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DIVIDEND POLICY, OWNERSHIP STRUCTURE, AND DEBT FINANCING

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Biographical Note

Marcelo Madeira dos Santos Rocha was born in 1999 in the city of Porto. He has completed a bachelor's degree in economics at School of Economics and Management (FEP) of University of Porto in 2021.

Marcelo actively engaged with student organizations that significantly influenced his academic and personal growth. Within the Student Association of FEP (AEFEP), he assumed roles within the financial department and contributed to student-focused initiatives. His involvement in FEP First Connection exemplified his dedication to fostering connections and aiding in student integration.

Currently, Marcelo is starting a new professional journey. Since March 2023, he has been a member of the PwC team, where he brings his knowledge and skills to the Transaction Services department. This opportunity enables him to apply the insights garnered from his academic pursuits and continue his growth in the field of Economics and Finance.

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The success of any individual's journey cannot be achieved in isolation. I firmly believe that in the pursuit of knowledge and accomplishment, the people who surround us play an indispensable role at every step of the way. Therefore, I wish to convey my sincere appreciation to all those who have contributed to my journey.

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Abstract

This dissertation aims to investigate the relationship between Dividend Policy, Debt Financing, and Ownership Structure among 34 Portuguese companies during the period from 2017 to 2021.

Agency costs, which result from conflicts of interest between shareholders and managers, have a significant impact on a company's dividend policies. This dissertation will delve deeper into this topic, aiming to explore whether varying levels of leverage and ownership structures can effectively mitigate agency costs and potentially act as substitutes for dividend distributions.

The findings of this dissertation have unveiled several key insights. Firstly, there exists a positive correlation between weak ownership concentration and higher dividend allocations. Secondly, a positive relationship has been observed between low levels of leverage and more substantial dividend payouts. Additionally, the research has identified a positive association between greater managerial ownership concentration in low-leverage firms and more generous dividend policies. These results collectively suggest that dividends can indeed serve as a mechanism to mitigate agency costs, particularly in firms characterized by lower leverage ratios.

Keywords: Dividend policy, debt financing, ownership structure, firm life cycle, agency theory, corporate governance.

JEL Codes: G30, G32, G35.

Resumo

Esta dissertação tem como objetivo estudar a relação entre a Política de Dividendos, o nível de Financiamento e a Estrutura acionista de 34 empresas portuguesas, entre 2017 e 2021.

Os custos de agência, decorrentes de conflitos de interesses entre acionistas e gestores, impactam as políticas de dividendos de uma empresa. Este tópico será explorado nesta dissertação para investigar se os níveis de alavancagem e as estruturas acionista podem mitigar os custos de agência e potencialmente servir como substitutos de dividendos.

Concluimos que existe uma correlação positiva entre a fraca concentração acionista e maiores distribuições de dividendos, bem como uma correlação positiva entre baixos níveis de endividamento e maiores pagamentos de dividendos. Estas conclusões sugerem que os dividendos podem servir como um mecanismo para mitigar os custos de agência, particularmente em empresas com rácios de alavancagem mais baixos.

Palavras-Chave: Política de dividendos, financiamento, estrutura corporativa, ciclo de vida, custos de agência.

JEL-Codes: G30, G32, G35

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1. Introduction

Dividends have long been a perplexing subject for financial economists. In a perfectly efficient capital market, as demonstrated by Modigliani & Miller (1961), dividend policy is shown to have no impact on share value. However, contrary to this theory, it becomes evident that dividends do indeed play a significant role, as indicated by the fact that stock prices frequently rise when companies increase dividend payouts.

Numerous studies have proposed various theories to explain corporate dividend behavior. One predominant explanation is the dividend signaling theory. According to the signaling models presented by Bhattacharya (1979), John & Williams (1985), and Miller & Rock (1985), managers possess greater insights into the true value of the company than investors and employ dividends as a means of communicating this information to the market. Consequently, these models predict a positive relationship between information asymmetry and dividend policy.

Companies characterized by higher levels of asymmetric information should logically engage in more frequent dividend payouts, as resolving such information imbalances holds significant value. Consequently, if the dividend signaling hypothesis holds true, we should observe a positive correlation between information asymmetry and a firm's dividend policy even after accounting for other factors influencing dividend decisions. Furthermore, dividends represent a more costly signaling mechanism compared to share repurchases, given their implication of a steadfast commitment and historically more favorable tax treatment. Therefore, investors should perceive dividends as possessing greater informational value. Hence, the signaling theory predicts that asymmetric information will exhibit a stronger positive relationship with dividends than with stock repurchases.

Fischer Black (1986) eloquently expressed the enigmatic nature of dividend policy when he remarked, "The deeper we delve into the dividend landscape, the more it resembles a puzzle with pieces that seemingly do not fit together" (Black, 1976). Despite significant advancements in our understanding of payout practices since Black's groundbreaking work (DeAngelo et al., 2009), fundamental inquiries about when, how much, and why companies distribute dividends continue to captivate researchers. This puzzle, commonly referred to in the literature as the "disappearing dividend puzzle," became more intricate when it was observed that while the number of firms paying dividends decreased, the overall aggregate dividend payout increased (DeAngelo et al., 2004).

Managers of firms must make decisions regarding their payout policies over various time periods. These decisions influence the manager's utility, which represents a weighted average of the firm's short-term capital gains and the long-term utility of investors. Shareholders in the firm exhibit loss aversion, signifying that they experience greater dissatisfaction from a dividend reduction between two periods than the satisfaction derived from an equal-sized dividend increase. The degree of loss aversion varies among investors, and the manager considers the average loss aversion of the firm's investors as a given parameter. The manager possesses the ability to signal the firm's earnings to the market through the choice of payout policy, presenting a trade-off. While the manager has an incentive to distribute higher dividends, as this is interpreted positively by the market and enhances the manager's short-term gains, higher dividends also entail a greater likelihood of future dividend reductions, which are strongly disapproved of by loss-averse shareholders.

Our dissertation is centered on the Portuguese market, comprising 34 different firms across a wide spectrum of sectors, including technology, finance, and services. It's crucial to emphasize that we will exclude specific types of companies from our study, such as those affiliated with football, financial services, and holding companies, because they possess unique operational and accounting characteristics. This study aims to enhance our understanding of the impact of Dividend Policy as a substitute for debt in mitigating agency costs and assess how ownership structure influences decisions regarding dividend policy within Portuguese firms in recent years. To achieve these objectives, the following key questions will be addressed in this dissertation:

- a) Does the dividend policy complement or replace debt as a mechanism to reduce agency costs?
- b) Does dividend policy depend on the firms' corporate governance policy?

Our results provided valuable insights into the relationship between ownership structure, leverage levels, and dividend distribution. We have found that ownership concentration plays a pivotal role in shaping dividend policies. Weak ownership concentration is associated with higher dividend allocations, while strong ownership concentration favors lower dividends. These findings align with prior research that has consistently shown an inverse relationship between ownership concentration and dividend distribution.

Furthermore, our analysis has uncovered that low-leverage firms tend to allocate higher dividends compared to their high-leverage counterparts. Notably, we have identified

a significant impact of managerial ownership, particularly in low-leverage firms where greater managerial ownership concentration is observed. This phenomenon leads to more substantial dividend policies. These findings emphasize the role of dividends as a potential mechanism to mitigate agency costs, especially for firms with lower leverage ratios.

This dissertation will be divided into 5 sections. Section 1 contained introduction and the motivations behind this work as well topic that will be developed. Section 2 will explore the literature review related to the main topic and respective mechanisms to eliminate agency costs. Section 3 will be dedicated to present the sample that will be studied and the respective methodology. Section 4 will present and discuss the results. To finish, section 5 will be dedicated to do a summary of the work, concluding with the main answers to the questions proposed.

2. Literature Review

In this section we will present the literature related to the main topics. First will be presented theories related to dividend policy. Asymmetric information, agency costs tax and clientele effect, signaling and irrelevance theory are the main topics developed based on dividend policy. Ownership structure and debt financing will be analyzed, trying to understand their relationship with dividend policy. In last sections, will be tested if exist a dividend policy tendency linked with company's life cycle or macroeconomic conditions.

2.1. Dividend Policy

Dividend Policy involves how companies distribute profits to shareholders, affecting investment and financing decisions. This intricate topic has puzzled financial economists, with factors often not aligning smoothly (Black, 1976). Lintner (1956) pioneered empirical research, finding that mature firms with consistent earnings often base their dividend approach on existing rates. Understanding these influences is key to predicting stability and comprehending broader firm decisions.

2.1.1. Asymmetric information and agency theory

Agency relationships, a concept defined by Shapiro (2005), involve one party acting on behalf of another. Asymmetric information arises when insiders or managers possess exclusive insights into the company, differing from the market. This information disparity – both in quantity and quality – empowers managers to share valuable insights with the market about future expectations.

Managers hold confidential information about cash flow distribution. Dividend decisions play a role in transmitting these insights to the market, a concept advanced by Heinkel (1978). Dividend policy acts as a conduit for this pivotal information. Financial markets meticulously scrutinize managerial actions, assessing their implications for future performance and firm valuation (Damodaran, 2001). Higher dividends can signal enhanced firm productivity, yet this information imbalance spawns conflicts of interest between managers and shareholders.

In this theoretical framework, companies are "contracts" where shareholders hold ownership and cash flow rights. This duality fosters conflicts, as managers seek to safeguard their interests. This dichotomy, coupled with divergent goals, results in agency costs – expenses incurred to mitigate conflicts. Dividends maintain consistent payouts, conveying information about financial well-being (Lintner, 1956, and Modigliani & Miller, 1961).

