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UNIVERSITY OF VAASA

Viljami Riuttala

Dividend Payout Ratio and Shareholder Return

Evidence from Helsinki Stock Exchange

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UNIVERSITY OF VAASA**School of Accounting and Finance**

Author:	Viljami Riuttala		
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ABSTRACT:

This study examines the relationship between the dividend payout ratio and total return in Finnish companies listed on the Helsinki Stock Exchange during the years 2003–2024. The analysis employs simplified and extended fixed-effects models that account for both firm- and year-specific effects. As a third model, an extended specification introduces that excludes firm-specific effects but includes sector-specific effects. The dependent variable is total return (%), and the key explanatory variable is the lagged dividend payout ratio ($t-1$). The control variables include free cash flow, market capitalization, the book-to-market ratio, leverage, and a sector variable.

Shareholder returns indicate that companies paying dividends are performed better than non-dividend-paying companies. However, when the dividend payout ratio and control variables are taken into account, dividend distribution itself is not a statistically significant explanatory factor. The simplified model shows a statistically significant negative relationship: a one-percentage-point increase in the dividend payout ratio decreases total return by 0.163 percentage points ($p = 0.0001$). The result of the extended model is not significant ($p = 0.6793$). In the sector-specific extended model, the results are significant, indicating an inverted U-shaped relationship and showing that a dividend payout ratio of 33.9% would be optimal, after which the relationship between shareholder return and the payout ratio turns negative.

The robustness checks employ winsorization of extreme values, removal of control variables, and a separate examination of the post-financial-crisis period. These confirm the stability of the results.

KEYWORDS: Dividend payout, Shareholder return, Firm performance, Dividend policy, Firm fixed effects, Sector fixed effects

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TIIVISTELMÄ:

Tässä tutkimuksessa tarkastellaan osingonjakosuhteen ja kokonaistuoton välistä suhdetta suomalaisissa Helsingin pörssiin listatuissa yhtiöissä vuosina 2003–2024. Analyysissa hyödynnetään pelkistettyä ja laajennettua kiinteiden vaikutusten malleja, joissa huomioidaan sekä yritys- että vuosikohtaiset vaikutukset. Kolmantena mallina tuodaan laajennettu malli, jossa ei ole yrityskohtaisia vaikutuksia, mutta on huomioitu toimialakohtainen vaikutus. Selitettävänä muuttujana on kokonaistuotto (%), ja keskeisenä selittävänä muuttujana käytetään viivästettyä osingonjakosuhdetta ($t-1$). Kontrollimuuttujina käytetään vapaata kassavirtaa, markkina-arvoa, kirjanpidollisen arvon suhdetta markkinahintaan, velkaantuneisuusastetta sekä toimialamuuttujaa.

Yhtiöiden osakkeenomistajien tuotot osoittavat, että osinkoa maksaneet yhtiöt ovat tuottaneet paremmin kuin osingottomat yhtiöt. Kun kuitenkin huomioidaan osingonjakosuhte ja kontrollimuuttujat, itse osingonjako ei ole tilastollisesti merkitsevä selittäjä. Pelkistetty malli osoittaa tilastollisesti merkitsevän negatiivisen yhteyden: yhden prosenttiyksikön kasvu osingonjakosuhteessa pienentää kokonaistuottoa 0,163 prosenttiyksikköä ($p = 0.0001$). Laajennetun mallin tulos ei ole merkitsevä ($p = 0.6793$). Sektorikohtiasessa laajennetussa mallissa tulokset on merkittäviä ja tämä osoittaa käänteisen u-muotoisen yhteyden, osoittaen, että 33,9% suuruinen osingonjakosuhte olisi optimi, jonka jälkeen osakkeenomistajien tuotto ja osingonjakosuhteen yhteys kääntyy negatiiviseksi.

Robustisuustarkasteluissa hyödynnetään ääriarvojen winsorointia, kontrollimuuttujien poistamista sekä finanssikriisin jälkeisen ajan erillistä tarkastelua, nämä vahvistavat tulosten pysyvyyden.

AVAINSANAT: Osingonjakosuhte, Osakkeenomistajien tuotto, Yhtiön tuotto, Osinkopolitiikka, Yrityskohtaiset kiinteät vaikutukset, Toimialakohtaiset kiinteät vaikutukset

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Abbreviations

Research Tools

The data were obtained from LSEG Workspace and analysed in a Python environment. The results were exported to Excel for further processing, and the resulting tables and figures were incorporated into the study. AI-based tools were used for grammar checking and linguistic refinement.

1 Introduction

Economist Fisher Black (1976) describes dividends as a puzzle: “The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just do not fit together.” He suggests that companies might pay dividends to reward existing shareholders and to attract new investors. Investors, in turn may value dividends for the tangible returns they offer either directly or indirectly. As cash payments or indirectly as a signal of future performance. On the other hand, companies that do not distribute dividends may reinvest profits in projects that yield higher long-term returns. Moreover, capital gains are often taxed more favourably than dividends, which further complicates the rationale behind paying dividends.

According to Black, dividends represent a fundamentally complex phenomenon that appears to contradict rational investment behaviour and tax efficiency. While traditional financial theory suggest that dividend policy should not affect shareholder returns, empirical evidence often suggest otherwise. This contradiction raises an important question: Does the dividend payout ratio have a statistically significant relationship with shareholder return?

Since the mid-1980s, dividend policy has also been shaped by the growing use of share repurchases as an alternative means of distributing profits to shareholders (Grullon & Michaely, 2002). While this global shift has reduced the relative importance of cash dividends in many markets, Helsinki Stock Exchange stands out with its strong dividend culture. This distinction makes the Helsinki Stock Exchange a suitable context for examining the correlation between dividend payout ratios and shareholder returns.

1.1 Dividend-paying is not trending anymore

Previous research has documented a long-term decline in dividend-paying behaviour since the late 1970s (Deangelo et al., 2004; Brav et al., 2015; Arnott & Asness, 2003; Fama & French, 2001). According to Fama and French (2001), this shift reflects structural

changes in newly listed firms, which tend to be less profitable, more growth-oriented, and less inclined to pay dividends. While dividend yields have increased since 2000 (Michaely & Moin, 2022), this is primarily attributed to non-dividend paying firms exiting public markets delisting or mergers.

In contrast to this global trend, the Helsinki Stock Exchange is known for its strong dividend culture. According to the Life Cycle Theory of Dividends (DeAngelo et al., 2006), this may be explained by the maturity of Finnish listed firms, which often have fewer growth opportunities. The dividend payout ratio is defined as the proportion of a firm's earnings distributed to shareholders in the form of dividends (Knüpfer & Puttonen, 2024).

1.2 Motivation

The motivation for the study stems from the distinctive features of the Finnish capital market and its divergence from international trends in dividend policy. While many global markets have seen a decline in dividend payments in favor of share repurchases, Finnish listed companies have largely maintained a stable and relatively high dividend payout culture. One explanation, as suggested by the Life Cycle Theory of Dividends (DeAngelo et al., 2006), is that many Finnish firms are mature, with limited growth opportunities, which makes profit distribution through dividends more likely. This study focuses exclusively on cash dividends.

Compared to the United States stock market, Finnish companies tend to prefer dividends over share buybacks. In the U.S, share buybacks have surpassed dividends in terms of capital distribution. For example, in 2018, U.S listed firms distributed over 1.25 trillion dollars to shareholders, approximately 800 billion through share buybacks and 450 billion through dividends (Backwell, McWalter, & Ritchken, 2022). Share buybacks involve companies repurchasing their own shares from the market and subsequently cancelling them. This process typically increases shareholders' value.

Grullon and Michaely (2002) demonstrate that an increasing number of firms have substitute dividends with share buybacks, particularly since the mid-1980s, among publicly traded companies listed on the U.S stock exchanges (NYSE, AMEX, and NASDAQ). This substitution effect helps explain why the dividend payout ratio alone may not fully reflect the value returned to shareholders. Firms that reduce dividends but simultaneously engage in share repurchase programs tend not to experience negative market reactions, suggesting that investors view buybacks as a viable alternative to dividends.

This Leads to the second major motivation factor: in the Helsinki Stock Exchange, no significant growth investments have been seen since the 2008 financial crisis (Lindblad, Sariola & Silvo, 2020), as listed companies have, with a few exceptions, distributed their profits as dividends to shareholders. This motivates an investigation into the link between the payout ratio and returns in the Finnish market. The study aims to examine the extent to which the payout ratio affects returns in the Finnish market.

1.3 Research Questions

The present study builds upon McManus et al. framework by extending the analysis to companies listed on the Helsinki Stock Exchange. The research question of this study is: Does the dividend payout ratio have a statistically significant relationship with shareholder return?

Prior research has shown that company size, free cash flow yield, Debt to common equity, and the Market cap to common equity are important determinants of dividend payout policy (DeAngelo et al., 2006; Denis & Osobov, 2008; Jensen, 1986; Myers, 1984). While the present study does not aim to explain payout policy itself, these variables are included as control variables. Their inclusion ensures that the estimated relationship between the dividend payout ratio and shareholder return is not confounded by firm-specific characteristics.

1.4 Contribution and Research Gap

The academic literature presents conflicting evidence on the relationship between dividend payout ratios and shareholder return. While Miller and Modigliani (1961) assert that dividend policy is irrelevant under perfect market conditions, other studies argue for a positive relationship. Arnott and Asness (2003) found that high payout ratios may signal higher future returns. Gordon's (1963) Bird in the Hand Theory suggests investors prefer the certainty of dividends over uncertain capital gains. Agency theory (Jensen, 1986) posits that dividends reduce managerial discretion, thus lowering agency costs. Conversely, Myers and Majluf (1984) argue that dividends should be minimized when external financing is costly. Firms often avoid cutting dividends even if it restricts potentially profitable investments. Thus, dividends may indirectly influence long term shareholder wealth.

This study builds upon the work of McManus, Gwilym, and Thomas (2004), who examined the role of the payout ratio in the relationship between dividend yield and stock returns in the UK market. Their results showed that the payout ratio significantly influences the explanatory power of dividend yield, and that both high-dividend and zero-dividend firms outperform moderate-dividend firms. While their focus was on dividend yield, this study extends the framework by directly analyzing the payout ratio itself, examining how it relates to total shareholder return in Finnish listed companies between 2003 and 2024.

Despite the extensive international literature on dividend policy, relatively few studies have directly examined the relationship between dividend payout ratios and shareholder return. The study addresses this research gap by evaluating whether dividend payout ratios help explain differences in total shareholder returns among Finnish firms. Given the mixed empirical evidence, the study assumes that the dividend payout ratio affects total return and posits a U-shaped relationship, whereby both low and high payout levels yield better returns.

