Asian Journal of Economic Modelling
ISSN(e): 2312-3656
ISSN(p): 2313-2884
DOI: 10.55493/5009.v10i1.4459
Vol. 10, No. 1, 43-60.

URL: www.aessweb.com

THE BOARD STRUCTURE AND DIVIDEND PAYOUT POLICY: EMPIRICAL EVIDENCE FROM BIST 100, TURKEY

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Article History
Received: 30 December 2021
Revised: 7 March 2022
Accepted: 23 March 2022
Published: 4 April 2022

Keywords
Agency theory
Board structure
Dividend
Panel data
RE Tobit model
Turkey.

JEL Classification:
G30; G34; G35.

ABSTRACT

There are various theories regarding the secret of dividend preference over other alternatives. The most notable of these dividend theories is the agency theory. Dividends play a vital role in mitigating agency costs between shareholders and managers. This study is distinct from others since it includes more separate board structure variables with long study periods using a panel econometric model. Hence, the present study aims to investigate the links between board attributes and dividends payout policy of listed industrial companies of Turkey from 2011 to 2019. Data were collected from the sampled companies that were listed on the Borsa Istanbul BIST 100 indexes as of December 31, 2019, from Finnet (data provider). The study employed the panel Tobit model and found a significant positive effect of board size on dividend payout policy and a significant negative impact of board meeting frequency on the payout policy of listed companies in Turkey.

Contribution/Originality: Previous studies have largely emphasized how the overall firm-level characteristics affect companies' payout policies. Prior studies in Turkey are also similar and depend on a few samples and short study periods. Thus, this is one of the very few studies with a long study period that includes key hand-collected individual board structure indicators that are not available in databases in Turkey.

1. INTRODUCTION

According to the Miller & Modigliani (1961) approach, dividend policy does not affect a firm's cost of capital and value. The choice of distributing profit to the shareholders or using it in reinvestment activities does not have different results in terms of cost of capital and firm value. Thus, the decision-maker is indifferent to the choice of dividends or capital gains. The practicality of this approach depends on the application of perfect capital market assumptions. However, most of the assumptions are not possible to hold in the real world. Many scholars have modified those unrealistic assumptions and claimed that transaction costs, taxes, and information asymmetry could be a condition for dividend policies (Baker & Wurgler, 2004; Easterbrook, 1984; Gordon, 1963; Jensen, 1986; Litzenberger & Ramaswamy, 1982). Dividends are one of the most explored though inconclusive areas in finance. The determinants of dividend distribution policy have been thoroughly investigated in various empirical studies in the past. However, there have been limited pioneering works to address the relationship between agency problems, corporate governance elements, and dividend payout policy (Easterbrook, 1984; Jensen, 1986; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). The agency problem is the principal component that influences a company's dividend policy. Firms

pay dividends for a variety of reasons despite dividends having a major tax disadvantage compared to retention or repurchase. The secret of why dividends are preferred over other alternatives lies in various theories. Among these dividend theories, agency theory is the most notable. As per the agency theory, shareholders opt for cash dividends over capital gains in the future because they fear that free cash flow could be abused by managers and dividend priority is perhaps greater in firms found in emerging economies and where shareholder protection is weak (Mitton, 2004). Dividend payments are likely to decrease the conflict of interest among managers and shareholders (La Porta et al., 2000). Hence, dividends play an important role in controlling agency problems and reducing agency costs between managers and shareholders as they reduce free cash flow under the custody of managers. The signaling theory proposed by Jensen (1986) argues that dividends reduce free cash flows under the control of managers and are considered by shareholders as a sign of efficient resource utilization. Dividend payments bring a favorable reaction in the stock market due to the positive attitudes of investors toward their managers' viable investment choices (Grullon, Michaely, Benartzi, & Thaler, 2005). Moreover, there are various reasons why dividends are paid to shareholders, but the outcome and substitution hypotheses are the two main rationales in corporate governance studies. The findings of previous studies show a strong link between corporate governance mechanisms and dividend policies. Among these pioneering works, La Porta et al. (2000) introduced two contradictory models that elaborate the corporate governance and dividend policy associations. These are the substitution and the outcome models of dividends. The present study aims to assess the effects of board structure attributes on dividend payout policies of manufacturing companies trading on the Borsa Istanbul BIST 100 index from 2011 to 2019. Separate board structure attributes, such as the size of the board, board independence, boards' female composition, and board meeting frequency, affect the dividend policy of listed manufacturing companies in a different direction and magnitude. As mentioned earlier, previous studies have largely emphasized how overall firm-level characteristics affect firms' payout policies. Previous research in this area in Turkey also focused on a small samples or short study periods. Therefore, this study is distinct from others since it includes a large number of variables with more study periods dealing with quantitative econometric models. The feature of this study that also differs from other studies in the same area is that the variables of the board structure are collected manually from the annual operational reports of the sample companies. Hence, this study examined the board structure and dividend policy links of Turkish manufacturing companies trading on the Istanbul stock exchange from 2011 to 2019. The Tobit regression model was employed and a significant association was found among companies' board structure and dividend policy. According to the random effects Tobit estimation, the board size has a significant positive effect on companies' dividend policies. Moreover, the frequency of board meetings inversely and significantly affects firms' dividend policies. However, board structure indicators, such as board independence and female director ratio, did not significantly affect the listed companies' dividend policies. In general, the directions that show the relationships between most board structure indicators and the dividend payout policy tend to support the substitution model. The findings of the current study contribute to the existing literature by analyzing more variables of interest, longer study periods, and the application of the panel data censored regression model for the emerging market in Turkey. The remainder of the study is structured as follows: a review of related literature and hypothesis development is presented in the second section, the third section explains the methodology, the fourth section presents the results and discussion, and the final section presents the conclusion.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

