

Impact of the Dividend Policy and Related Corporate Governance Mechanisms on Agency Costs

IVANA ĐUNDEK KOKOTEC, TIHANA GRBAC & MARINA KLAČMER ČALOPA

Abstract The paper's primary goal is to identify the role of the dividend policy and related corporate governance mechanisms in reducing agency problem between management (agent) or large controlling shareholders and minority shareholders (principal). Another important goal of the research paper is approximating the agency costs. The turnover coefficient of total assets approximates this measure for the work. The agency costs are specific for joint-stock companies, and it results from the agency problem (when agents do not represent the best interests of principals), and it is not possible to measure it directly. Namely, the agency costs and the possibility of their reduction are linked to the legal protection of investors (principals) and the specifics of the joint-stock company's. Therefore, additional knowledge is essential in solving the agency problem in the insufficiently researched developing countries. Based on the results of the empirical research carried out as part of this paper, the significant role of dividend policy in explaining changes in the agency costs has been confirmed, which is in line with the majority of research carried out so far.

Keywords: • dividend • policy • agency costs • agency theory • corporate governance mechanisms • Zagreb stock exchange

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1 Introduction

The primary goal of every company, that is, a joint-stock company, is to increase the capital of its owners or shareholders, which is achieved by increasing the company's value. If it operates successfully, it realizes a profit or profit that can be distributed to shareholders in the form of dividends or reinvested in internal capital, that is, saved in the form of retained earnings. On the one hand, shareholders expect dividend payments. On the other hand, the company needs additional capital, which is the easiest and fastest to obtain precisely from the realized profit. Based on the above, joint stock companies are faced with the challenge of deciding on dividend policy as one of the most important financial decisions.

Shareholders' expectations regarding the dividend payments largely depend on the characteristics of the financial system itself, that is, the country in which the joint-stock company operates. La Porta et al. (2000), Tipurić et al. (2007) and Džidić (2016) state that companies operating in countries with a monistic or Anglo-Saxon system of corporate governance are characterized by strong investor protection, capital market development and a dispersed ownership structure. On the other hand, in countries with a dualistic or continental system of corporate governance, investor protection is present to a lesser extent, capital markets are underdeveloped or shallow, and the ownership structure is relatively concentrated (La Porta et al. , 2000; Tipurić et al., 2007; Džidić, 2016, pp. 99-100). Namely, in joint-stock companies with a concentrated ownership structure, which is typical for the Republic of Croatia, managers are usually under the direct supervision of large shareholders, and dividends serve to a greater extent as a means of expropriating small shareholders rather than controlling managers. It is expected that such companies will advocate a dividend policy to a lesser extent, in contrast to companies with an Anglo-Saxon corporate governance system. In this way, the agency problem, that is, the conflict between the described interest groups, which arises based on their different goals concerning the company's operations, is directly reflected in the dividend policy (Kožul, 2012, pp. 77-78). Due to the occurrence of the described conflict, the agency costs arises, which represents the lost value of one of the parties in the contractual relationship defined in this way (Orsag, 2015, p. 61). The informational impact of dividends is also associated with the agency problem in such a way that a change in dividends due to information asymmetry can lead to a change in stock prices (Kožul, 2012, p. 71).

According to Cerović et al. (2011), agency costs are associated with significant problems in running a company that arise from the separation of ownership functions and control over a joint-stock company. They consist of all tangible and intangible assets that the principal uses to control the agent's behavior with the aim of optimal use of invested capital. Orsag (2015, p. 61) adds that the agency cost occurs due to the appearance of a conflict of interest through the lost value of some interest groups in the described principal-agent relationship. Jensen and Meckling (1976), Easterbrook (1984) and Kožul

