings before interest and taxes to the total assets and a positive relationship is expected between the profitability of a firm and the dividend payout-level decision.

*Investment Opportunities (Investment)*: In order to meet the positive NPV projects investment outlays need a firm

rather than raising funds from costly external sources such as capital markets prefers to depend more on internally generated cheaper reserve and surplus (Myers, 1984; Myers & Majluf, 1984). As a result, the firms having higher investment outlays need because of higher investment opportunities are more likely to pay less dividend to the equity shareholders so that the dependency on the capital markets to raise costly external funds get reduced. In this situation, a negative association is expected between the investment opportunities and the dividend payout-level decision. The investment opportunities are measured by utilising the proxy market-to-book ratio which is calculated as the ratio of market value of equity to the book value of equity.

*Financial Leverage (Leverage)*: The firm commits itself for paying fixed charges including interest and principal amount when it borrows fund from debt source of finance. The firm might face the risk of insolvency and bankruptcy if it is unable to meet the obligation of fixed charges payment. For this reason an indirect association is expected between the financial leverage and the dividend payout-level decision. The debt-to-capital ratio is utilised as a proxy for the financial leverage and it is calculated as the total debt divided by the total capital employed.

*Life-Cycle Stage (LifeCycle)*: Any firm has a well-defined life-cycle stages as suggested by the life-cycle theory (Mueller, 1972) and the decision to pay dividend differs during the various life-cycle stages of the firm. The firms mature in age are more likely to pay dividend as they have more accumulated earnings, less systematic risk and fewer investment opportunities (Grullon et al., 2002; DeAngelo et al., 2006; Denis & Osobov, 2008). Contrary, the firms young in age are less likely to pay dividend as they have low earnings, more investment opportunities and face considerable hurdles to raise funds from external capital markets for meeting their investment outlays needs which lead them to conserve internally-generated profits. Thus, a positive association is expected between the firm's life-cycle stage and the dividend payout-level decision. The life-cycle stage of a firm is measured by the earned-to-contributed equity mix which is calculated as the retained earnings divided by the total equity of a firm.

*Business Risk (Risk)*: The managers by paying dividend to the investors signal the future prospects of the firm to the outsiders thereby, reducing the information asymmetry between the managers (insiders) and the shareholders

(outsiders) (Bhattacharya, 1979; Aharony & Swary, 1980; Asquith & Mullins, 1983). The business risk is considered as the proxy for the uncertainty between the present and future earnings of a firm. The higher business risk entails that the expected association of the present earnings with the future earnings is more uncertain. Therefore, a negative association is expected between the business risk and the dividend payout-level decision. The business risk is calculated as the ratio of standard deviation of first difference of operating income to the total assets.

*Firm's Liquidity Position (Liquidity):* It is evident from previous research studies (see, e.g. Ho, 2003) that there is significant positive influence of the liquidity position on the firm's decision to pay dividend. When a firm distributes dividend to the equity shareholders this leads to the outflow of cash for a firm. For announcing dividend a firm might have enough profits but the cash in hand held by the firm might not be sufficient to pay dividend. Thus, a positive association is expected between the liquidity position of a firm and the dividend payout-level decision. The current ratio is utilised to measure liquidity position of a firm and it is defined as the current assets divided by the current liabilities.

*Free Cash Flow (FreeCashFlow):* When the managers take actions such as enlarging the size of the firm above its optimum level or overinvesting in the projects that have negative NPV or expending richly on perk in their own self-interest the agency conflicts between the shareholders (principal owner) and the managers (agent) arises. The agencies conflicts get alleviated when the surplus free cash flow available in the hands of managers are distributed in the form of dividend to the equity shareholders (Jensen & Meckling, 1976; Rozeff, 1982; Easterbrook, 1984). Hence, a positive association is expected between the free cash flow and the dividend payout-level decision. The free cash flow is calculated

as the ratio of net operating cash flow or the earnings before interest, taxes, depreciation and amortisation minus capital expenditures to the total assets.

*Tangibility of Asset (Tangibility):* There is also the possibility of agency conflicts between the bondholders and shareholders. Titman and Wessels (1998) indicate that the agency conflicts between the bondholders and shareholders are reduced when the firm possesses a high proportion of collateralisable or tangible assets in its total assets because it assures high level of protection to the bondholders. Accordingly, a direct association of assets' tangibility is expected with the dividend payout-level decision where, the assets' tangibility is calculated as the ratio of net fixed assets to the total assets.

*Dividend Distribution Tax (Tax):* The dividends were taxed in India during 1995–1996 in the hands of equity shareholders and in the year 1997 dividend distribution tax was imposed by the government which exempted equity shareholders from paying tax on dividend received whereas, the firms supposed to pay tax on the amount of dividend distributed. This system was reversed back to the formerly taxation system during the year 2002–2003 for one year and the dividend distribution tax was re-imposed again from the year 2003–2004 onward. The dividend distribution tax rates were revised during entire study period (i.e. 10% during 1997–2002; 12% plus additional surcharges during 2004–2006; 15% during 2007 and 16.909% thereafter). In this situation, as the tax policies are frequently changed and the tax rates in relation to dividends are increased during the study period by the government, it is hypothesised that the tax has indirect association with the dividend payout-level decision of a firm. The dividend distribution tax is calculated as the tax paid by the firm on the amount of dividend distributed divided by the net profit after tax.

**Table 1: Determinants of Dividend Payout-Level Decision**

| Factor                   | Name of Variable | Measure                                                              | Expected Relation with Dividend Payout-Level Decision |
|--------------------------|------------------|----------------------------------------------------------------------|-------------------------------------------------------|
| Size of a firm           | Size             | The natural logarithm of market capitalization.                      | +                                                     |
| Profitability            | Profitability    | The ratio of earnings before interest and taxes to the total assets. | +                                                     |
| Investment opportunities | Investment       | The ratio of market value of equity to the book value of equity.     | -                                                     |
| Financial leverage       | Leverage         | The total debt divided by the total capital employed.                | -                                                     |
| Life-cycle stage         | LifeCycle        | The retained earnings divided by the total equity of a firm.         | +                                                     |

| Factor                       | Name of Variable    | Measure                                                                                                                                                             | Expected Relation with Dividend Payout-Level Decision |
|------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Business risk                | <i>Risk</i>         | The ratio of standard deviation of first difference of operating income to the total assets.                                                                        | -                                                     |
| Liquidity position of a firm | <i>Liquidity</i>    | The current assets divided by the current liabilities.                                                                                                              | +                                                     |
| Free cash flow               | <i>FreeCashFlow</i> | The ratio of net operating cash flow or the earnings before interest, taxes, depreciation and amortization (EBITDA) minus capital expenditures to the total assets. | +                                                     |
| Tangibility of asset         | <i>Tangibility</i>  | The ratio of net fixed assets to the total assets.                                                                                                                  | +                                                     |
| Dividend distribution tax    | <i>Tax</i>          | The tax paid by the firm on the amount of dividend distributed divided by the net profit after tax.                                                                 | -                                                     |
| Insider ownership            | <i>Insider</i>      | The percentage of shares held by the insiders.                                                                                                                      | -                                                     |
| Dispersion of ownership      | <i>Dispersion</i>   | The natural logarithm of a number of common equity shareholders.                                                                                                    | +                                                     |

*Insider Ownership (Insider)*: The agency theory hints that when the proportion of common shares held by insiders is lower, the firm should distribute more dividends to common equity shareholders in order to reduce the associated bonding and monitoring agency costs. Contrary, when the insider ownership is higher there is less relevance of dividends to reduce agency problem as a bonding mechanism (Rozeff, 1982). Also, when the insider ownership is higher, the insiders would try to extract private benefits rather than distributing dividends to common equity shareholders which may lead to an entrenchment. Hence, the present study expects that the insider ownership (*Insider*) affects the dividend payout-level decision of a firm negatively and the insider ownership (*Insider*) is calculated as the percentage of shares held by the insiders.