There are different approaches to optimal dividend distribution, which are explained in the form of theories and propositions. According to the Miller & Modigliani (1961) approach, dividend distribution policies do not affect a firm's cost of capital and value. Based on the MM assumption, the value of a firm is determined by its ability to generate income, or the investment policy of its assets, and the way that the income stream is divided among dividends. It also states that undistributed profits do not affect firm value. A shareholder who needs cash takes a dividend and uses it to pay for necessary goods or services; however, a shareholder who does not need cash uses the

dividend to purchase new shares. Moreover, under the MM approach, dividend payout policy is unimportant as investors can generate 'homemade' dividends from the proceeds of an appropriate percentage of their equity holdings (Berlingeri, 2006). The practicality of this approach depends on the application of the assumptions of a perfect capital market, such as no taxes, no transaction costs, no risk or uncertainty, no agency problems, and having symmetric information and a fully competitive-efficient market. However, it is impossible to hold many of the above assumptions in the real world. Later, several researchers modified these unrealistic assumptions and argued that transaction costs, taxes, and information asymmetry could be a condition for dividend policies (Baker & Wurgler, 2004; Easterbrook, 1984; Gordon, 1963; Jensen, 1986; Litzenberger & Ramaswamy, 1982). According to the bird-in-hand approach, a reduction in dividend payments increases the expected rate of return. Each dollar that is not distributed as dividends (assumed to turn into capital gain) is riskier than a dollar profit distributed. Therefore, here, for an equal amount, a dividend is preferable to capital gain. Under the bird-in-hand theory, shareholders favor dividends as a less risky asset, thus the firm value increases as the payout ratio of the firm increases (Larin, Novak, & Khvostova, 2019). Nonetheless, based on the tax preference theory, a lower tax rate is applied on capital gain than dividends; shareholders favor capital gain compared to dividends with the notion of paying less tax. Therefore, the lower the dividend, the higher the firm value will be. The previous theoretical and empirical works of dividends tend to be mixed and inconclusive. Agency theory has been broadly examined and prior studies have produced supporting evidence (Jiraporn, Kim, & Kim, 2011). Jensen's agency theory (Jensen, 1986) states that companies' dividend policies are determined by the agency costs resulting from the asymmetrical interest between managers and shareholders due to the separation of ownership and control. Thus, dividends have an important role in reducing agency-related problems between management and shareholders. For establishing relationships among corporate governance structure and dividend distribution policy, La Porta et al. (2000) presented two prominent opposing dividend axioms—the substitution and outcome models of dividends. The outcome model is largely dependent on the free cash flow model. Managers of poorly governed firms often maximize their personal assets by paying low or deterring dividends (Al-Taleb, 2012; Chen & Steiner, 1999; La Porta et al., 2000). These opportunistic managers arrange for the expropriation of poorly protected shareholders by accumulating large sums of cash in their firms. If stronger corporate governance practices are implemented, managerial opportunism will be lower and more dividends will be distributed to shareholders. However, Chae, Kim, & Lee (2009) argued that companies with strong corporate governance practices merely distribute large amounts of dividends if they are not exposed to financial constraints in the financial market. Paying large amounts of dividends will eventually reduce the reserves of firms, which in turn increases the possibility of capital issuance in the future, and firms faced with capital issuance problems will pay lower dividends. There is a positive association between the quality of corporate governance and dividend policy in the outcome model. Dividend policy is the outcome of the governance regime, so companies with strong shareholder rights pay larger dividends (Jiraporn & Ning, 2006; Szilagyi & Renneboog, 2007). In general, firms pay larger dividends as the rights of minority owners are better protected. The substitution model views dividends as a substitute for legal protection. More and steady dividend payments are viewed as a reflection of a minimum level of expropriation (Larin et al., 2019). This model indicates that managers of weakly governed companies tend to pay more dividends to shareholders to build a positive image of the company, especially if they plan to issue capital in the future (La Porta et al., 2000; Officer, 2006). Hence, an inverse relationship between corporate governance and dividend payout policy implies that more dividends are paid when firms face weaker corporate controls (Jiraporn & Ning, 2006). The substitute hypothesis infers that shareholders in countries with weak legal protection will receive higher dividends than those with strong legal protection (La Porta et al., 2000).

2.1. Empirical Literature

Table 1 outlines studies focusing on the links between corporate governance structure and firms' dividends policy. Various studies have examined general aspects of governance mechanisms and their links to dividend policy.

Table 1. Summary of empirical literature.

Author/s	Country	Year	Data and Models Used	Key Findings
Board structure, dividend policy, and its determinants:				
La Porta et al. (2000)	International	2000	Worldwide data from 4103 firms from 33 countries for the period from 1989 to 1994. ✓ Random effect specification.	Companies that conduct business in countries that better protect minority stockholders pay higher rates of dividends. Thus, they pursue the outcome model of dividends.
Mitton (2004)	International	2004	Data from 365 sample companies operating in 19 emerging economies. ✓ OLS regression model.	Increasing the quality of corporate governance increases the dividend payout ratio.
Officer (2006)	USA	2006	Data from all US incorporated non-financial firms from 1974 to 2004. ✓ Each year, logit regressions were applied.	Firms with proxies of weak external and internal corporate governance mechanisms are likely to pay cash dividends.
Jiraporn et al. (2011)	USA	2011	Data for the period from 2001 to 2004 with 9893 firm-year observations. ✓ Logit & Tobit regression models.	The findings are similar to the outcome model of dividends.
Elmagrhi et al. (2017)	UK	2017	Data from 50 SMEs were collected from 2010 to 2013. ✓ The fixed effects, lagged effects & two-stage least squares (2SLS) models.	The results of the board and audit committee sizes supports the outcome, and the board meeting frequency and gender diversity support the dividend substitute model.
Pahi & Yadav (2018)	India	2018	360 sampled companies trading on the BSE 500 index from 2012 to 2016. ✓ Tobit and Logit models.	The findings support the dividend substitution model.
Larin et al. (2019)	Four EU states	2019	Data from 2017 from the Bloomberg database for the four major European economies. ✓ Tobit regression model.	The findings proved that the overall corporate governance quality supports the outcome hypothesis.
Pekkaya (2006)	Turkey	2006	Data from 19 companies trading on the ISE 30 index for 20 years. ✓ Regression analysis.	Some firms have positive links while others have a negative link among dividends and firm value. Thus, the findings reinforce the dividend puzzle.
Yildiz, Gökbulut, & Korkmaz (2014)	Turkey	2014	Data from 118 industrial companies trading in the industrial sector from 2003 to 2010. ✓ Panel regression analysis.	It was observed that variables such as profitability, tax, growth opportunities, liquidity, leverage, and firm size significantly affect companies' dividend payout policies.
Aydin & Cavdar (2015)	Turkey	2015	Data from 19 sample companies listed on the BIST Corporate Governance Index for the period from 2007 to 2014. ✓ OLS regression model.	No significant links were observed between governance mechanism and dividend policy.
Celik, Yenice, & Onat (2016)	Turkey	2016	Data from manufacturing companies trading on the Borsa Istanbul from 2007 to 2011. ✓ Logit & linear regression models	The findings show negative relationships between risk and dividend policies; however, it confirmed the presence of a positive correlation between companies' governance & dividend policies.
Baker, Kilincarslan, & Arsal (2018)	Turkey	2018	Data from 57 non-financial firms. ✓ Descriptive research techniques.	The findings demonstrate strong support for catering, signaling, firm lifecycle, and bird-in-hand theories of dividends.
Sendur & Doğukanlı (2019)	Turkey	2019	Data from 20 listed companies on BIST from 2009 to 2017. ✓ Panel model.	A strong positive correlation was observed among corporate governance rating and dividend payout policy.