(2012, p. 77) describe the agency cost as the sum of monitoring costs, compensation of the interests of the contracting parties in the principal-agent relationship and residual loss. Suppose the agency cost is viewed as the lost value due to the agent's actions. In that case, it represents an opportunity cost that does not arise directly based on actual payments but by making decisions by managers that do not follow the interests of the owners of the joint-stock company. Such an indirect agency cost can be avoided by monitoring and controlling the manager and continuously conducting actions between the two interest groups (Orsag, 2015, p. 61). Jensen and Meckling (1976) and Kožul (2012, p. 77) describe the indirect agency cost as a residual loss and equate it with the reduction of the principal's wealth due to the agent's decisions against the principal's interests. On the other hand, the direct agency costs arise precisely to avoid opportunity costs, which lead to additional costs. They refer to the already mentioned costs of monitoring and controlling agents, the costs of gathering information necessary to implement monitoring and control, the costs of compensation to agents and other compensations that motivate agents to work in the principal's best interest (Orsag, 2015, p. 61). The agency cost varies between joint stock companies and depends on many internal and external factors. The most important internal factors are the managers' preferences, which conflict with the owners' interests. They relate to reputation, prestige and freedom in the management of the company and the incentives of the owners with which they try to control managerial behavior. External factors refer to the company's market position, characteristics of the managerial market, and pressure from investors and creditors. Therefore, since measuring the agency cost directly is impossible, it is most often calculated based on cost efficiency. This method considers the manager's ability to control costs and generate profits. A less common but more precise method of measuring the agency cost is profit efficiency as a way of calculating the agency cost that also considers external factors such as prices on the market in which the company operates (Cerović et al., 2011). Approximate measures of the agent's cost, which are most often used in previous research in the field of agency problem, will be described in more detail in the empirical part of the paper, which identifies the agency cost as a dependent variable of this empirical research.

Important mechanisms of corporate governance, which play a significant role in mitigating agency costs and reducing the possibility of promoting managerial interests to the detriment of shareholders, are considered to be the reduction of cash flow to managers through dividend payments and the independence of the supervisory board, which enhances the supervision of managerial activities. The announcement of dividend payments can also serve as a positive signal about future investments and development of the joint-stock company, which leads to the continuation of such a dividend policy. Additionally, higher amounts of dividends are associated with an increase in low-cost external financing of joint-stock companies through the reduction of agent conflicts and the improvement of the process of obtaining information (Hamdan, 2018; Yakubu et al., 2022). Easterbrook (1984) is one of the first theorists who tried to define dividend policy in the context of agency problem between managers and external investors (La Porta et al., 2000). In his work, he mentioned the division of the economic literature on dividend

policy into that which assumes managers are perfect investors' agents. The reasons for paying dividends are sought to be examined. That which assumes the opposite, i.e., considers managers to be imperfect agents and investigates ways of harmonizing their interests with the interests of investors. Also, he explained that the primary goal of any dividend policy is to minimize the sum of capital, agent costs and tax costs (Easterbrook, 1984).

The dividend payments are most often negatively related to the agency costs. If a joint-stock company pays dividends, it creates value for its shareholders, which results in the management's efficient use of the company's assets, which can limit agency costs. A significant negative correlation is also expected concerning dividend yield and earnings per share, where earnings per share is a more stable indicator than dividend yield since it is based on market values, so the conditions of uncertainty occurring in the market should be considered. According to Kožul (2012), previous research on dividends as a signal of future cash flow was mainly based on the assumption that a change in dividends, due to information asymmetry, can lead to a change in stock prices, thus directly connecting the informational impact of dividends to the agency problem. It is expected that joint-stock companies with a concentrated ownership structure will pay lower dividends than companies with a dispersed ownership structure for the reason that controlling shareholders can then more easily get income from their investments in shares (Kožul, 2012, pp. 71, 78). Furthermore, as a rule, profitability has a negative relationship on the agency costs. At the same time, debt ratio, the size of the supervisory board, and the size of the company can, under certain conditions, limit and increase agency costs. In his research paper Jensen (1986) also recognized the optimal size of the company and the payment of cash to shareholders as potential agency problem.

Concerning the described subject and problem, the empirical research carried out as part of this paper examines the role of the dividend policy and related corporate governance mechanisms in limiting or intensifying agency conflicts between management or large controlling shareholders on the one hand and minority shareholders on the other side. Such conflicts result in agents' costs and are closely related to the legal protection of shareholders and the environment and specifics of the joint-stock company's country. As part of numerous types of research, it has been proven that the dividend policy has a significant role in changing agency costs and increasing the value of a joint-stock company. It is considered a possible solution for mitigating the problems of agents arising from the company's business activities. However, the research results did not offer a unique answer to the question of which dividend policy concept the company should apply under the given conditions. Following the above, the impact of eight variables that have so far proved to be significant for describing the dividend policy (dividend payment, dividend yield, earnings per share, concentration of ownership, debt ratio, profitability, size of the supervisory board, size of the company) with the dependent variable will be examined the agency costs, which aims to expand knowledge in the research of that area

of economics, and for which panel regression analysis will be used. Based on the described problem, the research questions of these paper were defined:

- RQ1: Is the dividend policy significant for the explained change in the agency costs?
 RQ2: Do the dividend policy measures (dividend payment, dividend yield, earnings per share) have a negative impact on the agency costs?
 RQ3: Does the ownership concentration have a negative impact on the agency costs?
 RQ4: Does debt ratio have a negative impact on the agency costs?
 RQ5: Does profitability have a negative impact on the agency costs?
 RQ6: Does the size of the supervisory board have a positive influence on the agency costs?
 RQ7: Does the size of the company have a negative impact on the agency costs?