*Dispersion of Ownership (Dispersion)*: The agency cost hypothesis argues that as a result of separation of ownership control and the information asymmetry between the managers (insiders) and the common equity shareholders (outsiders) the agency cost arises.

The agency cost is referred to as that cost which is incurred to resolve the agency conflicts between the common equity shareholders (principal owner) and the managers (agent) (Jensen & Meckling, 1976). Thus, when the outsiders own large number of shares, a firm should distribute more dividends to the common equity shareholders so as to reduce the bonding and monitoring agency cost associated with the managers. The dispersion of ownership (*Dispersion*) is quantified as the natural logarithm of a number of common equity shareholders, and the present study anticipates that the dispersion of ownership (*Dispersion*) is associated with the dividend pay-out level decision of a firm directly (Rozeff, 1982; Deshmukh, 2003; Al-Malkawi, 2007).

### Model Specification

The present study assumes a linear association between the dependent variable i.e. dividend pay-out level decision and its determinants. Therefore, the model for examining the determinants of dividend payout-level decision is specified in the following manner:

$$\begin{aligned}
 Y_{i,t} = \text{Tobit} & \left( \alpha + \beta_1 \text{Size}_{i,t} + \beta_2 \text{Profitability}_{i,t} + \beta_3 \text{Investment}_{i,t} + \beta_4 \text{Leverage}_{i,t} \right. \\
 & + \beta_5 \text{LifeCycle}_{i,t} + \beta_6 \text{Risk}_{i,t} + \beta_7 \text{Liquidity}_{i,t} + \beta_8 \text{FreeCashFlow}_{i,t} \\
 & \left. + \beta_9 \text{Tangibility}_{i,t} + \beta_{10} \text{Tax}_t + \varepsilon_{i,t} \right)
 \end{aligned} \quad (1)$$

where,  $Y_{i,t}$  is the dependent variable which is utilised for analysing the tobit or censored regression and it is equal to the firm's dividend payout ratio (*DivPayout*) or dividend yield (*DivYield*). When the firm  $i$  pays dividend in time  $t$  the dependent variable  $Y_{i,t}$  takes the actual value

of dividend payout ratio (*DivPayout*) or dividend yield (*DivYield*) and zero otherwise. The annual dividend paid per share divided by earnings per share is defined as the firm's dividend payout ratio (*DivPayout*) whereas, the annual dividend paid per share divided by market price

per share is defined as the firm's dividend yield (*DivYield*). *Size<sub>i,t</sub>* is firm's size variable defined as natural logarithm of market capitalisation for firm *i* in time *t*; *Profitability<sub>i,t</sub>* is firm's profitability variable defined as return on assets i.e. the ratio of earnings before interest and taxes to the total assets for firm *i* in time *t*; *Investment<sub>i,t</sub>* is firm's investment opportunities variable defined as the ratio of market value of equity to book value of equity for firm *i* in time *t*; *Leverage<sub>i,t</sub>* is firm's financial leverage variable defined as the ratio of total debt to total capital employed for firm *i* in time *t*; *LifeCycle<sub>i,t</sub>* is firm's life-cycle stage variable defined as the retained earnings divided by the total equity for firm *i* in time *t*; *Risk<sub>i,t</sub>* is firm's risk variable defined as the ratio of standard deviation of first difference of operating income to the total assets for firm *i* in time *t*; *Liquidity<sub>i,t</sub>* is firm's liquidity variable defined as the current ratio i.e. the ratio of current assets to the current liabilities for firm *i* in time *t*; *FreeCashFlow<sub>i,t</sub>*

is firm's free cash flow variable defined as the ratio of net operating cash flow to the total total assets for firm *i* in time *t*; *Tangibility<sub>i,t</sub>* is firm's asset tangibility variable defined as the net fixed assets divided by the total assets for firm *i* in time *t*; *Tax<sub>t</sub>* is firm's tax variable defined as the ratio of dividend distribution tax to the net profit after tax for firm *i* in time *t*;  $\alpha$  is an intercept term,  $\beta$ s are the unknown parameters to be estimated,  $\varepsilon_{i,t}$  is the random disturbances for firm *i* in time *t*.

Additionally, the ownership structure is considered as the significant factor affecting the dividend payout-level decision of the firm (see, e.g. Rozeff, 1982). Therefore, the ownership structure variables such as the insider ownership variable and the dispersion of ownership variable enter into equation (1) mentioned above and the equation (1) becomes:

$$Y_{i,t} = \text{Tobit} (\alpha + \beta_1 \text{Size}_{i,t} + \beta_2 \text{Profitability}_{i,t} + \beta_3 \text{Investment}_{i,t} + \beta_4 \text{Leverage}_{i,t} + \beta_5 \text{LifeCycle}_{i,t} + \beta_6 \text{Risk}_{i,t} + \beta_7 \text{Liquidity}_{i,t} + \beta_8 \text{FreeCashFlow}_{i,t} + \beta_9 \text{Tangibility}_{i,t} + \beta_{10} \text{Tax}_t + \beta_{11} \text{Insider}_{i,t} + \beta_{12} \text{Dispersion}_{i,t} + \varepsilon_{i,t}) \quad (2)$$

where, *Insider<sub>i,t</sub>* is the firm's insider ownership variable defined as the percentage of common shares held by the insiders for firm *i* in time *t*; *Dispersion<sub>i,t</sub>* is the firm's dispersion of ownership variable defined as natural logarithm of the number of common equity shareholders for firm *i* in time *t*; *Y<sub>i,t</sub>*, *Size<sub>i,t</sub>*, *Profitability<sub>i,t</sub>*, *Investment<sub>i,t</sub>*, *Leverage<sub>i,t</sub>*, *LifeCycle<sub>i,t</sub>*, *Risk<sub>i,t</sub>*, *Liquidity<sub>i,t</sub>*, *FreeCashFlow<sub>i,t</sub>*, *Tangibility<sub>i,t</sub>*, and *Tax<sub>t</sub>* are as described in equation (1),  $\alpha$  is an intercept term,  $\beta$ s are the unknown parameters to be estimated,  $\varepsilon_{i,t}$  is the random disturbances for firm *i* in time *t*.

The dividend payout-level decision is concerned about how much amount of dividend a firm distributes out of its total profits to the equity shareholders. In a given time *t*, out of total firms in our sample some firms distribute dividends whereas, other firms do not distribute any dividend i.e. distribute zero dividend. As a result the information concerning the dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) for the firms distributing zero dividend remains unavailable in a given time *t*. Such a sample is referred to as the censored sample as the information regarding dependent variable is not available for all the observations in a given time *t*.

In a most celebrated article, Tobin (1958) firstly indicated that the Tobit regression model is the most prominent model for estimating the censored data. Thus, in the present study the Tobit regression model also referred to as the censored regression model is considered as the most suitable model for analysing the dividend payout-level decision i.e. the decision pertaining to how much amount of dividend to be distributed out of total profits to the equity shareholders. As the values taken by the dependent variable are restricted, some authors also refer Tobit regression model as the limited dependent variable regression model. The Tobit regression model can be expressed in the simplest form in the following manner:

$$y_t^o = X_t \beta + u_t \quad (3)$$

where,  $u_t \sim \text{NID}(0, \sigma^2)$ ,

$y_t = y_t^o$  if  $y_t^o > 0$ ;

$y_t = 0$  otherwise.