Jensen (1986) suggests dividends counter managerial overinvestment, reducing free cash flow and limiting overinvestment opportunities. Easterbrook (1984) contends dividends extract excess cash from management, necessitating engagement with the stock market to fund new endeavors. This engagement disciplines management, curbing agency costs.

2.1.2. Tax and clientele effect theory

A key point of the dividend enigma emerges from the prevailing notion that dividends often incur higher tax rates compared to capital gains (Damodaran, 2001). Miller & Scholes (1978) ingeniously devised a method to transform dividend earnings into capital gains. Their approach capitalizes on a tax provision allowing interest expenses deduction before taxation. Through judicious borrowing, the interest can offset dividend income, ultimately reducing taxable income to zero.

Modigliani & Miller (1961) noted that under taxation, investors develop clienteles with distinct preferences for specific dividend yields. Despite potential tax disadvantages, certain investors favor income shares with higher dividends, a phenomenon known as the clientele effect. Companies cultivate their own "clientele" through dividend policies, with investor marginal tax rates influencing this affinity for dividends. Modigliani & Miller (1961) assert that altering dividend levels exclusively impacts a firm's shareholder composition. Investors select companies based on their needs, holding those aligning with their tax brackets in their portfolios (Collins & Kemseley, 2000).

Allen & Michaely (2002) demonstrate that taxes exert minimal influence on dividend policy. When the post-ex-dividend share price decline is smaller than the distributed dividend, the tax variable's impact nullifies. To counter adverse tax effects, aligning required investor returns with dividend yields can offset tax losses (Litzenberger & Ramaswamy, 1979).

2.1.3. Signaling theory

An imperative strategy is essential to furnish investors with comprehensive insights, diminishing the prevailing information asymmetry within financial markets. Modigliani & Miller (1961) assert that alterations in dividends serve as signals for anticipated shifts in market profits – the essence of signaling theory. Managers utilize dividends to communicate critical aspects of their company's status to the market, particularly in scenarios marked by insider-outsider information disparity. The concept that dividend policy empowers managers

to effectively convey the firm's true essence based on future perspectives finds resonance in the works of authors like Kalay (1980), Bhattacharya (1979), John & Williams (1985), and Miller & Rock (1985), rooted in the signaling theory. Dividend level announcements and changes indicate managers' favorable (or unfavorable) company prospects. Consequently, the market recalibrates share prices in response to these pivotal decisions.

2.1.4. Irrelevance theory

Modigliani & Miller (1961) showcased that, in perfect and full capital markets – marked by symmetric information, comprehensive contracting, complete markets, absence of taxes, and no transaction costs – a firm's dividend policy holds no influence over its value. This departure from earlier theories like Lintner (1956) challenged established notions. According to Modigliani & Miller (1961), a company's value stems from profit-making capability and business risk, rooted in asset profitability and investment strategy. Dividend policy solely governs the distribution of returns to shareholders, alternating between dividends and capital gains without emphasizing their origin. Despite Modigliani & Miller theory, firms continued substantial dividend distributions, revealing the irrelevance theory's limitations. Dividends significantly impact investment and financing decisions, rendering the irrelevance theory incongruous with actual practice.

2.2. Corporate Governance mechanisms

Dividend payouts, debt issuance, and managerial ownership stand out as three pivotal mechanisms for countering the free-cash-flow predicament. Despite a substantial body of research exploring their effectiveness in addressing agency problems (Denis, 2001), there remains no consensus on their interrelationships – whether they work in tandem or independently.

Jensen (1986) contends that debt and dividends act as substitutes, curbing managerial control over discretionary funds. This suggests a negative correlation, as higher leverage often suppresses dividend disbursement. Notably, dividends exhibit a statistically significant connection with managerial ownership. If dividends and managerial ownership act as substitutes in reducing free cash flow's agency costs, their correlation should be negative (Chen & Steiner, 1999 and Jensen, Solberg, & Zorn, 1992 and Lee, 2011). However, some authors propose a nuanced view, suggesting that the dividend-ownership link could even turn positive under specific ownership thresholds due to entrenchment effects.

2.2.1. Dividend Puzzle

A portion of the dividend puzzle arises from dividends often incurring higher tax rates than capital gains. Consequently, investing in non-dividend-paying firms could yield greater profits, as capital gains are subject to lower taxation. Although historically accurate, recent years have seen efforts to reduce or eliminate dividend taxes. Currently, no definitive solution exists for this dividend issue, given the divergence in author perspectives. Damodaran (2001) suggests dividend policy follows a company's life cycle, while Lintner (1956) contends that net income and payout from the last fiscal period dictate dividend policy. Central queries regarding dividends include: "Why do corporations offer dividends?" and "Why do investors seek dividends in their investment calculus?" Clearly, when an individual invests in a company, they anticipate receiving returns that align with the risk assumed. Conversely, corporations employ dividends to reward current shareholders and entice new ones. Yet, investors might prioritize higher future share values, translating to profit upon selling at a premium compared to the stock's purchase price. Abstaining from dividend distribution could signify potential share value growth surpassing the foregone dividend worth, ultimately leading to capital appreciation outweighing the missed dividends.

2.2.2. Ownership Structure

A corporation's ownership structure pertains to its ownership and control distribution among various entities, encompassing individuals, institutions, and governments. This structure significantly influences management, operations, and stakeholder interactions.

Ownership structure intersects with a pivotal topic integral to this dissertation: Agency theory. The detachment between ownership and management gives rise to conflicts, impacting financial performance and shareholder wealth (Jensen & Meckling, 1976). This misalignment triggers conflicts, costs, or value loss as managers might prioritize personal interests, introducing agency costs (Jensen & Meckling, 1976). Effective corporate governance is pivotal for a dividend policy that mitigates agency costs, harmonizing divergent ownership and management interests.

Dividend outcome model posits stronger corporate governance correlating positively with dividend distribution due to robust shareholder rights (La Porta et al., 2000; Mitton, 2004, Jiraporn & Ning, 2006). Such governance curbs information asymmetry between management and shareholders, reinforcing dividends as a signaling tool. Empirical research

(Asquith & Mullins, 1983; Adjaoud, 1984 and Healy & Palepu, 1988) underscores positive (negative) market reactions to dividend increase (reduction) announcements, bolstering the dividend signaling interpretation. Moreover, dividends restrict free cash flow and induce corporations to seek capital externally, reducing agency costs (Jensen, 1986; Lang & Litzenberger, 1989 and Easterbrook, 1984). Corporate governance enhances transparency, accountability, and integrity, cultivating investor trust and boosting financial performance (Fin, 2004). La Porta, Silanes, and Schleifer (2002) underscore governance as safeguards shielding external investors from internal ones.

Conversely, the substitution hypothesis suggests that governance quality can supplant dividends, with better-governed firms facing lower agency costs tied to ownership-control separation. Effective governance replaces dividends as mechanisms that counterbalance agency conflicts (Knyazeva & John, 2006). Strategic corporate governance mitigates conflicts, aligning management and shareholder interests for effective operations. Robust governance tools like independent boards, codes of conduct, performance-based compensations, shareholder rights, and stakeholder engagement curtail agency costs and elevate performance.

2.3. Dividend policy and firm life stage

Rooted in the life cycle theory, Mueller (1972) initiated this study by exploring the dividend-investment trade-off within companies. Young enterprises emerge with a mission of innovation, demanding substantial initial investments. These nascent phases emphasize consistent investment, envisioning a promising future. Gradual growth prevails initially, gradually transitioning into exponential expansion upon market entry and customer base expansion. In these stages, the agency problem remains minimal, driven by the necessity to seek external capital to fulfill financial needs, subjecting the firm to market scrutiny. Managerial and shareholder interests align due to this agency problem mitigation. As the market matures, subsequent entrants' surface, causing the initial firm's growth to decelerate. Eventually, the firm hits a juncture where profitable investment avenues for generated cash decreased. In this "mature stage," dividend payments compensate shareholder investments.

2.4. Similar Studies

This academic scrutinizes the interplay of dividend policy, debt financing, and ownership structure, aiming to ascertain whether dividends truly alleviate agency costs and, if so, whether they substitute for debt. The inquiry also probes whether the efficacy of agency

cost reduction is uniform across dividends and debt. While UK and USA have previously examined these aspects, this research delves into the Portuguese market, offering distinct temporal and data perspectives.

Mancinelli & Ozkan (2006) explored dividend policy's nexus with ownership structure in 139 listed Italian firms. The study highlighted concentrated ownership and the ensuing conflict between major and minority shareholders. Notably, rising majority shareholder voting power correlated with diminished dividends, suggesting control-related pacts.

In the UK, Farinha (2003b) delved into a sample of 600 companies across two five-year periods (1987-1991, 1992-1996). The study revealed a pronounced U-shaped relationship between insider ownership and dividends, signaling an entrenchment threshold at around 30%.

Turning to the Portuguese market, Ribeiro (2007) scrutinized 25 Euronext Lisbon-listed firms, discovering a U-shaped linkage between managerial ownership and dividend disbursement. Remarkably, the connection between managerial ownership and dividends varied across firms with diverse debt levels.

2.5. Critical analysis of the literature

To examine the interplay of dividends, ownership structure, and leverage within firms, a comprehensive examination of the world's ownership landscapes is indispensable.

