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The Impact of "Forced Dividends" on Future Firm Performance

Jason Silva

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Supervised by
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Biographical Note

Jason Silva was born in Porto in 2003. In 2021, he enrolled in the Bachelor's degree in Business Administration at the School of Economics and Management of the University of Porto, which he completed in 2024. Throughout his undergraduate studies he developed a particular interest in corporate finance and company valuation, which he pursued through summer internships in financial risk analysis and business intelligence.

In 2024, he enrolled in the Master's in Finance at the same institution. He joined FEP Finance Club, where he worked in equity research and later served as director of the university investment fund. He was part of a team that placed third in a personal finance competition jointly promoted by Banco de Portugal and CFA Society Portugal and reached the finals of the Equity Research Challenge organised by FEP Finance Club.

Alongside his studies, he worked in M&A advisory at FALLWALLS during 2025, before joining Deloitte's M&A Transaction Services team in January 2026. His master's dissertation examines the impact of forced dividends, which are companies that maintain or increase dividends despite a financial deterioration, on future firm performance

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To God be the glory.

Abstract

A long-standing question in corporate finance concerns what a dividend reveals when a firm can no longer afford it comfortably. When earnings deteriorate but the distribution is maintained, two dominant frameworks in literature predict opposite outcomes. The costly-signal view holds that such a payout is credible precisely because a weaker firm could not imitate it. Dividend rigidity implies that sustaining it as internal funds weaken exhausts the cheapest source of finance at the least opportune moment and that has a relevant cost. This dissertation aims to study the future impact of a forced dividend, which occurs when a firm's ordinary dividend per share is maintained or raised despite a deterioration in its financial performance.

The analysis uses LSEG (Refinitiv) data for a panel of 378 United States listed firms, excluding banks, that paid a positive ordinary dividend in every year between 2011 and 2025. Future performance is measured by abnormal stock price returns benchmarked against rolling five-factor loadings. Two specifications were then created, of which the first compares forced dividends observations with every other firm in the sample, and the second restricts the sample to firms with a decrease in cash earnings, isolating the payout choice of forcing the dividend relative to those that cut it.

The first model finds that forced dividends earn higher abnormal returns, but this reflects the general rebound of financially weaker firms rather than a reward for maintaining the dividend. Once this deterioration is held constant, maintaining is associated with lower abnormal returns, reaching significance over three years at approximately eleven percentage points relative to cutting. The association is also found to be absent in the announcement month, accumulating the abnormal returns thereafter.

Overall, the study favors more the rigidity view than the costly-signal, though not decisively.

Keywords: Dividend Policy, Payout Policy, Dividend Signalling, Financial Flexibility, Abnormal Returns, Dividend Rigidity.

Resumo

Uma longa questão em finanças corporativas diz respeito ao que um dividendo revela quando uma empresa já não o pode sustentar de forma confortável. Quando os lucros deterioram, mas a distribuição se mantém, duas correntes teóricas preveem resultados opostos. O sinal custoso defende que tal pagamento é credível precisamente porque uma empresa mais fraca não poderia imitá-lo. A evidência sobre rigidez de dividendos implica que mantê-lo enquanto os fundos internos se desgastam esgota a fonte de financiamento mais barata no momento menos oportuno e isso tem um custo relevante. Esta dissertação tem como objetivo estudar o impacto futuro de um dividendo forçado, que ocorre quando o dividendo ordinário por ação de uma empresa é mantido ou aumentado apesar de uma deterioração no seu desempenho financeiro.

A análise baseia-se num painel de 378 empresas cotadas nos Estados Unidos, excluindo bancos, que pagaram um dividendo ordinário positivo anualmente entre 2011 e 2025. O desempenho futuro é medido por rentabilidades anormais das ações, comparadas com *rolling five-factor loadings*. Duas especificações foram criadas, das quais a primeira compara dividendos forçados com todas as outras empresas na amostra, e a segunda restringe a amostra apenas a empresas com uma deterioração nos lucros, isolando a decisão de forçar o dividendo relativamente às empresas que o reduziram.

O primeiro modelo evidencia que dividendos forçados geram rentabilidades anormais maiores, mas refletem principalmente a recuperação de empresas financeiramente mais frágeis e não uma recompensa por terem mantido o dividendo. Quando a amostra é restrita às empresas com deterioração financeira, manter dividendos associa-se a rentabilidades anormais inferiores, atingindo significância ao longo de três anos em aproximadamente onze pontos percentuais relativamente a reduzir. A associação está ausente no mês do anúncio, acumulando-se depois.

De um modo geral, a perspetiva de rigidez prevalece sobre o sinal custoso, embora não decisivamente.

Palavras-chave: Política de Dividendos, Política de Distribuição, Sinalização de Dividendos, Flexibilidade Financeira, Retornos Anormais, Rigidez de Dividendos.

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1. Introduction

Dividends are one of a few corporate decisions that are highly visible and regular, making these distributions an essential part of the company. When studying the payout decisions, Lintner (1956) established that managers adjust distributions only gradually towards a long-run target and treat reductions as a last resort. Subsequent work on this topic has shown that changes in dividend distributions largely follow, rather than precede, changes in fundamentals, which works more as a confirmation of the earnings already achieved rather than forecasting the ones to come (Benartzi et al., 1997; DeAngelo et al., 1996). At the same time, dividends are considered expensive as they commit cash, limit the free cash flow available to management and may even force firms towards external capital markets when internal funds become depleted (Easterbrook, 1984; Jensen, 1986; Myers & Majluf, 1984). A distribution is therefore a commitment by management and, at the same time, a constraint, and the relationship between these two becomes tighter as the firm's capacity to sustain a distribution weakens.

This dissertation seeks to study the moment when the financial performance deteriorates and the ordinary dividend is nevertheless maintained or raise, referred throughout this study as 'forced dividend'. When this happens, the costly-signal view holds that such a distribution is credible precisely because a weaker firm could not afford to imitate it, so that maintaining conveys management's confidence in a recovery and should not be penalized by the market (Bhattacharya, 1979; John & Williams, 1985; Miller & Rock, 1985). However, dividend rigidity, managerial over-optimism and the value of financial flexibility, defend that maintaining a distribution under bigger strain sacrifices more of the cheapest available source of finance, which leaves less cash available for uses such as reinvestment and, in severe cases, may even require the firm to draw on reserves or raise external capital to fund the distribution (DeAngelo et al., 1996; Lintner, 1956; Myers & Majluf, 1984).

Beyond this, DeAngelo et al. (1992) examine firms with long records of positive earnings and dividends that subsequently report a loss and find that, although an annual loss is close to a necessary condition for a dividend reduction, roughly half of the firms with losses in earnings did not reduce the distribution at all. In the sample of this current study, forced dividends occur in 26.7% of all firm-years and 85.79% when restricted to firm-years with a cash earnings decrease. DeAngelo et al. (1996) further study firms whose earnings decline

after a sustained period of growth and find that maintaining the dividend in that setting carries little information about future earnings. They rather attribute the failure of the signal to managerial over-optimism precisely when growth prospects fade.

However, these last two studies mentioned are concerned with the information that a payout decision may have for subsequent accounting performance and both rely on United States data from the 1980s and early 1990s. So, neither asks what the decision implies for subsequent risk-adjusted stock returns, which has a very big and direct impact on shareholders.

This dissertation therefore investigates the impact of forced dividends in subsequent stock market performance, using a sample of United States listed firms over the period of 2011 to 2025, excluding banks, that paid a positive ordinary dividend in every year of the period, yielding a panel of 378 firms. The selection of the United States market is due to the fact that it provides a suitable setting given its liquidity, depth and that ordinary dividends there are managed with a strong emphasis on maintenance and gradual increases, which raises the likelihood of observing the behaviour of interest. Restricting the sample to established payers follows the design of DeAngelo et al. (1992) and rests on the reasoning that a decision to maintain carries more information where a commitment already exists. Subsequent performance is measured as the buy-and-hold abnormal return over the twelve and thirty-six months following each firm's own results announcement and is benchmarked against expected returns constructed from rolling five-factor loadings.

This dissertation therefore sets out (i) to establish whether forced dividends are associated with subsequent risk-adjusted stock returns, and whether any such association reflects the payout decision or the financial deterioration that accompanies it; (ii) to determine whether firms that maintain the dividend when facing a decline in cash earnings perform differently from firms that cut it under the same financial shock; (iii) to assess whether any such difference persists over a longer horizon, thereby distinguishing if this forced dividend is a durable erosion or just confined to a temporary impact that is subsequently reduced or eliminated.

To address the specific questions this study set out to answer, two specifications are created. The first examines whether forced dividends are associated with subsequent abnormal returns at all, comparing affected firm-years with firm-years in general. However, that comparison conflates the consequence of the deterioration with the consequence of the

payout decision. In this manner, the other specification is created under the restriction of the sample to firm-years in which cash earnings fell, so that every firm has experienced the same financial deterioration and only the payout decision varies. Both specifications include firm and calendar-year fixed effects and a full set of lagged controls. The estimates are also assessed under two-way clustering by firm and calendar year, and a permutation test. The design is further supported by a decomposition of the chosen future time horizon, separating the announcement month from the months that follow, and by an extensive set of robustness checks covering the treatment threshold, the return measure, the control set and the exclusion of the pandemic period.

The empirical results provide evidence that forced dividends are associated with higher subsequent abnormal returns, but that association reflects more the consequences of deteriorating firms rather than the payout decision itself. Though, once the deterioration is held constant, the decision to maintain the distribution carries a negative subsequent abnormal return both in a shorter and longer time horizon. However, it only reaches statistical significance over three years with a coefficient of approximately eleven percentage points. Regarding the decomposition of the chosen future time horizons, the association is found to be absent in the month the results are announced and accumulates over the months that follow, which is inconsistent with the market treating the maintained distribution as an informative signal at the moment of disclosure.

Following this introduction, chapter 2 reviews the literature on the determinants and consequences of dividend policy. Chapter 3 presents the research questions and hypotheses. Chapter 4 describes the sample, construction of the forced-dividend classification, measurement of subsequent performance, empirical models and other relevant empirical work. Chapter 5 then reports the results and their interpretation, together with the diagnostic and robustness analyses. Lastly, Chapter 6 provides a conclusion, discusses key limitations of the study and identifies ideas for future research.

2. Literature Review

2.1. Foundations and determinants of dividend policy

The classic dividend debate begins with Modigliani and Miller's (1961) dividend irrelevance theorem, which shows that in perfect markets, meaning a world without taxes, transaction costs or information asymmetries, a firm's value is unaffected by its dividend policy. In their model investors have no real preference between receiving a dividend and realising a capital gain through the sale of shares, since they can construct homemade dividends at will. In this sense, whether a firm distributes earnings or retains them should not change its value. This irrelevance result, however, holds only under very restrictive assumptions and once they are relaxed to admit taxes, asymmetric information, agency costs and financing frictions, dividends begin to matter.

One early relevance argument is the bird-in-hand theory associated with Gordon (1959, 1962), who argued that investors prefer the certainty of current dividends to uncertain future capital gains. In this view a higher dividend yield lowers investors' perceived risk and the firm's cost of capital, thereby raising firm value. Bhattacharya (1979) later disputed the argument, labelling it a fallacy since the risk of the underlying cash flows is unaffected by how they are packaged.