In the above equation (3),  $y_t^o$  is referred to as the latent variable which is observed only when it takes the positive value. On the contrary, the latent variable  $y_t^o$  is observed as  $y_t = 0$  when it is either negative or equal to

zero. The Tobit regression model as specified in equation (3) is modifiable in such a way that instead of censoring it from below it might be censored from above or it might be censored from both the end i.e. above as well as below. Also, the above Tobit regression model can be modified in a more deterministic manner to allow the point at which the censoring occurs that varies across the observations.

The log likelihood function for the Tobit regression model can be specified in the following way:

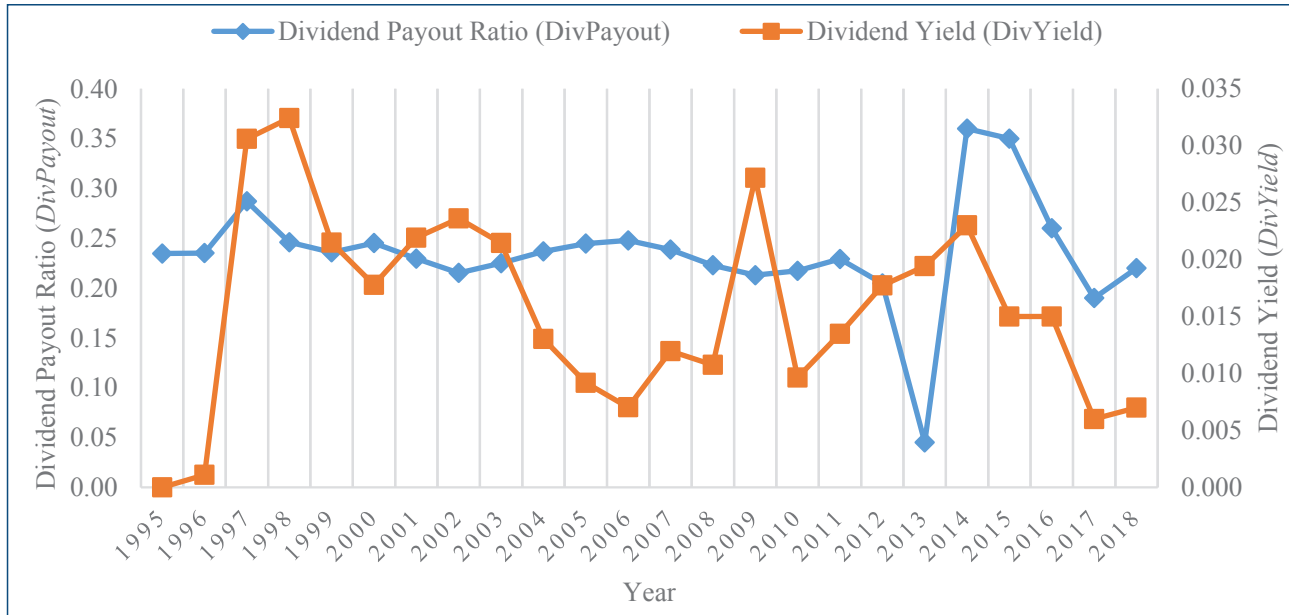
$$\sum_{y_t=0} \log \phi \left( -\frac{X_t \beta}{\sigma} \right) + \sum_{y_t>0} \log \left( \frac{1}{\sigma} \phi \left( \frac{y_t - X_t \beta}{\sigma} \right) \right) \quad (4)$$

For the Tobit regression model the loglikelihood function comprises of two peculiar terms. In the loglikelihood function the first term indicates the sum of the logs of probabilities for the censored observations on the other hand, the second term connotes the sum of the logs of densities for the uncensored observations. This implies that the dependent variable in the Tobit regression model has the distribution which is a combination of both the variables i.e. discrete as well as random variables.

## Analysis

### Sample Characteristics

This section offers an overview of the total numbers of 703 sample firms utilised in this study. Table 2 and Fig. 1 demonstrate the trends in the year-wise average dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) during the entire period of study i.e. 1995-2018 for the firms that pay dividends in the given year. The results indicate that the average dividend payout ratio (*DivPayout*) is highest and lowest in the year 2014 (i.e. 0.36) and 2013 (i.e. 0.05) respectively. Whereas, the average dividend yield (*DivYield*) is highest in the year 1998 i.e. 0.032 and lowest in the year 1995 i.e. 0.000. The average of the annual dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) is highest during the first post-reforms period as compared to second post-reforms period and the entire study period. Also, the dividend payout ratio (*DivPayout*) as well as the dividend yield (*DivYield*) show a volatile trend during the entire study period.



Source: PROWESS database maintained by CMIE (Centre for Monitoring Indian Economy).