1.5 Structure of the Study

The structure of the study is as follows. The first section introduces research motivation, research questions, contribution, and structure. The second section presents concepts of dividends, the main dividend strategies, relevant theoretical frameworks, and a review of previous literature and the section ends with the introduction of the hypothesis. The third section provides an overview of the data, methodology, and variables used in the analysis. The fourth section discusses empirical results and includes robust tests to validate the findings. Finally, the sixth section concludes the study and discusses the implications for investors and corporate managers.

2 Background and Literature Review

Before distributing dividends based on fiscal year's earnings, firm must assess their financial position and future obligations. First, a careful examination of the balance sheet is necessary year and whether there are any significant debt repayments due in the following year and whether the firm has sufficient liquidity to meet these obligations. Second, firms must ensure that adequate capital is allocated to maintenance investments to maintain operational competitiveness. Once these prerequisites have been addressed, the firm must decide whether to retain the remaining capital for growth purposes, such as investing in production capacity or research and development, or to distribute it to shareholders. If the firm chooses to return capital to its shareholders, it must then determine the appropriate method, such as paying cash dividends, issuing stock dividends, or conducting share buybacks.

A dividend is a portion of a company's profit distributed to shareholders, typically in the form of cash dividends or bonus shares. Cash dividends are paid out in monetary terms, whereas bonus shares are additional shares issued to existing shareholders, usually as a supplement to other forms of distribution. Companies may adopt different dividend policies depending on their financial situation and strategic goals. One such approach is the passive dividend policy (Knüpfer & Puttonen, 2024), where the firm distributes dividends irrespective of annual profitability. Under this policy, a company may maintain the same dividend level even during year, when firm have done loss or when profits are exceptionally high. This is commonly observed in firms with stable and predictable cash flow.

In contrast, the active dividend policy involves distributing a fixed percentage of profits each year, usually based on the previous year's earnings (Knüpfer & Puttonen, 2024, chapter 8.2). Another option is the irregular dividend policy, where the firm is not obligated to pay dividends regularly. Instead, the board of directors evaluates the company's performance and financial position annually before deciding. Lastly, under a

no dividend policy, the company chooses not to distribute any dividends to shareholders, opting instead to reinvest all profits into the business.

2.1 Theoretical Perspectives of Dividend Policy

According to dividend irrelevance theory by Miller and Modigliani (1961), a company's dividend policy has no impact on its market value. This is because, in an efficient market, the stock price adjusts downward by the amount of the dividend distributed. For example, suppose a firm's market value is €100,000, and it decides to distribute 50% of this as dividends, in example, €50,000. After the distribution, the market value of the firm decreases to €50,000, and shareholders hold €50,000 in cash, leaving their wealth unchanged. Alternatively, if the same firm decides to distribute only 10% in dividends, or €10,000, the remaining firm and the dividends received by shareholders remains €100,000. Shareholders can create their desired cash flow by selling shares, and the company can finance its investments through equity issuance or debt financing. Investors also can reinvest their dividend cashflow.

While Miller and Modigliani's (1961) dividend irrelevance theory remains a cornerstone of classical finance, some authors have questioned its applicability in real world conditions. Paulo and Gale (2012), for example, argue that the irrelevance theorem can resemble the characteristic of a Ponzi scheme, where returns to existing investors are financed by capital from new investors rather than by operating profits. Although their comparison is provocative and not widely accepted in mainstream financial literature, it draws attention to the practical limitations of the irrelevance theorem under conditions of market imperfections. Nevertheless, the Miller and Modigliani irrelevance theorem is still respected in financial literature. However, the irrelevance theory does not work in practice, because markets are not perfectly efficient and there are taxes and transaction costs.

Gordon (1963) presents a counterargument to Miller and Modigliani's (1961) dividend irrelevance theorem by suggesting that a company's stock price and cost of capital are

influenced by its dividend policy. He argues that investors prefer dividends over uncertain capital gains, as dividends represents predictable and tangible cash flow. Bird in the hand argument implies that dividends are perceived as less risky than retained earnings, whose value depends on uncertain future performance. Consequently, earlier and more certain dividends may be relatively more valuable to investors. In summary, Gordon suggests that investors may favour a high dividend payout ratio over uncertain growth in the firm's future value.

Prospect theory (Kahneman & Tversky, 1979) explains why human decision-making deviates from the rational expected utility maximization assumed in traditional economics. According to the theory, people evaluate outcomes relative to a reference point, such as their current situation, rather than in terms of final wealth. Losses are generally perceived as more impactful than gains of the same size. People also place disproportionate weight on certain outcomes and distort probabilities by overestimating small probabilities and underestimating large ones.

Lintner's paper (1962) Points out that "pure earnings" theorists believe stock prices are based on a firm's performance, and that dividends have no effect on stock prices. These theorists are aligned with the Miller and Modigliani irrelevance theory. Lintner also introduces the dividend theorist, who emphasize the value of dividends, suggesting that stock prices are determined by the present value of dividends, as assumed in the previous paragraph by Gordon. Dividend theorists also believe that a firm's net return and its investments are important because they affect future dividends. However, return and investment alone do not have any effect on stock prices if they are not distributed as dividends. The main difference between these two groups is that "pure earnings" theorist believe the values of debt-free stocks are determined by earnings, regardless of whether dividends are paid or not (Litner, 1962).

Lintner concludes his academic article by arguing that dividend theory, which holds that stock prices are determined by the present value of future cash flows such as cash

dividends, remains valid even under generalized conditions. He suggests that this theory should form the basis for further theoretical research in corporate finance. According to Lintner, earnings-based models are only valid if they can be formulated in a way that directly corresponds to the valuation of cash dividends received by investors. He emphasizes that the timing of earnings and corporate investments matters only to the extent that it influences the future stream of dividends. Additionally, Lintner highlights that even when debt financing is present the optimal financial structure is still defined by the present value of cash flows to investors, particularly dividends. This reinforces the fundamental role of dividend theory as a reliable framework for stock valuation.

2.2 Theoretical Explanations of Dividend Policy

The following sections present different theories and their connections to dividends. Begin by examining studies specifically related to dividends, which approach the topic from various perspectives.

2.2.1 Signaling Theory

Michael Spence (1973) applies signalling theory to the job market, where the core idea was that education serves as a signal of a worker's ability to potential employers. In the world of finance, this concept has widely studied in the context of how dividends function as signals to investors about a company's strong financial position and confidence in its future profitability. According to Miller and Rock (1985), dividends function as logical and credible signals only in cases where the firm has genuine, positive information to convey. In such situations, the cost of signalling, such as the loss of profitable investment opportunities be justified to avoid a false interpretation that firm's earnings performance has weakened. However, in a world of rational expectations, dividends cannot turn a weak firm into a strong one. Weak performance remains weak, and the market is not misled by the signal.

2.2.2 Pecking Order Theory

Myers and Majluf (1984) argue that firms prefer to use internal capital to fund new investments, provided they have sufficient funds available. This preference stems from a desire to avoid sending negative signals to investors. The paper also suggests that when firm's possess significant insider information that is not accessible to investors, they may choose not to undertake investments if doing so would require issuing new equity. This is because issuing equity under such circumstances may lead to stock being undervalued, thereby harming existing shareholders.

Later Myers (1984) present a new theory that aligns with the ideas in his earlier work with Majluf (1984). The pecking order theory proposes that firms prioritize internal financing overpaying dividends, basing their dividend policies on the availability of free cash flow for investment. According to theory, firms follow a financing hierarchy. They prefer to use internal funds first, then take on debt, and only issue equity as a last resort. This order arises due to asymmetrical information, managers possessing more accurate knowledge of the firm's true value than external investors. Consequently, issuing equity can be perceived as a negative signal, potentially leading firms to avoid it even when profitable investment opportunities exist. This observation is also made by Brav et al. (2005). They point out that managers were willing to avoid dividend cuts even at the expense of a positive net present value investment project. Unlike some capital structure theories, the pecking order theory does not assume a target debt ratio. Instead, a firm's observed leverage simply reflects its cumulative need for external financing.

2.2.3 Free Cash Theory

Jensen's Free Cashflow theory (1986) assumes that high dividend payouts can reduce the free cash flow available to management and thereby decrease the risk of poor investments decisions, but at the same time, they may limit future investment opportunities. Free cash flow refers to the cash that exceed the funding requirements of

all projects with a positive net present value when discounted at the relevant cost of capital.

Jensen (1986) argues that the greatest conflict of interest between shareholders and corporate managements arises when a company has significant free cash flow, and this is invested in inefficient projects. The article also highlights the challenge of how to motivate top management to distribute free cash flow to shareholders in the form of dividends instead of using it for unproductive investments. The free cash flow theory assumes that substantial free cash flow creates agency problems.

2.2.4 Agency Theory

As the previous paragraph indicates, dividends can help reduce agency problems. According to agency theory, corporate managers, acting as agent of the shareholders, may have interests that conflict with those of the shareholders, who are the principals (Jensen & Meckling, 1976). Managers do not always act in the best interest of shareholders, which can lead to agency problems. Jensen (1986) argues that risk of such problems increases particularly when a firm generates substantial free cash flow, as managers may use these funds for unprofitable or self-serving investments. In line with the control hypothesis (Jensen, 1986), higher dividend payouts and increased leverage can mitigate agency problems by reducing the amount of free cash flow available for discretionary use. By committing cash to dividends or debt service, firms limit managerial discretion and align managerial incentives more closely with those of shareholders.

The pecking order theory supports the signalling theory's view that companies tend to avoid cutting dividends, as doing so could send a negative message to the market regarding the firm's financial condition. According to the theory, firms prioritize internal financing and aim to maintain stable dividend payments to preserve management's credibility. From the perspective of agency theory, dividend payments can serve as a mechanism to reduce principal-agent conflicts. By distributing a portion of earnings to

shareholders, companies limit managerial discretion over the use of funds, reducing the risk of inefficient or self-serving investments. The free cash flow theory refines this viewpoint by focusing on situations where firms have excess cash, dividend payments in such cases can help prevent the misallocation of capital to value-destroying projects. Together, these theories form the foundation for Life Cycle theory of dividends, which incorporates the firm's stage of development as a key determinant of its dividend policy.

2.2.5 Life Cycle Theory

According to the Life Cycle theory of dividends, a firm's position within its life cycle significantly influences its dividend policy (DeAngelo et al., 2006). Young firms with abundant investment opportunities are typically less inclined to distribute dividends, as reinvesting profits is perceived to generate greater long-term value. In contrast, mature and established firms are more likely to pay dividends, as they have accumulated profits and capital reserves and are generally faced with fewer profitable investment opportunities compared to younger firms. This theoretical framework helps to explain several empirically observed patterns in corporate payout behaviour. It clarifies why younger firms often refrain from paying dividends (Fama & French, 2001), why many companies prefer to return excess cash to shareholders through share repurchases rather than traditional dividends (Jagannathan et al., 2000; Grullon & Michaely, 2002), and why some firms continue to pay substantial and regular dividends (Allen & Michaely, 2003; DeAngelo et al., 2004). For example, Michaely and Moin (2022, Table 7) find that older firms are more likely to pay dividends, supporting the predictions of the Life Cycle theory.