In Central Europe, diverse corporate governance systems reflect variations in legal and economic frameworks. Extensive documentation underscores the multifaceted corporate ownership structures prevalent in major European economies (Barca & Becht, 2001). While ownership configurations may differ due to location, industry, and company-specific traits, recurring patterns emerge. Family-owned enterprises dominate Europe, particularly in Germany, Italy, and Spain. Here, a family or closely-knit group commands management and decision-making. Concentrated ownership structures, observed across Europe, feature a small cohort of large shareholders wielding substantial control, prompting potential conflicts with minority shareholders (La Porta et al., 2000).

In the US, publicly traded companies exhibit dispersed ownership, with myriad shareholders holding smaller stakes. Institutional investors, like mutual and pension funds, diversify the ownership landscape. Governance tensions primarily arise between managers and external shareholders, with dividends acting as a check on free cash flow misuse by managers (Jensen, 1986).

Asian corporate landscapes often comprise conglomerates led by a central entity or family holding stakes in diverse industries. These conglomerates steer subsidiary companies' decisions, including dividend distribution.

Portuguese market is characterized by family-owned businesses and concentrated ownership prevail. Akin to other contexts, influential shareholders wield considerable control over decision-making, including dividends.

Complexity of the relationship between managerial ownership, debt levels, and dividend policy becomes evident. The Portuguese market, despite its small scale compared to international counterparts, lacks comprehensive study. Thus, this dissertation bridges the gap, providing insights specific to the Portuguese context, enriching the discourse on global ownership and dividend dynamics.

3. Methodology

3.1. Data

Examining the dynamics of ownership structure and debt financing across distinct phases of Portuguese companies necessitates a study encompassing a sample of firms listed on the Portuguese stock market. This market comprises 34 diverse entities spanning technology, finance, services, and more, including several featured in the PSI-20 index. This index, reflecting the most active Portuguese firms in the stock market, showcases entities with varying weights, reflecting their market influence. Football-related, financial, and holding companies, divergent in operational and accounting aspects, will be excluded from this study.

The investigation aims to discern how debt financing, ownership structure, and macroeconomic conditions collectively shape dividend policies within Portuguese firms. Focusing on the years 2017 to 2021, the study seeks to illuminate the interplay between dividend strategies, ownership dynamics, and debt levels as mechanisms to mitigate agency costs.

3.2. Empirical Hypothesis

In the field of corporate governance, a firm's quality is intricately tied to its dividend policy, ownership structure, and debt financing levels. La Porta et al. (2000), Mitton (2004), and Jiraporn & Ning (2006) underscore the positive correlation between strong corporate governance and dividends. Robust governance ensures shareholder protection, intensifying pressure on management for higher dividends. Conversely, the substitution effect suggests that well-governed firms might opt for dividends over governance. This dynamic relationship follows a U-shaped pattern, with governance impacting dividends and vice versa. Prior to an "entrenchment point," managers with limited equity tend to favor retained earnings for investment. As ownership concentration rises, dividends and ownership become substitutes, countering agency costs. However, post-entrenchment, entrenched managers embrace dividends to safeguard their position, aligning with entrenchment irrelevance and signaling theories.

Focusing on the Lisbon Stock Exchange, notable for family ownership and weaker protection for minority shareholders, the study aims to examine the following hypotheses:

H1: A negative correlation between managerial ownership and dividend policy in firms with weak ownership concentration.

H2: A positive correlation between managerial ownership and dividend policy in firms with strong ownership concentration.

Ownership's interplay with dividend policy evolves alongside debt levels. Firms with substantial debt are externally monitored, favoring debt over dividends for agency cost reduction. Dividend-paying firms often resort to debt for financing, influencing higher debt ratios. In contrast, firms relying on equity financing exhibit lower dividends, prioritizing debt repayment.

H3: No significant relation between dividend policy and managerial ownership in low-leverage Portuguese firms.

H4: A negative relation between dividends and managerial ownership in high-leverage Portuguese firms.

Debt's pivotal role in mitigating agency costs remains prominent. Debt's obligatory nature may lead firms to prefer it over dividends for addressing agency costs, especially in dispersed shareholder firms. Investigating the impact of debt versus dividends on agency cost mitigation leads to the following hypothesis:

H5: Dividends serve as substitutes for leverage in mitigating agency costs.

3.3. Collection of Sample, data and databases

This dissertation will utilize a sample of 34 listed Portuguese companies on Euronext Lisbon, some with annual dividends and others without. To ensure accuracy, financial institutions, holding firms, and sports clubs will be excluded due to distinct regulatory frameworks. The analysis covers a five-year period from 2017 to 2021. Data will be sourced from diverse outlets, including annual financial reports and SABI - Bureau van Dijk for variables like managerial ownership, board structure, dividends, external debt, and market metrics. Descriptive statistics will first be presented, followed by four models incorporating different categorical variables. Model 1 lacks categorical variables, Model 2 tests GDP and Covid factors, Model 3 includes Managerial Ownership, and Model 4 involves Company Stage. These models will gauge the significance of each variable in relation to the research context.

3.4. Empirical Model

According to Gujarati (2003), panel data are known to make a quantitative analysis between economic relationships, joining time-series and cross section data. It makes possible a better investigation into the dynamics of changes in variables, making possible to observe

the effect of some hidden variables, providing more degrees of freedom, thus allowing to reduce collinearity among explanatory variables. At the same time, allow the elimination of heterogeneity and the control of individual heterogeneity, thus increasing the efficiency of econometric estimations and avoiding possible biases in the results (Verbeek, 2004). The general formula can be written:

$$y_t = \alpha + X_t\beta + \varepsilon_t$$

Where:

y_t represents the dependent variable at a specific time t .

α is the intercept.

β is a vector comprising the coefficients to be estimated.

X_t row vector encompassing the explanatory variables at the same time point.

ε_t represents the error term associated with that time.

Additionally, it is assumed that $\mu_{i,t}$ follows a Cochrane-Orcutt correlation, being an estimation in an econometric approach with the finality of correct a linear model for serial correlation in the error term. If it is determined, for example using the Durbin-Watson statistic, that there is a correlation between consecutive error terms over time, then traditional statistical analysis applied to regression models becomes invalid due to biased estimation of standard errors. To overcome this issue, it is necessary to incorporate a model for the residuals.

$$\mu_{i,t} = \rho\mu_{i-1} + e_t, |\rho| < 1$$

If the errors exhibit characteristics of white noise, the Cochrane-Orcutt procedure can be employed to modify the model through a quasi-difference approach:

$$y_t - \rho y_{t-1} = \alpha(1 - \rho) + (X_t - \rho X_{t-1})\beta + e_t$$

So, an empirical model will be performed to identify the effect of capital structure, macroeconomic conditions, ownership structure and firm life cycle on dividend policy for Portuguese listed firms:

$$\begin{aligned} \text{DIV}_{i,t} = & \beta_0 + \beta_1 \text{Age}_{i,t} + \beta_2 \text{Board Size}_{i,t} + \beta_3 \text{Board Supervision}_{i,t} + \beta_4 \text{Man}_{i,t} \\ & + \beta_5 \text{Firm Size}_{i,t} + \beta_6 \text{Net Income}_{i,t} + \beta_7 \text{FCF}_{i,t} + \beta_8 \text{Net Debt} - \text{to} \\ & - \text{Equity} + \beta_9 \text{NWC}_{i,t} + \beta_{10} \text{ROA}_{i,t} + \beta_{11} \text{Tobin} - Q_{i,t} + \beta_{12} \text{GDP}_{i,t} + \mu_{i,t} \end{aligned}$$

Data analysis involves descriptive statistics, correlation analysis, and regression models to discern the relationships among variables and their impact on dividend policy in the context of Portuguese listed firms. The study aims to provide insights into how ownership structure, firm stage, and other determinants interact to shape dividend distribution decisions.

3.5. Variables

In this subsection, we will outline the variables under examination, categorizing them into dependent variables, variables of interest, and control variables.

Dependent Variable:

DIV: This variable measures annual dividend distributions in million euros by each firm. "DIV" serves as our dependent measure, encapsulating a critical aspect of corporate finance - the cumulative annual dividends disbursed by each firm. Dividends represent the allocation of profits or surplus funds to shareholders, compensating them for their investments and ownership. "DIV" aggregates dividends, providing insights into strategic decisions related to returning value to investors.

Companies often need to strike a balance between dividend distribution and debt servicing. Generous dividends may limit resources available for debt repayment, potentially affecting creditworthiness. However, dividends can also help mitigate agency costs by disbursing surplus cash and countering managerial opportunism. This interplay between dividends and debt sheds light on a firm's fiscal robustness and its ability to meet obligations and growth objectives.

Ownership structure plays a pivotal role in influencing dividend decisions. Concentrated ownership, whether by insiders or external parties, can significantly impact dividend policies. Family-owned firms, for instance, may prioritize dividends to facilitate wealth accumulation or promote growth. In contrast, firms with widely dispersed ownership might lean toward dividends as a means to mitigate conflicts between management and shareholders.

Variables of Interest:

Age: This variable is expected to exhibit specific trends concerning dividend distribution and measure a company's seniority. In the early and growth phases, young firms often prioritize reinvesting earnings to expand and capitalize on growth prospects, especially in dynamic markets requiring capital for research, development, marketing, and market entry. Such firms tend to reinvest profits into the business rather than distributing dividends.

Previous studies by Wang et al. (2011) and Stepanyan (2011) have explored the relationship between dividend policies and the age cycle hypothesis. They found that new high-growth, low-profitability firms tend to distribute more share dividends, while low-growth, high-profitability firms prefer cash dividends. These studies highlight the significance of considering growth potential, profitability, and the lifecycle stage when analyzing dividend distribution patterns. Young, high-growth firms may favor share dividends, whereas mature businesses tend to prefer cash dividends as a means of rewarding shareholders.