**Fig. 1:** Trends in Dividend Payout Ratio (*DivPayout*) and Dividend Yield (*DivYield*) during 1994-95 to 2017-18

**Table 2: Trends in Dividend Payout Ratio (*DivPayout*) and Dividend Yield (*DivYield*) during 1995-2018**

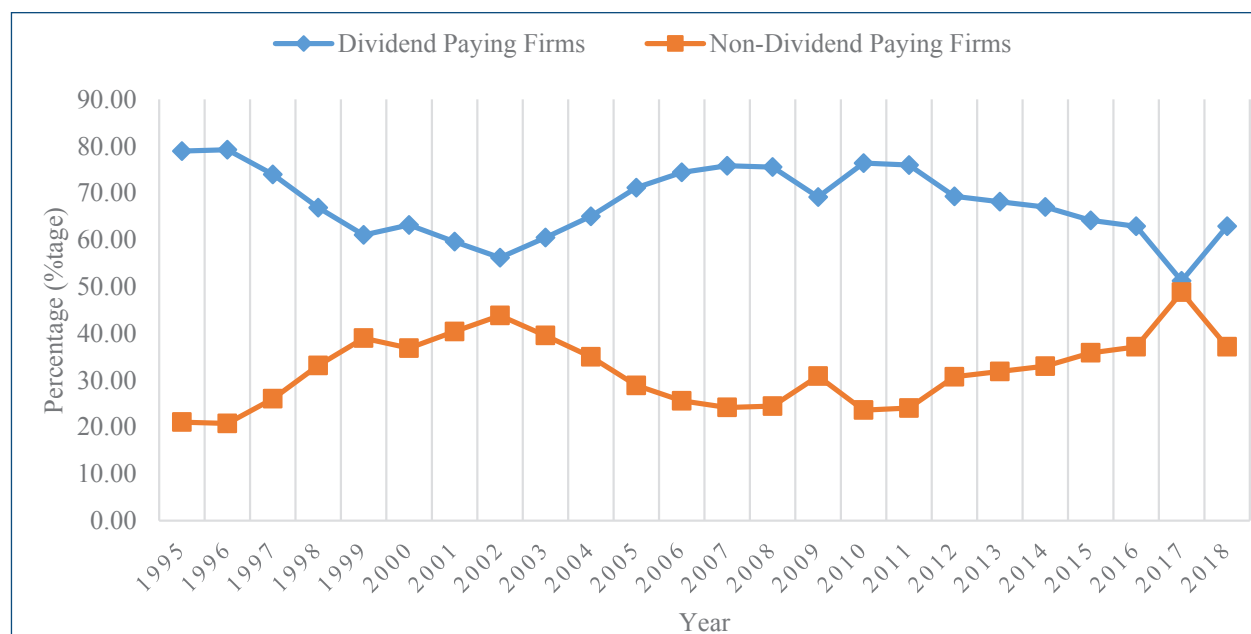
| Year      | Dividend Payout Ratio ( <i>DivPayout</i> ) |        |                    | Dividend Yield ( <i>DivYield</i> ) |        |                    |
|-----------|--------------------------------------------|--------|--------------------|------------------------------------|--------|--------------------|
|           | Mean                                       | Median | Standard Deviation | Mean                               | Median | Standard Deviation |
| 1995      | 0.23                                       | 0.22   | 0.20               | 0.000                              | 0.000  | 0.000              |
| 1996      | 0.24                                       | 0.22   | 0.19               | 0.001                              | 0.000  | 0.008              |
| 1997      | 0.29                                       | 0.25   | 0.27               | 0.031                              | 0.000  | 0.047              |
| 1998      | 0.25                                       | 0.22   | 0.24               | 0.032                              | 0.000  | 0.050              |
| 1999      | 0.24                                       | 0.21   | 0.26               | 0.021                              | 0.000  | 0.043              |
| 2000      | 0.25                                       | 0.21   | 0.27               | 0.018                              | 0.000  | 0.033              |
| 2001      | 0.23                                       | 0.19   | 0.26               | 0.022                              | 0.000  | 0.039              |
| 2002      | 0.22                                       | 0.16   | 0.25               | 0.024                              | 0.000  | 0.045              |
| 2003      | 0.23                                       | 0.19   | 0.25               | 0.021                              | 0.000  | 0.035              |
| 2004      | 0.24                                       | 0.20   | 0.25               | 0.013                              | 0.000  | 0.027              |
| 2005      | 0.24                                       | 0.21   | 0.25               | 0.009                              | 0.000  | 0.015              |
| 2006      | 0.25                                       | 0.21   | 0.27               | 0.007                              | 0.000  | 0.012              |
| 2007      | 0.24                                       | 0.20   | 0.27               | 0.012                              | 0.002  | 0.019              |
| 2008      | 0.22                                       | 0.17   | 0.26               | 0.011                              | 0.003  | 0.016              |
| 2009      | 0.21                                       | 0.14   | 0.26               | 0.027                              | 0.015  | 0.033              |
| 2010      | 0.22                                       | 0.16   | 0.25               | 0.010                              | 0.005  | 0.013              |
| 2011      | 0.23                                       | 0.17   | 0.27               | 0.013                              | 0.008  | 0.017              |
| 2012      | 0.20                                       | 0.14   | 0.26               | 0.018                              | 0.011  | 0.031              |
| 2013      | 0.05                                       | 0.01   | 0.12               | 0.019                              | 0.009  | 0.065              |
| 2014      | 0.36                                       | 0.16   | 2.23               | 0.023                              | 0.01   | 0.076              |
| 2015      | 0.35                                       | 0.16   | 3.18               | 0.015                              | 0.006  | 0.056              |
| 2016      | 0.26                                       | 0.16   | 0.57               | 0.015                              | 0.007  | 0.061              |
| 2017      | 0.19                                       | 0.05   | 0.70               | 0.006                              | 0.002  | 0.012              |
| 2018      | 0.22                                       | 0.11   | 0.70               | 0.007                              | 0.004  | 0.023              |
| 1995-2003 | 0.24                                       | 0.21   | 0.24               | 0.019                              | 0.000  | 0.033              |
| 2004-2018 | 0.23                                       | 0.15   | 0.66               | 0.014                              | 0.005  | 0.032              |
| 1995-2018 | 0.23                                       | 0.17   | 0.50               | 0.016                              | 0.003  | 0.032              |

Source: PROWESS database maintained by CMIE (Centre for Monitoring Indian Economy).

Note: Dividend Payout Ratio (*DivPayout*) of a firm is measured as the annual dividend paid per share divided by earnings per share. Dividend Yield (*DivYield*) of a firm is determined as the annual dividend paid per share divided by market price per share.

Fig. 2 presents the percentage of dividend paying and non-dividend paying firms during the entire period of study i.e. 1995–2018. The dividend paying firms are the firms that distribute dividend or pay a positive dividend in time  $t$ , whereas, non-dividend paying firms are the firms that do not distribute any dividend or pay zero or no dividend in time  $t$ . It is observed from Fig. 2 that the dividend paying and non-dividend paying firms do not show any consistent increasing or decreasing trend but instead depicts a volatile trend throughout the study period i.e. 1995–2018. These

findings are not in line with the disappearing dividend phenomenon as observed by Fama and French (2001) in the U.S. context where the percentage of dividend paying firms declined consistently from 66.5% in 1978 to 20.8% in 1999. The percentage of dividend paying firms are highest in the year 1996 i.e. 79.23% and lowest in the year 2017 i.e. 51.21%. The numbers of dividend paying firms have declined from 555 in the year 1995 to 442 in the year 2018 by 20.36% (a raw change of 113 firms) during the entire study period i.e. 1995–2018.



Source: PROWESS database maintained by CMIE (Centre for Monitoring Indian Economy).

**Fig. 2:** Trends in Dividend Paying Firms and Non-Dividend Paying Firms during 1994-95 to 2017-18

**Table 3:** Period-Wise Average Dividend Payout Ratio (*DivPayout*) according to Firm Characteristics

| Year      | Panel - A                               |        |                                  |                               |                                 |        |
|-----------|-----------------------------------------|--------|----------------------------------|-------------------------------|---------------------------------|--------|
|           | Firm's Size (Size)                      |        |                                  | Profitability (Profitability) |                                 |        |
|           | Small                                   |        | Large                            | Low                           | High                            |        |
|           | < ₹. 1182.28 Million                    |        | ≥ ₹. 1182.28 Million             | < 15 %                        | ≥ 15 %                          |        |
| 1995-2003 | 0.20                                    |        | 0.28                             | 0.23                          | 0.25                            |        |
| 2004-2018 | 0.19                                    |        | 0.23                             | 0.21                          | 0.21                            |        |
| 1995-2018 | 0.20                                    |        | 0.25                             | 0.20                          | 0.25                            |        |
| Year      | Panel - B                               |        |                                  |                               |                                 |        |
|           | Investment Oportunities<br>(Investment) |        | Financial Leverage<br>(Leverage) |                               | Life-Cycle Stage<br>(LifeCycle) |        |
|           | Low                                     | High   | Low                              | High                          | Young                           | Old    |
|           | < 2.12                                  | ≥ 2.12 | < 1.09                           | ≥ 1.09                        | < 0.03                          | ≥ 0.03 |
| 1995-2003 | 0.25                                    | 0.24   | 0.25                             | 0.22                          | 0.22                            | 0.26   |
| 2004-2018 | 0.25                                    | 0.19   | 0.22                             | 0.19                          | 0.20                            | 0.23   |
| 1995-2018 | 0.24                                    | 0.22   | 0.24                             | 0.20                          | 0.21                            | 0.24   |

Source: PROWESS database maintained by CMIE (Centre for Monitoring Indian Economy).

Note: 1995-2018 represents entire study period, 1995-2003 indicates the first post-reforms period, 2004-2018 implies the second post-reforms period, *Size* is defined as natural logarithm of market capitalization, *Profitability* is defined as return on assets i.e. the ratio of earnings before interest and taxes to the total assets, *Investment* is defined as the ratio of market value of equity to book value of equity, *Leverage* is defined as the ratio of total debt to total capital employed, *LifeCycle* is defined as the retained earnings divided by the total equity.

Tables 3 and 4 demonstrates the trends in the dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) respectively according to the different firm's characteristics during the entire period of study i.e. 1995–2018 and two sub-periods i.e. 1995–2003 and

2004–2018. The sample firms are sub-divided into small and large, low and high, young and old according to the firm's characteristics such as firm's size (*Size*), profitability (*Profitability*), investment opportunities (*Investment*), financial leverage (*Leverage*) and life-cycle

stage (*LifeCycle*) by taking into account the threshold value. The average of annual median value of the firm's characteristics is utilised as a threshold for the sub-division. The firms having market capitalisation, return on equity, market-to-book ratio, debt-to-equity ratio and retained earnings to total equity ratio higher than the threshold value are termed as the larger, more profitable firms, firms with high investment opportunities, high

financial leverage and old firms respectively and vice-a-versa. It is observed from Tables 3 and 4 that the dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) of larger, more profitable firms, firms with low investment opportunities, low financial leverage and old firms are comparatively higher and vice-a-versa during the entire study period i.e. 1995–2018 and two sub-periods i.e. 1995–2003 and 2004–2018.