In accordance with defined objectives and research questions, one main and eight auxiliary hypotheses were formulated as follows:

- H1: Dividend policy is significant for explaining agency costs changes.*
H1.1: The dividend payments have a negative impact on the agency costs.
H1.2: Dividend yield has a negative impact on the agency costs.
H1.3: Earnings per share have a negative impact on the agency costs.
H1.4: Ownership concentration has a negative impact on the agency costs.
H1.5: Debt ratio has a negative impact on the agency costs.
H1.6: Return on assets has a negative impact on the agency costs.
H1.7: The board size has a positive impact on the agency costs.
H1.8: Company size has a negative impact on the agency costs.

2 Literature overview

Research on the analyzed issue mainly focuses on examining the influence of agency costs on dividend policy as one of its factors. In contrast, a smaller number of research studies examine the reverse relationship. Although the development of the capital market has recently stimulated research in developing countries, most of the research has been carried out in developed countries. In any case, dividend policy remains one of the under-researched issues in corporate finance. In the continuation of the sub-chapter, an overview of the most significant global and Croatian research on the described issue is presented.

La Porta et al. (2000) surveyed more than 4,000 corporations from 33 different countries in the world to identify the role of dividend policy "in the world of agency problem between corporate insiders and outsiders" (La Porta et al., 2000, p. 4). For research, they were guided by the idea that dividend policy can significantly solve agency problems. Namely, when dividends are not paid to outsiders or external shareholders, the insiders, i.e., the company's management, can use the described earnings for personal use and direct it too unprofitable projects. The consequence of the above is reflected in the fact that external shareholders prefer the payment of dividends concerning retained earnings, thereby depriving the management of the possibility of inefficient use of the company's

assets. In addition, the dividend payment leads to the company's need to go to the capital market to obtain external means of financing, which allows external investors to exercise some control over insiders. As part of the research, the authors mentioned above take into account the legal protection of investors, which varies in different countries and is linked to the seriousness of the agency problem, which directly reflects the dividend policy on the agency problem. More precisely, they showed that the dividend policy results from effective real protection of investors, which improves the payment of dividends to small shareholders. Additionally, it has been proven that companies operating in countries with better legal protection against outsiders generally pay higher dividends to their shareholders (La Porta et al., 2000).

Hardjopranoto (2006) researched a sample of manufacturing joint-stock companies listed on the Indonesian Jakarta Stock Exchange (JSX) from 1994 to 2004, trying to investigate the relationship between debt policy, dividends and managerial ownership. The results showed, among other things, that managerial ownership does not significantly reduce agents' costs (Hardjopranoto, 2006). So, even though companies implement a specific dividend policy, it does not significantly reduce agency costs, which is supported by the proven statistically insignificant negative impact of dividend policy on agency costs. The obtained results follow the concept that dividends are not linked to an increase in the company's value, and the decision on their payment may depend on the tax burden and methods of taxation of investors (Iskandar et al., 2021).

Hamdan (2018) conducted a study that included 237 companies from member countries of the Gulf Cooperation Council (GCC) from 2003 to 2015. The research examined the moderating role of supervisory board independence in dividend policy and agency costs. The results showed that the companies of the four GCC member countries (Bahrain, Oman, Saudi Arabia and the United Arab Emirates) practice paying dividends to reduce free cash flow, consequently leading to a reduction in agency costs. Also, a positive influence of supervisory board independence was observed in the relationship between dividend policy and agents' costs. Namely, it has been proven that the payment of cash dividends and the independence of the company's board lead to a reduction in the agency costs, which was expected given the fact that the research was conducted in developing markets where, due to weak investor protection, the dividend payment policy seeks to mitigate agency problems and limit the described costs (Hamdan, 2018).

Hailin and Jingxu (2019) investigated the impact of a mandatory dividend policy on a sample of Chinese joint-stock companies whose shares were traded on two Chinese stock exchanges, the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE), in the period from 2007 to 2017. The results of the research showed that the mandatory dividend policy that has existed in China for the past ten years significantly inhibits agents' costs. It has been found that it has a significant impact on limiting the costs of agents in the case of companies that pay out larger amounts of dividends. In

contrast, this impact is absent in companies with smaller dividends and small and medium-sized supervisory boards (Hailin & Jingxu, 2019).