Board Size: The total number of directors on the management board is a significant factor that influences the quality of management control. Empirical evidence from studies such as Yermack (1996), Huther (1997), and Andres et al. (2005) has demonstrated a negative correlation between board size and effective managerial oversight. However, findings from Dalton et al. (2005) suggest that larger boards can foster diverse idea exchange, potentially curbing earnings manipulation and enhancing corporate governance practices. This dynamic could positively influence a company's governance landscape.

Board Supervision: The size of the management board, as reflected by the total number of directors, significantly impacts the quality of managerial control. Research by Yermack (1996), Huther (1997), and Andres et al. (2005) has shown a negative relationship between board size and the effectiveness of managerial oversight. Conversely, Dalton et al. (2005) propose that larger boards stimulate diverse idea exchange, potentially curbing earnings manipulation and bolstering governance. Board members offer independent oversight, strategic guidance, and constructive critique, acting as a check on managerial autonomy (Fama, 1980; Weisbach, 1988; Winter Jr, 1977). Their external expertise and impartiality may contribute to the negative correlation observed. Control variables in empirical models assess their impact on dividends, serving as alternative monitors amid agency challenges.

Managerial Ownership (Man): This variable indicates the percentage of shareholding by inside board members. Managerial ownership is significant as an incentive mechanism for

managers and its impact on corporate performance. It primarily addresses agency issues arising from the separation of ownership and control (Berle & Means, 1932) and misaligned incentives between managers and shareholders (Jensen & Meckling, 1976). These challenges can adversely affect a company's value, where managerial ownership serves as a potential solution to manager-shareholder conflicts. Jensen & Meckling (1976) proposed that higher managerial ownership improves corporate performance, but Morck et al. (1988) showed a likely nonlinear relationship.

Managerial ownership aligns managerial and shareholder interests, mitigating excessive perks and suboptimal investments (the incentive-alignment effect) while enhancing decision-making and performance. However, excessive ownership may lead to inadequate effort, prioritization of private benefits, and entrenchment (the entrenchment effect), which can hamper performance and decision-making. Higher financial leverage, up to an optimal point, can enhance firm value (Davies et al., 2005; Mak & Kusnadi, 2005), striking a balance between leverage's benefits and risks to maximize overall firm value. Given debt's substitution for dividends, leverage is expected to negatively impact dividend payments.

Firm Size: This variable represents market capitalization. While larger firms are typically expected to pay higher dividends, Josef R. Pattiruhu (2020) found no significant positive effect on dividend policy. In fact, some studies have indicated a negative relationship (Smith & Watts, 1992). Consequently, the anticipated impact direction of this variable remains uncertain.

Net Income: Net Income Margin reflects a company's efficiency in generating net profit from total sales after deducting expenses and taxes. It signifies how adeptly management controls costs, reflecting their competence. A rising Net Income Margin, indicating that net profit is increasing relative to sales, reflects improved profitability. Conversely, a declining margin indicates that net profit growth is lagging behind sales growth.

The interplay between net income and net sales showcases effective company management, yielding returns to shareholders. Net income significantly impacts profitability and dividends. Higher net income bolsters resources for dividend distribution, mirroring operational success and cash flows for dividends. Retained earnings and unallocated dividends influence future dividend capacity. Profitable firms with steady net income tend to sustain stable dividends. Additionally, net income influences dividend stability, as consistent net income fosters regular, dependable dividends.

Free Cash Flow (FCF): This variable measures the Free Cash Flow to Firm for each year and each company. Companies with positive free cash flow have surplus funds after covering operational and capital expenses. This surplus allows for dividend consideration. Positive free cash flow implies capacity for dividends without the need for borrowing or depleting cash reserves. However, dividend distribution depends on investment prospects. Firms with growth opportunities often reinvest free cash flow to enhance shareholder value, while those with limited prospects may allocate more free cash flow as dividends to reward investors.

The free cash flow hypothesis posits that companies have choices for utilizing excess cash: investing in positive NPV projects for value growth or distributing dividends for shareholder wealth (Yusof & Ismail, 2016; Zhang et al., 2016). Dividends help curb wasteful spending, as proposed by Baker & Wurgler (2004a) in their catering theory, which suggests that managers adapt dividend policies based on market sentiment.

Net Debt-to-Equity: This ratio represents Net Debt divided by total equity. Debt can amplify a company's profitability and benefit shareholders in specific scenarios. Leveraging debt can magnify returns and capitalize on growth opportunities. However, a company's financial health must be carefully assessed. Excessive debt amid financial challenges can risk bankruptcy. Thus, prudent debt management and sustainable debt levels are vital to protect shareholder interests.

Research by Affandi et al. (2019) found that the debt-to-equity ratio has a positive but statistically insignificant impact on dividend payout. Companies with a higher proportion of long-term debt tend to pay cash dividends. High-debt firms can manage interest obligations while paying dividends, aligning with signaling theory. This signals effective financial management to meet obligations. Dividend-paying firms often maintain conservative capital structures, relying less on debt financing than their peers in similar industries.

Net Working Capital (NWC): This variable represents short-term liquidity and is calculated as the difference between current assets and current liabilities. Companies with positive Net Working Capital (NWC) have favorable financial standing, with sufficient short-term liquidity to meet obligations. They are well-positioned to distribute dividends to shareholders, supported by ample current assets to cover liabilities and sustain operations. This robust financial footing empowers them to reward shareholders through dividends.

Conversely, firms with negative NWC may face challenges in distributing dividends. Negative NWC indicates that short-term liabilities exceed assets, suggesting liquidity concerns. In such instances, improving working capital and managing short-term obligations are crucial prerequisites for considering dividend distributions. Prioritizing the stability of working capital is essential to ensure financial health before committing to dividends.

Return on Assets (ROA): Return on Assets (ROA) represents the ratio of EBIT (Earnings Before Interest and Taxes) to total assets, showcasing how effectively a company's assets yield profits. Dividend policy encompasses managerial decisions that allocate net profits to shareholders as Total Asset Net Profit and Return on Assets, while retaining income for future investments. This policy is manifested in the dividend payout ratio, indicating the proportion of profits paid as dividends relative to net income.

Winarko (2017) conducted a study highlighting ROA's significant impact on the Dividend Payout Ratio (DPR). Miller & Rock's (1985) research suggests dividends positively correlate with profitability metrics. Therefore, we anticipate that ROA will positively affect dividend payments among Portuguese listed firms.

Tobin-Q: Tobin's Q is a financial metric that compares a company's asset market value to its replacement cost. This ratio, derived from the market value of equity and asset replacement cost, gauges whether assets are valued above ($Q > 1$) or below ($Q < 1$) their replacement cost.

A high Tobin's Q ($Q > 1$) reflects an optimistic outlook for assets, signaling growth and profitability prospects. Companies with this outlook often reinvest earnings to enhance long-term shareholder value, leading to lower dividend distributions. Conversely, a low Tobin's Q ($Q < 1$) suggests that assets are undervalued, limiting reinvestment prospects. Such companies may opt for higher dividend payouts to compensate for limited growth opportunities. Tobin Q guides dividend distribution by indicating growth potential and investment prospects. High Tobin's Q firms prioritize reinvestment, while low Tobin's Q firms prioritize dividends due to fewer reinvestment chances.

Control Variables:

GDP (Gross Domestic Product): GDP represents the aggregated monetary value of all goods and services produced within a nation's boundaries during a specific timeframe, measured in million euros. A higher GDP, indicative of a thriving economy, can act as a conduit for companies to transmit affirmative signals to investors through cash dividend distributions. Research by Ariwinata & Badjra (2021), Ong et al. (2018), and Romus et al.

(2020) underscores a constructive linkage between GDP and corporate dividend practices. Moreover, the surplus cash influx can be channeled into novel investments.

COVID-19: The COVID-19 variable represents the pandemic's impact on firms' dividend policies. The pandemic had a profound and varied impact on dividend distribution, affecting industries and companies diversely. It significantly influenced the global economy, causing widespread disruptions and uncertainty, compelling businesses to reassess financial strategies, including dividend distribution.

The pandemic's adverse effect on corporate profitability and capital ratios triggered fluctuations in daily stock prices and market indices, responding negatively to both short-term and long-term information. The persisting uncertainty arising from the pandemic resulted in instability, impacting stock market returns and heightening volatility (Krieger et al., 2021; Zainuri et al., 2021).

Regarding dividend policies, macroeconomic factors influence companies' external attributes. Among them, Gross Domestic Product (GDP) plays a pivotal role as an economic growth indicator. In times of crises, reduced economic activity leads to declining cash flows for firms. Consequently, in the face of economic uncertainty, there's a tendency to curb dividend rates, ensuring corporate continuity during the pandemic.

4. Empirical results

In this section, we provide an overview of regression analysis outcomes. Initially, we present descriptive statistics and empirical model results for the 2017-2021 sample.

The dataset highlights a significant range in annual dividend distributions, spanning from €0.00 million to €2019.50 million. The average dividend payout amounts to €57.50 million, emphasizing the diversity of dividend strategies adopted by companies. Furthermore, the median dividend value of €1.27 million underscores the central tendency in dividend allocation.

We then explore conclusions about the governance-dividend relationship, as well analyzing the correlation between all variables in this study. Lastly, we analyze two subsamples, comparing dividend relationships in high-leverage and low-leverage firms, as well as dividend-ownership results.