**Table 4: Period-Wise Average Dividend Yield (*DivYield*) according to Firm Characteristics**

| Year      | Panel – A                                |        |                                  |                               |                                 |        |
|-----------|------------------------------------------|--------|----------------------------------|-------------------------------|---------------------------------|--------|
|           | Firm's Size (Size)                       |        |                                  | Profitability (Profitability) |                                 |        |
|           | Small                                    |        | Large                            | Low                           | High                            |        |
|           | < ₹. 1182.28 Million                     |        | ≥ ₹. 1182.28 Million             | < 15 %                        | ≥ 15 %                          |        |
| 1995-2003 | 0.013                                    |        | 0.019                            | 0.013                         | 0.018                           |        |
| 2004-2018 | 0.012                                    |        | 0.015                            | 0.013                         | 0.013                           |        |
| 1995-2018 | 0.013                                    |        | 0.016                            | 0.013                         | 0.016                           |        |
| Year      | Panel - B                                |        |                                  |                               |                                 |        |
|           | Investment Opportunities<br>(Investment) |        | Financial Leverage<br>(Leverage) |                               | Life-Cycle Stage<br>(LifeCycle) |        |
|           | Low                                      | High   | Low                              | High                          | Young                           | Old    |
|           | < 2.12                                   | ≥ 2.12 | < 1.09                           | ≥ 1.09                        | < 0.03                          | ≥ 0.03 |
| 1995-2003 | 0.019                                    | 0.008  | 0.016                            | 0.015                         | 0.015                           | 0.016  |
| 2004-2018 | 0.015                                    | 0.010  | 0.014                            | 0.012                         | 0.013                           | 0.013  |
| 1995-2018 | 0.016                                    | 0.010  | 0.015                            | 0.014                         | 0.014                           | 0.015  |

Source: PROWESS database maintained by CMIE (Centre for Monitoring Indian Economy).

Note: 1995-2018 represents entire study period, 1995-2003 indicates the first post-reforms period, 2004-2018 implies the second post-reforms period. *Size*, *Profitability*, *Investment*, *Leverage* and *LifeCycle* are as defined in Table 3.

## Empirical Results

Table 5 exhibits descriptive statistics i.e. minimum, maximum, mean, median, standard deviation, skewness and kurtosis for all the dependent variables as well as for all the independent variables utilised in the study.

The dividend payout ratio (*DivPayout*) has a mean value of 0.23 and a median value of 0.17 and it ranges from a minimum of -0.08 to a maximum of 2.07. Whereas, the dividend yield (*DivYield*) ranges from a minimum of 0.00 to a maximum of 0.14 with a mean value of 0.01 and median value of 0.00.

**Table 5: Descriptive Statistics**

| Variable      | Min   | Max   | Mean | Median | Std. Dev. | Skewness | Kurtosis |
|---------------|-------|-------|------|--------|-----------|----------|----------|
| DivPayout     | -0.08 | 2.07  | 0.23 | 0.17   | 0.27      | 2.21     | 7.70     |
| DivYield      | 0.00  | 0.14  | 0.01 | 0.00   | 0.03      | 2.28     | 5.27     |
| Size          | -1.90 | 12.95 | 4.78 | 4.62   | 2.12      | 0.37     | 0.13     |
| Profitability | -0.57 | 1.27  | 0.15 | 0.14   | 0.19      | 1.21     | 7.09     |
| Investment    | -2.90 | 18.88 | 2.12 | 1.18   | 2.73      | 2.58     | 8.11     |
| Leverage      | 0.00  | 6.79  | 1.09 | 0.87   | 1.07      | 1.80     | 4.37     |
| LifeCycle     | -0.30 | 0.25  | 0.03 | 0.03   | 0.06      | -0.96    | 4.90     |
| Risk          | 0.01  | 0.18  | 0.04 | 0.03   | 0.03      | 2.38     | 7.26     |
| Liquidity     | 0.09  | 13.31 | 1.63 | 1.22   | 1.53      | 2.94     | 2.03     |
| FreeCashFlow  | -0.21 | 0.34  | 0.07 | 0.07   | 0.09      | 0.06     | 0.54     |
| Tangibility   | 0.00  | 0.99  | 0.35 | 0.34   | 0.19      | 0.31     | -0.48    |

| Variable   | Min   | Max  | Mean | Median | Std. Dev. | Skewness | Kurtosis |
|------------|-------|------|------|--------|-----------|----------|----------|
| Tax        | -0.01 | 0.16 | 0.02 | 0.01   | 0.03      | 1.61     | 2.99     |
| Insider    | 1.44  | 2.41 | 2.86 | 2.43   | 7.26      | -2.89    | 8.85     |
| Dispersion | 0.80  | 1.07 | 1.12 | 1.80   | 4.02      | 0.00     | 6.79     |

Source: Author's calculations.

Note: This table demonstrates descriptive statistics for all the dependent variables as well as for all the independent variables utilised in the study. *DivPayout* is the firm's dividend payout ratio which is defined as the annual dividend paid per share divided by earnings per share. *DivYield* is the firm's dividend yield which is defined as the annual dividend paid per share divided by market price per share. *Size* is defined as natural logarithm of market capitalization. *Profitability* is defined as return on assets i.e. the ratio of earnings before interest and taxes to the total assets. *Investment* is defined as the ratio of market value of equity to book value of equity. *Leverage* is defined as the ratio of total debt to total capital employed. *LifeCycle* is defined as the retained earnings divided by the total equity. *Risk* is defined as the ratio of standard deviation of first difference of operating income to the total assets. *Liquidity* is defined as the current ratio i.e. the ratio of current assets to the current liabilities. *FreeCashFlow* is defined as the ratio of net operating cash flow to the total total assets. *Tangibility* is defined as the net fixed assets divided by the total assets. *Tax* is defined as the ratio of dividend distribution tax to the net profit after tax. *Insider* is defined as the percentage of common shares held by the insiders. *Dispersion* is defined as natural logarithm of the number of common equity shareholders.

Among all other independent variables, the variables such as firm's size, investment opportunities, financial leverage, firm's liquidity position, insider ownership and dispersion of ownership i.e. *Size*, *Investment*, *Leverage*, *Liquidity*, *Insider* and *Dispersion* respectively are comparatively highly volatile. The skewness and kurtosis values for all the dependent variables as well as for all the independent variables are in the range which is acceptable i.e. the skewness and the kurtosis value is between  $\pm 3$  and  $\pm 10$ , respectively which hints that the data is normalized (Kline, 2016).

The correlation coefficient values and the variance

inflation factor (VIF) between all the independent variables that are taken from different theories of dividend policy are presented in the Table 6. It is observed from Table 6 that the correlation coefficient values are significant between some of the independent variables, but they are of either low or moderate degree which indicates that the problem of multicollinearity is absent between the independent variables. Also, for all the independent variables the VIF estimated values are much less than five, the rule of thumb i.e. the VIF values are very small implying that the multicollinearity problem is absent between the independent variables.