Subsequently, Iskandar et al. (2021) analyzed ten manufacturing joint-stock companies listed on the IDX from 2014 to 2018, investigating the impact of managerial ownership, debt policy and dividend policy on agency costs and the value of the observed joint-stock companies. A panel regression analysis of the data did not prove a statistically significant influence of the dividend policy on the agency costs nor on the value of the company. On the other hand, the results indicated a statistically significant and positive correlation between borrowing policy and company value and agents' costs. Additionally, a statistically significant indirect influence of managerial ownership and borrowing policy on the company's value was observed through the agency costs, an intervening variable in the model thus set (Iskandar et al., 2021).

Kim et al. (2021) investigated the relationship between information asymmetry and dividend policy in the emerging Korean market. The research was conducted on a sample of 1,238 companies listed on KOSDAQ and the Korea Exchange (KRX) from 2002 to 2010. The results indicated a negative relationship between information asymmetry and dividend policy, which is particularly strong when companies encounter obstacles when collecting external capital, such as high systemic risk, financial constraints and low liquidity of shares (Kim et al., 2021).

Related to research on dividend policy and agency problem in European countries, Mitton (2004) investigated the relationship between corporate governance and dividend policy in a total of 365 companies from 19 countries, including those in Europe. The results showed that joint-stock companies with a better corporate governance system pay out dividends to a greater extent, which can be explained in the context of agency theory (Mitton, 2004). Furthermore, Tekin (2020) investigates the impact of company size and the financial crisis on the payment of cash dividends, analyzing companies from 18 European countries from 2001 to 2017. The research results showed that smaller companies with greater information asymmetry pay lower dividends than larger companies, especially in conditions of uncertainty when agency costs are high, and investment opportunities are low (Tekin, 2020). Furthermore, Bena and Hanousek (2006) investigated Czech joint stock companies from 1996 to 2003. The results showed that joint-stock companies with a majority shareholder pay out dividends to a lesser extent and have a lower target dividend payout ratio, in contrast to companies with at least one minority shareholder. The above reflects the importance of substantial minority shareholders in the creation of dividend policy, especially in developing countries characterized by weak legal protection of shareholders and insufficiently developed corporate governance practices (Bena & Hanousek, 2006; Kožul, 2012, p. 137).

Companies in the Republic of Croatia have been exceptionally poorly researched in dividend policy and agents' costs, and only a small number of studies dealing with the

described issue can be found. Tipurić, Hruška and Aleksić (2007) analyzed the concentration of ownership in 2007 on a sample of a total of 211 Croatian public joint-stock companies. The results favor the highly concentrated ownership structure in the Republic of Croatia, which, as the authors explain, ensures a level of control that enables direct influence on management and reduces agency costs between management and owners. On the other hand, such a concentrated ownership structure leads to the problem of protecting minority shareholders concerning large controlling shareholders who are interested in realizing their benefits, further deepening the conflict between the abovementioned interests (Tipurić et al., 2007).

Kožul (2010) examined the relationship between ownership concentration and dividend policy for 2007 on a sample of 212 companies listed on the Regulated Market of the Zagreb Stock Exchange (ZSE). The research results indicated a high concentration of ownership characteristic of Croatian companies. Furthermore, a correlation between the concentration of ownership and the payment of dividends has been proven in such a way that companies with a higher concentration of ownership pay out dividends to a lesser extent, while those with a low concentration of ownership structure practice the payment of dividends. The proven influence of ownership concentration on the decision on the dividend policy of Croatian companies is directly related to the agency problem and the protection of the rights of small shareholders in relation to a large controlling shareholder (Kožul, 2010).

Cerović et al. (2011) analyzed companies with low ownership concentration in the Republic of Croatia, examining the influence of ownership and capital structure on the movement of agency costs in 2008. Limiting factors of the research are the small number of companies in the sample and the calculation of agency costs for only one observed year. The research additionally dealt with the issue of approximating the dependent variable agency costs, considering that the agency costs cannot be directly measured. It has been proven that they are more pronounced in Croatian companies with a low concentration, that is, a more dispersed ownership structure. The correlation between the agency costs and the company's leverage turned out to be negative, following the agency theory of Jensen and Meckling from 1976 (Cerović et al., 2011).