4.1. Descriptive Statistics

Descriptive statistics, presented in the Table 1, shows some significant values to each variable in study. Mean, standard deviation, median, 1st quantile and 3rd quantile, minimum and maximum values are presented in the table. The data set combine a total of 170 observations of 34 Portuguese listed companies over a period between 2017 to 2021. The explanatory variables will be divided into three groups: dependent variable, variables of interest and categorical variables to measure the real impact on dividend policy.

Table 1: Descriptive statistics for all firms

This table provides descriptive statistics of all variables used in the analysis. The sample contains 34 Portuguese listed firms over 2017-2021 period. Definitions of all variables are reported in table 6 (appendix).

Variables	Mean	Min	50%	Max
Dividends (€ Million)	57.50	0.00	1.27	2019.50
Age (Years)	70.88	3.00	44.50	501.00
Board Size (#people)	8.65	3.00	8.00	20.00
Board Supervision (#people)	4.24	0.00	3.00	20.00
Man (%)	40.00	0.00	0.00	100.00
FCF (€ Million)	120.56	-69.00	16.67	918.88
Firm Size (€ Million)	1845.93	0.00	171.23	21036.00
Stage (Categorical)	0.18	0.00	0.00	1.00
Net Income (€ Million)	107.97	-125.00	10.08	878.00
EBIT (€ Million)	84.39	-219.19	12.01	817.00
Assets (€ Million)	2048.96	1.59	316.95	29752.00
Equity (€ Million)	947.18	-53.38	175.93	9213.00
Liabilities (€ Million)	1116.50	1.00	118.73	20539.00
Cash (€ Million)	124.88	0.00	8.55	2490.00
Net Debt-to-Equity (€ Million)	1.04	-3.78	0.72	20.16
NWC (€ Million)	-6.25	-1158.00	0.00	591.18
ROA (%)	4.00	-48.00	2.00	55.00
TOBIN-Q (%)	88.00	0.00	57.00	669.00
GDP (€ Million)	206.15	195.95	205.18	214.74
COVID (Categorical)	0.40	0.00	0.00	1.00

The dependent variable, DIV, demonstrates a mean value of 57.5 million euros, indicating the average dividends distributed by each firm from 2017 to 2021. The median reveals a value of 1.27 million euros, suggesting that half of the firms distributed dividends below this amount, with dividends ranging from 0 to 2019.5 million euros. This underlines

the influence of diverse factors on dividend distribution, which we will explore further in this chapter.

The average age variable stands at 70.88 years, reflecting the average market tenure of analyzed companies of 70 years and 321 days. The youngest firm in the dataset is three years old, while the oldest is 501 years old. Median age is 44.50 years, suggesting that half of the firms are younger than this age. Consequently, these results suggest that, on average, the listed Portuguese firms are mature entities rather than startups. Such established and mature companies, having achieved stability, consistent profits, and prominent market presence, tend to adopt a more predictable dividend policy by regularly distributing dividends to shareholders.

In addition, the board size, measuring the number of board members, averages 8.65 people. Delving deeper, it's apparent that 50% of the analyzed firms have 8 or fewer board members.

Regarding members with board supervision roles, analyzed firms generally have around four members with such responsibilities. Managerial ownership pertains to the percentage of shares held by inside board members and is categorized as 1 if management owns shares, and 0 otherwise.

Free Cash Flow, a vital measure in estimating dividend distribution, shows an average of 120.56 million euros, suggesting that, on average, the analyzed companies generated positive cash flow from 2017 to 2021. In terms of Firm Size, estimated through market value, the average market value in Portugal is 1845.93 million euros, ranging from 0 to 21036 million.

Stage refers to the life stage of a firm and is categorized as before and after 2001. This year was chosen due to macroeconomic significance, marking Portugal's entry into the Eurozone. Net Income, a key determinant, averages 107.97 million euros annually, with a range of -125 million euros to 878 million euros.

EBIT (earnings before taxes) has a mean of 84.39 million euros. Assets, evaluated in absolute terms, significantly impact dividend decisions, with a mean of 2048.96 million euros. Equity, representing shareholder equity, averages 947.18 million euros.

Liabilities, including financial obligations, exhibit an average value of 116.5 million euros, impacting dividend consistency. Cash holding, on average, is 124.88 million euros, meaning that, on average, Portuguese firms have this value in cash reserves.

The Debt-to-Equity ratio, using net debt, averages 1.04, indicating an average debt value 4% greater than equity for the analyzed firms. Of note, 50% of the firms have a median of 0.72, what shows that, for these firms, equity value is greater than debt value.

Net working capital, measured by the difference between current assets and liabilities, averages -6.25 million euros, reflecting liquidity constraints. The average return on assets (ROA) is 4%, relatively low compared to a maximum of 55%.

Analyzing Tobin's Q, the average value is 0.88, indicating that companies are fairly valued. The Gross Domestic Product (GDP) was analyzed between 2017 to 2021, and the Covid variable differentiates pandemic-related years (2020 and 2021) from others (2017, 2018, 2019). This analysis aims to ascertain if dividends distribution was impacted by pandemic-induced economic shifts.

4.2. Correlation analysis

To gain deeper insights into potential correlations among variables, a comprehensive correlation analysis was conducted. It's essential to highlight that in correlation analysis, maintaining correlation coefficients among independent variables below 0.8 is ideal to avoid multicollinearity issues. Our assessment of the table confirms that concerns related to collinearity within the regression model seem insignificant.

The revealed outcomes offer compelling perspectives. Notably strong positive correlations emerge between Dividends, Net Income, Cash Flow, Tobin's Q, Firm Size, ROA, Age, GDP, Board Size, and Board Supervision. Conversely, Dividends display a negative correlation with Net Debt-to-Equity, Man and Net Working Capital (NWC). These observed correlations align with initial expectations outlined in this study. Particularly noteworthy is the robust positive correlation with Net Income, underlining its pivotal role. Conversely, the negative correlation of the net debt-to-equity ratio signifies that companies with higher leverage tend to distribute fewer dividends, validating an important aspect of this research.

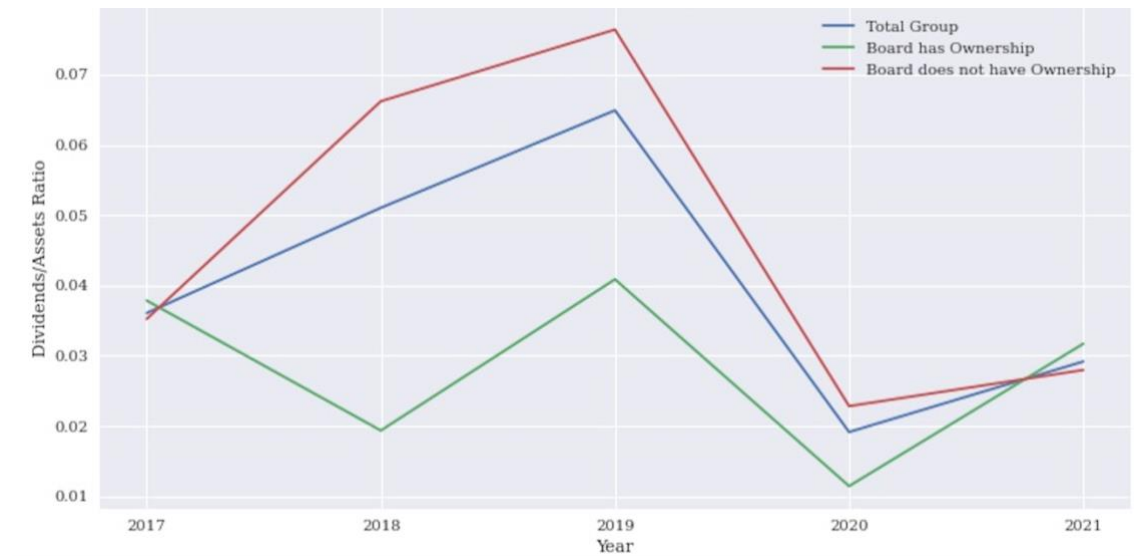
Table 2: Correlation between all variables

This graphic reports the correlation between variables used in this analysis. The sample contains 34 firms over 2017-2021 period. Definitions of all variables are in Table 1. Dividends (1) measuring the annual dividend distributions, in million euros, by each firm; Age (2) is the seniority of the company, in years; Board Size (3) is the total number of board members; Board Supervision (4) is the total number of members responsible for control board member's decisions; Man (5) is the percentage of firm's shares held by inside members in functions; Firm Size (6) is the market value of a company, in million euros; Net Income (7) is a financial metric to measure the profitability of a company, in million euros, in a specific period; FCF (8) is the Free-Cash-Flow to firm, in million euros; Net Debt-to-Equity (9) is the ratio of net debt level to total equity; NWC (10) is the Net Working Capital and represents the difference between company's current assets and current liabilities; ROA (11) is the Return on Assets, in %, measured through the ratio of EBIT to total assets; Tobin-q (12), in %, is the ratio of the company market value divided by total assets replacement value; GDP (13) is the Gross Domestic Product, measured in million euros.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	1.00												
(2)	0.10	1.00											
(3)	0.09	0.26	1.00										
(4)	0.04	-0.12	0.00	1.00									
(5)	-0.11	-0.08	-0.08	-0.09	1.00								
(6)	0.41	-0.03	0.05	0.70	-0.16	1.00							
(7)	0.50	-0.05	0.10	0.74	-0.18	0.92	1.00						
(8)	0.48	-0.03	0.14	0.73	-0.19	0.91	0.98	1.00					
(9)	-0.03	0.19	0.06	0.05	0.11	0.02	0.00	0.04	1.00				
(10)	-0.05	0.06	0.06	-0.62	0.06	-0.64	-0.53	-0.53	0.08	1.00			
(11)	0.32	0.04	0.11	0.01	-0.17	0.20	0.29	0.25	-0.10	-0.02	1.00		
(12)	0.42	0.16	0.06	0.02	-0.22	0.36	0.32	0.30	-0.15	-0.07	0.51	1.00	
(13)	0.09	0.01	0.00	0.00	0.00	0.03	0.02	0.03	-0.06	-0.08	-0.09	-0.01	1.00

4.3. Dividend-Ownership results

Figure 1- Dividends/Assets ratio per year to ownership



Note: The figure shows the average of the ratio of dividends to total assets for the sample of 34 Portuguese firms, for the group of “Board as ownership” and “Board does not have ownership” between 2017 to 2021

To comprehensively assess the influence of ownership structure on dividend distribution, this study presents descriptive statistics for two distinct subsamples: firms with board ownership and those without. A binary dummy variable was introduced, assuming the value 1 for ownership-present instances and 0 otherwise.