A second early contribution came from Lintner's (1956) study of corporate payout practices. He found that managers are reluctant to cut dividends following a decline in earnings and cautious about raising them following an increase, so that dividends adjust only partially towards a long-run target payout. This behaviour became known as dividend smoothing and it essential to this study as it finds that dividend changes lag changes in earnings, and the observed dividend series is far smoother than the earnings underlying it. If managers are genuinely reluctant to cut when earnings fall, they must regard the dividend as something of value to shareholders that is worth financing from retained earnings or debt in order to preserve.

Furthermore, life-cycle models of payout formalise the observation that young growing firms forgo dividends in order to finance projects, while older firms with fewer profitable reinvestment opportunities return cash to shareholders (DeAngelo et al., 2006; Grullon et al., 2002).

Interestingly, Fama and French (2001) document that the proportion of United States non-financial, non-utility firms paying dividends fell from 66.5% in 1978 to 20.8% in 1999 and show that a substantial part of this decline reflects a general reduction in the propensity to pay. Therefore, payout became concentrated rather than eliminated as DeAngelo et al. (2004) show that aggregate real dividends continued to rise even as the number of payers fell, because distributions concentrated among a shrinking group of very large payers. Denis and Osobov (2008) confirm the same concentration internationally across the United States, Canada, the United Kingdom, Germany, France and Japan.

Moving on, Grullon et al. (2002) show that firms increasing dividends subsequently experience declines in systematic risk, capital expenditure and growth rates, consistent with a transition towards a more mature stage of the corporate life cycle. Besides this, profitability was found to not improve following dividend increases, indicating a shrinking investment opportunity set and a reduced need for internal funds rather than improving growth prospects.

The agency rationale for dividend policy originates in the broader theory of the firm developed by Jensen and Meckling (1976). They argue that the separation of ownership and control creates conflicts of interest between managers and shareholders, since managers may pursue private benefits or invest in projects that maximise their own utility rather than shareholder wealth. These conflicts generate monitoring costs, and dividend policy subsequently emerged as one mechanism for mitigating them by restricting managerial discretion over internally generated cash.

Jensen (1986) develops this argument specifically for payout as he contends that when firms generate free cash flow in excess of profitable investment opportunities, managers face incentives to deploy those resources inefficiently in negative net present value projects since internal funds can be spent more freely without external scrutiny.

Moreover, Easterbrook (1984) identifies that firms distributing larger dividends retain fewer internal funds, increase their dependence on debt and equity financing to support future investment, raise external capital and that this exposes managers to scrutiny by underwriters, creditors and analysts. The disciplinary benefit therefore lies not only in the cash a dividend removes but in the recurring obligation it creates to justify the firm's financing decisions to outside providers, making payout an active governance mechanism.

Empirical evidence is broadly consistent with this view in the sense that firms with fewer growth opportunities and larger free cash flows are more likely to pay dividends and to distribute larger amounts (DeAngelo et al., 2006; Denis & Osobov, 2008), which links the agency and life-cycle accounts.

Reinforcing this view, La Porta et al. (2000) show that in countries with strong shareholder protections firms pay significantly higher dividends, consistent with shareholders using payout policy to force insiders to use excess cash. However, the countries where investor protections are weak, insiders are better able to retain and potentially misuse corporate resources, which supports the view that dividends serve a governance function by limiting managerial discretion.

A behavioural alternative is offered by Baker and Wurgler (2004), who propose that managers cater to investor demand for dividends. They find that firms respond to a time-varying dividend premium, initiating dividends when investor sentiment for payers is strong and cutting back when that demand calms, which suggests that part of dividend policy is driven by prevailing investor preferences rather than by fundamentals alone.

To complicate all of these accounts, Brav et al. (2005) find through a survey that CFO's only consider dividend increases after long-term sustainable earnings are established. They also find that firms use repurchases for payout flexibility while keeping dividends steady, precisely because dividends create shareholder expectations that are costly to break. Managers do not cite signalling as their primary rationale, and most reject the idea that they pay dividends to signal firm quality in the academic sense. They report instead that dividends are attractive to retail investors, while denying that they use payout to alter their investor base. Free cash flow concerns are acknowledged, with many executives viewing both dividends and repurchases as ways to limit cash that might otherwise be misused.

Denis and Osobov (2008) show that across six developed markets, larger and more profitable firms with high retained earnings are far more likely to pay dividends and report that signalling, clientele and catering explanations have little explanatory power across countries, concluding instead that the evidence supports agency cost an life cycle theories of payout. Reviews of the field are more cautious than any single study but tend to treat agency and life-cycle considerations as better supported than pure signalling or tax explanations (Allen & Michaely, 2003; Farre-Mensa et al., 2014).

In sum, the Modigliani and Miller irrelevance result provides a useful benchmark, but in realistic settings dividend policy is relevant to firm behaviour. The consensus across these strands is that dividends reflect firm fundamentals and governance, such as profitability, maturity, and the need to commit cash to shareholders, rather than an arbitrary policy that can be ignored.

2.2. The consequences of dividend policy

2.2.1. Dividend yields and stock returns

Early empirical work examined whether high dividend yields imply higher future returns. Fama and French (1988) report that portfolios of stocks with high dividend yields tend to earn higher long-horizon returns, with the explanatory power of the yield increasing with the forecast horizon, suggesting some predictability in stock performance. Other studies find little effect of dividend policy on average returns once risk and taxes are accounted for. Black and Scholes (1974), for example, show that on a risk-adjusted basis dividend yields have no significant impact on stock returns and that after adjusting for personal tax differentials and investor clienteles, dividend policy alone does not appear to alter expected returns. Any yield effect may therefore partly reflect omitted risk factors.

Regarding repurchases, Grullon and Michaely (2004) study long-run price and operating performance following share repurchase announcements and find that, although repurchasing firms earn positive abnormal returns over long horizons, their operating performance does not improve after the announcement. This parallels the finding of Grullon et al. (2002), discussed above, that profitability and growth decline following dividend increases. Both results tell against the view that payout increases signal superior future operating prospects, indicating instead that changes in the payout mix reflect the firm's evolving investment opportunity set rather than optimistic private information.

2.2.2. Clientele effects and shareholder composition

Dividend policy also interacts with the type of shareholder a firm attracts, an idea known as the clientele effect. Elton and Gruber (1970) infer marginal stockholder tax rates from ex-dividend price behaviour and argue that investors sort by tax position and cash needs, with tax-exempt or income-seeking investors favouring high-yield shares and those in high tax brackets preferring low-yield shares in order to defer taxation.

Some rebalancing of the shareholder composition may nonetheless occur when a firm changes its policy. Asquith and Mullins (1983) note that when firms initiate dividends, some existing shareholders sell while dividend-preferring investors are attracted, so that the net wealth effect reflects both information and tax-driven rebalancing. Clientele effects therefore moderate how dividend changes are priced, but they do not by themselves guarantee abnormal returns for maintaining or cutting a dividend.

2.2.3. Dividend signalling and announcement effects

A central theme in dividend research is that under asymmetric information an unexpected dividend change may convey managers' private assessment of the firm's prospects. Bhattacharya (1979) formalises this by showing that managers will raise dividends only when they expect sufficient future earnings to sustain them, since dividends are costly and there generate a more credible signal.

Miller and Rock (1985) develop a complementary framework in which dividend announcements are informative because current earnings and available cash are not fully observable. Since investment and distributions have a similar finite pool from where they come from, the dividend may reveal the size of that pool, and an unexpected increase communicates confidence that future cash flows can sustain both. The signal is costly in their model for a specific and relevant reason: a firm determined to maintain a distribution when earnings are low must either cut investment below its optimal level or raise external finance. The dividend is credible precisely because sustaining it is expensive in one of those two forms.

John and Williams (1985) develop a related signalling equilibrium in which firms with stronger expected cash flows distribute higher dividends despite their tax disadvantage. Because the payment is dissipative, weaker firms cannot credibly imitate it without incurring substantial financial strain, which makes the higher payout a credible signal of quality. With Bhattacharya (1979) and Miller and Rock (1985), this model forms the theoretical foundation of the signalling literature, and the empirical work below is developed against its predictions.

Furthermore, Pettit (1972) was among the first to document a significant announcement effect, showing that prices rise on average when firms announce dividend increases and fall on omissions. Subsequent research replicated the finding, confirming that investors treat dividend changes as news about firm value (Aharony & Swary, 1980; Charest, 1978).

Asquith and Mullins (1983) examine firms that initiate dividend payments and document exceptionally large positive abnormal returns around the announcement, substantially larger than those observed for ordinary increases, with the magnitude of the reaction increasing in the size of the dividend initiated. They are careful in interpretation, however, emphasising that the information conveyed is tied to contemporaneous and near-term earnings and cash flow rather than to long-run growth prospects. So, initiations signal a discrete improvement in payout capacity rather than a permanent shift to a higher growth trajectory.

Michaely et al. (1995) extend this literature in a large-sample study covering 1964 to 1988 and find that stocks omitting dividends suffer an average three-day decline of roughly 7%, while initiations earn about 3.4% in the short run. More importantly, they document that prices continue to drift in the same direction over the following year, with initiating firms outperforming by approximately 7.5% and omitting firms underperforming by around 11% over the twelve months following the announcement. They also find little evidence of clientele shifts in either sample, which indicates that the drift reflects a revaluation of the firm rather than a change in the composition of its shareholders.

Whether dividend changes actually predict future earnings has been contested since the beginning of this literature. Watts (1973) examined whether unexpected dividend changes improve forecasts of future earnings and found that, while dividend announcements contain some information, their incremental predictive ability is weak, indicating that dividend changes largely confirm what is already reflected in past performance.

Healy and Palepu (1988) study initiations and omissions and they find that initiating firms experience positive earnings changes both before and after the dividend decision, while omitting firms experience negative changes, but then their subsequent earnings changes relate positively to the initial announcement return. They interpret this as evidence that investors read dividend announcements as managers' forecasts of future earnings.

Benartzi et al. (1997) examine whether dividend changes predict future earnings growth and find that they generally do not. According to their study, firms increasing dividends have typically experienced strong recent growth but do not subsequently outgrow comparable firms, while firms cutting dividends tend to have suffered prior declines and often recover afterwards. Although they do find modestly positive abnormal returns following dividend increases over longer horizons, they attribute these to the absence of subsequent negative

news rather than to superior fundamentals, supporting the view that dividend changes are largely backward-looking confirmations that recent earnings are sustainable.

Nissim and Ziv (2001) also test this topic using a specification that controls for mean reversion in earnings and find that dividend changes are in fact positively related to profitability in the two subsequent years, supporting the information content hypothesis.

The balance of evidence is therefore mixed as dividend changes clearly correlate with contemporaneous and recent performance, while their forward-looking content remains disputed.