2.2.6 Catering Theory

Firms with high volatility and low profitability typically do not pay dividends (Fu & Blazenko, 2015). However, Michaely and Moin (2022) find that even firms with low volatility and high profitability may choose not to pay dividends, despite expectations to do so. This may highlight that firm profitability alone does not fully explain dividend

payout behaviour and provides a reference for why the correlation between the dividend payout ratio and shareholder return is not always consistent.

According to the Catering theory of dividends (Baker & Wurgler, 2004), dividends are not determined solely by firm fundamentals but also by investors' time-varying preferences for dividend-paying stocks. Therefore, understanding how dividend policy aligns with shareholder return on the Helsinki Stock Exchange may also require considering shifts in investor demand for dividends. Moreover, it is noteworthy that many owners on the Helsinki Stock Exchange are institutions such as pension funds, family-owned companies, and the government, all of which typically prefer stable and predictable returns.

Moortgat, Annaert, and Deloof (2023) investigate the dividend policy of Belgian listed firms between 1838 and 2020. They find that dividend payers are typically large firms with low levels of idiosyncratic risk and more liquid shares, and the result regarding idiosyncratic risk is consistent with Fu and Blazenko (2015). The authors also show that the dividend policies of industry peers have an important impact on a firm's decision to pay dividends. They find that liquidity considerations have become less relevant today. Furthermore, they do not find any evidence consistent with the signalling role of dividends. The study also suggests that firms do not respond to changes in the demand for dividends as predicted by the catering theory. Finally, they find mixed evidence that the dividend premium is higher in times of greater environmental uncertainty, as suggested by prospect theory.

2.3 Empirical Evidence on the Relationship Between Dividends and Returns

McManus et al. (2004) study how the payout ratio affects the explanatory power of dividend yield. In their research, the dependent variable is excess return, and the independent variables include dividend yield, payout ratio, firm size, and seasonal dummy variables. In contrast, this study uses shareholder return as the dependent variable, the independent variable is dividend payout ratio and control variables is market cap,

free cash flow yield, debt to common equity, and market to book. Despite differences in variables this study adopts the framework of McManus et al.

McManus et al. (2004) find that the dividend payout ratio has a significant impact on the statistical explanatory power of dividend yield in predicting stock returns. They also suggest that the payout ratio contains information that goes beyond what is captured by the dividend yield alone. Possibly due to a signaling effect. Moreover, they find that zero-dividend firms are not necessarily weak performers and that there is a U-shaped relationship between dividend yield and stock returns. This indicates that both zero-dividend and high-dividend firms tend to outperform those with moderate dividend yields.

Morgan and Thomas (1998) focus in their paper on examining a tax-based explanation for the positive relationship between stock returns and expected dividend yields by studying the UK market and its tax system. They divided companies into six different groups: a zero-dividend portfolio, four quintiles of increasing dividend yields, and the highest-dividend-yielding quintile. Their results show that zero-dividend firms earned higher returns than several of the lower-yielding quintiles. This finding is consistent with McManus et al. (2004), who also report that zero-dividend firms and high-dividend firms tend to outperform companies paying only modest dividends.

The study by Gwilym et al. (2000) shows that a higher level of dividends (measured by dividend yield) predicts higher total returns, particularly risk-adjusted excess returns. This relationship is associated with the fact that stable dividend payments, an essential element of payout continuity, signal lower systematic risk.

Denis and Osobov (2008) report that the presented values are averages of annual median values for measures of profitability, growth opportunities, and firm size over the period 1989 to 2002. Paper focuses primarily on the determinants of dividend policy rather than the relationship between dividend payouts and shareholder returns. They

find that firms which pay dividends have higher earnings to assets (E/A) ratios in the United States, Canada, The United Kingdom, France, Germany, and Japan. They also find that dividend-paying firms tend to have higher retained earnings to book equity (RE/BE) ratios. In addition, these firms are usually larger and have fewer growth opportunities, which supports Live Cycle theory (DeAngelo et al., 2006).

Arnott and Asness (2003) examine the relationship between the dividend payout ratio and future earnings per share growth over the period 1946–2001. They find that historically, high dividend payout ratios have been linked to faster growth. Specifically, they report that in the lowest payout quartile, the average real earnings growth over the subsequent 10 years was negative (-0.4% per year). In contrast, firms in the highest payout quartile experienced strong average real earnings growth of 4.2% per year over the following decade. This challenges the traditional view that high dividend payouts limit investment and reduce growth potential. Similar findings are presented by Denis and Osobov (2008), who report that dividend-paying firms tend to be more profitable (higher RE/BE), and are generally larger than non-dividend-paying firms.

2.4 Literature Review Summary

The literature suggests that the relationship between dividend policy and shareholder return cannot be explained solely by fundamental firm characteristics such as profitability or growth opportunities. Empirical studies indicate that investor preferences, the method of capital distribution (dividends versus share buybacks), the firm's life-cycle stage, incentive structures between managers and shareholders, as well as potential agency conflicts, all influence dividend decisions. In addition, the firm's free cash flow position determines how much capital can be distributed to shareholders.

The evidence further shows that the dividend payout ratio plays a significant role in explaining cross-sectional stock return variation (McManus et al., 2004), and that both zero-dividend firms and high-dividend firms tend to outperform companies with moderate payout levels (McManus et al., 2004; Morgan & Thomas, 1998). Stable and

high dividends also predict strong risk-adjusted returns because they signal lower systematic risk (Gwilym et al., 2000). Moreover, dividend-paying firms are typically larger, more profitable, and more mature, and higher payout ratios may even be associated with stronger subsequent earnings growth (Denis & Osobov, 2008; Arnott & Asness, 2003). These findings challenge the traditional dividend irrelevance hypothesis and instead align with signaling theory and free cash flow theory, both argue that dividends convey information about firm quality, support efficient capital allocation, and may enhance long-term financial performance.

Since the dividend payout ratio alone cannot fully explain a firm's stock return behavior, this study also incorporates standard firm-specific controls such as size, leverage, free cash flow, market-to-book ratio, and sector classification. Based on literature, the following hypotheses are formulated.

2.4.1 Hypothesis

The first hypothesis directly addresses the research question: Does the dividend payout ratio have a statistically significant relationship with shareholder return?

According to Gordon (1963) and Lintner (1962), investors may value certain dividend payments more highly than uncertain future capital gains. Empirical evidence (McManus et al., 2004; Morgan & Thomas, 1998) shows that the payout ratio can explain stock returns and may be positively associated with them. Therefore, the first hypothesis is:

H1: The dividend payout ratio is statistically significantly associated with shareholder returns.

Furthermore, the literature suggests that both zero-dividend firms and very high-dividend firms may outperform moderate-payout companies (McManus et al., 2004), indicating a non-linear pattern. This leads to the second hypothesis:

H2: The relationship between the dividend payout ratio and shareholder return is U-shaped.

The next chapter defines the key variables of the study: shareholder returns as the dependent variable, and a set of indicators for dividend payout, firm size, free cash flow, leverage, and market-to-book value as the independent and control variables. In the alternative specification, a sector dummy is added as an additional control variable. It then describes how the panel dataset covering the years 2003–2024 is constructed using data from LSEG Workspace. The chapter concludes by introducing the fixed effects regression framework that will be used to test the hypotheses.

3 Data and Methodology

The study employs regression analysis to examine the relationship between the dividend payout ratio and shareholder return. Firm-level data, including financial indicators, were collected from LSEG Workspace. The sample period covers the years 2003–2024. The number of firms in the sample varies annually between 131 and 193, depending on listing activity and data availability.

The dataset does not include firm-level data for years in which the company was listed or delisted during the middle of a calendar year. Thus, firms whose trading began or ended mid-year, as well as firms that disappeared through mergers, are excluded from the observations of that specific year. This ensures that each firm contributes complete annual observations to the panel.

Certain firms from the Helsinki Stock Exchange are also excluded due to domicile or listing considerations, as they were not included in the dataset. Nordea Bank Abp is not included, as its legal domicile was moved to Helsinki only in 2018. Rautaruukki Oyj merged into SSAB AB in 2014, and since SSAB is a Swedish firm, the merger interrupts the time series; therefore, SSAB is excluded. However, Rautaruukki is included in the dataset until the year of the merger. Similarly, Telia Company AB is a Swedish dual-listed firm, and since this study focuses on Finnish primary listings, it is excluded from the sample.

Initially, the data was collected from LSEG Workspace into Excel. The data was then cleaned on a yearly and firm-specific basis, and the values were organized under their respective variable columns. The following variables were obtained directly from LSEG Workspace: shareholder return, dividend payout ratio, market capitalization (in thousands of euros), debt-to-common equity, market capitalization-to-common equity and sector variable. Free cash flow per share was also collected and converted into free cash flow yield by dividing it by the year-end stock price and multiplying the result by 100%.

Additionally, a dividend dummy variable creates to indicate whether a company paid a dividend or not. A dummy value of 1 indicated that the firm paid a dividend, while a value of 0 indicated that no dividend was paid. If the dataset did not contain an entry for dividend payment, the dummy variable assigns a value of 0, meaning the company did not distribute dividends.

It should be noted that the dataset is not fully precise. For example, the number of outstanding shares is rounded to the nearest thousand in LSEG Workspace, and the conversion of free cash flow per share into yield was performed using year-end stock prices with cent-level precision. Also, there were 34 different sectors, and not every firm included a sector variable. In this study, 34 different industries were examined and grouped into 10 industry categories. Companies that not fit into these categories' places in the "other" or "unidentified" category. These factors may result in minor rounding differences.

Table 1 Number of dividend-paying and non-dividend-paying firms by year.

Year	Total firms	Dividend payers	Non-payers	Missing information	Dividend payers (%)	Non-payers / Missing information (%)
2003	156	58	37	61	37.2%	62.8%
2004	151	64	31	56	42.4%	57.6%
2005	148	84	30	34	56.8%	43.2%
2006	141	86	29	26	61.0%	39.0%
2007	140	83	26	31	59.3%	40.7%
2008	136	53	15	68	39.0%	61.0%
2009	131	47	26	58	35.9%	64.1%
2010	133	67	34	32	50.4%	49.6%
2011	138	60	42	36	43.5%	56.5%
2012	142	63	49	30	44.4%	55.6%
2013	144	57	45	42	39.6%	60.4%
2014	152	72	44	36	47.4%	52.6%
2015	159	79	47	33	49.7%	50.3%
2016	165	80	48	37	48.5%	51.5%
2017	168	74	51	43	44.0%	56.0%
2018	177	72	59	46	40.7%	59.3%
2019	187	72	70	45	38.5%	61.5%
2020	190	69	89	32	36.3%	63.7%
2021	193	84	79	30	43.5%	56.5%
2022	188	65	70	53	34.6%	65.4%
2023	185	64	64	57	34.6%	65.4%
2024	177	63	66	48	35.6%	64.4%

The results are also examined by sector. Companies were divided into nine sector categories, which were represented in the data set using numerical codes: Financials (0), Industrials (1), Technology (2), Consumer Goods (3), Consumer Services (4), Basic Materials (5), Energy and Utilities (6), Health (7), Real Estate (8), and Other or Undefined (9). The last category includes unidentified sectors or those that do not fit into the earlier classifications. The sector classification was obtained from LSEG Workspace, where 34 original sectors were consolidated into 10 broader sector categories.