**Table 6: Correlation Matrix and Variance Inflation Factor (VIF)**

| Variable      | Size     | Profitability | Investment | Leverage | LifeCycle | Risk     | Liquidity | FreeCashFlow | Tangibility | Tax     | Insider | Dispersion |
|---------------|----------|---------------|------------|----------|-----------|----------|-----------|--------------|-------------|---------|---------|------------|
| Size          | 1.000    |               |            |          |           |          |           |              |             |         |         |            |
| Profitability | 0.214**  | 1.000         |            |          |           |          |           |              |             |         |         |            |
| Investment    | 0.504**  | 0.173**       | 1.000      |          |           |          |           |              |             |         |         |            |
| Leverage      | -0.186** | -0.139**      | -0.049**   | 1.000    |           |          |           |              |             |         |         |            |
| LifeCycle     | 0.349**  | 0.321**       | 0.234**    | -0.263** | 1.000     |          |           |              |             |         |         |            |
| Risk          | -0.191** | -0.009        | -0.072**   | -0.059** | -0.123**  | 1.000    |           |              |             |         |         |            |
| Liquidity     | -0.134** | -0.065**      | -0.065**   | 0.007    | -0.022    | 0.027*   | 1.000     |              |             |         |         |            |
| FreeCash-Flow | 0.189**  | 0.153**       | 0.068**    | -0.152** | 0.289**   | -0.036** | -0.071**  | 1.000        |             |         |         |            |
| Tangibility   | -0.217** | -0.099**      | -0.162**   | 0.218**  | -0.189**  | -0.022   | -0.050**  | -0.037**     | 1.000       |         |         |            |
| Tax           | 0.109**  | 0.001         | 0.056**    | -0.059** | 0.037**   | -0.083** | -0.097**  | 0.066**      | -0.024      | 1.000   |         |            |
| Insider       | 0.0211   | 0.062**       | 0.075**    | -0.022   | 0.097**   | -0.053** | -0.038**  | 0.084**      | -0.024      | 0.060** | 1.000   |            |
| Dispersion    | 0.025*   | 0.067**       | 0.068**    | -0.011   | 0.121**   | -0.081** | -0.037**  | 0.093**      | -0.00       | 0.069** | 0.935** | 1.000      |
| VIF           | 1.589    | 1.147         | 1.382      | 1.160    | 1.394     | 1.075    | 1.037     | 1.233        | 1.222       | 1.033   | 4.040   | 4.105      |

Source: Author's calculations.

Note: This table reports the correlation between all the independent variables utilized in this study and the variance inflation factor (VIF). For variable explanation see note in Table 5. \*\*\* indicates significance at 1% level, \*\* indicates significance at 5% level and \* indicates significance at 10% level.

Tables 7 and 8 demonstrates the empirical findings of the estimation of the censored or Tobit regression analysis model based on equation (1) and (2) with dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) respectively as the dependent variable. In Table 7 and 8 the endogenous variable is equal to the actual value of the dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) respectively when the firm distribute positive dividend in a given year  $t$  and it is equal to zero when the firm do not distribute any dividend in a given year

$t$ . The marginal effects which implies the likelihood that the endogenous variables i.e. dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) are uncensored are reported in the second, fourth, sixth and eighth columns for the respective periods. The significance of the likelihood ratio entails the overall significance of the censored or Tobit regression analysis model in all the four respective periods. For all the four respective periods the Wald test statistics are significant thus rejecting the null hypothesis that in the regression equation the parameters are jointly equal to zero.

**Table 7: Tobit Regression Results**

| Variables             | Dividend Payout Ratio ( <i>DivPayout</i> ) as Dependent Variable |              |                                     |              |                                     |              |                                    |              |
|-----------------------|------------------------------------------------------------------|--------------|-------------------------------------|--------------|-------------------------------------|--------------|------------------------------------|--------------|
|                       | 1995-2018                                                        |              | 1995-2003                           |              | 2004-2018                           |              | 2006-2018                          |              |
|                       | (1)<br>Coefficient<br>Estimates                                  | (2)<br>dy/dx | (3)<br>Coefficient<br>Estimates     | (4)<br>dy/dx | (5)<br>Coefficient<br>Estimates     | (6)<br>dy/dx | (7)<br>Coefficient<br>Estimates    | (8)<br>dy/dx |
| Constant              | 0.152***<br>(11.85)                                              |              | 0.179***<br>(7.66)                  |              | 0.095***<br>(3.36)                  |              | 0.621***<br>(4.00)                 |              |
| Size                  | 0.014***<br>(9.11)                                               | 4.776        | 0.044***<br>(11.84)                 | 3.821        | 0.013***<br>(3.59)                  | 5.637        | 0.011***<br>(2.61)                 | 5.733        |
| Profitability         | 0.005<br>(0.31)                                                  | 0.152        | 0.150***<br>(4.98)                  | 0.133        | 0.109***<br>(5.88)                  | 0.170        | 0.145***<br>(7.73)                 | 0.173        |
| Investment            | -0.001<br>(-0.72)                                                | 2.124        | -0.013***<br>(-6.18)                | 1.646        | -0.009***<br>(-5.70)                | 2.553        | -0.008***<br>(-4.71)               | 2.406        |
| Leverage              | -0.020***<br>(-6.94)                                             | 1.093        | -0.027***<br>(-5.42)                | 1.116        | -0.024***<br>(-5.57)                | 1.072        | -0.021***<br>(-4.40)               | 1.074        |
| LifeCycle             | 0.360***<br>(6.36)                                               | 0.032        | 0.177**<br>(2.07)                   | 0.0294       | 0.093 (1.21)                        | 0.034        | 0.108 (1.28)                       | 0.035        |
| Risk                  | -2.514***<br>(-21.12)                                            | 0.036        | -0.006**<br>(-2.25)                 | 2.117        | -1.317***<br>(-6.97)                | 0.035        | -0.843***<br>(-3.89)               | 0.034        |
| Liquidity             | 0.011***<br>(6.42)                                               | 2.200        | 2.732**<br>(14.20)                  | 0.037        | 0.001<br>(0.26)                     | 2.274        | 0.002 (0.90)                       | 2.287        |
| FreeCashFlow          | 0.319***<br>(9.21)                                               | 0.074        | 0.134**<br>(2.94)                   | 0.0788       | 0.057 (1.24)                        | 0.070        | 0.013<br>(0.26)                    | 0.067        |
| Tangibility           | 0.077***<br>(4.84)                                               | 0.349        | 0.186***<br>(5.94)                  | 0.373        | 0.042<br>(1.34)                     | 0.328        | 0.008 (0.23)                       | 0.321        |
| Tax                   | -2.697***<br>(-27.24)                                            | 0.022        | -0.607***<br>(-4.23)                | 0.023        | -1.816***<br>(-13.04)               | 0.021        | -1.633***<br>(-10.86)              | 0.021        |
| Insider               | -                                                                | -            | -                                   | -            | -                                   | -            | -0.004***<br>(-3.18)               | 51.718       |
| Dispersion            | -                                                                | -            | -                                   | -            | -                                   | -            | 0.231***<br>(4.22)                 | 3.887        |
| No. of Observation    | 18744                                                            |              | 7029                                |              | 11715                               |              | 10153                              |              |
| Pseudo R <sup>2</sup> | 0.1528                                                           |              | 0.1978                              |              | 0.1671                              |              | 0.1548                             |              |
| Log Likelihood        | -5280.5154                                                       |              | -2145.4147                          |              | -2350.7222                          |              | -1600.9316                         |              |
| Wald Test             | $\chi^2$ (10) = 598.66<br>(0.0000)                               |              | $\chi^2$ (10) = 616.13<br>(0.0000)  |              | $\chi^2$ (10) = 383.46<br>(0.0000)  |              | $\chi^2$ (12) = 299.24<br>(0.0000) |              |
| LR Test               | $\chi^2$ (10) = 2203.22<br>(0.0000)                              |              | $\chi^2$ (10) = 1364.48<br>(0.0000) |              | $\chi^2$ (10) = 1253.25<br>(0.0000) |              | $\chi^2$ (12) = 915.26 (0.0000)    |              |

Source: Author's calculations.