Of most direct relevance to this dissertation, DeAngelo et al. (1996) examine firms whose annual earnings decline after nine or more consecutive years of growth. They find virtually no support for the proposition that dividend decisions identify firms with superior future earnings, attributing the failure of the signal to a bias towards over-optimism, which leads managers to overestimate earnings precisely when growth prospects are fading, and the modest size of the cash commitments involved, which undermines their credibility. Rather than indicating recovery, dividend decisions in these firms frequently preceded a reversal of earnings growth, so that maintenance during a period of weakening fundamentals should not be read as a reliable indicator of future growth.

The prevailing evidence therefore indicates that dividend increases more often reflect management's confidence in the sustainability of earnings already achieved than superior future prospects, just as cuts signal deterioration that has already occurred. The long-run price behaviour documented by Michaely et al. (1995) suggests that the market updates its assessment gradually rather than instantaneously. An important caveat though, consistent with Lintner (1956), is that firms increasing dividends rarely suffer sharp profit collapses immediately afterwards, since managers raise dividends cautiously as they know cutting them will yield a negative reaction.

2.2.4. Capital structure and payout policy

Cooper and Lambertides (2018) find that large dividend increases are followed by substantial rises in leverage and interpret this as firms using dividends to draw on excess debt capacity. More precisely, managers raise the payout and borrow correspondingly in order to maintain their capital structure. The leverage increase is therefore not explained by standard determinants such as firm maturity, investment or risk, nor by a change in target leverage,

which suggests that a large dividend increase alters the way the firm approaches debt adjustment rather than the target itself.

Kim et al. (2024) report the opposite pattern for Korean firms, finding that firms announcing large dividend increases subsequently reduce their leverage ratios, implying a lower cost of equity and less reliance on debt, with book and market leverage both rising after dividend cuts. The direction of the relation may therefore depend on the institutional setting, but both studies agree that payout and financing decisions are jointly determined and that large payout commitments are accompanied by material capital-structure adjustment.

From a longer-term perspective, DeAngelo et al. (2006) argue that dividend policy evolves in a life-cycle fashion together with capital structure. They show that the mix of earned versus contributed equity is among the strongest predictors of dividend-paying status, stronger even than profitability and growth opportunities, so that mature firms with accumulated retained earnings are far likelier to pay and maintain dividends than younger firms with little internally generated equity. As the share of contributed capital rises relative to earned capital, the propensity to pay declines.

2.2.5. Dividend policy and financial constraints

Firms facing tight financial constraints are generally less able to raise or maintain dividends, since a distribution reduces internal cash and they still need earnings for investment. Extending the life-cycle evidence discussed above, DeAngelo et al. (2006) show that firms with negative retained earnings almost never pay dividends, whereas those with positive retained earnings are far likelier to maintain them. Furthermore, they find that the rise in external financing over the 1970s to 2000s, with the associated increase in firms holding negative retained earnings, largely accounts for the decline in the fraction of dividend payers.

Furthermore, the pecking-order framework of Myers and Majluf (1984) and Myers (1984) examines the cost of maintaining a distribution when internal funds weaken. They find that under asymmetric information firms prefer to finance investment first from internally generated funds, then with debt, and only as a last resort with new equity, because external financing carries adverse-selection costs. From this perspective, sustaining a dividend while internal earnings deteriorate creates a financial deficit as it depletes the cheapest source of funds and forces the firm prematurely up the pecking order towards external capital. Flexibility is therefore sacrificed at the point when it is most valuable, and

financing costs can be expected to exceed those of a firm that retains its earnings. This is the same trade-off identified by Miller and Rock (1985), approached from the financing rather than the investment side.

In practice, then, firms under pressure from dividend commitments may exhibit a distinctive behaviour. Given the reluctance to cut documented by Lintner (1956), a firm facing weak earnings may temporarily finance the distribution by drawing down cash or borrowing, a course that cannot be sustained indefinitely without consequences for future performance. This suggests a hypothesis the present study tests rather than a finding already established. More precisely, when earnings fall and the dividend is nonetheless maintained, the decision admits either that management has unusual confidence in a rebound or that the firm is preserving appearances at the cost of financial flexibility. The two carry very different implications for subsequent performance and distinguishing between them is the purpose of this dissertation.

2.3. Synthesis and research gap

A consistent finding across the literature is that dividend changes generally follow, rather than precede, changes in firm fundamentals and firms that increase dividends typically do so after periods of strong earnings and cash flow (Benartzi et al., 1997; Lintner, 1956), while firms that cut or omit usually experience significant prior declines in performance (Michaely et al., 1995). Dividend policy is in this sense widely viewed as a conservative and backward-looking decision that reflects management's assessment of the sustainability of current earnings rather than a forecast of future growth, although the strength of that conclusion remains disputed (Nissim & Ziv, 2001).

At the same time, agency theories hold that payout limits the misuse of free cash flow while forcing firms to rely on external financing (Easterbrook, 1984; Jensen, 1986; La Porta et al., 2000). Besides this, life-cycle theories show that payers are typically mature, profitable and rich in retained earnings, while firms with weak internal funding capacity almost never pay (DeAngelo et al., 2006; Denis & Osobov, 2008) and the pecking order implies that a firm sustaining a distribution as internal funds weaken is deliberately exhausting its cheapest source of finance (Myers & Majluf, 1984).

Furthermore, the behaviour of firms that maintain payout despite deteriorating performance is not itself unexamined and it would be inaccurate to describe it as rare.

DeAngelo et al. (1992) study firms with long records of positive earnings and dividends that subsequently report a loss and find that although an annual loss is close to a necessary condition for a dividend reduction. The found that about 50.9% of loss firms reduced dividends against 1.0% of firms without losses, which means that roughly half of loss-making firms did not reduce the dividend at all. The closely related evidence of DeAngelo et al. (1996), discussed in Section 2.2.3, covers firms whose earnings decline after a long period of growth and the same conclusion follows.

What these studies do not address, though, are more direct consequences for shareholders as both are concerned with the informational content of the payout decision for subsequent accounting performance and both draw on United States data from the 1980s and early 1990s. Like this, neither asks what the decision implies for subsequent risk-adjusted stock returns, which directly impacts shareholders

To study this topic, this dissertation defines a forced dividend as a firm-year in which the ordinary dividend per share is maintained or raised while the firm's cash earnings fall. This phenomenon places the two dominant interpretations in direct opposition. On one hand, the costly-signal tradition implies that a firm sustaining a distribution like this is credibly conveying confidence in a recovery (Bhattacharya, 1979; John & Williams, 1985; Miller & Rock, 1985). On the other hand, the evidence on rigidity, over-optimism and financial flexibility implies that this decision is sacrificing flexibility at the least opportune moment and therefore should reflect a real cost (DeAngelo et al., 1996; Lintner, 1956; Myers & Majluf, 1984).

The gap addressed here is therefore not whether dividends convey information, nor whether firms maintain payout under strain, but what the decision to maintain rather than cut implies for subsequent market performance, measured against a group of firms that faced the same deterioration. By identifying forced-dividend episodes explicitly and comparing maintainers with cutters, this dissertation examines whether dividend rigidity under adverse conditions carries a measurable gain or cost for shareholders, and which of the two competing interpretations the evidence favours.

3. Research Questions and Hypotheses

The literature in the previous chapter finds a few relevant conclusions that this study seeks to explore. Firstly, that dividends are sticky, adjusting only gradually towards a long-run target (Lintner, 1956). Then, the fact that they are largely backward-looking, which means it provides more information on previous earnings rather than forecasting growth (Benartzi et al., 1997; DeAngelo et al., 1996). Lastly, that they are costly because they commit cash and constrain financial flexibility (Easterbrook, 1984; Jensen, 1986; Myers & Majluf, 1984).

As Section 2.3 set out, the occasion where a firm maintains or increases dividends despite worse financial performance is not rare among established payers, but its consequences for shareholders have not been examined through subsequent risk-adjusted stock returns.

Furthermore, the costly-signal and rigidity frameworks make opposite predictions about what should follow and favouring one over the other requires care in choosing the most correct comparison group. In this sense, one should note that a forced-dividend firm differs from others in two respects at once as its earnings have deteriorated and, given that, it has maintained or increases the dividend payout. Because this study focuses more on the payout decision, comparing forced dividend firms with others in general conflates the consequences of the financial deterioration with those of the decision.

This line of thought set out three main questions to be addressed:

Research Question 1. Do firms that maintain or raise the ordinary dividend while their cash earnings fall experience different subsequent stock market performance from firms where this does not happen, independently of if the cause was the financial deterioration or the payout decision itself?

Research Question 2. Is any such difference attributable to the payout decision itself, or to the deterioration in cash earnings that accompanies it?

Research Question 3. Do the consequences of a forced dividend persist in longer periods of time?

From these questions, and from the two competing frameworks set out above, three hypotheses are formulated.

Hypothesis 1. Firm-years in which the ordinary dividend is maintained or raised while cash earnings fall are associated with subsequent abnormal stock returns that differ from those of firm-years in which no such episode occurs.

This hypothesis establishes whether the episode causes a market reaction at all. Its comparison is against firm-years in general, including those without deterioration, so it captures the combined consequence of the financial decline and the payout decision rather than this last decision alone.

Hypothesis 2. Among firms whose cash earnings have fallen, those that maintain or raise the ordinary dividend earn lower subsequent abnormal returns than those that cut it.

This is the central hypothesis of the study as the comparison group here is not firms in general but firms subject to the same financial shock that responded differently, so the deterioration is held constant and only the payout choice varies.

The hypothesis states earning lower abnormal returns in order to favour one the competing frameworks previously described. The rigidity view defends that as the payout ratio rises because earnings have fallen while the dividend has not, a shrinking residual of internal cash generated from operations remains for reinvestment and for rebuilding reserves, and in severe cases the firm must draw on reserves or raise external finance to sustain the distribution (DeAngelo et al., 2006; Jensen, 1986; Myers & Majluf, 1984; Cooper & Lambertides, 2018). Despite this, according to Lintner (1956) and DeAngelo et al. (1996) managers avoid cuts because they are read as bad news and they over-estimate future earnings precisely when growth prospects are fading. Like this, when investors find out that the company cannot truly keep up with the distributions and that management was being overconfident on earnings or trying to play off the worse financial performance, they may penalise the stock price.

The rival prediction follows the costly-signal view, where if a distribution the firm can ill afford is credible precisely because a weaker firm could not imitate it, the market should not penalise maintainers relative to firms that cut, since the payout conveys management's expectation of recovery (Bhattacharya, 1979; John & Williams, 1985). The costly-signal view can therefore be read as predicting a difference of zero or above on market reaction and Hypothesis 2 is framed accordingly as it allows one to conclude which view is correct.

Hypothesis 3. A difference in subsequent abnormal returns between maintainers and cutters happen beyond the first year following the payout decision.

This hypothesis tests whether an abnormal return, if one exists, persists over a longer time horizon, or, if no abnormal return is initially observed, whether one emerges over a longer horizon. It is important to note that according to literature, abnormal returns following dividend omissions persist for roughly a year (Michaely et al., 1995), while the long-run performance consequences of payout decisions are considerably harder to detect and more sensitive to methodological choices (Fama, 1998; Grullon & Michaely, 2004). The hypotheses are therefore tested at both a one-year and a three-year horizon.