Table 2 Shows firms' sectors by year

Basic Materials	10	10	10	10	9	8	7	7	7	7	7
Consumer Goods	12	11	10	10	10	10	10	10	10	10	10
Consumer Services	22	21	21	21	22	20	19	20	20	21	22
Energy & Utilities	4	4	4	3	3	3	3	3	3	3	3
Financials	14	13	13	12	12	11	11	12	11	13	13
Health	9	8	8	7	7	7	6	6	6	9	9
Industrials	33	34	34	32	32	32	31	32	35	35	35
Other/Undefined	13	12	12	11	11	11	10	10	10	10	10
Real Estate	8	7	6	6	6	6	6	5	6	5	6
Technology	31	31	30	29	28	28	28	28	30	29	29
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Basic Materials	7	7	7	6	8	8	8	7	7	7	7
Consumer Goods	10	10	10	11	12	12	11	13	13	13	12
Consumer Services	23	24	23	23	23	27	26	26	25	24	24
Energy & Utilities	3	4	4	4	4	4	4	4	4	4	3
Financials	14	17	19	17	20	20	20	20	19	19	17
Health	10	10	11	14	16	15	14	14	14	14	14
Industrials	35	36	36	37	37	40	41	41	40	41	40
Other/Undefined	12	11	11	12	13	14	17	16	16	16	16
Real Estate	7	7	7	8	8	7	5	6	6	6	6
Technology	31	33	37	36	36	40	44	46	44	41	38

3.1 Variables and Methodology

Next, the study defines the variables. The dependent variable of this study is shareholder return. Shareholder return is a widely used performance measure that combines both stock price appreciation and dividends into a single indicator of shareholder return. It captures the value created for investors during a year, making it an appropriate dependent variable for this study.

(1) Shareholder return.

$$SR_{t+1} = \frac{P_{t+1} - P_t + D_{t+1}}{P_t} * 100 . \quad (1)$$

Where [P_t stock price at the beginning of the year, P_{t+1} stock price at the end of the year and D_{t+1} dividends paid during the year].

The first independent variable is the dividend payout ratio, which measures the proportion of a firm's earnings distributed as dividends. In the main research method, the study uses the previous year's dividend payout ratio, as it is linked to the current year's shareholder return. According to theory, the dividend payout ratio should not affect the value of a stock, since the market price is expected to decline by the amount of the dividend (Miller & Modigliani, 1961). Thus, dividend payments do not by

themselves alter shareholder return, which is determined by both price changes and the dividends received.

In this study, Dividend payout (% earnings) is used as the measure of dividend policy. This variable indicates the proportion of the company's net income for the fiscal year that is distributed as dividends to shareholders. It is based on firm-level data (total dividends paid / net income) and is therefore comparable across companies and time periods. Alternatively, the dataset also provides a Dividend payout per share variable, which is calculated from per-share data (DPS/EPS)

(2) Dividend payout ratio.

$$\text{dividend payout \%} = \frac{D_t}{E_t} * 100\% . \quad (2)$$

Where [D_t is annual dividends and E_t earnings available to common shareholders].

Previous research shows that firm size, free cash flow and leverage are important determinants of dividend payout policy (DeAngelo et al., 2006; Denis & Osobov, 2008; Jensen, 1986; Myers, 1984). Although these findings are relevant for understanding dividend distributions, the present study does not focus on explaining payout policy itself. Instead, these variables are included as control variables to ensure that the estimated relationship between dividend payout ratio and shareholder return is not confounded by firm-specific characteristics.

The first control variable is firm size, measured by market capitalization in thousands of euros. It is calculated by multiplying the closing share price by the number of outstanding shares. Shareholder return is reflected in a firm's market value through changes in the stock price. However, this does not diminish its usefulness as an explanatory variable, but it does require caution in the interpretation of the results (Fama & French, 2001). The formula is:

(3) Market cap.

$$\text{market cap}_t = (P_{i,t} * N_t) . \quad (3)$$

Where [$P_{i,t}$ stock price at year-end and N_t number of outstanding shares].

The second control variable is the debt-to-common equity ratio (D/E), which measures a company's indebtedness relative to its equity. It is calculated by dividing total debt (short-term and long-term debt) by total shareholders' equity minus preferred equity. The ratio indicates how much of the firm's capital structure consists of interest-bearing debt and reflects the firm's financial risk. A higher D/E ratio suggests greater reliance on debt financing, which may increase vulnerability to financial distress but can also enhance returns when leverage is used optimally. This variable is included as a control because capital structure decisions can affect both payout policies and shareholder return (Frank & Goyal, 2009).

(4) Debt to common equity ratio (D/E).

$$D/E = \frac{\text{short-term debt} + \text{long-term debt}}{\text{common equity} - \text{preferred equity}} * 100 . \quad (4)$$

The third control variable is free cash flow yield (%). This ratio measures how efficiently a company generates cash in relation to its asset base and reflects the firm's capacity to invest, repay debt, or distribute dividends. Firms with higher free cash flow typically have more financial flexibility, which can influence both dividend policy and shareholder returns. This control variable is included because cash generation capacity is central to a firm's ability to finance investments, service debt, and pay dividends (Jensen, 1986; DeAngelo et al., 2006).

(5) Free cash flow yield

$$FCF = \left(\frac{EBITx(1-t) + D\&A - \Delta NWC - CapEx}{\text{outstanding shares} * \text{market price}_{\text{year end}}} \right) * 100\% . \quad (5)$$

Where [EBIT stands for earnings before interest and taxes; t is the tax rate (in decimal form); D&A is depreciation and amortization; ΔNWC is the change in net working capital; CapEx is capital expenditures on tangible and intangible assets,

and outstanding shares and year-end market price equals equity market capitalization].

The fourth control variable is the market-to-book equity ratio (M/B), defined as market capitalization divided by the book value of common equity. In this study, the terms market-to-common equity and market-to-book equity are used interchangeably. If $M/B > 1$, the market anticipates future growth; if $M/B < 1$, the stock may be undervalued, or the firm may face challenges. Consistent with the growth-opportunities view, a higher M/B is typically associated with a lower likelihood of dividend payments. This variable is included as a control because it reflects firms' growth opportunities and investment policies, which have been shown to influence dividend behavior and shareholder returns (Fama & French, 2001; DeAngelo, DeAngelo, & Stulz, 2006).

(6) Market to common equity and Market to book.

$$M/B = \frac{\text{market capitalization}}{\text{common equity}}. \quad (6)$$

Where [market capitalization is the stock price at year-end multiplied by the number of shares outstanding, and common equity is total shareholders' equity minus preferred equity].

Descriptive statistics are reported for the following variables: shareholder return (%), dividend payout ratio, market capitalization (thousand €), debt-to-common equity, free cash flow yield (%), and the market-to-book ratio (or market cap to common equity). The dataset comprises 3,501 firm-year observations from 2003 to 2024.

Table 3 Reports mean, median, minimum, maximum and standard deviation for the key variables.

	count	mean	std	min	median	max
Shareholder Return (%)	2980	12.25	50.47	-97.54	7.00	612.00
Dividend payout (%)	2386	30.37	31.06	0.00	26.19	100.00
Market cap (Thousands) €	3121	1335678.08	4629315.97	634.00	142526.00	101994593.00
Free cash flow yield (%)	3163	-4.98	92.76	-4805.88	0.76	514.37
Debt-to-Common equity (%)	3435	828.43	43536.35	-49764.58	55.86	2551020.41
Market cap / Common equity	3121	2.30	11.31	-462.92	1.82	101.65

Next table reports the correlation matrix of the key variables. As noted, the correlation between shareholder return (%) and dividend payout (%) is small ($r = 0.016$), indicating only a weak direct association between the two variables. However, the correlation is positive. The highest correlation between the dependent variable and the other variables is observed between shareholder return and free cash flow yield, which indicates that firms generating higher free cash flow relative to their market value tend to provide higher returns to shareholders. The highest correlation is between market cap to common equity and debt-to-common equity ($r = 0.679$), which is expected because both variables are closely related to firms' capital structure and equity base.

Table 4 Pearson's correlation matrix.

	Shareholder return (%)	Dividend payout (%)	Market cap (Thousands) €	Free cash flow yield (%)	Debt-to-Common equity (%)
Shareholder Return (%)	1				
Dividend payout (%)	0.01641	1			
Market cap (Thousands) €	0.02791	0.17163	1		
Free cash flow yield (%)	0.11136	0.05732	0.01720	1	
Debt-to-Common equity (%)	0.00188	-0.01671	-0.02154	0.06910	1
Market cap / Common equity	0.08101	0.03288	0.02761	0.01707	0.67924

3.2 Regression Model

The regression model used in this study is based on a cross-sectional framework and is derived from Fama and French (1992), The Cross-Section of Expected Stock Return. In their original model, the expected return of a stock was examined using firm size and the book to market ratio as explanatory variables. In a later paper (2001), they analyse the relationship between dividends and stock returns. This 2001 model serves as one of the primary theoretical foundations for the model applied in this study. Another important foundation is the paper by Arnott and Asness (2003), where they examine how historical payout ratios affect subsequent earnings growth. To address research question of this thesis, the following two regression models are employed:

(7) Original Model (Arnott & Asness (2003))

$$EG_{t+k} = \alpha + \beta * PayoutRatio_{i,t} + \varepsilon_t \quad (7)$$

Where $[EG_{t+k}$ represent average earnings growth over the next k years, in paper it 10 years, Payout Ratio represent dividend payout ratio at time t and β represent estimated effect of payout ratio on future earnings growth].

The study's baseline specification examines whether there is any relationship between total shareholder return and the dividend payout ratio. In the alternative specification, sector variables are included, and one specification further interacts the dividend payout ratio with the sector dummies to investigate whether the payout–return relationship varies across sectors.

(8) Baseline Specification

$$SR_{i,t} = \alpha + \beta_1 DPR_{i,t-1} + \gamma X_{i,t} + u_i + \lambda_t + \varepsilon_{i,t}. \quad (8)$$

Where $[SR_{i,t=1}$ represent shareholder return of firm i in year t , DPR represents dividend payout ratio in the year prior to t , $X_{i,t}$ represents control variables, u_i denotes firm fixed effects, λ_t represent year fixed effects and β represent the estimated effect of DPR on SR].