As stated in the prior literature, corporate leadership in general, and the board characteristics in particular, significantly affect companies' dividend payout policies. In addition, the magnitude and direction of correlations between payout policy and board structure characteristics were varied.

2.2. Hypotheses Development: Board Structure Characteristics and Dividend Payout Policy

Although there are various studies on dividend policy determinants, the relationship among specific issues of corporate governance and dividend policy in emerging markets such as Turkey has not been adequately explored. Hence, examining the features of the board structure and its connection with dividend policy is vital for agency cost reduction.

2.2.1. Board Size and Dividend Payout Policy

The outcome hypothesis states that larger boards are better at shaping opportunistic managers to keep the best interests of shareholders than boards with fewer directors because larger boards have the opportunity to acquire skilled and experienced directors who can provide resource networks and mitigate agency costs (Coles, Daniel, & Naveen, 2008; Elmagrhi et al., 2017; Ntim, Opong, & Danbolt, 2015).

According to the substitution hypothesis, companies with larger boards are often characterized by poor governance structure because larger boards face disruption in communication and disagreements in decision-making (Jensen, 1993; Lipton & Lorsch, 1992). Hence, a larger board means a lower-performing board that leads to poor governance. The higher dividend payment rate in firms with a larger board replaces poor governance, which supports the substitution hypothesis.

According to the resource dependence theory, boards with more directors are superior in monitoring the governance functions because more skilled and talented individuals might be included in the boardroom. Therefore, larger boards prefer better corporate governance mechanisms. When the resource dependency theory is supported, a firm will pay lower dividends to shareholders as there is confidence in the given board structure and their performance, hence shareholders do not worry about their invested money being exploited for the managers' personal interests. Several studies found a positive relationship between board size and dividend policy (Abor & Fiador, 2013; Bradford, Chen, & Zhu, 2013; Chen, Leung, & Goergen, 2017; Jiraporn & Ning, 2006; Litai, Chuan, & Kim, 2011; Shahid, Gul, & Rizwan, 2016). However, a few studies found an inverse association (Ghasemi, Madrakian, & Keivani, 2013; Mardani & Indrawati, 2018). Based on this, the below hypothesis is formulated:

H_1: The link between board size and dividend payout policy is positive.

2.2.2. Composition of Board Independency and Dividend Payout Policy

Strengthening the independence position of the board is a vital part of corporate monitoring as it reduces the demand for dividends (Elmagrhi et al., 2017). This is because independent directors are expected to be impartial in decision-making and control functions, thus balancing the interests of managers and shareholders (Fama & Jensen, 1983). Sharma (2011) suggested that independent directors can effectively limit dividend policies that only meet the interests of management and other stakeholders at the shareholders' expense.

Companies pay a lower dividend when the rate of independent directors is higher in the boardroom. This implies an inverse association between the rate of dividend and board independence. Many works support this notion (Al-Najjar & Hussainey, 2009; Benjamin & Mat, 2015; Borokhovich, Brunarski, Harman, & Kehr, 2005) and are similar to the substitution hypothesis put forward by La Porta et al. (2000). On the contrary, various studies display evidence of a positive link between the proportion of board independence and dividend payout (Ranti, 2013; Sharma, 2011; Tahir, Masri, & Rahman, 2020). From this, the following hypothesis is established:

H_2: There is an inverse relationship between the proportion of board independence and dividend payout policy.

2.2.3. Board Gender Diversity and Dividend Policy

One of the main elements of board diversity is gender diversity. According to Adams & Ferreira (2009), gender-diversified boards are effective in monitoring functions because women perform tasks much more attentively than their male counterparts. Broome, Conley, & Krawiec (2011) stated that companies boost monitoring functions by

promoting gender diversity in the boardroom. Under the estimation of the substitution model, gender diversity and dividend payout are negatively correlated, which implies that companies with more gender-diverse boards pay lower dividends than male-dominated boards (Elmagrhi et al., 2017). Therefore, diverse boards are better at corporate monitoring functions that ultimately reduce shareholders' demand for high dividends. Similarly, Saeed & Sameer (2017) also identified an inverse association between gender diversity and dividend distribution for the three emerging markets, i.e., Russia, China, and India.

However, in line with the outcome model prediction, Byoun, Chang, & Kim (2016) argued that firms with gender-diverse boards can pay high value dividends than firms with non-diverse boards because diverse boards are better at protecting the interests of shareholders, such as approving large dividend payouts. Moreover, Chen et al. (2017) and Gyapong, Ahmed, Ntim, & Nadeem (2021) found a positive association between female directors and dividend policy. Based on this, the following hypothesis is proposed:

H_5: The proportion of female directors (gender diversity) and dividend payout policy are positively associated.

2.2.4. Board Meetings Frequency and Dividend Policy

Boards that meet more often are better at mitigating agency costs as there tends to be smoother communication among board members, managers, shareholders, and other stakeholders (Elmagrhi et al., 2017). Therefore, firms that meet more frequently have stronger monitoring functions that result in good corporate governance practices, whereas dividend payment is an alternative to alleviating agency conflict during poor governance practices (Benjamin & Mat, 2015), who suggested that board meeting frequency and dividend payout rate is inversely related. Hence, their findings supports the substitution model of agency theory. In contrast, boards that meet recurrently can develop skills to effectively consult, monitor and shape management, thus raising financial performance including dividend distribution (Ntim & Osei, 2011). Consequently, there is a positive correlation between board meetings frequency and dividend policy. As per our expectation, the following hypothesis is established:

H_6: Frequency of board meetings and dividend payout policy are negatively related.

3. DATA AND METHODS

This section discusses sample selection and data collection methods, definitions of variables, and model specifications.