Taken together, the hypotheses specify in advance what evidence would favour each interpretation. Support for Hypothesis 2 would favour the rigidity view, in which maintaining carries a cost that cutters do not bear and a coefficient positive or indistinguishable from zero would favour the costly-signal view. Lastly, a result confined to the shorter horizon would suggest the market revises its assessment over the following years rather than creating a long-term impact.

4. Data and Methodology

This chapter sets out the data used to test the hypotheses formulated in Chapter 3, the methodologies applied, and the challenges those methodologies are designed to address.

4.1. Sample construction

The sample aimed to exclude firms with irregular or opportunistic payout policies, following DeAngelo et al's. (1992) approach, since for these firms an unchanged dividend would carry little to no information given the absence of any prior commitment to maintain it. Therefore, the sample comprises United States listed firms that paid a positive ordinary dividend every year between 2011 and 2025. Consequently, firms that reduced their dividend remain in the sample, but those that cut it to zero at any point are excluded, since even a small continued payment signals that maintaining the payout still matters to the firm.

Furthermore, the banking sector was excluded throughout because their reporting conventions and capital structures make various financial accounts such as leverage, total assets and cash holdings non-comparable with most of other industries. Furthermore, no size filter is applied, so the sample spans small, mid and large capitalisation firms. Lastly, the

United States market was chosen for its liquidity and depth, and because ordinary dividends there are managed with a strong emphasis on maintenance and gradual increases, which raises the likelihood of observing a forced dividend.

Data were then obtained from LSEG (Refinitiv) with all accounting and market variables measured at each firm's own fiscal year end so that market and accounting quantities refer to the same moment and remain comparable across firms with different fiscal calendars. The resulting panel contains 378 firms observed annually from 2011 to 2025, giving 5,670 firm-year observations.

The accounting panel begins in 2011 rather than earlier because the forced-dividend classification compares each firm's cash earnings against the preceding year, so the earliest year in the panel functions as a reference level rather than as an observation. Consequently, that reference must be representative of the firm's ordinary earnings capacity.

Taking this in consideration, fiscal year 2010 and the few others preceding it do not meet that requirement as they are under the impact of the financial crisis of 2008. To further confirm this volatility, the median year-on-year change in cash earnings was tested and the one from 2010 to 2011 is approximately 12.5%, roughly double the corresponding figure for every subsequent transition in the panel. A comparison anchored in 2010 would therefore capture the broad post-crisis recovery in earnings rather than firm-specific payout pressure, whereas 2011 provides a reference year drawn from more ordinary trading conditions.

Besides the main sample, monthly total returns are collected from January 2010, one year earlier than the accounting data because the expected-return benchmark of Section 4.4 is estimated from each firm's trailing monthly returns. Beginning the return series in 2010 provides that sufficient history for the earliest firms without extending the factor-loading estimation far into the acute phase of the financial crisis.

A clear consequence of this sample is that it is conditioned on a firm remaining a dividend payer through to the end of the defined period. This means that the results of this study regard firms with persistent, established payout policies and should not be generalised to all listed firms or to all dividend payers. Furthermore, the rule leaves out critical observations for the hypothesis under test as firms that abandoned the dividend entirely are arguably the most decisive cutters of all, and they are excluded. However, removing the most extreme cutters from the comparison group can be viewed as understating the difference between maintaining and cutting which will make the estimates conservative in this respect.

4.2. Measuring deteriorating payout capacity

Identifying a forced dividend requires a measure of the firm's capacity to fund its payout from operations, comparable within a firm from one year to the next.

On one side, reported earnings per share is the figure the market actually benchmarks as earnings reports are framed around it and investors judge dividend sustainability largely by reference to reported earnings, so there is a plausible case for a study of market performance to use the same measure. However, EPS is a per-share figure and share counts move for reasons unrelated to operating performance, such as share buybacks or issuances. For this reason, reported EPS was not considered to measure a firm's capacity to fund its payout from operations.

On the other side, a normalised measure of free cash flow to equity was considered for being, in corporate finance terms, the most precise description of the cash genuinely available for distribution to shareholders. However, it was rejected on grounds of relevance rather than correctness as investors forming expectations about dividend sustainability look more to reported figures such as EPS, and a measure that is technically superior but more disconnected from the information investors act upon is poorly suited for a study of market reactions.

Taking this in consideration, the measure adopted sits between the two options described: cash earnings, defined in total-dollar terms as normalised net income plus depreciation and amortisation. Like this, we get:

(4.1) $$CE_{i,t} = (EPS_{i,t} \times WAS_{i,t}) + D\&A_{i,t}$$

Where:

$CE_{i,t}$ - cash earnings of firm i in fiscal year t

$EPS_{i,t}$ - normalised basic earnings per share

$WAS_{i,t}$ - weighted-average basic shares outstanding

$D\&A_{i,t}$ - depreciation and amortisation

To achieve the cash earnings, one must first multiply normalised earnings per share by the weighted-average basic share count. This recovers net income exactly rather than approximately, because basic earnings per share is net income divided by that same share count. Second, as mentioned, the earnings figure is normalised, so it reflects core operating

profitability and excludes non-recurring items such as impairments, restructuring charges and gains on disposals. This variable is meant to capture a deterioration in the firm's ordinary capacity to fund its dividend, not an accounting event or extraordinary gains. Third, depreciation and amortisation are added back because dividends are paid in cash and these are the largest non-cash charges deducted in reported earnings, which moves the measure closer to distributable resources without drifting too far from the earnings framework the market uses.

However, it is important to note that cash earnings so defined is not cash flow, since the measure omits crucial cash impacts such as capital expenditures and changes in working capital. For this reason, the variable is described throughout the study as cash earnings rather than as cash flow.

4.3. Identifying forced dividends

A forced dividend is defined as a firm-year in which the ordinary dividend per share is maintained or increased even though the firm's cash earnings have fallen. The classification rests on a single condition, which combines a payout comparison with an earnings comparison:

(4.2) $FD_{i,t} = 1$ if $DPS_{i,t}^{ord} \geq DPS_{i,t-1}^{ord}$ and $CE_{i,t} < CE_{i,t-1}$

Both sides of the comparison use the ordinary dividend only because special dividends are discretionary and rarely expected to recur, so investors do not build them into their expectations of the regular payout. Including them would also introduce an asymmetry, since a special dividend paid in the current year could create an apparent event while one paid in the prior year would raise the comparison threshold.

Another fact of interest is that no condition on the level of cash earnings is attached to it as a simple directional rule avoids having to define financial health performance as a threshold.

The first year in which the trigger can be evaluated, and therefore also when the estimation sample begins, is 2012 as 2011 supplies the prior-year cash earnings and dividend against which 2012 is compared and therefore functions as a reference year rather than as an observation.

Because a forced dividend is a discrete event that switches off as soon as cash earnings tick upward, a second indicator records whether the firm has actually recovered from the episode. A firm therefore enters an unrecovered spell when the trigger first fires and remains in it until cash earnings exceed the level held immediately before the episode began.

When a firm experiences successive declines within a single spell, the reference level is the highest of the pre-decline levels observed since the spell started, rather than the most recent one. If this were the case, a firm suffering a second consecutive decline would face a less demanding recovery threshold than one suffering a single decline and could be recorded as recovered while remaining well below its pre-episode financial position. In this manner, the spell is released only when cash earnings rise above the pre-episode financial position, at which point the firm is treated as recovered and any subsequent episode establishes a new unrecovered spell of its own.

The creation of this variable means that a firm that has never experienced a forced dividend never has a reference level, so the measure captures recovery from a specific episode rather than the firm's position relative to its historical peak, making it episode linked. Combining the two indicators gives three mutually exclusive states, reported in Table 1.

Table 1 - Distribution of episode states in the estimation sample (2012-2025)

Table 1 reports the distribution of the sample three mutually exclusive episode states. Firm-years are not classifiable when the prior-year cash earnings or dividend needed to evaluate the trigger are unavailable.

Episode state	Definition	Firm-years	Share
0 - No episode	Baseline	2,563	48.4%
Of which cash earnings decreased and dividends were cut		95	1.8%
1 - Ongoing unrecovered spell	Prior trigger, cash earnings still below the pre-decline level	965	18.2%
Of which cash earnings decreased and dividends were cut		139	2.6%
2 - Fresh forced dividend	Trigger fires in the current year	1,413	26.7%
Not classifiable	Trigger inputs unavailable	351	6.6%
Total		**5,292**	**100%**

4.4. Measuring subsequent performance

To measure future performance confidently, this section will explore when the market can reasonably be assumed to have learned of the deterioration, what the chosen time horizon measures and how it is broken down, and what benchmark those returns should be judged against.

4.4.1. When the window opens

Seventy-eight of the 378 firms close their financial year in a month other than December, so anchoring every firm's performance window on a common calendar date would measure the wrong months for a substantial part of the panel. Two dates were therefore extracted for every firm-year: the fiscal period end and the month in which the annual results were announced. The window is anchored on the announcement month as it is the point at which the annual results become available to investors and from which subsequent performance can meaningfully be measured:

(4.3) $\text{Anchor}_{i,t} = \text{AnnouncementMonth}_{i,t}$

Of the 5,670 firm-years in the panel, 5,666 are situated between the first and fourth month after fiscal year end, making this anchor a plausible decision. There is a specific observation that its announcement month cannot be established and one that is in the same month as the fiscal year end. These are then excluded from the return measures rather than assigned an assumed date. Furthermore, calendar year fixed effects are also defined on the calendar year of the anchor month rather than on the fiscal year's one.

Table 2 - Distribution of the announcement lag

Table 2 reports the interval between each firm's fiscal year end and the month in which annual results are announced

Months after fiscal year end	Firm-years	% of total	Cumulative %
0	1	0.02	0.02
1	1,703	30.04	30.06
2	3,846	67.84	97.90
3	117	2.06	99.96
4+	2	0.04	100.00
Total	5,669	100.00	

4.4.2. What the window measures

Because the window is anchored on the announcement itself, it can be positioned to include or to exclude the month in which the results became public, which impacts the interpretation of results. The first year is therefore measured in three ways, all from the same anchor.

Firstly, the full first year which spans the announcement month and the eleven that follow. This is the primary measure, containing both the immediate response to the announcement and whatever adjustment follows.

Then, the announcement month is measured on its own, in an attempt to isolate the reaction at the moment the dividend decision and the annual results became public.

The last window spans the eleven months after the announcement, excluding the announcement month itself. This isolates the drift that occurs once the information is already available.

The same logic is applied at the three-year horizon, which is measured over the full thirty-six months beginning with the announcement and, separately, over the thirty-five months that exclude it. This aims to answer the hypothesis 3 previously described.

A possible limitation here is that the announcement-month measure captures the calendar month in which the results were published, so it contains the announcement reaction together with ordinary trading in that month rather than the reaction in isolation. This may introduce, for example, price volatility related to investors' expectations of the earnings rather than the reported figures themselves or even some post announcement drift if the report was made earlier in the respective month.