Note: The figures in parentheses are the z-statistics. \*\*\* indicates significance at 1% level, \*\* indicates significance at 5% level, and \* indicates significance at 10% level. The period for the estimation of equation (2) is from 2005-06 to 2017-18 due to unavailability of ownership structure data.

The marginal effects described in each period point the anticipated change in the percentage of dividend payout ratio (*DivPayout*) or dividend yield (*DivYield*) when there is one percentage change in one exogenous variable while holding other exogenous variables constant. From the Table 7 and 8, the study finds that the exogenous variables such as firm's size (*Size*), life-cycle stage (*LifeCycle*) and free cash flow (*FreeCashFlow*) have direct association with the dividend payout-level decision and are statistically highly significant at 1% level of significance for both the dependent variables during the entire study period i.e. 1995–2018. Whereas, the exogenous variables like business risk (*Risk*) and dividend distribution tax (*Tax*) have significant negative influence on the dividend payout-level decision at 1% level of significance for both the dependent variables during the entire study period i.e. 1995–2018. These results indicate that the larger, mature firms and firms with high free cash flow have higher dividend payout-level on the other hand, the firms facing high business risk and the high dividend distribution tax imposed by the government tend the firms to have lower dividend payout-level. These results are consistent with the findings of previous research studies (see, e.g. DeAngelo et al., 2006; Al-Malkawi, 2008; Hamill and Al-Shattarat, 2012; Singhanian & Gupta, 2012; Kamat & Kamat, 2013).

The marginal effect of firm's size (*Size*), life-cycle stage (*LifeCycle*) and free cash flow (*FreeCashFlow*) implies that an increase in firm's size (*Size*), life-cycle stage (*LifeCycle*) and free cash flow (*FreeCashFlow*) of one percentage would lead to an increase in the dividend payout-level by 4.776, 0.032 and 0.074, respectively while holding other exogenous variables constant. The marginal effect of business risk (*Risk*) and dividend distribution tax (*Tax*) indicate that if firm's business risk (*Risk*) and dividend distribution tax (*Tax*) increase by one percentage, the anticipated decrease in the dividend payout-level would be 0.036 and 0.022, respectively. The financial leverage (*Leverage*) has negative association whereas, the liquidity position of a firm (*Liquidity*) and tangibility of assets (*Tangibility*) have positive relationship with the dividend payout-level decision and are statistically significant only for the dividend payout ratio (*DivPayout*) as the dependent variable during the entire study period i.e. 1995–2018. The firm's profitability (*Profitability*) has positive impact whereas, the investment opportunities (*Investment*) has negative influence on the dividend payout-level decision but they are statistically significant only for the dividend yield (*DivYield*) as the dependent variable during the entire study period i.e. 1995–2018.

**Table 8: Tobit Regression Results**

| <i>Dividend Yield (DivYield) as Dependent Variable</i> |                              |              |                              |              |                              |              |                              |              |
|--------------------------------------------------------|------------------------------|--------------|------------------------------|--------------|------------------------------|--------------|------------------------------|--------------|
| <i>Variables</i>                                       | <i>1995-2018</i>             |              | <i>1995-2003</i>             |              | <i>2004-2018</i>             |              | <i>2006-2018</i>             |              |
|                                                        | (1)                          | (2)          | (3)                          | (4)          | (5)                          | (6)          | (7)                          | (8)          |
|                                                        | <i>Coefficient Estimates</i> | <i>dy/dx</i> | <i>Coefficient Estimates</i> | <i>dy/dx</i> | <i>Coefficient Estimates</i> | <i>dy/dx</i> | <i>Coefficient Estimates</i> | <i>dy/dx</i> |
| Constant                                               | 0.035***<br>(11.19)          |              | 0.076***<br>(9.85)           |              | 0.021***<br>(6.68)           |              | 0.046***<br>(4.60)           |              |
| Size                                                   | 0.008***<br>(21.29)          | 4.776        | 0.014***<br>(12.09)          | 3.821        | 1.001***<br>(13.85)          | 5.637        | 0.004***<br>(15.19)          | 5.733        |
| Profitability                                          | 0.005*<br>(1.88)             | 0.152        | 0.070***<br>(6.69)           | 0.132        | 0.003<br>(1.60)              | 0.170        | 0.004**<br>(2.07)            | 0.173        |
| Investment                                             | -0.004***<br>(-18.76)        | 2.124        | -0.008***<br>(-11.73)        | 1.646        | -0.002***<br>(-14.40)        | 2.553        | -0.003***<br>(-14.80)        | 2.406        |
| Leverage                                               | -0.001<br>(-1.53)            | 1.093        | -0.005***<br>(-2.78)         | 1.116        | -0.001***<br>(-2.74)         | 1.072        | -0.002***<br>(-4.66)         | 1.074        |
| LifeCycle                                              | 0.035***<br>(3.67)           | 0.032        | 0.016<br>(0.58)              | 0.029        | 0.051***<br>(6.65)           | 0.034        | 0.002<br>(0.21)              | 0.035        |
| Risk                                                   | -0.322***<br>(-13.82)        | 0.036        | -0.588***<br>(-9.05)         | 0.037        | -0.164***<br>(-8.28)         | 0.035        | -0.173***<br>(-9.09)         | 0.034        |

| Dividend Yield (DivYield) as Dependent Variable |                                    |       |                                    |       |                                    |       |                                   |        |
|-------------------------------------------------|------------------------------------|-------|------------------------------------|-------|------------------------------------|-------|-----------------------------------|--------|
| Variables                                       | 1995-2018                          |       | 1995-2003                          |       | 2004-2018                          |       | 2006-2018                         |        |
|                                                 | (1)                                | (2)   | (3)                                | (4)   | (5)                                | (6)   | (7)                               | (8)    |
|                                                 | Coefficient Estimates              | dy/dx | Coefficient Estimates              | dy/dx | Coefficient Estimates              | dy/dx | Coefficient Estimates             | dy/dx  |
| Liquidity                                       | 0.001<br>(0.24)                    | 2.200 | 0.001<br>(0.22)                    | 2.117 | 0.001<br>(0.50)                    | 2.274 | 0.003<br>(1.28)                   | 2.287  |
| FreeCashFlow                                    | 0.050***<br>(8.74)                 | 0.074 | 0.124***<br>(8.69)                 | 0.079 | 0.015***<br>(3.44)                 | 0.070 | 0.034***<br>(6.41)                | 0.067  |
| Tangibility                                     | 0.005<br>(1.36)                    | 0.349 | 0.006<br>(0.60)                    | 0.373 | 0.004<br>(1.24)                    | 0.328 | 0.002<br>(0.87)                   | 0.321  |
| Tax                                             | -0.084***<br>(-5.18)               | 0.022 | -0.242***<br>(-5.85)               | 0.023 | -0.063***<br>(-4.76)               | 0.021 | -0.146***<br>(-9.81)              | 0.021  |
| Insider                                         | -                                  | -     | -                                  | -     | -                                  | -     | -0.003***<br>(-3.35)              | 51.718 |
| Dispersion                                      | -                                  | -     | -                                  | -     | -                                  | -     | 0.013***<br>(3.52)                | 3.887  |
| No. of Observation                              | 18744                              |       | 7029                               |       | 11715                              |       | 10153                             |        |
| Pseudo R <sup>2</sup>                           | 0.2456                             |       | 0.0626                             |       | 0.0979                             |       | 0.0718                            |        |
| Log Likelihood                                  | 7239.46                            |       | 965.40                             |       | 7621.66                            |       | 6673.09                           |        |
| Wald Test                                       | $\chi^2(10) = 902.51$<br>(0.0000)  |       | $\chi^2(10) = 447.46$<br>(0.0000)  |       | $\chi^2(10) = 456.69$<br>(0.0000)  |       | $\chi^2(12) = 287.97$<br>(0.0000) |        |
| LR Test                                         | $\chi^2(10) = 2324.73$<br>(0.0000) |       | $\chi^2(10) = 1142.92$<br>(0.0000) |       | $\chi^2(10) = 1143.81$<br>(0.0000) |       | $\chi^2(12) = 765.75$ (0.0000)    |        |