3.1. Sample Selection and Data Collection Methods

Data was collected from the sampled companies that traded on the Borsa Istanbul BIST 100 index as of December 31, 2019. The following steps were taken to determine the final sample of companies from the original list of 100 companies included in the index:

- As of December 31, 2019, there were 19 financial companies (such as banks, insurance, leasing, and investment companies) listed on the BIST 100 index. Since finance companies have their own regulatory and operating environments, these 19 companies were excluded from the sample.
- Three football clubs listed on the index were excluded because their operations and accounting periods are not the same as other sampled companies.
- Twenty-three different firms with missing data for board indicators and financial variables were also excluded. Finally, 55 companies from different sectors were used in the final sample for data collection and analysis purposes (a list of these sampled companies can be provided upon request).

The study covers the period starting from the beginning of 2011 to the end of 2019 and includes 495 firm-year observations. The study period starts at the beginning of 2011 because the corporate governance communiqué of Turkey, which introduces the mandatory application of certain principles, was published and commenced in 2011. During this period, the previous voluntary 'comply or explain' practices were changed to the mandatory application

of certain principles that included most of the board structure indicators used in this study. The study period runs to the end of 2019 as it is the most recent year with access to the published reports of the sample firms. Board structure and related data were collected manually from annual operational reports downloaded from the Public Disclosure Platform (PDP) and the respective companies' websites. Accounting and financial variables were also collected from Finnet, Borsa Istanbul's licensed data disseminator so the study matches the corporate governance and board structure indicators with financial data from the Finnet database. The sample companies covered in this study were listed for the whole study period (from 2011:01 to 2019:12) and board structure and accounting and financial data of all selected proxies from 2011–2019 were available.

3.2. Description of Variables and Model Specification

The dividend payout ratio, which is the dependent variable in this study, is measured as the ratio of total cash dividends to total assets. Compared to the dividends to total assets ratio, dividends to net income or earnings ratio is highly volatile and unstable as earnings approach zero (Aivazian, Booth, & Cleary, 2003; Chang & Dutta, 2012). The volatile nature of the dividend to earnings ratio is also evident in this study (see Dividend/Earnings (%) in Figure 2). In addition, the ratio of dividend to total assets was applied as a dependent variable in various other studies (Afza & Mirza, 2011; Aivazian et al., 2003; Elmagrhi et al., 2017; Jiraporn et al., 2011; Sanan, 2019; Tahir et al., 2020).

To test the research hypotheses, we regressed the three types of variables (dependent, explanatory and control) together. Firm-specific dividend determinant variables were used in the regression analysis to control the potential bias from omitted variables (Gujarati, 2003). Listing period (firm age), firm growth opportunity, leverage, and return on equity (ROE) were employed in the model as control variables as they have some explanatory power for dividend payout ratios as observed in most previous empirical studies. Table 2 describes the variables used in determining the relationships between board structure and dividend payout policy.

The Tobit model is applied to analyze the data of listed companies using STATA 15 statistical packages. In this study, the Tobit model is preferred because the dividend payout ratio is expected to lie between 0 and 1. Hence, dividend payments are either positive or equal to zero when the firm does not distribute its profits so dividends can never be negative (Singhania & Gupta, 2012). To ensure the robustness of the model in this study, the dividend payout ratio is replaced by the dividends to net income ratio and the dividends to net sales ratio, which is consistent with the work of La Porta et al. (2000). In the Tobit model, the dependent variable is censored, which restricts the dependent variable to lie within a certain range.

The general panel regression model used to implement the inferential model is shown in Equation 1.

$$Y_{it} = \propto_0 + \beta_1 X_{it} + \beta_2 C_{it} + \varepsilon_{it} \quad (1)$$

$\mathbf{Y}_{it}$ in Equation 1 denotes the latent variable, which measures the dividends distribution ratio; $\mathbf{X}_{it}$ represents the vector of independent or board structure variables; and $\mathbf{C}_{it}$ is a vector for control variables for an i^{th} company at time t; $\propto_0$ is the intercept; $\beta_1, \beta_2 \ldots \beta_\infty$ are the parameters to be predicted; and ε_{it} is the error term. More specifically, the panel regression model used to estimate the pooled Tobit and random effects Tobit model is presented in Equation 2 as follows:

$$\text{DIPR}(Y_{it}) = \propto_0 + \beta_1(\text{SoB}) - \beta_2(\text{B\_Ind\%}) + \beta_3(\text{FeBoD}) - \beta_4(\text{B\_Meet}) + \sum_6^j (\textit{Control Variables})\beta_j + \varepsilon_{it} \quad (2)$$

The Tobit model is also referred to as a censored regression model, which takes either a positive or zero value if the company doesn't distribute dividends. Statistically, the censored regression model is exhibited in Equation 3 (Gujarati, 2004).

$$Y_i = \beta_1 + \beta_2 X_i + u_i, \text{ if } Y_i > 0 \quad (3)$$

$= 0$, otherwise.

Table 2. Description and measurement of variables.

Variable		Description	Measurement	Expected Sign
Dependent	Dividend Payout Ratio (DIPR)	Dividends payout to total asset ratio	Cash dividend paid ÷ total assets	
Independent	Board size (SoB)	Total number of directors on the board in each accounting period	Natural logarithm of board size	(+)
	Board independence (B_Indep%)	The proportion of independent directors to total board size	Number of independent directors ÷ Total board members	(-)
	Female directors (FeBoD)	The ratio of female board members to total board size in each accounting period	Number of female directors ÷ Total board members	(+)
	Frequency of board meetings (B_Meet)	Total number of board meetings held within a year	Natural logarithm of board meetings	(-)
Control	Leverage ratio (Lev%)	Book values of total debt to total assets ratio	Lev% = TD ÷ TA	(-)
	Firm age (List_ISE)	Number of years the company is registered to Borsa Istanbul	Natural logarithm of the listing period	(+)
	Profitability (RoE)	Firm profitability	Net Income ÷ Equity	(+)
	Firm's growth opportunities (F_growth%)	The firm's sales growth rate is measured annually	$(Sales_1 - Sales_0) \div Sales_0$	(-)

The data collected in this study has both panel and censored data characteristics. Thus, it is advisable to use the panel Tobit model. Conversely, the maximum likelihood method can be used during estimation in Tobit models, hence it is possible to fit the model in question only to a random effects limited regression model (Ersoy & Cetenak, 2015). For this reason, according to the results of the LR test, a random effects (RE) Tobit model was chosen to test the formulated hypotheses.

The sample data in the current study consists of (Y_i, X_i), for I = 1…,55. X_i stands for the (k x 1) vector of fully observed explanatory variables; however, the dependent variable Y_i, which represents the willingness of the companies to distribute dividends, is not always observed. Therefore, some of Y_i is equal to zero due to firms' unwillingness or periodic losses. The Tobit model calculates a maximum likelihood estimate to determine both σ and β for this specific model. The key aspect here is that β_i estimates the effect of board structure variables (X_i) on dividend payout policies (Y^*), i.e., the latent variable.