Examining the dependent variable DIV, among the 55 observations representing firms with board ownership, the average annual dividend distributions are approximately 30.06 million euros, with a median value of 0.12 million euros. This indicates significant variability in dividend payments among these firms, with some firms distributing very low dividends (as indicated by the low median) and others distributing higher amounts. This extensive range underscores the heterogeneous nature of dividend allocation strategies adopted by these companies.

Conversely, within the 115 observations for firms lacking board ownership control, the average annual dividend distributions are approximately 70.62 million euros, with a median value of 4.87 million euros. Unlike firms with board has ownership, companies where board does not have ownership firms tend to have higher average dividend payments, and even the median value is considerably higher, indicating more consistent dividend distributions among these firms. Firms with Board has Ownership distribute, on average,

approximately 40.6 million euros less in dividends compared to firms with Board does not have Ownership. This difference suggests that, on average, companies with ownership on the board tend to distribute significantly lower dividends than companies without ownership on the board.

Conclusions can be drawn to address hypotheses H1 and H2. For firms with weak ownership concentration and no board ownership, the average dividend allocation is around 70.62. This suggests that these firms tend to allocate higher dividends on average compared to those with strong ownership concentration. The notable standard deviation of 210.95 highlights diverse dividend practices within this subset, indicating that certain entities may significantly deviate from the average in their dividend policies. In contrast, for firms with strong ownership concentration and board ownership, the mean dividend payment is approximately 30.06. This trend indicates ownership structure's potential influence on dividend distribution strategies. Despite a narrower range than weak ownership concentration firms, the standard deviation of 64.24 suggests significant variability in dividend disbursements within the strong ownership concentration group.

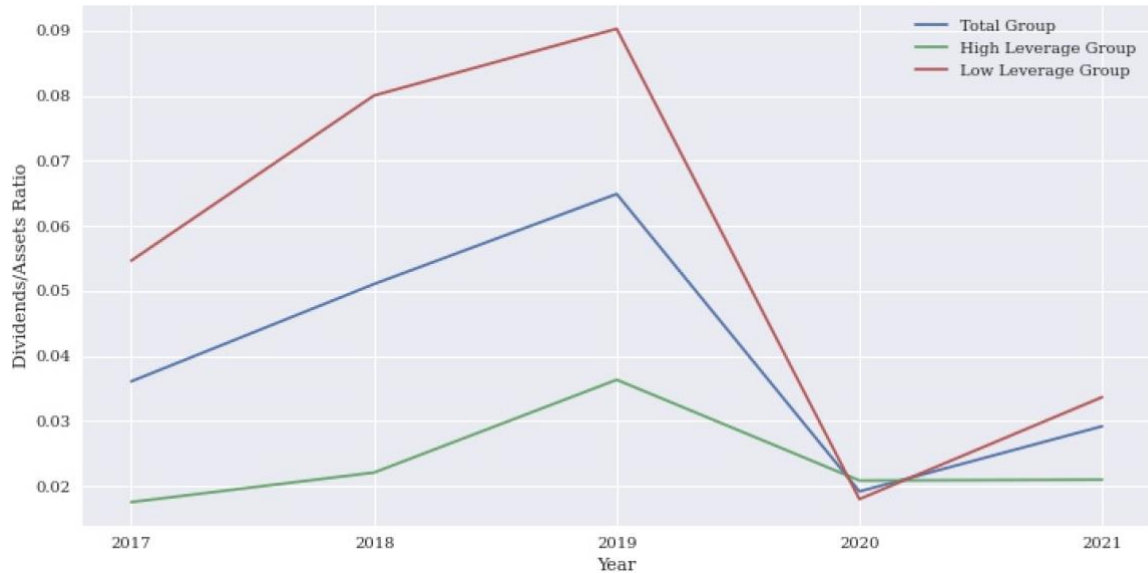
Table 3: Descriptive Statistics for firms according to ownership structure

This table provides descriptive statistics of all variables used, dividing firms into two groups: (1) Board has Ownership and (2) board does not have Ownership. Dividends measures the annual dividend distributions, in million euros, by each firm; Board Size is the total number of board members; FCF is the Free-Cash-Flow to firm, in million euros; Firm Size is the market value of a company, in million euros; Net Income is a financial metric to measure the profitability of a company, in million euros, in a specific period; EBIT are the earnings before income and tax, in million euros; Assets are the total assets, in million euros; Equity is the total equity in million euros; Liabilities are the total liabilities in million euros; Cash is the total cash held by each company, in million euros; Board Supervision is the total number of members responsible for control board member's decisions; NWC is the Net Working Capital and represents the difference between company's current assets and current liabilities; GDP is the Gross Domestic Product, measured in million euros. Covid is a categorical variable that measures the pandemic impact; Man is the percentage of firm's shares held by inside members in functions; Stage is a categorical variable, categorizing firms into two different groups, based on founding years – companies formed before or after year 2001; ROA is the Return on Assets, in %, measured through the ratio of EBIT to total assets; Net Debt-to-Equity is the ratio of net debt level to total equity; Tobin-q, in %, is the ratio of the company market value divided by total assets replacement value.

	Board has Ownership (1)		Board does not have Ownership (2)		Diff (1 – 2)	
Variables	Mean	50%	Mean	50%	Mean	50%
Dividends (€ Million)	30.06	0.12	70.62	4.87	-40.60	-4.80
Board Size (#people)	8.73	8.00	8.61	7.00	0.10	1.0
FCF (€ Million)	43.18	6.40	157.56	27.26	-114.40	-20.90
Firm Size (€ Million)	461.41	74.00	2,508.10	382.00	-2,046.7	-308.0
Net Income (€ Million)	38.11	2.46	141.39	14.80	-103.30	-12.30
EBIT (€ Million)	38.85	5.47	106.18	17.64	-67.30	-12.20
Assets (€ Million)	805.44	183.53	2,643.68	429.00	-1,838.2	-245.5
Equity (€ Million)	549.93	128.83	1,137.16	183.99	-587.20	-55.20
Liabilities (€ Million)	255.51	68.20	1,528.28	148.47	-1,272.8	-80.30
Cash (€ Million)	7.64	0.23	180.96	23.00	-173.30	-22.80
Board Supervision(#people)	3.73	3.00	4.48	3.00	-0.80	0.0
NWC (€ Million)	6.49	0.01	-12.35	0.00	18.80	0.0
GDP (€ Million)	206.15	205.18	206.15	205.18	0.0	0.0
COVID (Categorical)	0.40	0.00	0.40	0.00	0.0	0.0
Man (%)	4.32	1.50	0.00	0.00	4.30	1.5
Stage (Categorical)	0.09	0.00	0.22	0.00	-0.1	0.0
ROA (%)	0.00	1.00	6.00	3.00	-1.00	0.0
Net Debt-to-Equity (%)	97.00	44.00	108.00	80.00	-1.00	-4.00
Tobin-Q (%)	59.00	40.00	103.00	57.00	-4.00	-2.00

4.4. Dividend-Leverage results

Figure 2 – Dividends/Assets per year to leverage level



Note: The figure shows the average of the ratio of dividends to total assets for both High leverage and Low leverage firms, based on the studied sample of 34 Portuguese firms from the period of 2017 to 2021

To gain deeper insights into the impact of leverage on dividend distribution, this study provides descriptive statistics for two distinct subsamples: high-leverage and low-leverage firms in our dataset. The debt-to-equity ratio was used to categorize firms, with those having a ratio > 1 classified as high-leverage and those with a ratio < 1 as low-leverage.

Considering the dependent variable DIV, among the 76 observations representing high-leverage firms, the mean dividend amount stands at 47.40, with a median of 0.00 million euros. Contrastingly, for the 94 low-leverage firms, the dataset reveals an average dividend of 65.66, along with a median of 4.49 million euros. These findings underline the diversity in dividend disbursement among companies, with some refraining from dividends while others allocate substantial sums. The difference between the two groups (Diff 1 - 2) is -18.25 million euros in terms of the average dividend distribution. From these results, it's evident that Portuguese listed firms with low leverage allocate higher dividends to shareholders compared to high-leverage counterparts.