Klačmer Čalopa et al. (2020) researched a sample of 109 large Croatian companies that operated in the manufacturing industry and wholesale and retail trade, specifically in the repair of motor vehicles and motorcycles, in the period from 2014 to 2018. The research first tried to examine the influence of the size of the supervisory board and the concentration of ownership, debt financing, and the company's growth rate on agency costs, which are approximated by the turnover ratio of total assets. Applying a regression panel data analysis, a statistically significant and negative influence of the size of the supervisory board, debt financing and growth rate on the costs of the agent of the sample company was proven. At the same time, it is absent in ownership concentration (Klačmer Čalopa et al., 2020).

3 Research

The initial research sample included all joint-stock companies based in the Republic of Croatia whose shares were actively traded on the Zagreb Stock Exchange from January 1, 2015, to December 31, 2021. The initial research sample included a total of 106 shares, from which the shares of those companies that met one or more criteria below were excluded from further analysis:

1. the issuing company belongs to sector K (Financial and insurance activities) and differs from non-financial companies due to its specific balance sheet structure
2. the issuing company did not operate continuously within the defined period
3. the issuer's shares are not ordinary
4. the issuer's shares are not listed on the Zagreb Stock Exchange, or securities were executed within the defined period
5. the issuer's shares were not continuously listed on the Zagreb Stock Exchange within the defined period.

Considering the selection criteria, the final research sample includes 52 joint-stock companies. Table 1 below shows the variables of the conducted empirical research. According to available research that dealt with agency theory and agency problems, the two most commonly used approximations of agency costs are below. The dependent variable of this research that cannot be directly measured:

1. ratio of sales revenue and total assets of the joint-stock company i in year t , according to Ang et al. (2000), Singh and Davidson (2003), Hamdan (2018), Klačmer Čalopa et al. (2020), Huu Nguyen et al. (2020);
2. the ratio of operating costs and income from the sale of a joint-stock company in year t , according to Ang et al. (2000), Cerović et al. (2011), Hailin and Jingxu (2019), Chamidah and Asandimitra (2017).

Cerović et al. (2011) state that the first approximation represents an auxiliary ratio for the direct costs of agents and indicates the extent to which the managers who manage the company successfully control operating costs and how much funds are spent on their interests. The second approximation refers to lost income due to a lack of ability, failure to invest, or bad investment decisions by managers (Cerović et al., 2011). Taking into account the previously described agency cost measures and the availability of data on joint-stock companies from the sample, the first form of approximation was used for this paper. The dependent variable agency costs is therefore calculated as the ratio of sales revenue to the total assets of the joint-stock company (i) in the year (t). The measure mentioned above of asset utilization is called the total asset turnover ratio or, for short, asset turnover, and it measures the effectiveness of asset management practices. A high turnover of assets shows a large amount of sales and cash flow generated for a given level of assets, from which it follows that the management, i.e., the joint-stock company, uses the assets effectively, thereby creating value for its owners or shareholders. On the other

hand, if the asset turnover is low, it can be concluded that the management uses the assets in ventures that do not generate cash flow, consequently leading to a decrease in the value of the joint stock company. Following what has been described, if the financial indicator of asset turnover by which the dependent variable is approximated is higher, the agency costs will be lower and vice versa. Joint-stock companies with greater information asymmetry between management and shareholders will have lower asset turnover rates, creating less value for their shareholders than companies with less apparent agent conflicts (Singh & Davidson, 2003; Cerović et al., 2011; Hamdan, 2018).

The first independent variable that describes the dividend policy is dividend payments. It is approximated as a binomial or dummy variable, meaning it can take the value 1 or 0. The variable would take the value of 1 if the joint-stock company paid dividends during the year; otherwise, it takes the value of 0. Only regular dividend payments were taken into account. Hardjopranoto (2006), Bena & Hanousek (2006) and Kožul (2011) used such a measure of dividend policy in their research.

The following independent variable that describes the dividend policy is the dividend yield. Based on the research conducted by Hamdan (2018), Nusaputra and Basana (2020) and Kim et al. (2021), the dividend yield was measured by the percentage of dividends paid per share and the market price per share of the joint-stock company (i) in the year (t). In doing so, only ordinary shares of the analyzed companies from the sample were included in the calculation. The market price was determined as the last market price on the year's last trading day. If the joint-stock company did not pay dividends in the observed year, the dividend yield is 0%.

According to Kožul (2012), the lack of dividend yield is the sensitivity to changes in share prices and based on the idea that Croatian companies with a highly concentrated ownership structure generally do not pay dividends, a third independent variable, earnings per share, was defined and used in their research by Nusaputra and Basana (2020) examining the correlation between agency costs and dividend policy. According to Žager et al. (2017, p. 55-56), earnings per share is a financial indicator of investment that compares the profit of the period, that is, the net profit after interest and taxes, and the number of ordinary shares of the observed joint-stock company (i) in the year (t). It is expressed in monetary units. More precisely, this empirical research shows how many Croatian kuna (HRK) profits or dividends are realized per share of the company.