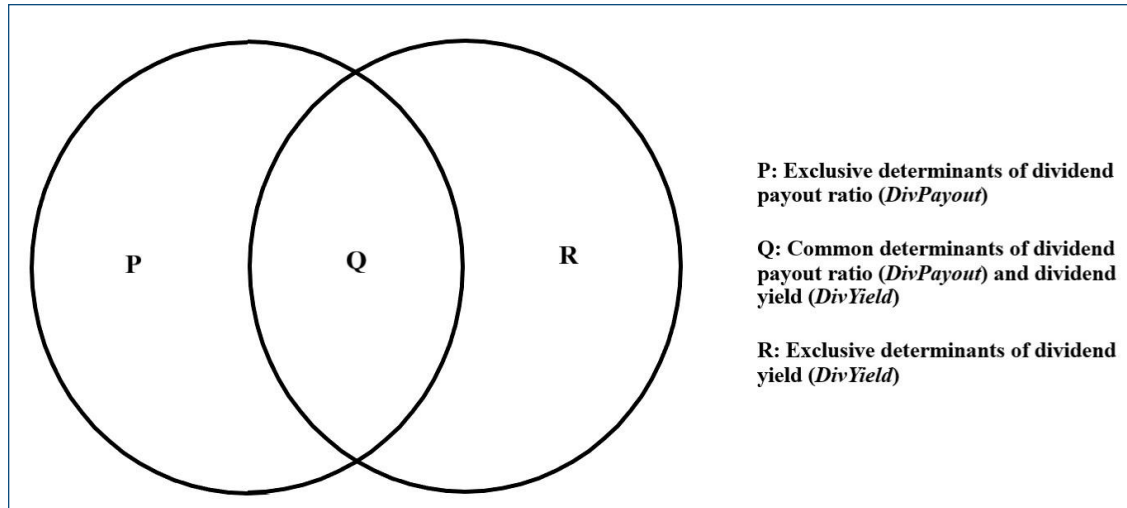
Source: Author's calculations.

Note: The figures in parentheses are the z-statistics. \*\*\* indicates significance at 1% level, \*\* indicates significance at 5% level, and \* indicates significance at 10% level. The period for the estimation of equation (2) is from 2005-06 to 2017-18 due to unavailability of ownership structure data.

During the sub-period 1995–2003 the exogenous variables such as firm's size (*Size*), profitability (*Profitability*) and free cash flow (*FreeCashFlow*) affect the dividend payout-level decision positively and are statistically significant whereas, investment opportunities (*Investment*), financial leverage (*Leverage*), business risk (*Risk*) and dividend distribution tax (*Tax*) variables have a significant negative impact on the dividend payout-level decision for both the dependent variables. During the sub-period 2004–2018 the explanatory variable like firm's size (*Size*) is statistically highly significant and has a positive relationship with the dividend payout-level decision whereas, investment opportunities (*Investment*), financial leverage (*Leverage*), business risk (*Risk*) and dividend distribution tax (*Tax*) variables have a negative association with the dividend payout-level decision and are statistically highly significant for both the dependent variables.

In Tables 7 and 8, the columns 7 and 8 report the empirical findings of the estimation of censored or Tobit regression analysis model based on the equation (2)

with ownership structure variables for the sub-period 2006–2018. The empirical results indicate that the ownership structure variables such as insider ownership (*Insider*) has negative impact whereas, the dispersion of ownership (*Dispersion*) has positive effect on the dividend payout-level decision and are statistically highly significant at 1% level of significance for both the dependent variables during the sub-period 2006–2018. These results are consistent with the findings of previous research studies (see, e.g. Al-Malkawi, 2008; and Hamill and Al-Shattarat, 2012). The marginal effects of insider ownership (*Insider*) suggest that a one percentage increase in a firm's insider ownership would lead to decrease in the dividend payout-level by 51.718. On the other hand, the marginal effects of dispersion of ownership (*Dispersion*) indicate that if for example, the firm's dispersion of ownership increases by one percentage the expected increase in the dividend payout-level would be 3.887. Fig. 3 shows the diagrammatic representation of the determinants of dividend payout-level decision.



Note: P = Financial leverage (*Leverage*), Liquidity position of a firm (*Liquidity*), and Tangibility of assets (*Tangibility*); Q = Size of a firm (*Size*), Life-cycle stage (*LifeCycle*), Business risk (*Risk*), Free cash flow (*FreeCashFlow*), Dividend distribution tax (*Tax*), Insider ownership (*Insider*), and Dispersion of ownership (*Dispersion*); R = Profitability (*Profitability*), and Investment opportunities (*Investment*).

**Fig. 3: Determinants of Dividend Payout-Level Decision**

## Conclusions

This research article investigates the determinants of the dividend payout-level decision of 703 NSE listed sample firms in India during the period from 1994–95 to 2017–18. Also, considering the different phases of liberalisation in India a sub-period wise analysis is carried out. The censored or Tobit regression analysis is utilized in order to examine the determinants of dividend payout-level decision (i.e. how much amount of dividend a firm distributes out of its total profits to the equity shareholders?). From the trend analysis the study find that the dividend payout ratio (*DivPayout*) as well as the dividend yield (*DivYield*) shows a volatile trend during the entire study period. Also, the number of dividend paying firms have declined by 20.36% during the study period but this decline is not consistent rather it depicts a volatile trend throughout the study period. The analysis of sample characteristics reveals that the dividend payout ratio (*DivPayout*) and dividend yield (*DivYield*) of larger, more profitable firms, firms with low investment opportunities, low financial leverage and old firms are comparatively higher and vice-a-versa during the entire study period i.e. 1995–2018 and two sub-periods i.e. 1995–2003 and 2004–2018.

The censored or Tobit regression analysis results indicate that the exogenous variables such as firm's size (*Size*), life-cycle stage (*LifeCycle*), business risk (*Risk*), free cash

flow (*FreeCashFlow*) and dividend distribution tax (*Tax*) significantly affect the dividend payout-level decision for both the dependent variables during entire study period i.e. 1995–2018. The empirical findings hint that the exogenous variables like firm's size (*Size*), life-cycle stage (*LifeCycle*) and free cash flow (*FreeCashFlow*) affect the dividend payout-level decision positively, whereas, the exogenous variables like business risk (*Risk*) and dividend distribution tax (*Tax*) affect the dividend payout-level decision negatively. These results indicate that the larger, mature firms and firms with high free cash flow have higher dividend payout-level on the other hand, the firms facing high business risk and the high dividend distribution tax imposed by the government tend the firms to have lower dividend payout-level. The empirical results regarding the ownership structure variables suggest that the variables such as insider ownership (*Insider*) has significant negative impact whereas, the dispersion of ownership (*Dispersion*) has significant positive effect on the dividend payout-level decision for both the dependent variables during the sub-period 2006–2018. Overall, the findings of the study are in line with the agency, signaling and firm life-cycle theories of the dividend policy.

## Practical Implications

The present study has implications for both the corporate managers as well as for the investors. The corporate managers can consider the major determinants of

dividend payout-level decision while formulating the appropriate dividend policy for a firm in India. Also, the investors after considering the nature of the firms on the basis of payment of dividends can choose the firms for better investment.

## Limitations

The ownership structure is considered as the significant factor affecting the dividend payout-level decision of a firm. Because of unavailability of ownership structure data during the entire period of study 1995–2018, the study is able to investigate the influence of ownership structure on the firm's dividend payout-level decision only during 2006–2018.

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