The next model builds on McManus et al. (2004), who included the squared term of the dividend payout ratio to allow the relationship to exhibit potential curvature. The key difference is that this study applies to a firm- and year-level panel model, whereas McManus employed portfolio-level data. In alternative specifications, sector variables are added, and one specification further interacts the dividend payout ratio with the sector variable to examine whether the payout–return relationship differs across sectors.

(9) Extended Specification

$$SR_{i,t} = \alpha + \beta_1 DPR_{i,t-1} + \beta_2 DPR_{i,t-1}^2 + \gamma X_{i,t} + u_i + \lambda_t + \varepsilon_{i,t}. \quad (9)$$

Where [the squared term of the dividend payout ratio is included to allow the relationship to exhibit potential curvature].

The next chapter focuses on the research questions and examines the study's hypotheses using two models. First, the results of the baseline specification model with control variables are presented, followed by a simple scatterplot illustrating the relationship between shareholder return and the dividend payout ratio. The analysis then proceeds to the extended specification model, where the squared term of the dividend payout ratio is included alongside the control variables. Finally, the analysis proceeds to the extended specification model, which excludes firm fixed effects but includes sector variables. A corresponding figure is provided to illustrate the shape of the relationship. Finally, the findings are discussed in relation to the research questions, and the following chapter presents the robustness checks.

4 Empirical Results

In this section, the empirical findings of the study are presented. The results are reported using a sequence of panel-data models, and the analysis is complemented with illustrative figures. Section 5 then provides a series of robustness checks, followed by a summary of the key findings.

4.1 Results of the research methods

This subsection outlines how the empirical analysis proceeds across the different model specifications. The investigation begins with a baseline fixed-effects model, after which the analysis is expanded by introducing a squared payout ratio term, sector-level adjustments, and interaction effects. These models are then complemented with descriptive figures to illustrate the patterns observed in the data. The following subsections present the results of each specification in detail.

The baseline and extended specification models include both year and firm fixed effects, meaning that the analysis focuses on how the dividend payout ratio affects returns within firms over time. In the sector-level model, the firm fixed effects are removed, allowing the analysis to focus on how the dividend payout ratio affects shareholder returns within each sector, rather than within individual firms.

4.1.1 Baseline Specification

The baseline specification specifies the dividend payout ratio lagged by one year ($t-1$), since the previous year's dividend policy can influence current dividends and thereby shareholder return. This lag structure is tested in both regression models.

Table 5 Panel regression results of the baseline specification.

Field	Value		
No. Observations		2085	
Time periods		21	
Included effects	Entity, Time		

Parameter	Coef	Std. err.	P-value
Dividend payout ratio	-0.163	0.043	0.000
Market cap (thousands) €	0.000	0.000	0.002
Debt to common equity	-0.018	0.009	0.039
Market to book	0.497	0.265	0.061
Free cash flow yield	0.045	0.027	0.097

Metric	value
R2_within	0.024
R2_overall	0.024

Table 5 reports the results of a fixed-effects panel regression for Finnish listed companies over the period 2004–2024. The dataset covers the full-time span, as the dividend payout ratio from 2003 is used to explain shareholder return in 2004. The dependent variable is shareholder return.

The results show that a one-percentage-point increase in the dividend payout ratio is associated with a 0.163% decrease in shareholder return, significant at the 1% level ($p > 0.01$). Firm market capitalization has a statistically significant effect on the model, although the magnitude of the change is small. A one-percentage-point increase in the debt-to-common-equity ratio decreases shareholder return by 0.018%, significant at the 5% level. An increase of one unit in the market-to-book ratio increases shareholder return by 0.49%, significant at the 10% level. A one-percentage-point increase in free cash flow yield increases shareholder return by 0.0447%. The R^2 of the model is 2.4%, indicating that these variables explain only a small share of the variation in shareholder return.

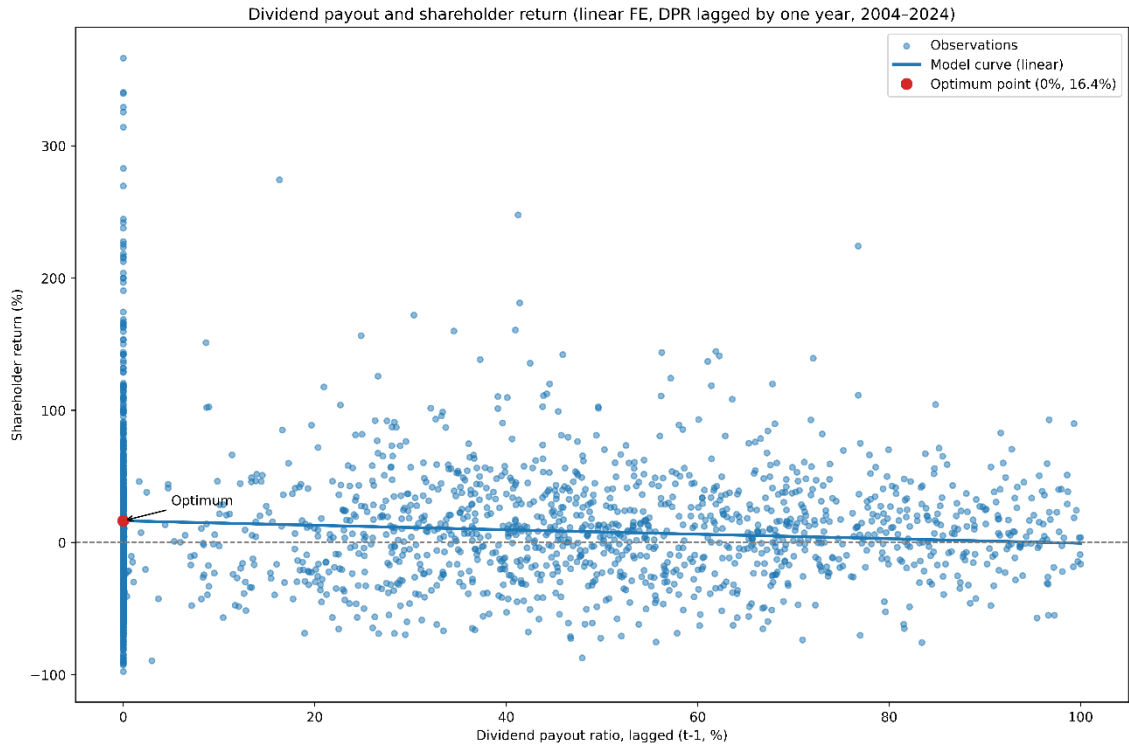


Figure 1 Trendline between dividend payout ratio and total shareholder return.

Figure 1 illustrates the simple correlation between dividend payout ratio (%) and shareholder return (%). Based on the scatter plot and fitted line, a one-percentage-point increase in the dividend payout ratio is associated with a 0.027% increase in shareholder return. However, this relationship is very weak, as indicated by the extremely low explanatory power of 0.0003. The figure is based on 2,095 firm-year observations. This result differs from the panel regression in Table 5, because the figure only captures the raw correlation between payout ratio and shareholder return, without controlling for other firm-specific and time effects. Figure 1 shows a simple positive correlation between payout ratio and shareholder returns. However, this pattern disappears once

firm and year fixed effects are included, which explains why the baseline regression produces a negative relationship.

4.1.2 Result of Extended Specification

Next, the effect of the magnitude of the dividend payout ratio on shareholder return is examined. The analysis is conducted to determine whether the level of shareholder return influences the relationship between payout ratio and return. The objective of this analysis is to test hypothesis 2.

Table 6 Panel regression results of the extended specification.

Field	Value		
No. Observations	2085		
Time periods	21		
Included effects	Entity, Time		

Parameter	Coef	Std. err.	P-value
Dividend payout ratio	-0.214	0.143	0.135
Dividend payout ratio ²	0.001	0.001	0.679
Market cap (thousands)	0.000	0.000	0.002
Debt to common equity	-0.018	0.009	0.039
Market to book	0.499	0.265	0.060
Free cash flow yield	0.045	0.027	0.096

Metric	Value
R-squared (Within)	0.02
R-squared (Overall)	0.02

In the extended specification panel, a squared term of the dividend payout ratio was included to test for a potential non-linear relationship. The results show that the coefficient for the dividend payout ratio is -0.214, but it is not statistically significant ($p < 0.135$). Similarly, the dividend payout ratio² has a coefficient of 0.0006, which is also not significant.

Because neither the linear nor the quadratic term is statistically significant, this extended specification does not provide support for hypothesis 2, which predicts a U-shaped relationship between the dividend payout ratio and shareholder return.

Firm market capitalization has a statistically significant effect on shareholder return at the 1% level, although the magnitude of the coefficient is very small. A one-percentage-point increase in the debt-to-common-equity ratio decreases shareholder return by 0.018%, significant at the 5% level, which is consistent with the baseline specification model. An increase of one unit in the market-to-book ratio increases shareholder return by 0.49%, significant at the 10% level. Likewise, a one-percentage-point increase in free cash flow yield increases shareholder return by 0.045%, also significant at the 10% level. The explanatory power of the model is only 2%, indicating that these variables explain only a small share of the variation in shareholder return. Due to the low explanatory power of the model, the study focuses on sector-specific investigations.

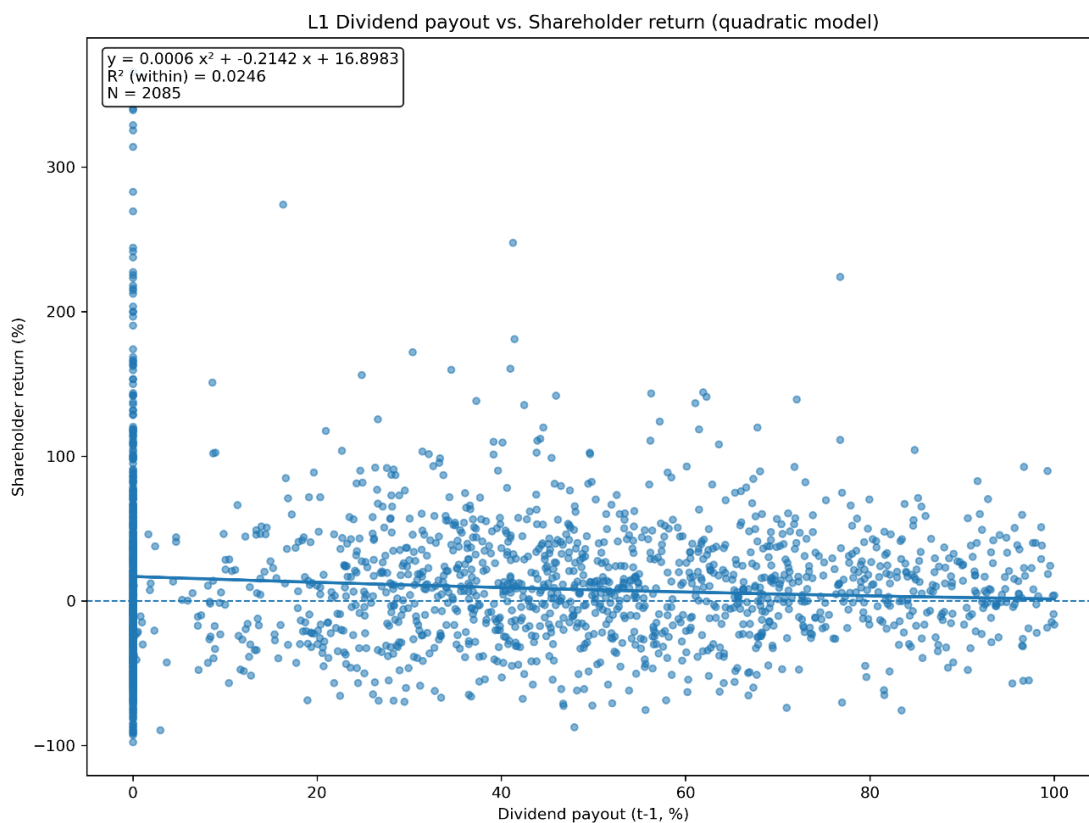


Figure 2 Quadratic trend line between dividend payout ratio and total shareholder return.