The control variable ownership concentration was measured by the percentage share of ownership of the largest shareholder of the joint-stock company (i) in the year (t), taking into account their unique relationships. Following the above, groups of institutional investors (pension funds, investment funds, insurance companies) were viewed as jointly owned, that is, as one majority shareholder. This approximated variable was used in the research by Ang et al. (2000), Tipurić et al. (2007), Kožul (2011) and Kim et al. (2021).

Furthermore, following the research conducted by Ang et al. (2000), Singh and Davidson (2003), Bena & Hanousek (2006), Cerović et al. (2011), Chamidah and Asandimitra (2017), Hamdan (2018), Hailin and Jingxu (2019), Klačmer Čalopa et al. (2020), Nusaputra and Basana (2020), Tekin (2020) and Kim et al. (2021) defined the control variable leverage measured by the debt ratio. The indicated indicator compares the total liabilities and assets of the joint-stock company (i) in the year (t). According to Žager et al. (2017, p. 48-49), the debt ratio reflects the company's capital structure. It indicates its static debt, i.e., how much of the joint stock company's assets are financed from other people's capital or liabilities.

According to the works of authors Mitton (2004), Bena & Hanousek (2006), Cerović et al. (2011), Hailin and Jingxu (2019), Huu Nguyen et al. (2020) and Kim et al. (2021), the following control variable, profitability, measured return on assets, was defined. The indicator compares the period's profit and the joint-stock company's total assets (i) in the year (t). It represents the percentage of the total assets that the company's shareholders will earn. According to Žager et al. (2017, p. 52-53), return on total assets is one of the financial indicators of profitability that indicates the success of the joint-stock company's operations and the rate of return that the company achieved concerning the total assets.

The following control variable is board size. Taking into account the research of Singh and Davidson (2003), Chamidah and Asandimitra (2017), Klačmer Čalopa et al. (2020) and Huu Nguyen et al. (2020), was measured by the number of members of the supervisory board of the joint-stock company (i) in the year (t). In the absence of a company's supervisory board, for comparability with other years and entities, as already described at the beginning of this subchapter, information on the number of board members was used.

The last control variable, company size, was measured as the natural logarithm of the total assets of the joint-stock company (i) in the year (t). Mitton (2004), Hamdan (2018), Tekin (2020) and Huu Nguyen et al. used such an approximation of the mentioned variable in research in the field of dividend policy and agency costs. (2020).

The method used for this empirical research is panel regression analysis. Specifically, a static model of panel data whose spatial dimension consists of 52 joint-stock companies from the sample, and the time dimension refers to the finally defined period from 2015 to 2021. Furthermore, a fixed-effect model was used after diagnostic tests to determine that such a model was the most suitable for analysis for this empirical research. Based on the defined hypotheses and selected research variables and taking into account the theoretical assumptions of the static panel data model with a fixed effect, an econometric model was defined to test the impact of the dividend policy on the agency costs as follows:

$$TA_{i,t} = \alpha_{i,t} + \beta_1 * DIV_{i,t} + \beta_2 * DY_{i,t} + \beta_3 * EPS_{i,t} + \beta_4 * KV_{i,t} + \beta_5 * VNO_{i,t} + \beta_6 * ROA_{i,t} + \beta_7 * KZ_{i,t} + \beta_8 * VP_{i,t} + \varepsilon_{i,t}$$

Where is:

$TA_{i,t}$ – Total asset turnover ratio of a joint-stock companies (i) in time (t)

$DIV_{i,t}$ – Dividend payments of a joint-stock companies (i) in time (t)

$DY_{i,t}$ – Dividend yield of a joint-stock companies (i) in time (t)

$EPS_{i,t}$ – Earnings per share of a joint-stock companies (i) in time (t)

$KV_{i,t}$ – Ownership concentration of a joint-stock companies (i) in time (t)

$VNO_{i,t}$ – Bord size of a joint-stock companies (i) in time (t)

$ROA_{i,t}$ – Return on assets of a joint-stock companies (i) in time (t)

$KZ_{i,t}$ – Debt ratio of a joint-stock companies (i) in time (t)

$VP_{i,t}$ – Size of a joint-stock companies (i) in time (t)

$i = 1, \dots, 52$; $t = 1, \dots, 7$.