4.4.3. The benchmark and the return measure

Abnormal returns are measured against the Fama and French (2015) five-factor model, which augments the market, size and value factors of Fama and French (1993) with profitability and investment factors. It is estimated separately for each firm on a rolling window of thirty-six months, with an estimate produced wherever at least twenty-four of those months are available. The aim of using these factor loadings is to create an expected return for each firm based on several key characteristics, previously described, to which it can then be compared to the true returns and observe if there was an abnormal behaviour.

(4.4) $R_{i,m} - R_{f,m} = \alpha_i + \beta_1 MKT_m + \beta_2 SMB_m + \beta_3 HML_m + \beta_4 RMW_m + \beta_5 CMA_m + \varepsilon_{i,m}$

Regarding the selection of window length of prior return months, choosing a short window will yield loadings that vary with sampling error rather than with an actual change in the firm's risk, while a long one may blend a firm's current risk profile with a materially different earlier one registered many years ago. In this sense, pairing a maximum window with a lower minimum, so that an estimate is produced whenever a shorter, but still adequate, history exists is standard in rolling factor-loading estimation. Frazzini and Pedersen (2014) use rolling five-year windows on monthly data but requires at least a one-year minimum period of available returns. Taking this into account, the window length used here is twenty-four to thirty-six months as it increases the minimum Frazzini and Pedersen (2014) used in order to mitigate short-term sampling noise but it also reduces their maximum as five years is roughly one third of the whole sample used in this study which may stale the risk profile across years.

Estimating the window on trailing data only also ensures that the expected return for any month is constructed solely from information available beforehand following the convention established by Fama and MacBeth (1973). Appendix B3 reports the distribution of window lengths actually used, the estimated loadings and the first stage fit.

Buy-and-hold abnormal returns are then computed over the twelve and thirty-six months following the anchor as the difference between the compounded realised return and the compounded expected return obtained from the factor loadings:

(4.5) $BHAR_{i,T} = \prod_m(1 + R_{i,m}) - \prod_m(1 + E[R_{i,m}])$

It is important to note that this calculates BHAR from the difference between a firm's realised path and a smoothed path fitted from the five factor loadings. However, because the realised path is more volatile, compounding it tends to pull the resulting difference below zero even when the firm has not genuinely underperformed.

Regarding the choice of a buy-and-hold rather than a cumulative measure, Barber and Lyon (1997) show that summing abnormal returns yields a biased estimate of the return actually earned over a long horizon and argue that a buy-and-hold measure better reflects the experience of an investor holding the position for the full window. However, Fama (1998) takes the opposing view, on the grounds that compounding also compounds any error in the benchmark model and that cumulative measures are statistically better behaved at long

horizons. Because the debate is unresolved, this is constructed and reported in the robustness section. It is still important to note that the construction adopted here is also not equivalent to compounding the abnormal return as a whole and subtracting one, so that alternative is retained and reported alongside the arithmetic cumulative measure.

Lastly, in order to address any extreme values, all return measures are winsorised at the first and ninety-ninth percentiles. Nevertheless, the models are re-estimated on the unwinsorised series so that the effect of this choice is visible. The full set of moments is reported in Appendix B2.

4.5. Control variables

The models control for the firm characteristics that the payout literature identifies as jointly determining dividend policy and subsequent performance. All control variables also enter the study with a one-year lag, and are further defined in Appendix A.

Size, measured as the natural logarithm of total assets, is included because payout is heavily concentrated among large firms. Fama and French (2001) show that aggregate distributions remained concentrated in the largest and most profitable firms even as the proportion of payers fell. Furthermore, DeAngelo et al. (2006) link payout status to accumulated retained earnings, which scale with size. Size is also among the most established determinants of the cross-section of returns (Fama & French, 1993).

Leverage is measured as total debt over total assets. Under the agency view, debt service, often correlated with this ratio, disciplines managers by committing cash that would otherwise be available for discretionary use (Jensen, 1986). It is also mechanically linked to payout decisions as increases and decreases in dividends may lead firms to resort more or less to external financing, respectively (Cooper and Lambertides, 2018).

Tobin's Q, measured as total liabilities plus market capitalisation over total assets, proxies for the investment opportunity set. The life-cycle account of payout holds that firms distribute cash as profitable reinvestment opportunities are exhausted. Grullon et al. (2002) show that dividend increases are followed by declining growth rates and systematic risk, consistent with a contracting opportunity set rather than improved prospects.

Asset turnover, measured as revenue over total assets, is used here to capture operating efficiency as firms generating more revenue per unit of assets have, all else equal, a larger base from which to fund a distribution.

Capital expenditure intensity is measured as capital expenditure over total assets. As mentioned in the literature, survey evidence is explicit that investment takes priority over payout, with managers maintaining the dividend around investment needs rather than the opposite (Brav et al., 2005). Furthermore, Grullon et al. (2002) document falling capital expenditure following dividend increases.

Cash holdings, measured as cash and equivalents over total assets, show the buffer available to sustain a distribution when earnings weaken. This is central to the mechanism under study as a firm with a large buffer can maintain a dividend through a deterioration at a far lower cost than one without that buffer.

Working capital, measured as working capital over revenue, complements cash holdings as a measure of liquidity as a higher working capital over sales forces, in general, more liquidity out of the company when revenue grows before it effectively generates cash from that increase.

Dividend yield is included because it has an established relation with subsequent returns and with the treatment variables of this study. Fama and French (1988) report that high-yield portfolios earn higher long-horizon returns, while Black and Scholes (1974) find no reliable relation once risk and tax clienteles are accounted for.

Payout ratio measures how much of generated earnings the existing distribution absorbs and therefore shoes how much room the firm has to sustain it as earnings weaken. Furthermore, an indicator for non-positive earnings is included alongside it, since DeAngelo et al. (1992) show that an annual loss is close to a necessary condition for a dividend reduction among established payers, making observations with negative earnings a key component of the study.

An indicator for a decline in shares outstanding is included because it is often seen as a substitute for dividends when it comes to returning cash to shareholders. Firms that hold the dividend steady while distributing cash through buybacks instead are not captured by the dividend variable alone (Brav et al., 2005). The indicator marks a year in which shares outstanding fell, a proxy for net repurchase activity.

Lastly, dividend streak is the number of consecutive years in which the ordinary dividend was maintained or raised and aims to captures how established the commitment to dividends of a firm in a given year is. This follows from Lintner (1956) and DeAngelo et al. (1992),

which find that if managers adjust dividends only gradually and resist cuts, the length of an unbroken record measures the strength of the commitment being tested.

All controls enter with a one-year lag as this avoids conditioning future performance on firm characteristics determined at the same moment as the payout decision itself, which would absorb part of the effect under study. The exception is the treatment variables, since the trigger is defined by comparing fiscal year t with t-1. A single regression therefore combines a treatment defined on year t, controls measured at t-1, and a return window opening after year t is published.

4.6. Descriptive statistics

Table 3 traces how the panel narrows from the full extraction to the estimation samples and Table 4 reports the distribution of every variable used.

Table 3 - Sample construction

Table 3 traces the sample for the models and time horizons used.

Step	Firm-years	Firms
Full panel, 2011-2025	5,670	378
Estimation window, from 2012	5,292	378
less firm-years where the trigger cannot be evaluated	4,941	364
One-year horizon		
less firm-years without a complete return window	4,370	362
less firm-years with a missing lagged control	**3,867**	**352**
of which deteriorating firm-years (Model 2)	**1,303**	**335**
Three-year horizon		
less firm-years without a complete return window	3,664	361
less firm-years with a missing lagged control	3,180	350
of which deteriorating firm-years (Model 2)	1,010	324

Table 4 - Descriptive statistics, estimation window 2012-2025

Table 4 reports the distribution of every variable used in the models over observations in which the trigger can be evaluated, that have the respective return window available but still contain non-classifiable observations. Dependent variables are winsorised at the first and ninety-ninth percentiles. Control variables are lagged one year and reported over the estimation window.

Variable	N	Mean	SD	p25	Median	p75
Dependent variables						
One-year BHAR	4,674	-0.027	0.204	-0.154	-0.026	0.094
Three-year BHAR	3,914	-0.123	0.354	-0.332	-0.125	0.091
Treatment variables						
Forced dividend	4,941	0.286	0.452	0	0	1
Below pre-decline level	4,941	0.481	0.500	0	0	1
Control variables (lagged)						
Size (ln assets)	5,291	23.053	1.391	22.062	22.983	24.046
Leverage	5,221	0.352	0.190	0.235	0.338	0.446
Tobin's Q	5,291	2.054	1.286	1.242	1.623	2.395
Capex intensity	5,165	0.053	0.049	0.021	0.040	0.070
Cash holdings	5,277	0.062	0.068	0.012	0.039	0.090
Dividend yield	5,268	0.032	0.029	0.014	0.025	0.038
Payout ratio (regression series)	5,287	0.699	1.014	0.245	0.432	0.722
Negative earnings	5,289	0.041	0.197	0	0	0
Dividend streak (years)	5,292	4.530	3.844	1	4	7
Working capital	5,076	0.106	0.282	-0.031	0.084	0.238
Asset turnover	5,289	0.776	0.749	0.247	0.575	1.023
Buyback proxy	5,282	0.470	0.499	0	0	1

The dependent variables have negative means at both horizons which, as explained in Section 4.4.3, is a mechanical property of differencing a volatile realised path against a smoothed expected path rather than evidence that the sample underperformed.

Regarding the control variables, the median firm has a debt to assets of 0.34, a dividend yield of 2.5%, a payout ratio of 0.43 and has maintained or raised its ordinary dividend for four consecutive years. These indicate that the median firm leans toward moderately leveraged firms with settled payout policies, precisely the setting in which maintaining a dividend through a deterioration carries information.

4.7. Empirical models

Every specification below is estimated with firm and calendar-year fixed effects, for reasons further explained in Section 4.8.1. The natural starting point is a single regression of subsequent abnormal returns on the forced dividend indicator, with the recovery indicator and the controls alongside it:

(4.6) $$BHAR_{i,t} = \alpha + \beta_1 FD_{i,t} + \beta_2 BP_{i,t} + \gamma' X_{i,t-1} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Where:
$FD_{i,t}$ - forced-dividend indicator
$BP_{i,t}$ - indicator for cash earnings below the pre-decline reference level
$X_{i,t-1}$ - vector of lagged control variables
μ_i - firm fixed effect; λ_t - calendar year fixed effect

As previously mentioned, a forced dividend necessarily places the firm below its pre-decline reference level, so the two indicators are nested rather than independent. The coefficient β_1 is therefore not the effect of a forced dividend against a healthy firm-year but the increment of an observation that has cash earnings below the pre-decline reference level, which makes the total association the sum of the two coefficients.

In this manner, and in order to test whether if the total association, measured by β_2 plus the increment of β_1, is statistically significant, the previous regression was reworked to include the sum of the baseline and the forced dividend trigger:

(4.7) $$BHARi,t = \alpha + \delta 1 S1_{i,t} + \gamma' X_{i,t-1} + \mu_i + \lambda t + \varepsilon_{i,t}$$

The variable S1, in the future regarded as a fresh forced dividend, is therefore the sum of the coefficients of FD and BP used in (4.6). This coefficient will be used in the

demonstration and interpretation of results as it is the representation of the conclusion that the two previously mentioned variables are nested.