Figure 2 illustrates the relationship between the dividend payout ratio (%) and shareholder return (%) using a quadratic specification. The fitted curve shows that the coefficient on the payout ratio is negative (-0.2142), while the squared term is positive (0.0006). Although the quadratic trend visually curves, the relationship is not statistically significant and therefore figure 2 cannot be interpreted as evidence in support of hypothesis 2.

4.1.3 Results of the Sector Specification

The baseline and extended specification models include both year and firm fixed effects, meaning that the analysis focuses on how the dividend payout ratio affects returns within firms over time. To examine how the dividend payout ratio operates within sectors rather than within individual firms, the next model removes the firm fixed effects

and instead includes sector fixed effects. Because dividend policies and payout ratios differ across sectors, the next step is to examine the regression results that incorporate the sector variable. The analysis first evaluates how baseline specification changes once sector indicators are added. It then reviews the results of the extended model. Finally, the dividend payout ratio and the sector variable are combined into a single explanatory term to assess whether the payout–return relationship varies across industries.

Table 7 Results for the sector-adjusted extended model.

Field	Value
No. Observations	2085
Time Periods	21
Fixed effects	Sector FE and Year FE

Parameter	Coef	Std.err	P-value
Dividend payout ratio	0.183	0.090	0.043
Dividend payout ratio ²	-0.003	0.001	0.005
Market cap (thousands) €	0.000	0.000	0.293
Debt to common equity	-0.015	0.006	0.012
Market to book	0.453	0.231	0.050
Free cash flow yield	0.048	0.026	0.065

R-squared	0.243
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In the extended panel specification with sector fixed effects and without firm fixed effects, the results indicate a statistically significant nonlinear relationship between the dividend payout ratio and shareholder return. The coefficient for the dividend payout ratio is 0.183 and statistically significant at the 5% level ($p = 0.043$). The squared term is -0.003 , significant at the 1% level ($p = 0.005$), indicating a concave inverse U-shaped relationship.

These results suggest that when moving from the firm-level comparison to a sector-adjusted comparison, the dividend payout ratio shows a positive marginal effect on shareholder return at low payout levels. Specifically, a 1-percentage-point increase in the lagged dividend payout ratio initially increases shareholder return by approximately

0.183 percentage points, after which the negative quadratic term begins to dominate, and the effect turns downward. This implies diminishing returns and eventually negative returns at high payout levels.

Firm market capitalization has a statistically significant effect on shareholder returns at the 1% level, although the magnitude of the coefficient is economically negligible. A one-percentage-point increase in the debt-to-common-equity ratio decreases shareholder return by 0.015%, significant at the 5% level, which is consistent with the baseline specification. An increase of one unit in the market-to-book ratio raises shareholder return by 0.45%, significant at the 5% level. Likewise, a one-percentage-point increase in free cash flow yield increases shareholder return by 0.048%, significant at the 10% level.

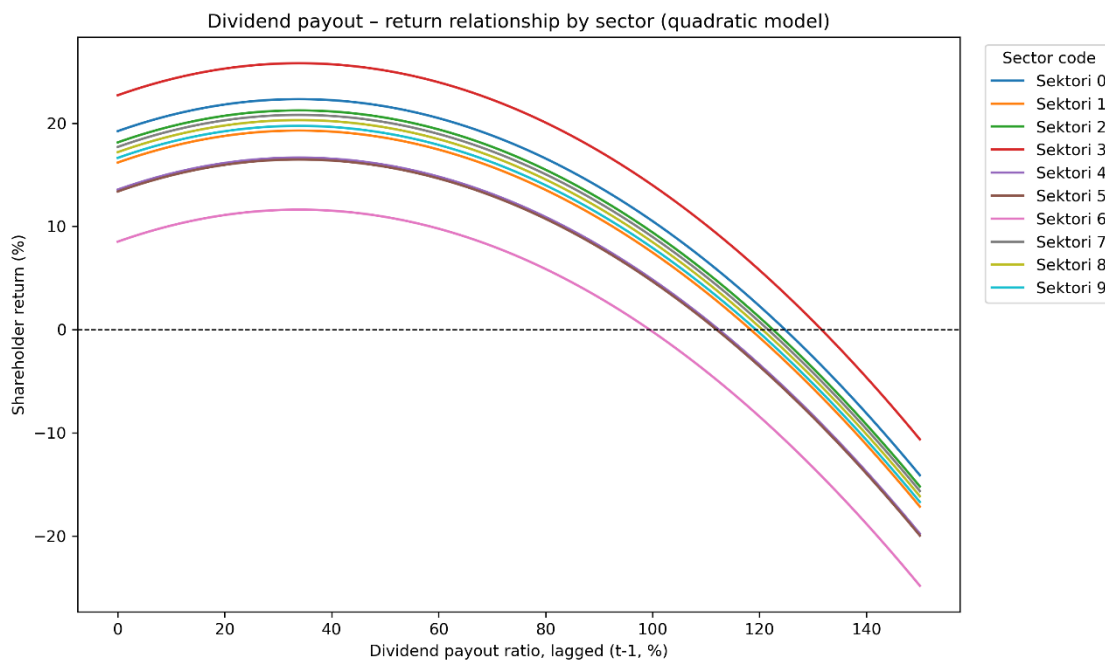


Figure 3 Show the effect of the dividend payout ratio on shareholder value.

From the chart, observe that when firm-level fixed effects are removed and replaced with sector-level effects, the results begin to resemble the outcomes predicted by Hypothesis 2. In the dataset, sectors are represented using the following numerical codes: Financials (0), Industrials (1), Technology (2), Consumer Goods (3), Consumer

Services (4), Basic Materials (5), Energy and Utilities (6), Health (7), Real Estate (8), and Other or Undefined (9). The figure displays raw data, with shareholder return on the y-axis and the dividend payout ratio on the x-axis. Therefore, the y-axis reflects absolute return levels across different payout ratios. Although the visualization is a simplified, non-panel representation, the direction and shape of the relationship are consistent with the sector-level panel regression results.

4.1.4 How Dividend-Paying Firms Have Performed

By examining the cumulative returns of dividend-paying and non-dividend-paying firms since the early 2000s, observe that companies distributing dividends have achieved higher total returns compared to those that do not. Based on this figure, dividend-paying firms appear to deliver superior shareholder value over time.

However, our baseline specification model indicates that a one-percentage-point increase in the dividend payout ratio decreases shareholder return by 0.163%. This suggests that the difference observed in the figure cannot be explained by dividend policy. To investigate this further, turn to the panel data analysis.

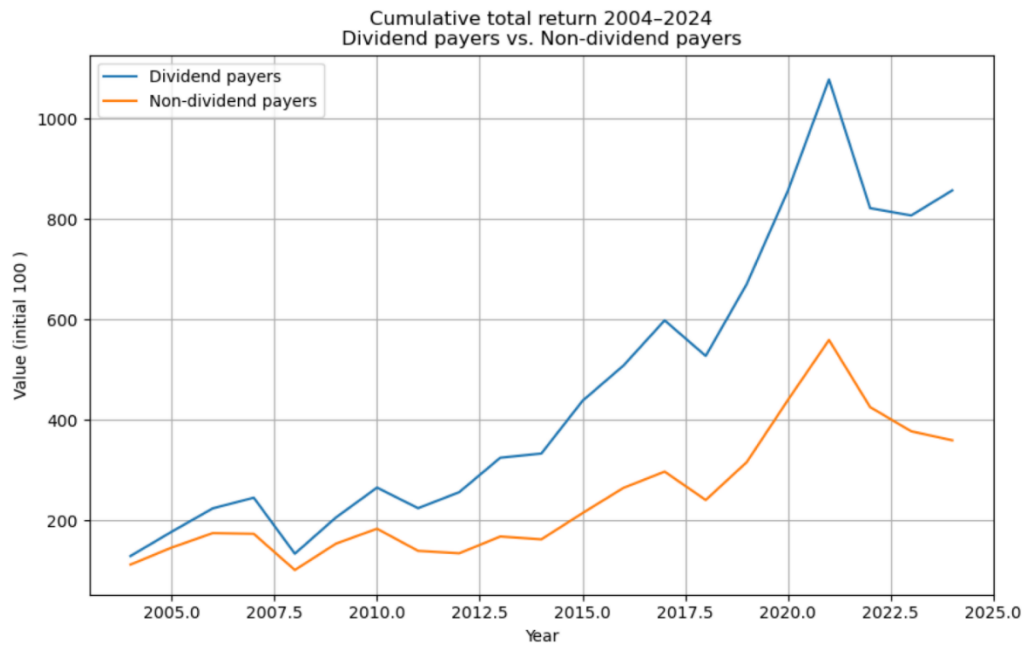


Figure 4 Performance of dividend-paying and non-dividend-paying companies during the 2000s.

The following table examines the effect of dividend-paying firms on total return. This table investigates how dividend distribution, in general, influences total shareholder return. The model is based on the following regression specification.

(10) Table 8 regression model

$$SR_{i,t} = \alpha + \beta 1DividendDummy_{i,t} + \gamma X_{i,t} + u_i + \lambda t + \varepsilon_i \quad (10)$$

Where [the dividend dummy indicates whether a firm paid dividends in year t, and the other variables are the same as in the regression model of this study].

Table 8 Effect of dividend-paying firms on shareholder return.