4 Discussion

Based on the results of the panel regression analysis shown in table 2, it is evident that the payment of dividends has a negative, statistically significant impact on the agency costs at a significance level of 5%. In other words, if the company pays dividends, it will have a higher turnover of assets and a lower agent cost. Earnings per share of the observed joint-stock companies also have the expected, statistically significant and negative impact on the agency costs at a significance level of 10%. In addition, leverage and profitability have a significant and positive relationship with the asset turnover of the analyzed companies and negatively affect the agency costs. Contrary to expectations, dividend yield shows a significant negative relationship with asset turnover, implying its positive impact on agency cost at the 5% significance level. Namely, if the dividend yield of a joint-stock company is higher, it does not use its assets efficiently enough, and the agency costs is higher. The size of the company also significantly and positively correlates with the agency costs, while for the variable's concentration of ownership and size of the supervisory board, no statistically significant influence on the agency costs was identified.

In accordance with the previously described results, the main hypothesis is accepted, according to which all three dividend policy measures (dividend payment, earnings per share, dividend yield) have a statistically significant influence on the agency costs. More precisely, it is confirmed that dividend policy is significant for explaining changes in agent cost. Such results are consistent with previous research (Hamdan, 2018; Hailin & Jingxu, 2019; Nusaputra & Basana, 2020; Kim et al., 2021; La Porta et al., 2000; Mitton, 2004; Kožul, 2010), which showed that dividend policy significantly correlates with agency costs, mainly contributing to their reduction. Other results in Table 3 show that the sub-hypotheses according to which leverage and profitability have a negative impact on the agency costs are supported. Accordingly, a positive relationship between

profitability and asset turnover and its negative impact on the agency costs was confirmed, per the assumptions of the agency theory and the research conducted by Cerović et al. (2011) and Huu Nguyen et al. (2020). The theory can also explain that a higher level of profitability leads to a higher cash flow for the payment of dividends, as stated by Nusaputra and Basana (2020) and Kim et al. (2021), which then reduces agency problems and agency costs. Leverage is also in a significant and positive relationship with asset turnover. More precisely, a higher level of leverage leads to a reduction in agency costs in accordance with the analyzed research (Ang et al., 2000; Cerović et al.; Chamidah & Asandimitra, 2017; Hamdan, 2018; Huu Nguyen et al., 2020). The explanation is found in the fact that a lower level of leverage allows management greater freedom in decision-making and the selection of less risky solutions, consequently reducing the agency costs.

Furthermore, the sub-hypotheses assuming a negative relationship between ownership concentration, the size of the supervisory relationship and the size of the company with agency cost are not supported. The concentration of ownership has a negative but statistically insignificant relationship with the agency costs in accordance with the results of some previous research (Hardjopranoto, 2006; Klačmer Čalopa et al., 2020; Iskandar et al., 2021). Given that numerous studies have proven a significant correlation between the mentioned variables (Ang et al., 2000; Singh & Davidson, 2003; Kožul, 2010; Cerović et al., 2011; Hamdan, 2018; Nusaputra & Basana, 2020), the explanation is found in the different characteristics of the examined markets and the high concentration of ownership of the analyzed Indonesian and Croatian joint-stock companies, compared to research conducted in the area of developed countries. The size of the supervisory board also did not show a significant impact concerning the agency costs, which can be explained by the smaller average number of members of the supervisory board of the analyzed joint-stock companies, where such an impact is absent. This is by the results of research conducted by Chamidah and Asandimitra (2017) and Hailin and Jingxu (2019), while there is no link with the claim that supervisory boards of companies increase the level of agency costs and are therefore less efficient (Singh & Davidson, 2003; Huu Nguyen et al., 2020; Klačmer Čalopa et al., 2020). Regarding the size of the company, its significant positive influence on the agency costs was proven, which is contrary to expectations and in line with research conducted by Mitton (2004), Hamdan (2018) and Nusaputra and Basana (2020). The reason for this is found in the insufficient example of appropriate mechanisms for monitoring management behavior, and the way assets are used (Hamdan, 2018), where the similarity with Indonesian companies is visible. Additionally, as the sample includes large joint-stock companies listed on the Zagreb Stock Exchange, they have easier access to financial resources and greater investment opportunities that improve their cash flow and business performance.

The previously analyzed results must be viewed in the context of the limitations of implementing this empirical research. They relate primarily to the characteristics of the balanced sample in which specific non-financial companies were selected, more precisely, joint-stock companies that operated continuously and whose ordinary shares

were continuously listed on the Zagreb Stock Exchange in a defined period from 2015 to 2021. Additional limitations relate to the instability of the market and the reduction of investment activities caused by the coronavirus pandemic in the second half of the observed period, the impossibility of directly measuring the agency costs, which is approximated by the turnover of total assets, and the collection of data on joint-stock companies from several different sources, given the unavailability of all necessary data in as part of the annual financial statements. The last limiting factor is related to the problem of transparency and weak legal protection of investors in Croatia.