Dividends/Assets ratio shows that high-leverage firms have an average annual dividend distribution ratio of 2%, while low-leverage firms have a ratio of 5%. The difference between the two groups (Diff 1 - 2) is -3% in terms of the average ratio of dividends to

assets. This suggests that low-leverage firms tend to have a higher ratio of dividends to total assets compared to high-leverage firms, indicating a more aggressive dividend policy.

Regarding the Managerial Ownership categorical variable, among high-leverage firms, the average percentage of shares held by management is 24%. In contrast, for low-leverage firms, the mean managerial ownership is 39%, indicating significantly higher managerial ownership concentration among low-leverage firms in the Portuguese listed companies.

Conclusions can be drawn to address hypotheses H3 and H4: high-leverage firms exhibit weaker managerial ownership and distribute fewer dividends. Conversely, low-leverage firms demonstrate higher managerial ownership, leading to more substantial dividend policies. Additionally, hypothesis H5 is supported. The data highlights dividends as a strategy akin to leverage in mitigating agency costs among Portuguese listed firms. Companies with lower leverage levels prioritize dividend distribution compared to high-leverage counterparts. This indicates that dividends serve as an alternative to alleviate agency costs, as firms with lower leverage ratios allocate more earnings to shareholders rather than relying extensively on debt financing.

Table 4: Descriptive statistics for all firms according to different debt levels

This table provides descriptive statistics of all variables used, dividing firms into two groups: (1) High-leverage firms and (2) Low-leverage firms.

Dividends measures the annual dividend distributions, in million euros, by each firm; Board Size is the total number of board members; FCF is the Free-Cash-Flow to firm, in million euros; Firm Size is the market value of a company, in million euros; Net Income is a financial metric to measure the profitability of a company, in million euros, in a specific period; EBIT are the earnings before income and tax, in million euros; Assets are the total assets, in million euros; Equity is the total equity in million euros; Liabilities are the total liabilities in million euros; Cash is the total cash held by each company, in million euros; Board Supervision is the total number of members responsible for control board member's decisions; NWC is the Net Working Capital and represents the difference between company's current assets and current liabilities; Stage is a categorical variable, categorizing firms into two different groups, based on founding years – companies formed before or after year 2001; Man is the percentage of firm's shares held by inside members in functions; ROA is the Return on Assets, in %, measured through the ratio of EBIT to total assets; Net Debt-to-Equity is the ratio of net debt level to total equity; Tobin-q, in %, is the ratio of the company market value divided by total assets replacement value.

Variables	High-Leverage firms (1)		Low-Leverage firms (2)		Diff (1 – 2)	
	Mean	50%	Mean	50%	Mean	50%
Dividends (€ Million)	47.40	0.00	65.66	4.49	-18.25	-4.49
Board Size (# people)	8.32	7.00	8.91	8.50	-0.60	-1.50
FCF (€ Million)	147.68	19.57	98.63	15.00	49.05	4.57
Firm Size (€ Million)	2,285.24	95.13	1490.75	177.73	794.49	-82.60
Net Income (€ Million)	125.57	9.21	93.75	10.84	31.83	-1.64
EBIT (€ Million)	107.88	13.33	65.41	10.96	42.47	2.37
Assets (€ Million)	3,057.48	436.14	1233.55	250.39	1823.93	185.75
Equity (€ Million)	1,052.45	174.01	862.06	177.62	190.39	-3.60
Liabilities (€ Million)	2,037.95	349.64	371.49	58.00	1666.46	291.64
Cash (€ Million)	142.69	2.62	110.49	11.30	32.20	-8.68
Board Supervision (#People)	4.59	3.00	3.95	3.00	0.65	0.00
NWC (€ Million)	4.17	0.64	-14.68	0.00	18.85	0.64
Stage (Categorical)	0.22	0.00	0.14	0.00	0.09	0.00
Man (%)	24.00	0.00	39.00	0.00	-16.00	0.00
ROA (%)	2.00	2.00	5.00	4.00	-3.00	-3.00
Net Debt-to-Equity (%)	230.00	180.00	2.00	19.00	228.00	162.00
Tobin-Q (%)	66.00	44.00	106.00	73.00	-40.00	-29.00
Dividends/Assets (%)	2.00	0.00	5.00	1.00	-3.00	-1.00

4.5. Categorical variables

Within this subsection, we will explore categorical variables across four distinct models. Categorical variables offer insights into emergent patterns, facilitating valuable interpretations and conclusions. For this reason, we will use categorical variables to test the significance level of the following variables, on the dividend policy: Covid, Man and Stage. To establish the statistical significance of a variable, hypothesis testing is commonly employed. This involves computing a p-value, compared against a predetermined significance level, set at 5% (0.05). If the computed p-value is equal to or less than this level, the null hypothesis can be rejected. Conversely, if the p-value exceeds the significance level, there is insufficient evidence to reject the null hypothesis.

In Model 1 we include all variables without introduce any categorical variable, to test the significance level of each variable, without any influence of others categorical variables. Model 2 includes COVID categorical variable, to test the significance of pandemic situation on the analyzed regression, in the years 2020 and 2021. Model 3 introduced Managerial Ownership Categorical (Man). As mentioned in the sub-section number 4.3, firms were divided into two groups: Board has ownership and Board does not have ownership. Managerial ownership was introduced as a categorical variable to examine whether active managers holding company stocks tend to influence dividend distribution. So, the significance level of this variable will be tested, to understand if could or not reject the null hypothesis. Model 4 adds Stage categorical variable. The "Stage" variable was introduced to test whether there is a significant difference in dividend payments before and after the year 2001.

Table 5: OLS Regression Analysis: The effect of categorical variables

This table provides the OLS regression model. In all regressions the dependent variable is DIV (Dividends) with 95% of confidential interval, for event window [0.025; 0.975]. In Model 1 any categorical variable was added. In the others models we include dummy variables. Model 2 considers COVID variable, while Model 3 and Model 4 introduced Managerial ownership and Stage, respectively. For each variable, we list the P-value and in parenthesis the standard errors. ***, **, and * stand for statistically significant at 1%, 5% and 10%, respectively. The statistically significant coefficients are denotated in bold. All variables are defined in annex 1.

	Model 1	Model 2	Model 3	Model 4
Variables	P-value	P-value	P-value	P-value
Board Size	0.47 (2.90)	0.50 (2.90)	0.32 (2.94)	0.75 (2.90)
Board Supervision	0.00*** (4.08)	0.00*** (4.09)	0.00*** (4.07)	0.00*** (4.04)
Man	0.55 (2.74)	0.56 (2.74)	0.81 (3.18)	0.77 (2.72)
Firm Size	0.10* (0.01)	0.13 (0.01)	0.16 (0.01)	0.06* (0.01)
Net Income	0.00*** (0.25)	0.00*** (0.25)	0.00*** (0.25)	0.00*** (0.24)
FCF	0.55 (0.22)	0.62 (0.22)	0.44 (0.22)	0.64 (0.22)
Net Debt-to-Equity	0.88 (5.09)	0.90 (5.09)	0.85 (5.07)	0.79 (5.02)
NWC	0.60 (0.09)	0.64 (0.09)	0.50 (0.09)	0.63 (0.09)
ROA	0.74 (104.62)	0.73 (104.76)	0.95 (105.94)	0.91 (105.15)
TOBIN-Q	0.02** (12.88)	0.02** (12.91)	0.03** (12.89)	0.01** (12.79)
GDP	0.16 (1.33)	0.13 (1.35)	0.15 (1.33)	0.13 (1.32)
COVID		0.42 (20.76)		
Man (Categorical)			0.14 (26.87)	
Stage (Categorical)				0.02** (29.64)
Adjusted R-squared	0.49	0.48	0.49	0.50
F-statistic	14.32	13.24	13.48	13.98
N	170	170	170	170

In this dissertation, we conducted a regression analysis to examine the factors influencing dividend distributions among a sample of 170 firms. Four models were employed to investigate the impact of various independent variables, including financial metrics, corporate governance measures and categorical variables. On one hand, if the p-value is less than the significance level ($p < 0.05$), we can conclude that the variable is statistically significant. On the other hand, if the p-value is greater than your chosen significance level ($p > 0.05$), you fail to reject the null hypothesis, indicating that the variable is not statistically significant.

Model 1, with no categorical variables, three significant variables, with a p-value < 0.05 . Net income, board supervision and Tobin's Q exhibit notably low p-values of 0.001788133, 8.44275E-08 and 0.019596912, respectively, significantly below the 0.05 significance level. This unequivocally indicates the statistical significance of these variables, highlighting their substantial impact on the dependent variable.

Model 2 introduced Covid as a categorical variable, reflecting the influence of Covid-19 pandemic situation during 2020 and 2021. The results reveal statistical significance for key variables. Notably, 'Board Supervision,' 'Net Income' and 'TOBIN-Q,' variable all demonstrated statistically significant coefficients with p-values less than the 0.05 significance level. Interestingly, contrary to initial expectations, the findings suggest that the inclusion of the "COVID" variable for the years 2020 and 2021 does not exert a substantial impact on the dividend distribution practices of the analyzed Portuguese listed firms, as indicated by the available data and statistical analysis.

In Model 3, which introduced 'Managerial Ownership' as a categorical variable to examine the impact of insider ownership on dividend distributions, several variables were assessed for their significance. The analysis revealed that 'Board Supervision,' 'Net Income' and 'TOBIN-Q,' were statistically significant, with p-values less than the 0.05 significance level. Moreover, the Man variable doesn't achieve statistical significance at the 0.05 level. This suggests that the presence of management ownership doesn't seem to exert a substantial impact on dividend distribution strategies among the Portuguese listed firms examined.