Nevertheless, this first model compares firms experiencing a forced dividend with all other firm-years. Since the research question concentrates more on the payout decision under the condition of financial deterioration, the two components are separated by restricting the sample to firm-years in which cash earnings fell.

Within this new subsample every firm has been affected and only the payout choice remains:

(4.8) $BHAR_{i,t} = \alpha + \tau\, MAINT_{i,t} + \gamma' X_{i,t-1} + \mu_i + \lambda_t + \varepsilon_{i,t}$ conditional on cash earnings decline

This second model asks the main question regarding this study: among firms all experiencing a deterioration in cash earnings, did those that maintained or increased the dividend subsequently perform worse than those that cut it? The comparison group is no longer healthy firms but firms that responded to the same pressure differently, making τ the primary test of Hypothesis 2.

4.8. Estimation, identification and robustness

4.8.1. Estimator and inference

The choice between pooled, random and fixed effects estimation is made on the basis of the Breusch-Pagan Lagrange multiplier test (Breusch & Pagan, 1980) and the Hausman specification test (Hausman, 1978), both reported in the following chapter. Fixed effects are used throughout, since the estimator is consistent whether or not random effects would also be, and holding it constant keeps the columns comparable.

Then, standard errors are clustered in every specification to address potential groupwise heteroskedasticity and within-firm correlation. Nevertheless, multicollinearity, groupwise heteroskedasticity, serial correlation and functional form are examined using variance inflation factors and the modified Wald, Wooldridge (2010) and Ramsey (1969) RESET tests. Furthermore, because firm clustering allows correlation only within a firm across years and not across firms within the same year, results are also reported clustered by both firm and calendar year (Cameron et al., 2011; Thompson, 2011). However, with only fifteen calendar years available, this will have few clusters, making the results of this test overall less reliable (Cameron & Miller, 2015).

4.8.2. Identification

The central claim of this study rests on comparing maintainers against firms that cut rather than against healthy firms, and that comparison is informative only if it is not itself a consequence of something unrelated to the payout decision.

In this manner, and as previously described, (4.8) controls for the cash earnings decrease directly, by restricting the sample to firm-years in which cash earnings fell, which holds the deterioration constant and leaves only the payout choice varying.

However, firms which maintain a dividend through a deterioration may already differ from those that cut, in ways that would produce a difference in subsequent returns whatever the payout decision had been. This can be caused by information reaching the market gradually rather than at the announcement, such as in the previous quarterly results, reverse causality, an omitted characteristic correlated with both the payout choice and future returns, or the two groups simply being on different trajectories. Firm fixed effects do not address most of them, because the concern is time-varying rather than fixed at the firm level, and the controls mitigate it only partially. The study therefore repeats the analysis over two windows preceding the anchor, constructed identically to the forward window. Firstly, the twelve months ending immediately before it, covering the deterioration year itself. Secondly, the twelve months before that, which precede the registered forced dividend.

What this establishes is whether the two groups were already diverging before the year-end payout decision became public. In this manner, the test establishes whether Hypothesis 2, if supported, can be read as a consequence of the payout decision rather than a difference that predated it.

Lastly, within the restricted subsample, firm fixed effects can only be identified from firms that both maintained and cut the dividend across different episodes, meaning that firms that maintained through every decline contribute no within-firm variation. Since those firms are the most rigid payers in the sample, and therefore of particular interest, (4.8) is also estimated without firm fixed effects, retaining calendar year effects, controls and clustered standard errors.

4.8.3. Robustness

The findings are then subjected to further checks, known as robustness tests. Firstly, a cash earnings decrease threshold is created and set at ten per cent, testing whether the result depends on if a line between a decline and a material decline is drawn.

Then, the return measure is varied across the compounded abnormal return, the arithmetic cumulative abnormal return and the unwinsorised BHAR. After that, the models are re-estimated excluding 2020 and 2020-2021, since the pandemic caused many dividend suspensions with an unusually sharp market recovery. Furthermore, the payout ratio control, being a function of earnings and therefore related to the treatment definition, is removed. Lastly, a permutation procedure is applied where the observed pattern of who maintained and who cut is reassigned at random across firms, re-estimating the model on each reshuffled sample. Because this does not rely on the same asymptotic assumptions as the clustered standard errors, it provides an independent check on a model that is identified by comparatively few firms.

Together these establish whether the association is specific to the payout decision, robust to several choices made regarding the model construction and stable outside an exceptional period.

5. Results and Discussion

This chapter presents and discusses the empirical results, following the hypotheses set out in Chapter 3. It examines first whether forced dividends are associated with subsequent abnormal returns at all. Then, the comparison the study was designed around, so between firms that maintained and firms that cut while facing the cash earnings deterioration. It then decomposes the first year, examines whether the association persists beyond it, and reports the diagnostics and robustness checks.

5.1. Forced Dividends and Subsequent Abnormal Returns

This section addresses Research Question 1 and tests Hypothesis 1, which states that firm-years in which the ordinary dividend is maintained or raised while cash earnings fall are associated with subsequent abnormal returns that differ from those of firm-years in which no such episode occurs. Table 5 reports the estimates of the first model, represented by the

(4.7) regression, as well as its breakdown composed by the coefficients of FD and BP in (4.6), and accompanied by the respective p-values for each variable:

Table 5 - Forced dividends and subsequent abnormal returns (Model 1)

Table 5 shows the coefficients and p-values for the Model 1 variables, where the dependent variable is the buy-and-hold abnormal return over twelve and thirty-six months. The results should be read against firm-years with no episode. P-value * p<0.10, ** p<0.05, *** p<0.01.

		Model 1 (1y)	Model 1 (3y)
Forced dividend		0.0090	0.0268
	p-value	0.419	0.173
Below pre-decline level		0.0335***	0.0532**
	p-value	0.001	0.012
Fresh forced dividend		0.0425***	0.0799***
	p-value	0.000	0.000
Observations		3,867	3,180
Firms		352	350

The results from the first model support Hypothesis 1 and the association is positive. The fresh forced dividend is associated with abnormal returns 4.25 percentage points higher over the following year, significant at the one per cent level, and 7.99 percentage points higher over three years, also significant at the one per cent level. Firms in an ongoing unrecovered spell also earn higher abnormal returns of 3.35 and 5.32 percentage points respectively and so the difference between the two is the forced dividend. Its coefficient is small and statistically insignificant, at 0.0090 and 0.0268 with a p-value of 0.419 and 0.173.

The direction of this result is the opposite of what the rigidity view predicts, and the explanation lies in the comparison group rather than the payout decision. A firm experiencing a forced dividend has, by construction, just suffered a decline in cash earnings, and the controls show the sample is priced accordingly.

Table 6 - Control coefficients

Coefficients on the control variables from the same regressions summarised in Tables 5 and 7, at the one-year and three-year horizons. P-value: * p<0.10, ** p<0.05, *** p<0.01.

Control	Model 1 (1y)	Model 2 (1y)	Model 1 (3y)	Model 2 (3y)
Size	-0.0410***	-0.0622*	0.0661	0.0075
Leverage	0.1184***	-0.0001	0.0591	-0.0037
Tobin's Q	-0.0483***	-0.0596***	-0.0825***	-0.1238***
Capex intensity	0.1379	-0.0482	0.5214*	0.1095
Cash holdings	-0.1581*	-0.5702***	-0.4787***	-0.2516
Dividend yield	1.4249***	1.5303***	1.9515**	0.4722
Payout ratio	0.0072	0.0281**	-0.0086	0.0193
Negative earnings	0.0716***	0.1574**	-0.0130	-0.0484
Dividend streak	-0.0031*	-0.0042	-0.0088*	-0.0047
Working capital	-0.0083	-0.0478	0.0991**	0.0490
Asset turnover	-0.0134	-0.0283	0.1894***	0.1658
Buyback proxy	0.0131	-0.0118	0.0451**	0.0301
Observations	3,867	1,303	3,180	1,010

According to Table 6, lagged leverage carries 0.118 and lagged Tobin's Q -0.048, both significant at one per cent. Firms with high leverage and low valuations earn positive abnormal returns here, consistent with a value or distress premium the five-factor benchmark does not fully absorb. The dividend-yield control behaves in the same way as Fama and French (1988) reports in the sense that high-yield portfolios earn higher long-horizon returns. The positive coefficient therefore reflects the rebound of deteriorating firms in general, not a reward for maintaining the dividend.

This is precisely the limitation that Section 4.8.2 identifies as the first threat to interpretation and it is why Hypothesis 1 was framed as establishing whether an association exists rather than as attributing it directly to payout policy. Evidence on this hypothesis is therefore informative but is not, by itself, evidence about the payout decision, which will be addressed in this next section.

5.2. Maintainers versus Cutters among Deteriorating Firms

This section addresses Research Question 2 and tests Hypothesis 2, which states that among firms whose cash earnings have fallen, those that maintain or raise the ordinary dividend earn lower subsequent abnormal returns than those that cut it. This is the central hypothesis of the study, with the regression shown in (4.8) tackling it and the results of the coefficients alongside the respective p-values can be found in table 7. Regarding the number of forced dividends, it goes from 26.7%, under all firm-years, to 85.79% when restricted to firm-years with a cash earnings decrease.

Table 7 - The payout decision among deteriorating firms (Model 2)

Table 7 shows the coefficient and p-value for Model 2, where the sample is restricted to firm-years in which cash earnings fell. The coefficient should be read as the difference between maintainers and cutters facing a financial deterioration. P-value * p<0.10, ** p<0.05, *** p<0.01.

	Model 2 (1y)	**Model 2 (3y)**
DPS maintained (declining firms only)	-0.0352	-0.1122**
p-value	0.198	0.035
Observations	1,303	1,010
Firms	335	324

Firstly, the table shows that the coefficient of interest carries the predicted negative sign at both horizons but reaches significance only at the three-year horizon. In this manner, among firms whose cash earnings fell, those that maintained the dividend earned abnormal returns 3.52 percentage points lower over the following year than those that cut, with a p-value of 0.198 and when extending the time horizon to three years, the abnormal return is 11.22 percentage points lower and significant at the five per cent level.

Regarding the control variables, as reported in Table 6, lagged leverage, which was 0.118 and significant at one per cent on the full sample, falls to -0.0001 at the one-year horizon and -0.0037 at the three-year horizon, both with p-values above 0.10, once the sample is restricted to deteriorating firms. This means that leverage was capturing the contrast between distressed and healthy firms, which the restriction now removes. However, lagged Tobin's Q is the control that survives the restriction, at -0.0596 over one year and -0.1238 over three, significant at the one per cent level at both horizons. This indicates that the value effect also operates within the deteriorating group, contributing with a negative coefficient.

The association is therefore negative at both horizons, as the rigidity view predicts, but at one year it cannot be distinguished from zero, so the costly-signal prediction that maintainers should not be penalised cannot be rejected at one year but is rejected at three and will be analysed more thoroughly in 5.4. That the comparison can be made at all reflects the incidence documented by DeAngelo et al. (1992), who find that roughly half of firms reporting a loss after a long record of positive earnings did not reduce their dividend, leaving both groups populated. It is also consistent with DeAngelo et al. (1996), who find virtually no support for the proposition that dividend decisions identify firms with superior future earnings after a long period of growth. Their explanation, that managers over-estimate earnings precisely when growth prospects fade and that the cash committed is too modest to make the signal credible, is the mechanism this result would require. Lastly, it also sits with the broader finding that payout follows performance rather than anticipating it (Benartzi et al., 1997; Lintner, 1956).