Field	Value		
No. Observations	2085		
Time periods	21		
Included effects	Entity, Time		
Parameter	Coef	Std. Err.	P-value
Dividend payout ratio	0.188	0.140	0.177
Dividend payout ratio ²	-0.268	0.127	0.036
Zero-dividend dummy	0.134	0.036	0.000
Market cap (thousands) €	0.000	0.000	0.003
Free cash flow yield	0.045	0.027	0.091
Debt to common equity	-0.018	0.008	0.018
Market to book	0.005	0.003	0.047
Metric	Value		
R-squared (Overall)	0.027		

Table 8 shows whether dividend-paying firms differ in their total returns compared to non-dividend-paying firms. The model includes control variables as well as firm and year fixed effects. However, the purpose of the dividend dummy is not to test the curvature of the payout–return relationship, and therefore the significance of the squared term in this model should be interpreted with caution. This specification mainly captures systematic differences between dividend-paying and non-paying firms, not the shape of the payout–return relationship. This coefficient is also significant at the 5% level ($p = 0.036$). In contrast, the dividend payout ratio itself is not statistically significant. The dividend dummy equals 1 if the firm pays a dividend and 0 otherwise. The results indicate that firms that pay dividends have generated higher returns.

The explanatory power of the model is low (0.027). This table supports the evidence from Figure 4, which showed that dividend-paying firms have achieved higher cumulative returns, but it suggests that the difference is not driven by dividend policy itself, but rather by other firm-level characteristics. Given the low explanatory power, dividend policy alone and other variables on the table do not explain much of the variation in shareholder returns. The direction of the squared dividend payout ratio is

also inverted, consistent with the sector-specific model, which had an explanatory power 0.243.

The panel data results are illustrated by examining the optimal dividend payout point. The baseline model does not allow for an optimal payout point because it is linear; instead, it simply indicates the relationship between the dividend payout ratio and shareholder return. The extended specification models with firm fixed effects are not statistically significant and therefore cannot be used to estimate the optimal payout point. In contrast, the sector-level fixed effects extended model's dividend payout variables are statistically significant and can be used to calculate the optimal payout point. Based on the sector-level model, the optimal dividend payout ratio is 33.9%. Beyond this point, further increases in the payout ratio are associated with lower shareholder returns, as can be seen in Figure 5.

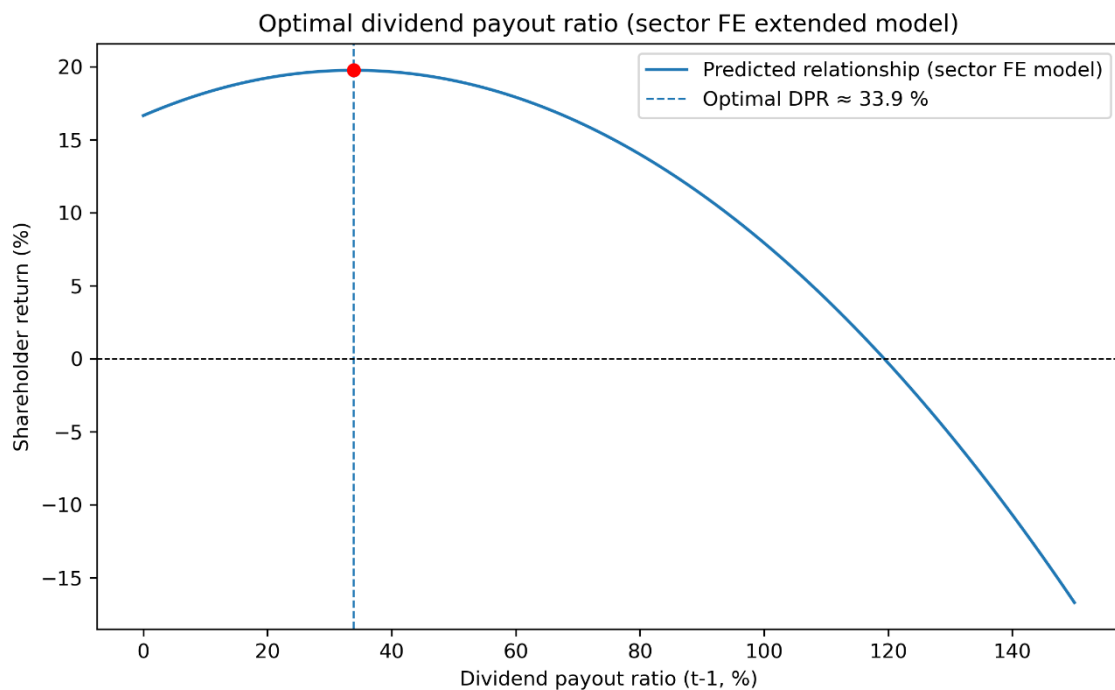


Figure 5 Optimal dividend payout ratio based on the sector fixed effects extended model.

Next, the study focuses on a robustness check, after which it summarizes the empirical results, assesses their robustness, and examines the hypotheses.

4.2 Robustness Check

To ensure that the results are not driven by model specification choices or sample selection, several robustness checks are conducted. First, the study evaluates whether the findings remain stable when extreme observations are winsorized in both the baseline and extended specifications. Second, the analysis re-estimates the models without control variables to isolate the direct relationship between the dividend payout ratio and shareholder return. Third, the models are re-estimated for the post-financial-crisis period (2009–2024).

These robustness checks support the validity of the study’s findings. Residual diagnostics revealed no evidence of conditional heteroskedasticity, indicating that the main results are not driven by volatility clustering or instability in the error structure.

4.2.1 Winsorized Robustness Check

Winsorized robustness checks trim the top and bottom 1% of observations, which removes outliers and therefore prevents them from affecting the results.

Table 9 Winsorized results of a baseline specification fixed-effects panel regression.

Field	Value		
No. Observations		2006	
Time periods		20	
Included effects	Entity, Time		
Parameter	Coef	Std. Err.	P-value
Dividend payout ratio	-0.171	0.043	0.000
Market cap (thousands) €	0.000	0.000	0.276
Debt to common equity	-0.039	0.013	0.002
Market to book	3.777	1.132	0.001
Free cash flow yield	0.659	0.066	0.000
Metric	Value		
R-squared (Within)	0.13		
R-squared (Overall)	0.12		

Table 9 reports the winsorized baseline specification. The results remain consistent with the linear baseline model. After trimming the top and bottom 1% of observations, a one-percentage-point increase in the dividend payout ratio decreases shareholder return by 0.171 percentage points, statistically significant at the 1% level. Market capitalization remains economically small and statistically insignificant. The effects of debt-to-common-equity, market-to-book ratio and free cash flow yield become slightly stronger, with higher statistical significance. The explanatory power increases to approximately 13%, higher than in the original baseline model.

Table 10 Winsorized results of an extended specification fixed-effects panel regression.

Field	Value		
No. Observations	2006		
Time periods	20		
Included effects	Entity, Time		
Parameter	Coef	Std. Err.	P-value
Dividend payout ratio	-0.233	0.144	0.105
Dividend payout ratio ²	0.001	0.001	0.613
Market cap (thousands) €	0.000	0.000	0.281
Debt to common equity	-0.039	0.013	0.002
Market to book	3.779	1.135	0.001
Free cash flow yield	0.659	0.066	0.000
Metric	Value		
R-squared	0.13		
R-squared (Overall)	0.12		

Table 10 reports the winsorized extended specification. The results align with the main extended model, that neither the dividend payout ratio nor its squared term is statistically significant. Market capitalization remains insignificant, while debt-to-common-equity and free cash flow yield remain significant and similar in magnitude to the full model. Overall, winsorization does not alter the qualitative conclusions.

Table 11 Winsorized estimates from the extended panel regression.

No. Observations	2085		
Time periods	21		
Fixed effects	Sector FE and Year FE		
Winsorized (1–99 %)			
Parameter	Coef	Std.err	P-value
Dividend payout ratio	0.220	0.087	0.012
Dividend payout ratio ²	-0.003	0.001	0.002
Market cap (thousands) €	0.000	0.000	0.266
Debt to common equity	-0.015	0.006	0.008
Market to book	0.449	0.221	0.042
Free cash flow yield	0.043	0.024	0.075
R-squared	0.261		

Table 11 presents the winsorized results of the extended model with sector fixed effects. The results are consistent with the non-winsorized version. A one-percentage-point increase in the dividend payout ratio initially raises shareholder return by approximately 0.22 percentage points, after which the effect becomes negative, producing the inverted U-shaped pattern. Control variable effects and significance levels remain largely unchanged, and the explanatory power (26.1%) is nearly identical to the main model.

Market capitalization does not have a statistically significant effect in this specification, like the main model that excluded firm fixed effects and included sector fixed effects. Free cash flow yield exhibits a similar effect to that observed in the full sample and remains moderately significant at the 10% level. Debt-to-common-equity and the market-to-book ratio also show effects in the same direction as in the full sample, with significance at the 1% level ($p = 0.008$) and the 5% level ($p = 0.042$), respectively. The explanatory power remains as high (26.1%) as in the main model.

4.2.2 Robustness Check without control variables

Next, examine the results without control variables, beginning with the extended model and then moving to the extended model that includes sector fixed effects. This approach allows us to focus on the direct relationship between the dividend payout ratio and

shareholder return. It shows whether the relationship persists even in the absence of control variables.

Table 12 Results of a fixed-effects panel regression, without control variables.

Field	Value			
No. Observations		2015		
Time periods		20		
Included effects	Entity, Time			
Parameter	Coef	Std. Err.	P-value	
Dividend payout ratio	-0.140	0.043	0.001	
Metric	Value			
R-squared	0.0052			

Table 12 shows the baseline model re-estimated without control variables. The relationship remains negative, that a one-percentage-point increase in the dividend payout ratio decreases shareholder return by 0.14 percentage points, significant at the 1% level. As expected, the explanatory power drops substantially to 0.5%.

Table 13 Results of an extended specification, without control variables.

Field	Value			
No. Observations		2015		
Time periods		20		
Included effects	Entity, Time			
Parameter	Coef	Std. Err.	P-value	
Dividend payot ratio	-0.17	0.14	0.23	
Dividend payot ratio^2	0.00	0.00	0.83	
Metric	Value			
R-squared	0.005			
R-squared (Within)	0.001			

Table 13 presents the extended model without control variables. Neither the linear nor the quadratic term is statistically significant, consistent with the full extended model.

The magnitude of the coefficients remains similar, indicating that the lack of significance is not caused by the control variables.

Table 14 Results for the sector-adjusted extended model, without control variables.

No. Observations	2085		
Time Periods	21		
Fixed effects	Sector FE and Year FE		
	Parameter	Coef	Std.err P-value
	Dividend payout ratio	0.241	0.092 0.009
	Dividend payout ratio ²	-0.003	0.001 0.002
R-squared	0.226		

Table 14 reports the extended specification with sector fixed effects and without control variables. The results remain consistent with the full-sample sector-level model: shareholder return increases by approximately 0.24 percentage points for each one-percentage-point increase in the dividend payout ratio at low payout levels, after which the effect turns negative. The inverted U-shape persists, and the explanatory power remains high (22.6%).

4.2.3 Robustness Check for the Post-Financial Crisis Period

Next, examine both the linear and non-linear models by restricting the sample period to 2009–2024, which is period after the financial crisis period. It has been observed that after the financial crisis, Finnish companies have invested less than before the crisis (Lindblad et al., 2020). In addition, financial regulation changed following the crisis (Vauhkonen & Asplund, 2024). Therefore, re-examine the research question focusing specifically on the post-crisis period.