Equation 4 presents the Tobit regression model, which is specified in linear terms pertaining to some unobserved latent Y^* variables:

$$Y_i^* = \beta_0 + \beta_1 x_i + \varepsilon_i = xi'\beta + \varepsilon_i \quad (4)$$

$\varepsilon_i \sim$ Normal $(0, \sigma^2)$ or ε_i is normally distributed.

The observed variables are Y_i in this context, and the dividend payments are related to the latent variables Y_i^* through the observed rule. The observed value of the dependent variable, i.e., dividend payments Y, is defined in Equation 5.

$$Y_i = \begin{cases} Y_i^* \; if \; Y_i^* > 0 \\ 0 \quad if \; Y_i^* \leq 0 \end{cases} \quad (5)$$

The sample data consists of censored and uncensored observations. We can only observe left-censored or right-censored. For the data (truncated sample data) the following equation is used:

If $Y_i^* > 0$, here Y_i = dividend payout ratios = $Y_i^* = x_i'\beta + \varepsilon_i$

If $Y_i^* \leq 0$, here $Y_i = 0$.

The distribution of dividend payout (dependent variable) is given in Figure 1. There is a concentration on the right-hand side towards zero in the distribution of the dividend or dependent variable, while the payout ratio is restricted from the left. Due to the abovementioned properties of the dependent variable (dividend payout), the Tobit panel model was the preferred model in this study.

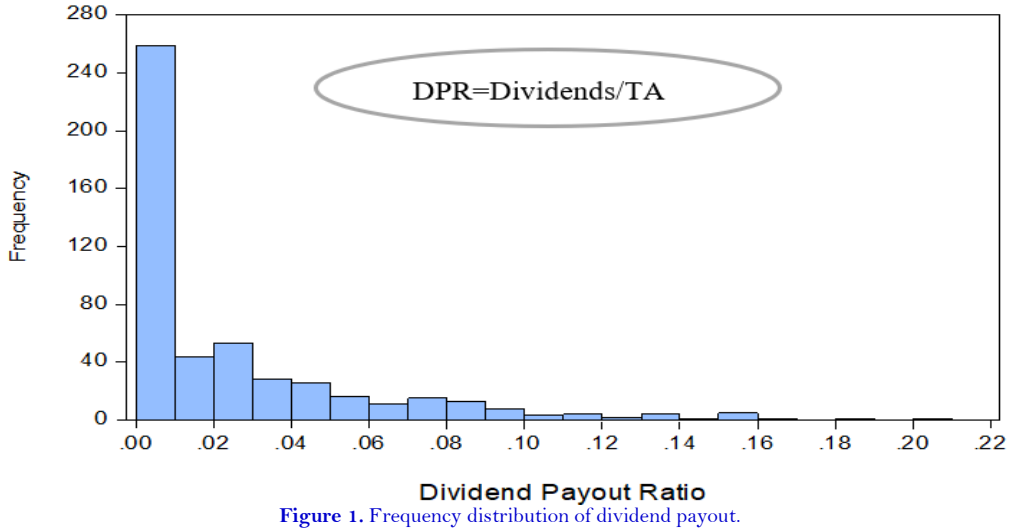

Figure 1. Frequency distribution of dividend payout.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Descriptive and Bivariate Analyses

Descriptive analysis for the dependent, explanatory, and control variables is summarized in Table 3. In the sample companies, the board of directors consists of nine members on average with a minimum of three members and a maximum of 18 members. In the sample companies, the female directors on average make up only 13% of the board of directors, with a minimum of zero females on the board up to a maximum of 66.7%. From this, we can say that the boards of directors in Turkish companies are male-dominated. The average number of independent board members is two, with a maximum of six independent members. Furthermore, the independent directors make up on average 27.6% of the board, with a minimum of zero independent directors and a maximum of 66.7%. Hence, the majority of the board members in Turkish companies are insiders such as family members or individuals with an interest in the firm. In addition, the sampled firms on average paid 18,731,266 Turkish lira annually to the CEO and board members as a form of compensation, such as basic salary, bonus, and other incentives. The average dividend payout ratio (Div/TA) for the sample companies is 2.4%, with a maximum payout rate of 20.7%.

The sample companies were established an average of 47 years ago, with a minimum age of 11 years old and a maximum of 87 years old. The sample companies were listed on Borsa Istanbul an average of 21 years ago, with a minimum of one year and a maximum of 35 years of trading history. Thus, we can say that the sample companies are mature companies.

The proportion of leverage in the capital structure of the sample companies includes 54.5% of debts, with a minimum of 5.6% and a maximum of 104% debt. Finally, the profitability of the sampled companies reported an average of 5.4% (ROA) and 9% (ROE).

Table 4 presents the correlation analysis and variance inflation factors (VIF) for the explanatory variables employed in this study. These types of analyses are essential to test and ensure the robustness of the results. Variance inflation factors are helpful in identifying any sort of multicollinearity among explanatory variables.

Table 3. Descriptive statistics for sampled companies.

Variable		Mean	Median	Std. Dev.	Min.	Max.	Skewness	Kurtosis	N.
DIPR	Div/TA	0.024	0.008	0.035	0	0.207	1.99	7.27	495
	Div/NI	0.411	0.144	1.71	-6.67	32.33	13.37	250.13	495
	Div/sales	0.036	0.015	0.065	0	0.63	4.66	34.55	495
SoB		8.9	9	2.37	3	18	0.54	3.78	495
# of female director		1.1	1	1.14	0	5	1.25	4.73	495
FeBoD		0.13	0.11	0.14	0	0.667	1.26	4.59	495
# of independent directors		2.44	2	1.13	0	6	-0.056	3.67	495
B_Ind%		0.276	0.333	0.111	0	0.667	-0.98	4.60	495
B_Meet		22.03	20	14.19	2	68	0.645	2.76	495
Comp		18,731,266	8,924,000	2.88e+07	43,006	2.48e+08	4.0645	24.221	495
Firm_age (Maturity)		46.88	49	16.61	11	87	-0.45	2.5	495
List_ISE		20.85	22.5	8.55	1	35	-0.45	2.16	495
F_growth%		0.228	0.139	1.064	-0.99	22.77	19.34	409.33	495
Lev%		0.545	0.582	0.229	0.056	1.04	-0.386	2.33	495
RoA		0.054	0.055	0.095	-0.46	0.995	1.79	25.04	495
RoE		0.09	0.121	0.401	-3.38	3.6	-0.234	38.5	495