5.3. Decomposing the First Year

The one-year measure spans the announcement month and the eleven months that follow it and therefore contains both the market's immediate response to the results and whatever post announcement drift follows. This section separates the two, using the exact partition described in Section 4.4.2. Table 8 reports the decomposition for the main variable of both models

Table 8 - Decomposition of the first year into the announcement month and the subsequent months

Table 8 splits the one-year window into the announcement month and the eleven months after and shows the coefficient and p-value for Model 1 and Model 2. P-value * p<0.10, ** p<0.05, *** p<0.01.

	Full year (0-11)	Announcement (0)	Subsequent (1-11)
Model 1: fresh forced dividend	0.0425***	0.0006	0.0410***
p-value	0.000	0.800	0.000
Model 2: DPS maintained	-0.0352	-0.0021	-0.0341
p-value	0.198	0.790	0.166
Observations (Model 1)	3,867	3,867	3,867
Observations (Model 2)	1,303	1,303	1,303

The most consistent pattern here is that the announcement month is empty. For the central comparison, maintainers and cutters differ by -0.21 percentage points in the month the results are published, with a p-value of 0.790. Regarding the fresh forced dividend variable, the announcement-month estimate is 0.06 percentage points with a p-value of 0.800. This means that when the sample is restricted to only the announcement month, none of the main variables are distinguishable from zero or economically meaningful.

However, the Model 2 coefficient over months one to eleven is -0.0341, almost identical to the full-year -0.0352, has a high p-value of 0.166, and the same holds for Model 1 coefficient.

The economic reading is that the market does not distinguish maintainers from cutters at the moment the annual results become public and the difference that exists accumulates over the following months. This is consistent with the gradual price adjustment documented by Michaely et al. (1995), who find that abnormal returns continue to drift over the twelve months following dividend announcements and report that the drift persists at longer horizons. It is also consistent with Healy and Palepu (1988), where the informational consequences of a payout decision are revealed through subsequent performance rather than priced instantaneously.

Read against the signalling literature, the absence of any announcement-month difference is an interesting result as Bhattacharya (1979), Miller and Rock (1985) and John and Williams (1985) all require the payout to be informative at the moment it is announced, since that is what a costly signal is for. The evidence here is therefore closer to Watts (1973), whose finding show that the incremental predictive content of dividend announcements is weak implies that dividend changes confirm what is already known.

5.4. Persistence beyond the First Year

This section addresses Research Question 3 and tests Hypothesis 3, which states that subsequent abnormal returns between maintainers and cutters occur beyond the first year following the payout decision. The relevant comparison is between the one-year and three-year estimates already reported in Table 7.

The Model 2 coefficient moves from -0.0352 at one year to -0.1122 at three, and from indistinguishable from zero to significant at five per cent, which means that a longer time

horizon not only reinforced the direction that the one-year was heading, but also turned it significant.

Table 9 sets the two horizons alongside their announcement-month decomposition under the Model 2 with respective p-values.

Table 9 - The three-year horizon, with and without the announcement month

P-value * p<0.10, ** p<0.05, *** p<0.01.

	One year	Three years
Full window	-0.0352	-0.1122**
p-value	0.198	0.035
Excluding the announcement month	-0.0341	-0.0986**
p-value	0.166	0.042
Observations	1,303	1,010
Firms	335	324

The three-year estimate excluding the announcement month remains significant at the five per cent level, with a p-value of 0.042, and accounts for most of the complete three-year abnormal return value.

Hypothesis 3 therefore seems supported as the evidence favours a durable erosion of financial flexibility over a temporary mispricing. To complement this result by literature, Michaely et al. (1995) document drift over the twelve months following omissions and report that it persists at longer horizons, so a three-year effect is not exceptional against the omissions literature.

However, Fama (1998) and Lyon et al. (1999) caution that long-run performance effects are harder to detect and more sensitive to methodological choices than short-window results, which is why the three-year estimate is examined against alternative measures and inference in Section 5.6 rather than reported on its own.

Under the rigidity reading, the cost accumulates as the firm continues to fund distributions it cannot support from operations, drawing down reserves or resorting to external finance, which is what the widening coefficient describes. This is also consistent with the capital-structure adjustment Cooper and Lambertides (2018) document following large dividend increases, which they read as firms drawing on debt capacity, and with

DeAngelo et al. (2006), where the propensity to pay is tied to internally generated equity rather than current profitability. The pecking-order logic of Myers and Majluf (1984) also defends this by identifying that a firm sustaining a distribution while internal funds weaken depletes its cheapest source of finance first, so the consequences appear progressively as it uses that source of funds rather than necessarily at the moment of decision.

Lastly, it is important to note that the three-year window is measured over a shorter calendar period, since no complete thirty-six-month window exists for the most recent anchors, which is shown by the three-year sample being correspondingly smaller at 1,010 firm-years against 1,303. The two horizons are therefore not estimated on identical sets of firm-years and the comparison between them should not be treated as exact.

5.5. Estimation and Specification Diagnostics

Before turning to the robustness checks, this section reports the tests that support the estimator and the specification. Table 10 summarises them for both specifications estimated:

Table 10 - Model selection and post-estimation diagnostics

	Model 1 (1y)	Model 1 (3y)	Model 2 (1y)	Model 2 (3y)
Breusch-Pagan LM, Prob > chibar2	1.000	0.024	1.000	0.002
Hausman, Prob > chi2	0.000	0.000	0.000	0.006
corr(u_i, Xb)	-0.798	-0.709	-0.765	-0.476
Mean variance inflation factor	3.24	3.09	3.44	3.17
Modified Wald, Prob > chi2	0.000	0.000	0.000	0.000
Wooldridge, Prob > F	0.585	0.000	0.073	0.009
Ramsey RESET, Prob > F	0.381	0.371	0.828	0.105

At one year the Breusch-Pagan test returns a firm-effect variance of exactly zero, which alone would favour pooled estimation. However, the Hausman test rejects random effects decisively across both specifications and time horizons. Even though these seem to be conflicting at the one-year horizon, the correlation between the firm effects and the regressors, -0.798 for Model 1 and -0.765 for Model 2 at one year is a key number as random effects requires that correlation to be zero and therefore fixed effects is a better option.

Furthermore, and although the same rationale regarding correlation holds across both specifications at the three-year horizon, the rejection of the null hypothesis of Pooled OLS under the Breusch-Pagan test and a rejection of the random effects under the Hausman test, means that fixed effects is therefore chosen for the three-year and consequently for all of the specifications and time horizons.

Regarding the other diagnostics, mean variance inflation factors range from 3.09 to 3.44 across the specifications, which indicates that there is no general multicollinearity problem. Mean VIF for each variable is reported in Appendix C1.

Groupwise heteroskedasticity is present across every specification and time horizon, as expected, which is what motivates the clustering of standard errors. The Wooldridge test finds no first-order serial correlation at the one-year horizon on the full sample, with a p-value of 0.585. On the Model 2 sample it returns 0.073, rejecting at ten per cent, but the statistic is computed on 57 firms as the restriction leaves only a few with cash earnings declines in consecutive years, making the test less reliable. At the three-year horizon the test rejects on every specification, which is expected as consecutive thirty-six-month windows share twenty-four months by construction.

Lastly, Ramsey RESET passes across the board which means that there is no evidence that the specifications are missing an important nonlinear relationship and so the treatment plus controls structure used throughout the study is adequate.

5.6. Robustness Checks

This section reports the checks described in Section 4.8.3. and are grouped by what each is designed to rule out: alternative inference, pre-existing differences between the two groups, the identifying variation behind the estimate, as well as the measurement and sample choices made along the way.

5.6.1. Alternative inference

Table 11 reports the central comparison under two other approaches to inference:

Table 11 - Model 2 under alternative approaches to inference

Window	Coefficient	P-values		
		Baseline	Two-way cluster	Permutation
Full year (0-11)	-0.0352	0.198	0.461	0.172
Announcement (0)	-0.0021	0.790	0.832	0.753
Subsequent (1-11)	-0.0341	0.166	0.393	0.170
Three years (0-35)	-0.1122	0.035	0.214	0.012
Three years, subsequent (1-35)	-0.0986	0.042	0.290	0.024

The three approaches regarding the announcement month yield relatively similar p-values, agreeing that it is not statistically significant. However, they disagree at the three-year horizon with baseline returning 0.035 and the permutation test 0.012, both rejecting at the five per cent level, while two-way clustering returns 0.214.

Notwithstanding this, it is important to note that two-way clustering is less reliable by construction as the calendar-year dimension contains only thirteen clusters at one year and eleven at three (Cameron & Miller, 2015). In this sense, the permutation test, which makes no asymptotic assumption, is better suited for a specification identified by few firms. Furthermore, the full null distribution of the permutation test is reported in Appendix C2.

Taking this in consideration, the three-year result is reported as significant based on firm clustering and the permutation test, with the note that it is not robust based on the less reliable treatment of two-way clustering.

5.6.2. Pre-existing differences

The pre-event test described in Section 4.8.2 re-estimates the same specification over the twelve months ending immediately before the announcement and the twelve months before that. Table 12 reports it for the central comparison, using Model 2.

Table 12 - Event-time estimates for Model 2

Table 12 re-estimates the Model 2 specification over two windows that close before the announcement rather than opening at it, testing whether maintainers and cutters already differed beforehand. P-values * p<0.10, ** p<0.05, *** p<0.01.

	t-24 to t-13	t-12 to t-1
DPS maintained	0.0401**	0.0105
p-value	0.034	0.669
Observations	1,281	1,281

The earlier of the two pre-event windows returns a positive coefficient of 0.0401, significant at the five per cent level. This means that the two groups were not identical before the payout decision and, more precisely, that firms that would go on to maintain their dividend despite worse cash earnings had been earning higher abnormal returns two years earlier, while the window immediately preceding the announcement is insignificant, though already with a lower coefficient.

The fact that it appears only in the second year before the window opens does not allow a claim that no difference exists, but it also does not undermine the finding of this study as a group performing better beforehand and worse afterwards cannot have its subsequent underperformance manufactured by that earlier advantage. Therefore, what this test can rule out is the specific concern that maintainers were already on a declining trajectory that the payout decision merely coincided with.

Lastly, it is important to note that it does not identify which of the reasons set out in Section 4.8.2 produces the earlier difference and, in particular, it cannot detect information that is never impounded in prices.

5.6.3. Identifying variation

Within the restricted subsample, firm fixed effects are identified only from firms that both maintained and cut across different episodes and of the 335 firms in the Model 2 sample, 120 display that within-firm variation, 208 maintained through every decline and 7 cut through every decline.

Table 13 - Firms contributing to the Model 2 estimate

Table 13 splits the firms in the Model 2 sample by whether their payout response varies across episodes.