Table 15 Results of a fixed-effects panel regression, post-financial crisis.

Field	Value		
Time window	2009–2024		
Included effects	Entity, Time		
Parameter	Coef	Std. Err.	P-value
Dividend payout ratio	-0.193	0.065	0.003
Market cap (thousands) €	0.000	0.000	0.353
Debt to common equity	-0.014	0.009	0.115
Market to book	0.393	0.245	0.110
Free cash flow yield	0.040	0.024	0.100
Metric	Value		
R-squared	0.020		
R-squared (Within)	0.017		

Table 15 provides the baseline specification for the post-crisis period. The negative linear effect becomes slightly stronger -0.193 percentage points and remains highly significant. Market capitalization becomes insignificant, while free cash flow yield, debt-to-common-equity, and market-to-book ratio maintain the same direction as in the full sample.

Table 16 Results of an extended specification, post-financial crisis.

Field	Value		
Time window	2009–2024		
No. Observations	1613		
Included effects	Entity, Time		
Parameter	Coef	Std. Err.	P-value
Dividend payout ratio	-0.230	0.140	0.100
Dividend payout ratio ²	0.000	0.001	0.764
Market cap (thousands) €	0.000	0.000	0.355
Debt to common equity	-0.014	0.009	0.115
Market to book	0.393	0.245	0.109
Free cash flow yield	0.040	0.024	0.098
Metric	Value		
R-squared	0.017		

Table 16 shows the extended model for the post-crisis period. The negative linear effect remains, and the squared term remains statistically insignificant. The results mirror the full sample extended model. Market capitalization does not have a statistically significant

effect, unlike in the main model. Free cash flow yield shows a similar effect as in the full sample and remains moderately significant at the 10% level. Debt-to-common equity and the market-to-book ratio also have effects in the same direction as in the full sample, but their significance is slightly above the 10% threshold.

Table 17 Results for the sector-adjusted extended model and without firm fixed effects, post-financial crisis.

No. Observations	1613		
Time Periods	16		
Year range	2009–2024		
Fixed effects	Sector FE and Year FE		
Parameter	Coef	Std.err	P-value
Dividend payout ratio	0.154	0.102	0.130
Dividend payout ratio ²	-0.003	0.001	0.019
Market cap (thousands) €	0.000	0.000	0.349
Debt to common equity	-0.011	0.006	0.072
Market to book	0.368	0.216	0.089
Free cash flow yield	0.045	0.025	0.074
R-squared	0.208		

Table 17 presents the sector-adjusted extended model for the post-crisis period. The inverted U-shape remains statistically significant: a one-percentage-point increase in the payout ratio initially increases shareholder return by approximately 0.15 percentage points, after which the effect turns negative. Control variable effects remain like the winsorized and full-sample models.

Market capitalization does not have a statistically significant effect on this specification, like the model where extreme values were winsorized, as well as the main model that excluded firm fixed effects and included sector fixed effects. Free cash flow yield exhibits a similar effect to that observed in the full sample and remains moderately significant at the 10% level. Debt-to-common-equity and the market-to-book ratio also show effects in the same direction as in the full sample, with significance at the 10% level ($p = 0.089$)

and the 10% level ($p = 0.072$), respectively. The explanatory power remains as high (20.8%) as in the main model.

4.3 Summary of Result

In the baseline model, which included year and firm fixed effects, there was a slight connection between the dividend payout ratio and total shareholder return, although the explanatory power of the model was low. This indicates that the results support Hypothesis 1: the dividend payout ratio is statistically significantly associated with shareholder returns, although the magnitude of the effect is small. The model results show that the connection was slightly negative. The extended model, which included firm and year fixed effects, is not significant and does not have a meaningful impact on shareholder returns. The first hypothesis therefore receives mixed support: the baseline model supports it, but the extended model does not. This is why the sector-specific extended model excludes firm fixed effects and includes sector fixed effects.

In the sector-specific model, the dividend payout ratio results were significant, showing that shareholder returns first increased but, after the optimal dividend payout point, began to decrease. This supports Hypotheses 1, but rejects hypothesis 2, because study's hypothesis assumes U-shaped relation, but result shows inverted U-shaped relationship.

As can be seen in Figure 4 and Table 8, firms that pay dividends have generated higher returns. These results are not explained by the dividend payout ratio but by other variables and firm characteristics. This model mainly captures systematic differences between dividend-paying and non-paying firms rather than the functional form of the payout-return relationship.

The tables that included firm fixed-effect results showed no substantial influence, and in the extended model, not even significant results. This indicates changes in a company's dividend payout ratio do not affect shareholder returns. The explanatory power of these tables was also low. In the sector-specific analysis, however, the results were significant,

and the optimal payout point calculated from the model was 33.9%. Despite this, the explanatory power of all models remains low, reinforcing the conclusion that the dividend payout ratio explains only a small portion of shareholder returns.

4.3.1 Hypothesis Testing Outcome

According to the results of the baseline and sector-specific extended models' empirical research and robustness checks, accept hypothesis 1 that the dividend payout ratio is statistically significantly associated with shareholder returns.

According to the sector-specific extended model's empirical research and robustness check results, the findings reject hypothesis 2, because it assumes that the relationship is U-shaped, where a zero dividend payout ratio and high payout ratios are associated with higher shareholder returns. Our results showed an inverted U-shape, in which a 33.9% dividend payout ratio produced higher returns on average.

4.3.2 Differences in Findings Compared to Prior Literature

Companies nevertheless continue to pay dividends, consistent with theories such as the bird-in-the-hand or prospect theory, which suggest that investors prefer certain income over uncertain but potentially higher future gains. Dividends have also been found to have positive implications according to signaling theory, the free cash flow theory, and agency theory, as dividends can reduce agency costs. In addition, dividend policy can be explained by the life-cycle theory, where firms without profitable investment opportunities may choose dividend distribution as an alternative use of funds.

The findings of this study differ from several prior works on the subject. McManus et al. (2004) examined the explanatory power of dividend yield in predicting stock returns and concluded that the dividend payout ratio plays a significant role. They also reported that zero-dividend and high-dividend firms tend to outperform firms with moderate dividends. Their research design, which incorporated dividend yield, payout ratio, firm

size, and seasonal dummies, differs from that of this study, which helps explain the divergence in results.

Similarly, Morgan and Thomas (1998) found that zero- and high-dividend firms generated higher returns than those paying low or moderate dividends. However, their grouping of firms by dividend yield, as well as differences in research setting, make their findings not directly comparable. Arnott and Asness (2003) focused on the link between payout ratios and subsequent earnings growth, showing that higher payout ratios have historically been associated with faster growth. This line of inquiry differs both in research questions and methodology from the present study. Despite the differences in research designs and results, some similarities are found. Observe that there is some kind of relationship between the dividend payout ratio and total return and note that it forms a U-shape, although in this study's model it takes an inverted form, in which companies distributing an average dividend payout of 33.9% perform better.

4.3.3 Robustness Check

Robustness was first tested by winsorizing the extreme 1% tails in models, and the results were consistent with the main analysis. Removing control variables as well as restricting the sample to the post-financial-crisis period produced similar outcomes.

4.3.4 Conclusion and Contextual Considerations

In conclusion, in the baseline model a higher dividend payout ratio is connected to total return that a 1% increase in the payout ratio decreases shareholder return by 0.163 percentage points. The firm fixed-effect extended model does not show any statistically significant effect. The sector fixed-effect extended model indicates an inverted U-shaped relationship between the dividend payout ratio and shareholder return, showing that the worst outcomes occur when firms distribute a 100% dividend payout ratio. In that model, a higher dividend payout ratio is connected to total return such that a 1% increase in the payout ratio raises shareholder return by 0.183 percentage points, but

the squared payout ratio reduces it by 0.003. Thus, the model forms an inverted U-shape. While dividend-paying firms have outperformed non-payers on the Helsinki Stock Exchange during the 2000s, this outperformance cannot be attributed to the payout ratio itself but rather to other firm characteristics. At the sector level, the firms that have distributed moderate payout ratios (33.9%).

5 Conclusion

This study examined whether the dividend payout ratio helps explain total shareholder return. The analysis also included several control variables: market capitalization, free cash flow yield, debt-to-common-equity, and the market-to-book ratio. The sector-specific extended model additionally included sector variable. The empirical setting focused on firms listed on the Helsinki Stock Exchange over the period 2003–2024. Two regression specifications were employed, one of which incorporated the squared term of the dividend payout ratio. In both models, the payout ratio from the previous year was used, as it reflects the dividends distributed in the current year.

The literature review drew from classical finance theories as well as theories related to dividend policy. The hypotheses were developed based on prior research examining how dividend payout ratios and dividend levels relate to total returns or firm-level return growth. Since no previous study employed identical research design, the hypotheses were adapted from these earlier works.

The purpose of the study was to determine whether the dividend payout ratio has a statistically significant relationship with shareholder return. The results of the baseline model indicated a slightly negative association between the payout ratio and total return, with a one-percentage-point increase in the payout ratio associated with a 0.16-percentage-point decrease in shareholder return. However, the explanatory power of the models was very low. In the specification including the squared term, the coefficients were not statistically significant.

The extended model, which includes sector fixed effects and excludes firm fixed effects, shows an inverted U-shaped relationship, and in this model both payout ratio coefficients are statistically significant. This model also shows that a 1% increase in the dividend payout ratio increases shareholder return by 0.183 percentage points, while the squared payout ratio decreases it by 0.003, thereby forming the inverted curve. The explanatory power of this model was higher than that of the firm fixed-effects models.

When examining the Helsinki Stock Exchange, dividend-paying firms were found to outperform non-payers, but this appears to be driven by other firm characteristics rather than the payout ratio itself. The robustness check results are in line with the findings of the study.

5.1 Research Limitations

This study focuses on firms listed on the Helsinki Stock Exchange between 2003 and 2024. Compared to other European stock exchanges, the Helsinki market has relatively few listed companies, which limits the generalizability of the results. The analysis uses only the dividend payout ratio as the main independent variable and does not include dividend yield or other potentially important variables. In addition, no macroeconomic control variables, such as interest rate levels, were incorporated. Instead, only four firm-specific control variables were employed.

The explanatory power of the models, excluded sector fixed effect models, was found to be very low, indicating that there are other important independent variables that could better explain shareholder returns. Furthermore, the firm fixed effect extended model was not statistically significant, which limits the strength of the conclusions.

5.2 Further Research

Future research could be extended to cover a longer time period and include additional explanatory variables, such as dividend yield and growth expectations. Control variables could also be expanded to incorporate macroeconomic indicators, such as GDP growth, inflation, and interest rates. These additions could improve the explanatory power of the models. Furthermore, future studies could examine multi-year periods to explore how dividend policy, payout ratios, and dividend yields have influenced firm growth.

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