Notes: The table presents descriptive statistics of the full sampled companies. Board structure variables were manually obtained from PDP. Financial and accounting data were obtained from Finnet financial data provider. DIPR denotes dividend payout ratio; Div/TA denotes dividends to total assets ratio; Div/NI denotes dividends to net income ratio; Div/sales denotes dividend to sales ratio; SoB denotes the size of the board; FeBoD denotes the female director ratio; B_Ind% denotes the proportion of board independence; B_Meet denotes board meeting frequency; Comp denotes compensation for the CEO and board members; Firm_age denotes the operational age of the firm; List_ISE denotes a firm's listing period on the Istanbul stock exchange; F_grow% denotes a firm's growth rate. The firm growth rate is the one-year growth rate in total sales. Lev% denotes leverage ratio; RoA denotes return on assets; and RoE denotes return on equity. Only the bold text variables were included in the main regression analysis.

Table 4. Correlation matrix and VIF analysis.

Variables	1	2	3	4	5	6	7	8	VIF	1/VIF
1. DIPR	1.000									
2. SoB	0.199***	1.000							1.17	0.854
3. B_Ind%	-0.094**	-0.117***	1.000						1.07	0.934
4. FeBoD	-0.149***	-0.229***	0.159***	1.000					1.14	0.879
5. B_Meet	-0.177***	-0.048	-0.097	0.117***	1.000				1.06	0.944
6. List_ISE	0.025	0.048	-0.058	0.058	-0.059	1.000			1.04	0.965
7. F_growth%	-0.062	-0.007	-0.049	-0.036	-0.029	0.009	1.000		1.01	0.992
8. Lev%	-0.171***	0.306***	0.037	-0.215***	0.09**	-0.13***	-0.057	1.000	1.22	0.822
9. RoE	0.198***	0.016	-0.044	0.016	-0.081	-0.003	0.01	-0.14***	1.03	0.969
Mean VIF									1.09	0.91

Notes: This table presents the pairwise correlation matrix and the VIF values. VIF denotes variance inflation factors. DIPR denotes the dividend payout ratio (Div/TA); SoB denotes the size of the board; B_Ind% denotes the board independence ratio; FeBoD denotes the female director ratio; B_Meet denotes board meeting frequency; List_ISE denotes a firm's listing period on the Istanbul stock exchange; F_growth% denotes a firm's growth rate. The firm growth rate is the one-year growth rate in total sales. Lev% denotes leverage ratio, and RoE denotes return on equities. *** and **, denote significance at the 1% and 5% levels (two-tailed), respectively.

The calculated amount of variance inflation factors was much lower than the rule of thumb value of ten (Gujarati, 2003) with a mean value of 1.09, suggesting no multicollinearity among the explanatory variables. Likewise, the correlation analysis strengthens the lack of collinearity between the explanatory variables included in the study. The highest collinearity (0.306) was found between the explanatory variables of Lev% and SoB. The high correlation among these variables is not a problem because it is natural to have a linear relationship among these variables. The strength of collinearity is also weak, i.e., 0.31 (which is below 0.5). Therefore, all variables in Table 4 were employed in the main parts of the regression model. Overall, multicollinearity is not an issue for the main regression analysis. According to the results of the univariate analysis, there is a significant positive relationship between the size of the board and the dividend payout ratio. However, female and independence ratio in the board and board meeting frequency are negatively and significantly linked with payout ratio. Moreover, the leverage ratio has a significant inverse association with the payout ratio, while RoE has a significant positive link with the dividend payout ratio. The preliminary results are in agreement with the prior empirical studies.

Figure 2 provides the average trends for board structure indicators and dividend payout ratios from 2011 through to 2019. The board independence rate increased from 8.3% (2011) to 27.61% (2012). This rapid growth was due to

the change in the voluntary 'comply or explain' approach of reporting the board independence to the mandatory rules, i.e., to have at least 1/3 (33%) independent directors in the boardroom. Thus, the independence rate eventually increased to 32.12%. Although the female director ratio on the board increased from 12.5% to 17.5% with a fluctuating rate, the result is still far from the recommended rates. Therefore, according to the recommendation of the Capital Markets Board of Turkey, at least 25% of the board members should be female directors.

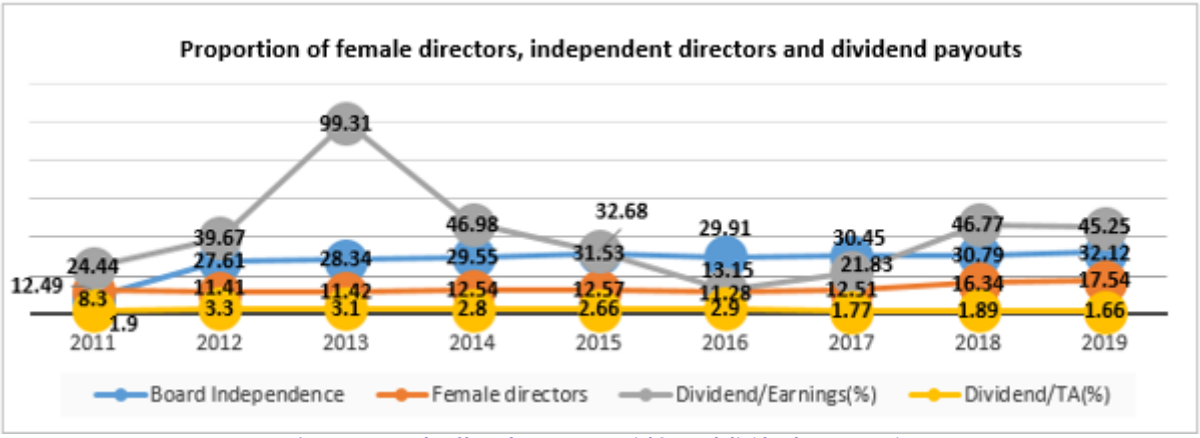

Figure 2. Trends of board structure variables and dividend payout ratio.

4.2. Regression Analysis

Table 5 provides the predictions of Equation 2 using the pooled Tobit and random effects Tobit models with the dividends to total assets ratio as a dependent variable. Model 1 in Table 5 shows the pooled Tobit model without control variables, while Model 2 shows the pooled Tobit with control variables. Model 3 shows the random effects (RE) panel Tobit model without control variables, and Model 4 shows the RE panel Tobit model with control variables.