Model 4, which introduced the 'Stage' variable as a categorical variable to differentiate firms based on their founding years (pre or post-2001), we observed significant results for certain variables. Notably, 'Board Supervision,' 'Net Income,' 'TOBIN-Q,' and the 'Stage' variable all exhibited statistical significance, with p-values below the 0.05 significance level. These findings emphasize the importance of the "stage" variable, revealing its significant role

in shaping dividend distribution practices among analyzed Portuguese listed firms. Particularly, companies established before 2000 appear to significantly influence dividend distribution compared to more recently established counterparts.

4.6. Stage and macroeconomic conditions results

Based on the preceding data concerning the macroeconomic variable COVID-19, as presented in Table 5, there is no statistically significant evidence suggesting a substantial impact of the COVID variable on dividend distribution. Although the coefficient of -16.88 implies a potential negative relationship, the lack of statistical significance ($p\text{-value} = 0.42$) and the wide confidence interval (-57.89 to 24.12) indicate significant uncertainty in this association. Consequently, a definitive conclusion cannot be drawn regarding COVID's significant influence on dividend distribution among the observed companies.

However, the Stage variable, as depicted in Model 4 and Table 5, representing a company's establishment before or after 2001, does exhibit a significant impact on dividend distribution. The coefficient of -67.19, coupled with a statistically significant $p\text{-value}$ of 0.02, implies a meaningful negative correlation between this variable and dividends. This suggests that companies founded prior to 2001 are more prone to allocate lower dividends in comparison to their more recently established counterparts. This analysis underscores the importance of the Stage variable, emphasizing that the historical timing of a company's inception substantially shapes its approach to dividend distribution. Companies established earlier, particularly before 2001, tend to opt for reduced dividend payouts as opposed to those established later.

4.7. Structure test:

We will now proceed to analyze whether significant differences exist in the coefficients of our regression model when segmenting the data into high leverage and low leverage categories, as shown in the tables in the appendix. To accomplish this, we employed the Chow test, a widely recognized method for identifying structural breaks in regression models. Our analysis encompasses a range of independent variables, including 'Age,' 'Board Size,' 'Board Supervision,' 'Man,' 'Firm Size,' 'Net Income,' 'FCF,' 'Net Debt-to-Equity,' 'NWC,' 'ROA,' 'Tobin-Q,' 'GDP,' and 'Stage,' with 'Dividends' serving as the dependent variable.

The outcomes of the Chow test produced a statistic of 0.3551, notably lower than the critical value of 1.7620 at a significance level of $\alpha=0.05$. This indicates insufficient statistical evidence to reject the null hypothesis. In simpler terms, this implies that the regression coefficients pertaining to high leverage and low leverage subsets are not significantly distinct. This suggests that the impact of ownership structure and debt financing on dividend policy remains consistent, regardless of differing levels of leverage at various stages of a company's lifecycle.

From a broader perspective, this result illuminates the consistent nature of factors influencing dividend policies, even as companies traverse diverse growth stages and leverage levels. It indicates that the drivers of dividend policies concerning ownership structure and debt financing exhibit stability and avoid significant alterations based on a company's leverage situation.

5. Conclusion

The primary objective of this study was to investigate the intricate connections between dividend policy, ownership structure, and debt financing within a sample of 34 firms listed on Euronext Lisbon spanning from 2017 to 2021. This exploration aimed to uncover the tangible implications for dividend distribution and understand how this mechanism operates in mitigating agency costs.

Various variables were scrutinized, including Leverage, ROA, Tobin-Q, and Cash holding, to assess their influence on dividend distribution. Additionally, corporate governance factors like board size, board supervision members, and managerial ownership were studied to discern their impact on dividend allocation. Categorical variables, such as Covid, leverage levels, stage, and managerial ownership, were also examined to shed light on their effects, primarily on dividend distribution.

According to Jensen (1986) theory of free cash flow, managers prefer retaining resources rather than distributing dividends. The data supports this notion, as dividend payouts decrease as owner-managers' voting power increases and approach near-zero levels when they have complete control. Conversely, dividends remain consistently positive when a company is owned by institutional shareholders (Eckbo & Verma, 1994). Short et al. (2002) found a negative correlation between managerial ownership and dividend distribution. Similarly, Chen et al. (2005) identified an adverse link between managerial ownership and dividend policies in Hong Kong. Jensen et al. (1992) demonstrated a significant reduction in dividend distribution associated with managerial ownership among US corporations. Farinha (2003) reported a similar unfavorable relationship in the UK. The study unveiled intriguing insights concerning ownership structure and dividend distribution across different leverage levels. Firms with weak ownership concentration exhibited a tendency to allocate higher dividends, reflecting the influence of ownership on distribution decisions. Conversely, companies with strong ownership concentration favored lower dividends, indicating ownership's role in shaping dividend policies. The findings align with previous research, confirming the inverse relationship between ownership concentration and dividend allocation.

Almazan et al. (2010) examined the impact of financial leverage on the dividend policies of Karachi-based enterprises. Their research revealed a notable negative correlation between financial leverage and the amount of distributable profits. In line with this previous

study, the analysis revealed that low-leverage firms allocated higher dividends compared to their high-leverage counterparts. Florackis et al. (2015) uncovered evidence suggesting that the connection between managerial ownership and dividends varies significantly among firms with varying levels of debt. Specifically, they observed that in high-leverage firms subject to oversight by debtholders, dividends, and ownership act as alternative methods to mitigate agency costs. Conversely, in low-leverage firms without this monitoring mechanism for controlling agency costs, higher levels of managerial ownership may expose the firms to entrenchment issues. The study highlighted the significant impact of managerial ownership, where firms with lower leverage displayed greater managerial ownership concentration, contributing to more substantial dividend policies. This underscores dividends as an alternative approach to mitigate agency costs, especially for companies with lower leverage ratios.

In conclusion, this research enriches our understanding of the intricate interplay between ownership structure, leverage, and dividend distribution. The consistent impact of specific variables across diverse models underscores the stability of drivers shaping dividend policies. These insights offer valuable guidance for practitioners and policymakers navigating the complex terrain of corporate finance and governance, emphasizing the critical role of dividend policy in managing agency costs.

5.1. Limitations:

This study presents certain limitations, with the main one being the sample size. The Portuguese stock market has a relatively small number of listed companies, which means that the findings may primarily reflect the characteristics and behaviors of the entities or cases within the sample. Therefore, it may not be feasible to confidently generalize these results to a broader context. The limited availability of Portuguese companies that consistently offer dividends poses a constraint, potentially affecting the statistical inference and consequently influencing the study's outcomes. Furthermore, obtaining information related to corporate governance structures, particularly in understanding the stage factor and studying the policies adopted by each company, proved challenging for all firms during the period from 2017 to 2021.

5.2. Further Research

While the current dissertation sheds light on the influence of debt levels and ownership structure on dividend payouts, it paves the way for further investigation into the dynamic interplay of these factors and their potential mediation through financial performance. The envisioned study aims to delve into the mutual interactions between varying debt levels and ownership structures across different time frames, which can have consequences for a company's financial performance. Subsequently, this performance can impact the firm's dividend policy. By exploring the intermediary role of financial performance, this research aims to provide a more comprehensive understanding of the underlying mechanisms guiding dividend decisions within corporate entities.

In the field of corporate finance, the traditional wisdom regarding the relationships among dividends, ownership structure, and debt financing often assumes linearity, assuming that changes in one factor will invariably lead to proportional changes in another. However, emerging research challenges this conventional assumption, suggesting the presence of non-linear interactions that could significantly influence a firm's financial choices and outcomes. The existence of non-linear relationships among dividends, ownership structure, and debt financing implies that as these variables undergo changes, their mutual effects and the overall financial well-being of a corporation may deviate from the expected linear trajectory. Instead, these relationships could potentially exhibit thresholds, turning points, or other intricate patterns that require a more nuanced understanding.

Despite this study's attempt to analyze the impact of the Covid-19 pandemic as a macroeconomic variable, it is still too recent to draw concrete and precise conclusions about its true impact on dividend distribution adopted by each firm. Therefore, it would be interesting to investigate the impact of ownership structure and debt financing levels on dividend payments before, during, and especially after the pandemic crisis.

Further research could beneficially expand upon the present study to understand the real impact of ownership structure and debt financing levels not only in Portugal but also in other external markets.

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7. Appendix

Table 6- Variable definitions

Variable	Description
Dividends <i>Dependent variable</i>	Total dividends distributed by each firm, in million euros
Age	Consider the number of activity years, determined through the difference between the current year and the year of foundation
Stage	Variable used to determine the stage of a company. In this study we will divide firms into two groups (Founding year before 2000 and after 2000) to test the impact on dividends distribution
Board Size	Related with the number of board members controlling the firm's decisions
Board Supervision	Total number of members responsible for supervising board members' decisions
Managerial Ownership (Man)	Is measured through percentage (%) of firm's shares held by inside members in functions
Firm Size	Measure through the market capitalization of a company, in million euros
Net Income	Key financial metric used to measure the profitability of a company over a specific period, in million euros
FCF	Variable used to evaluate the cash that a company can generate, in million euros
Net Debt-to-Equity	Ratio of net debt level to total equity (%)
Net Working Capital (NWC)	Represents the difference between company's current assets and current liabilities, in million euros
ROA	Ratio of net income to total assets (%)
Tobin-Q	Is the ratio of the company market value divided by total assets replacement value
GDP	Gross Domestic Product for the years between 2017 to 2021, in million euros