5 Conclusions

The results of the conducted statistical analysis confirmed the main hypothesis that the dividend policy of the observed joint-stock companies is significant for explaining changes in agency costs. Therefore, the dividend policy plays a significant role in mitigating the conflict between management or large controlling shareholders and minority shareholders, consequently reducing agents' costs, which is consistent with the assumptions of agency theory. Joint-stock companies in the Republic of Croatia are characterized by a continental corporate governance system with a highly concentrated ownership structure where management is under the direct supervision of large controlling shareholders. In addition, the problem of the weak legal protection of minority shareholders in relation to large controlling shareholders who seek to achieve their interests, primarily in establishing control over the company, based on which the agency costs arise, is expressed. Thus, the agency problem is directly related to the dividend policy, which is confirmed by research examining the differences in dividend policy depending on investor protection. Precisely because of the diversity of the market, the results of this research conducted in developing countries, characterized by insufficient adoption of corporate governance mechanisms, differ from those in countries with an Anglo-Saxon corporate governance system. Furthermore, the analysis showed that it is essential to implement a stable dividend policy because investors can perceive constant changes as a negative signal about the future operations of companies, especially in conditions of uncertainty and market instability. The informational impact of dividends is thus directly connected to the agency problem in such a way that a change in dividends due to information asymmetry leads to the variability of stock prices by the signaling theory. Additional results showed that, in addition to the dividend policy, the increase in leverage and profitability also leads to a decrease in the agency costs. At the same time, the influence of the other analyzed variables was not identified.

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Appendix:

Table 1: Selected research variables

Name	Label	Approximation	Expected impact
Dependent variable			
Agency Costs	TA	sales revenue / total assets	negative (-)
Independent and controlling variables			
Dividend payments	DIV	One or zero	negative (-)
Dividend yield	DY	Dividends paid per share / market price per share (%)	negative (-)
Earnings per share	EPS	Net profit / number of equity shares	negative (-)
Ownership concentration	KV	Share of ownership of the largest shareholder of the joint-stock company (i) in the year (t) (%)	negative (-)
Debt ratio	KZ	Total liabilities / total assets	negative (-)
Return on assets	ROA	Net profit / the joint-stock company's total assets (i) in the year (t)	negative (-)
Board size	VNO	Number of members of the supervisory board in the year (t).	positive (+)
Company size	VP	Ln (total assets)	negative (-)

Source: Created by the authors based on the literature analysis.

Table 2: Results of the static panel analysis

Dependent variable Agency costs (TA) (i,t)	Coefficient	p-value
Independent variable		
Intercept ($\alpha_{i,t}$)	1.896226	0.0061
Dividend payments (DIV)	0.056252	0.0554*
Dividend yield (DY)	-0.015847	0.0051*
Earnings per share (EPS)	0.000064	0.1821**
Ownership concentration (KV)	0.001222	0.2554
Debt ratio (KZ)	0.098172	0.1657**
Return on assets (ROA)	0.001761	0.0220*
Board size (VNO)	-0.007057	0.4204
Company size (VP)	-0.065602	0.0467*
F-test		0.0000
Hausman test		0.0078
LM test		/
Selected model		FE
No. of observations (N)		364

*significant at the 5% level; **significant at the 10% level.

Source: Created by the authors in EViews.

Table 3: Results of research sub-hypotheses testing

Research sub-hypothesis	Description	Impact	Compliance with expectation
H_{1.1}	The dividend payments have a negative impact on the agency costs.	statistically significant, negative	yes
H_{1.2}	Dividend yield has a negative impact on the agency costs.	statistically significant, negative	no
H_{1.3}	Earnings per share have a negative impact on the agency costs.	statistically significant, negative	yes
H_{1.4}	Ownership concentration has a negative impact on the agency costs.	statistically insignificant, negative	no
H_{1.5}	Debt ratio has a negative impact on the agency costs.	statistically significant, negative	yes
H_{1.6}	Return on assets has a negative impact on the agency costs.	statistically significant, negative	yes
H_{1.5}	The board size has a positive impact on the agency costs.	statistically insignificant, negative	no
H_{1.8}	Firm size has a negative impact on the agency costs.	statistically significant, positive	no

Source: Created by the authors.