The likelihood ratio (LR) Wald $\chi 2$ tests measure the fitness of the overall model. The results in Table 5 shows that all models, i.e., Model 1 to Model 4, are generally significant at the 1% significance level as denoted by the LR Wald $\chi 2$ tests. On the other hand, the LR test compares the random effects model with the pooled model. The likelihood ratio in Table 5 is shown to be statistically significant at 1% for the RE Tobit model. The LR test results point out that the panel-level variance component is essential and therefore the panel prediction is different from the pooled prediction. The Rho (ρ) coefficient, which is the panel-level variance component, indicates that the total variance proportion, determined by the panel level variance component, is different from zero (0.451). Therefore, compared to the pooled Tobit, the RE panel Tobit model is more appropriate.

To examine the board characteristics and dividend policy links within listed companies, the three major board structure variables and one general corporate governance variable was employed in the panel Tobit regression models. Adding control variables to the pooled Tobit model does not change the explanatory variables' signs and significance levels. However, adding control variables to the RE panel Tobit model does change the signs and significance levels of the explanatory variables. For example, adding control variables to the RE Tobit model changes the board size significance level from 5% to 1%, and the sign of female directors turned negative, albeit insignificant.

The Model 2 results in Table 5 reveal that the board size coefficient is positive and significant at the 1% level ($z = 5.55$, $p < 0.01$). Similarly, the results in Model 4 (RE Tobit model) show that the board size coefficient is positively significant at the 1% level of significance ($z = 2.85$, $p < 0.01$). This linear relationship indicates that firms with larger boards distributed higher dividends than firms with smaller boards. An increase in board size increases the dividend payout rate because a larger board is expected to include stakeholders who will protect the interests of minority shareholders. This result is in support of H_1, which is reinforced by the findings of previous studies, such as Jiraporn & Ning (2006); Abor & Fiador (2013); Bradford et al. (2013); and Chen et al. (2017). If we link our findings with the

substitution hypothesis, a larger board size means a lower-performing board, which leads to poor overall governance. Thus, companies with a large board can distribute large dividends to compensate for their weak governance structures. This reinforces the substitution hypothesis because dividend payment compensates for poor monitoring performance. Under the resource dependence theory, firms with a large board benefit from the directors' diverse backgrounds and experience, and opportunities for building resource networks. In addition, controlling the activities of managers can be boosted, and shareholders' and managers' interests can be easily aligned. The stronger the corporate governance (as measured by larger boards), the higher the dividend payout. This result conforms with the outcome model of agency theory.

The board independence coefficient in the pooled Tobit is negative and statistically insignificant, which implies that an increase in the proportion of director independence in the boardroom will decrease the dividend payout ratio, which supports the substitution model. It is believed that a board with many independent members encourages a strong system of good governance mechanisms. Dividends are a substitute for poor governance, hence companies that practice good governance and offer strong shareholder protection will pay lower dividends. This result is in line with Al-Najjar & Hussainey (2009), who argue that either inclusion of the independent board members or paying dividends will reduce conflicts of interest between managers and shareholders. This is because dividend payment and board independence are used as an alternative to lower agency costs. In the random effects Tobit model, board independence has positive though insignificant effect on payout policy. This is consistent with the outcome hypothesis of dividends. However, the result does not support H_2.

The board's female ratio coefficient in Model 2 and Model 4 reports negative though insignificant effects on the payout ratio. This suggests that an increase in the board's female ratio will decrease the dividend payout. Hence, companies with gender-diverse boards are in a position to distribute lower dividends. The negative impact of the board's female ratio on dividend policy is not surprising because the results of previous studies that focused on the effect of gender diversity on dividend policy have been mixed and inconclusive. Our finding is in agreement with Elmagrhi et al. (2017); Saeed & Sameer (2017) and Mustafa, Saeed, Awais, & Aziz (2020). Contrary to our findings, Byoun et al. (2016); Pucheta-Martínez & Bel-Oms (2016) and Chen et al. (2017) found a positive link between the proportion of females directors on the board and dividend payout.

However, our main model (Model 4 or the random effects Tobit model) does not support H_3, which suggests a negative but statistically insignificant influence of gender diversity on dividend policy. This agrees with the work of Elmagrhi et al. (2017), who found that the negative and insignificant influences of gender diversity on dividend policy may be the result of lower representation and participation on the board (an average of 13%).

Moreover, an inverse link between gender diversity and dividend policy may indicate support for the substitution hypothesis. If a higher proportion of women are represented on the board, shareholders anticipate lower dividends because women are more risk averse than their male counterparts, thereby some culture theories argue that risk aversion is attested by high cash reserves and lower dividend payouts (Bae, Chang, & Kang, 2012).

Finally, we present the last variable of interest, the frequency of board meetings. The results in both the pooled and RE Tobit models in Table 5 indicate that the nexus between board meeting frequency and the payout ratio is negative and significant at a given standard significance level. This refers to the low rate of dividends paid to shareholders as an outcome of more frequent board meetings. Thus, boards that meet more frequently have the opportunity to effectively monitor, consult and discipline managers, which in turn reduces agency costs (Ntim & Osei, 2011). Similar to Elmagrhi et al. (2017), this result supports the substitution model of La Porta et al. (2000), which states that dividend payments replace the need for strong corporate monitoring via close follow-ups and meetings. Also, the results were found to support H_4, which proposes an inverse link between the frequency of board meetings and dividend payout policy. To increase the explanatory power of regression models and to control potential omitted variable biases, we included the variables used as main determinants of dividends in previous studies. Regarding the

control variables, the results were similar to those of previous studies. However, the link between the age of a firm and its dividend payout rate is worth investigating.

In the Tobit model, the age of a firm has a positive but statistically insignificant link, whereas in the main random effects Tobit model, a firm's age has a statistically insignificant negative link with the rate of dividend payout. The association between growth opportunity and dividend payout rate is negative though insignificant in both models. Also, in both models, the debt ratio has a significant negative influence on dividend payout, which reveals that a rise in the levels of leverage will reduce the amount paid to shareholders because more indebted firms prioritize settling their obligations than paying out more dividends (Abor & Fiador, 2013). This result conforms with the studies of Rozeff (1982); Al-Malkawi (2007) and Gul, Mughal, Shabir, & Bukhari (2012). The profitability of a firm positively and significantly affects dividend payout in both models. The result is identical with those of Al-Malkawi (2007); Denis & Osobov (2008); Jensen, Solberg, & Zorn (1992); and Yarram & Dollery (2015). With some exceptions, the results of control variables are congruent with the general notions of the previous studies.

Table 5. Board structure characteristics and dividend payout relationships.

Variable	Pooled Tobit Model		Random Effects Tobit Model	
DIPR (Div/TA)	**Model 1**	**Model 2**	**Model 3**	**Model 4**
SoB	0.034 (4.07)***	0.047 (5.55) ***	0.029 (2.15)**	0.037 (2.85) ***
B_Ind%	-0.043 (-1.64)	-0.024 (-0.93)	0.026 (0.97)	0.024 (0.90)
FeBoD	-0.008 (-0.49)	-0.026 (-1.65)	0.003 (0.11)	-0.003 (-0.16)
B_Meet	-0.014 (-4.89)***	-0.011 (-4.08) ***	-0.009 (-2.17)**	-0.009 (-2.36)**
List_ISE		0.003 (0.76)		-0.001 (-0.14)
F_growth%		-0.012 (-1.63)		-0.004 (-1.25)
Lev%		-0.058 (-5.65) ***		-0.057 (-3.70)***
RoE		0.039 (5.65) ***		0.022 (2.71)***
Constant	-0.021 (-0.95)	-0.035 (-1.50)	-0.033 (-1.00)	-0.018 (-0.49)
Var(e.Div_TA)	0.002 (12.02) ***	0.002 (12.13) ***		
Sigma_u(σ_u)			0.034 (8.14)***	0.030 (7.63)***
Sigma_e(σ_e)			0.033 (23.52)***	0.033 (23.35)***
Rho (ρ)			0.517	0.451
Log-likelihood	420.82	458.29	501.44	513.53
LR/Wald chi-squared p-value	70.54*** (0.000)	145.47*** (0.000)	43.80*** (0.000)	64.89*** (0.000)
LR test P-value			161.23*** (0.000)	110.47*** (0.000)
N	495	495	495	495
Year Effects	Yes	Yes	Yes	Yes

Notes: The pooled Tobit & random effects Tobit regression coefficients of the dividend payout, explanatory, and control variables are presented in this table. DIPR denotes the ratio dividend payout, measured dividend paid-to-total asset ratio (Div/TA); SoB denotes board size; B_Ind% denotes the proportion of board independence; FeBoD denotes the female director ratio; B_Meet denotes board meeting frequency; List_ISE denotes a firm's listing period on the Istanbul stock exchange; F_grow% denotes a firm's growth rate. The growth rate of a firm is the one-year growth rate in total sales. Lev% denotes the leverage ratio, and RoE denotes return on equity. *** and **, denote significance at 1% and 5% levels (two-tailed), respectively.

In summary, according to the pooled and RE Tobit model estimation results, board size and board meeting frequency from the board structure and corporate governance indicators, and leverage and RoE from the control

variables, are significantly related to the dividend policy. However, board independence, female ratio, listing period (firm age), and growth opportunity from the control variables have insignificant relationships with the dividend payout policy.

4.3. Robustness Test

In the present study, a robustness analysis was carried out to check the results of the variables on the main regression model. The variables in the Tobit regression were re-estimated by replacing the dividend-to-total asset ratio with alternative dependent variable metrics, namely dividends-to-earnings, and dividends-to-sales ratio. This type of robustness check dispels the relevant criticism of various dividend policy measures and provides a balanced perspective on the field. The overall explanatory power of both dividends-to-sales and dividends-to-earnings ratio models is significant at the standard level (the full robustness results can be provided upon request).

The robustness analysis results in both models revealed the same results as the main regression model, except for changes in the signs of a few variables. The size of the board has a significant positive link, whereas the board meeting frequency has a significant negative association with dividend policy.

5. CONCLUSION

The determinants of dividend distribution policy have been thoroughly investigated in various prior empirical studies. However, pioneering works have not adequately addressed the relationship between agency problems, corporate governance elements, and dividend distribution policy. Moreover, studies concerned with the links between corporate governance and dividend policy concentrate on the general aspects of governance structure, and little investigation has been done into the relationship among specific issues of corporate governance such as board structure characteristics and dividend payout policy in emerging markets such as Turkey. By employing the unique hand-collected board structure variables from 55 listed companies, this study contributes to existing literature and adds some insights into specific areas of corporate governance and their relationship with dividend policy. Hence, the main objective of this study is to examine the link between board structure characteristics and payout policy of listed companies in Turkey's emerging market. The Tobit regression model was used to analyze the effects of board structure variables on the dividend payout policy of companies listed on the BIST 100 index. Specifically, based on the likelihood ratio (LR) test results, the random effects Tobit regression model was chosen over the pooled Tobit model to test the formulated hypotheses. Therefore, to examine the links between board characteristics and dividend policies of listed companies, three major board structure indicators and one general corporate governance variable were employed in this panel Tobit regression model.

As per our main model (RE panel Tobit) estimation results, board size and dividend payout are positively and significantly related. This linear relationship shows that firms with larger boards pay more dividends than firms with smaller boards. An increase in board size increases the dividends payout ratio as the larger board is expected to include stakeholders who will protect the interests of minority shareholders. The resource dependency theory states that companies with broader boards benefit from a variety of directors' backgrounds, experience, and resource networking opportunities, such as financial resources. In this way, the activities of the managers can be easily monitored and shareholders' and managers' interests can be easily aligned. The stronger corporate governance (as measured by larger boards), the higher the dividend payout. This finding is in line with the outcome model of the agency theory. However, the nexus between the frequency of board meetings and the dividend distribution ratio is negative and significant. This implies that the board of directors, which meets frequently, pays shareholders a lower dividend rate. This finding supports the dividend substitution model, which states that dividend payment replaces the need for strong corporate monitoring through close follow-ups and meetings. Board structure attributes such as board independence and the proportion of women in the boardroom do not substantially affect the dividend payout policy of listed companies in Turkey. While the director's independence and female proportion on the board have

statistically insignificant effects, the relationships between most of the board structure indicators and dividend policy tends to support the substitution model.

Last, data were collected from sample companies listed on the BIST 100 index, but these firms may already have a strong adherence to corporate governance principles. Therefore, both listed and unlisted firms can be considered for future research in the same area. In addition, due to limited resources, this study only investigates the board structure indicators and dividend policy relationships. Future studies should concentrate on the links between other main corporate governance elements and dividend payout policies.

Funding: This research is supported by Cukurova University (Grant number: 12805).
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study.

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