Group	Firms	Firm-years	Median dividend streak
Maintained through every decline	208	745	6
Both maintained and cut	120	550	3
Cut through every decline	7	8	8.5
Total	335	1,303	4

Those firms also differ systematically from the rest because they have a median dividend record of three consecutive years against six for those that maintained throughout. This means that the estimate is identified by the shorter-record payers while the most rigid contribute nothing.

Since the firms that drop out are of particular interest, the specification is also estimated without firm fixed effects, retaining calendar-year effects, controls and clustered standard errors. The results are presented in Table 14:

Table 14 - Model 2 with and without firm fixed effects

P-values * p<0.10, ** p<0.05, *** p<0.01.

	One year		Three years	
	Firm FE	Pooled	Firm FE	Pooled
DPS maintained	-0.0352	-0.0526**	-0.1122**	-0.1657***
p-value	0.198	0.016	0.035	0.000
Observations	1,303	1,303	1,010	1,010
Firms	335	335	324	324

The pooled estimate is -0.0526 at one year and -0.1657 at three, which means it is larger in magnitude than the fixed effects estimate. However, and arguably more importantly, the p-value under the pooled estimate decreases and therefore its significance increases. A reason for this is that the fixed-effects estimate is identified only by around 120 firms that switch between maintaining and cutting across different episodes, whereas the pooled estimate additionally uses between-firm variation, as reported in Table 13. In this manner,

not only are there more firms contributing information under the pooled estimate, but also firms that are of particular interest to this design.

5.6.4. Measurement and sample choices

Table 15 summarises the remaining checks on the central comparison.

Table 15 - Robustness of the Model 2 estimate

P-value: * p<0.10, ** p<0.05, *** p<0.01.

Specification	1y coef.	1y p-value	3y coef.	3y p-value	3y N
Baseline	-0.0352	0.198	-0.1122**	0.035	1,010
Excluding the payout-ratio control	-0.0353	0.207	-0.1113**	0.038	1,010
Excluding 2020	0.0018	0.947	-0.0998*	0.059	879
Excluding 2020 and 2021	-0.0301	0.321	0.0041	0.950	718

Removing the payout-ratio control, which is a function of both earnings and dividends, and therefore related to the treatment definition, maintains both the coefficient and the p-value essentially unchanged, indicating that the estimate is unaffected by the payout control.

Regarding the covid crisis treatment, excluding 2020 calendar year alone leaves the three-year estimate at -0.0998, significant at ten per cent, but excluding 2020 and 2021 together moves it to 0.0041. Part of what happens is that the comparison group shrinks with only 234 of the 1,647 deteriorating firm-years involving a cut, which are also heavily concentrated with 44 happening in 2021. Excluding 2020 and 2021 therefore removes roughly a quarter of the cutters along with the calendar time cut where the three-year sample falls from 1,010 firm-years to 718. Table 16 reports the incidence year by year.

Table 16 - Payout decisions among deteriorating firm-years, by anchor year

Values in 2026 come from firms that announce in the following calendar year despite 2025 fiscal year-end.

Anchor year	Cut	Maintained	Total	% cut
2012	0	16	16	0.00
2013	3	108	111	2.70
2014	12	83	95	12.63
2015	6	93	99	6.06

Anchor year	Cut	Maintained	Total	% cut
2016	11	127	138	7.97
2017	11	129	140	7.86
2018	14	76	90	15.56
2019	3	84	87	3.45
2020	12	127	139	8.63
2021	44	120	164	26.83
2022	11	50	61	18.03
2023	13	105	118	11.02
2024	51	117	168	30.36
2025	25	110	135	18.52
2026	18	68	86	20.93
Total	234	1,413	1,647	14.21

The stricter treatment definition, requiring the decline in cash earnings to reach ten per cent, is reported in Table 17:

Table 17 - Alternative treatment threshold (Model 2)

Table 17 compares the baseline Model 2 estimate with a restriction where cash earnings must fall by at least ten per cent, rather than by any amount, to have a forced dividend. P-value: * p<0.10, ** p<0.05, *** p<0.01.

		Baseline	Strict (≥10% decline)
One year		-0.0352	-0.0097
	p-value	0.198	0.807
Observations		1,303	745
Three years		-0.1122**	-0.1192
	p-value	0.035	0.133
Observations		1,010	557

This robustness test concludes that although a restriction of more material decline in cash earnings does not move much the coefficient, which measures the abnormal return, it does impact the significance of the variable. In this case, the only statistically significant

interpretation, three-year baseline, became insignificant when a restriction of a more than ten percent decline was imposed to cash earnings, going from a p-value of 0.035 to 0.133. However, it is important to note that this restriction reduces the number of observations considerably and, as mentioned before, compromises not only the comparison of results but also its reliability.

Moving on, varying the return measure across the compounded abnormal return, the arithmetic cumulative abnormal return and the unwinsorised series was found to produce changes both in the coefficient and in the p-value, as reported in Table 18:

Table 18 - Alternative return measures (Model 2)

Table 18 re-estimates Model 2 with four different measures of subsequent performance over the same windows and sample. P-value: * p<0.10, ** p<0.05, *** p<0.01.

Horizon		BHAR (winsorised)	Compounded AR	Cumulative AR	BHAR (raw)
One year		-0.0352	-0.0282	-0.0342	-0.0536
	p-value	0.198	0.227	0.150	0.136
Three years		-0.1122**	-0.0796**	-0.0729*	-0.1950**
	p-value	0.035	0.030	0.052	0.019

In both the one-year and three-year estimates, BHAR (raw) makes the coefficient more negative and provides a better p-value as it restores the most extreme cases in the sample, which are also arguably the clearest instances of the mechanism under study. Though, it is important to note that the one-year estimate never achieves a considerable level of significance in any of the alternative return measures. Furthermore, compound and cumulative AR seem to diminish the coefficient while maintaining the p-value relatively constant, particularly in the three-year estimate which goes from -0.1122 to -0.0796 and -0.0729, respectively.

5.7. Summary of Findings

Taken together, the evidence supports Hypothesis 1 and partially supports Hypothesis 2 and 3. Table 19 summarizes the findings and is further explained below.

Table 19 - Research questions, hypotheses and corresponding tests

	Hypothesis	Specification	Outcome
RQ1	Forced dividends are associated with subsequent abnormal returns	Model 1, Table 5	Supported as the association is positive but attributable to the rebound of deteriorating firms rather than to the payout decision
RQ2	Among deteriorating firms, maintainers earn lower returns than cutters	Model 2, Table 7	Partially supported as it is negative at both horizons, significant at three years but not at one
RQ3	Any difference persists beyond the first year	Model 2, Tables 7 and 9	Supported as the coefficient grows with the horizon and survives removal of the announcement month

Initially, it is found that forced dividends are associated with subsequent abnormal returns, but it is mostly explained by the rebound of deteriorating firms rather than the payout decision. Though, once the deterioration is held constant, the payout decision carries the predicted negative sign in hypothesis 2 at both horizons, reaching significance at three years. The association is also absent in the announcement month, accumulating thereafter, and is larger at three years than at one.

In this sense, maintaining a dividend through a deterioration is not rewarded by the market, and over three years it is associated with a cost of approximately eleven percentage points relative to cutting. Under the costly-signal view, in which a distribution the firm can ill afford is credible precisely because a weaker firm could not imitate it (Bhattacharya, 1979; John & Williams, 1985), maintainers should not be penalised relative to firms that cut, and at three years they are. Consequently, the evidence favours the rigidity interpretation over the costly-signal interpretation, though not decisively.

Lastly, the robustness tests confirm that the one-year estimate for Model 2 is in fact not statistically significant, except for the Pooled OLS estimation. Regarding the three-year estimate it does not survive two-way clustering by firm and calendar year, and it does not survive the exclusion of 2020 and 2021, a period that supplies a substantial share of the firms that cut and therefore is of particular interest but that also reduces the sample. A further key finding from the robustness test is that the two groups were not identical two years before the decision, although that difference runs in the direction opposite to the finding and therefore would if anything work against the result rather than produce it.

6. Conclusion

This dissertation set out to establish what happens to firms that maintain or raise the ordinary dividend while their cash earnings fall, and specifically whether that decision carries a measurable consequence for shareholders once it is compared against an appropriate group of firms.

Furthermore, it faces the costly-signal view, which defends that a distribution a firm can ill afford is credible precisely because a weaker firm could not imitate it and therefore maintaining the dividend should not be penalised, against the rigidity view, which defends that maintaining exhausts the cheapest source of finance at the moment it is most needed and should therefore carry a cost. In order to distinguish between them, holding the financial deterioration constant and allowing only the payout response to vary is required and is what the empirical section of this study also sets out to build.

Regarding the conclusions, initially it was found that forced dividends, when compared to all other firms, are associated with subsequent higher abnormal returns. However, this was mostly explained by the cash earnings decline rather than the payout decision as anticipated beforehand. In this sense, once the deterioration is held constant, the decision to maintain is associated with lower subsequent abnormal returns at both horizons tested. Over one year the estimate is negative but not statistically significant and over three years it reaches approximately eleven percentage points relative to firms that cut, significant at the five per cent level. Moreover, the association is absent in the month the decision is announced, accumulating over the months that follow, and is larger overall at three years than at one. The growth of the effect with the horizon is more likely to be associated with a gradual erosion of financial flexibility, as the firm continues to fund a distribution its operations no longer support.

In this manner, seeing as though the costly-signal frameworks require the payout to be informative at the moment of disclosure and that not only the announcement-month estimate is indistinguishable from zero but also that the coefficients are negative, it can be concluded that the results do not necessarily favour this perspective.

Regarding robustness, the three-year estimate does not survive two-way clustering by firm and calendar year, although the calendar dimension contains too few clusters for that variance component to be estimated reliably, and the permutation test, which makes no

asymptotic assumption, rejects at the five per cent level. More substantially, the three-year result does not survive the exclusion of 2020 and 2021 from the sample. However, that period supplies a large share of the firms that cut, so removing it excludes a large part of the variation that identifies the estimate as well as a considerable period of calendar time. Finally, it was found that the two groups were not identical two years before the decision was taken, although that difference runs in the direction opposite to the finding and would if anything work against the result rather than produce it.

It is also important to mention that the requirement that firms pay a positive ordinary dividend in every year excludes those that abandoned the distribution entirely, and since these are the most decisive cutters, their absence understates the difference between maintaining and cutting, which arguably ends up making the estimates more conservative. Besides this, within the restricted sample, firm fixed effects are identified only from firms observed both maintaining and cutting across different episodes, which means that the most rigid payers, and of great interest, contribute least to the estimate.

Taken together, the evidence favours the rigidity interpretation over the costly-signal, though not decisively. This result is particularly interesting for managers as the reluctance to cut, well documented since Lintner (1956) and rational from the perspective of avoiding an adverse market announcement reaction, does not appear to protect shareholder value over longer horizons. For investors, a maintained distribution during a period of weakening earnings appears to be a weaker signal of confidence than the signalling literature would imply and based on this evidence it should not create a confident expectation of recovery.

Regarding future research, the mechanism proposed here that maintaining depletes internal funds and pushes firms towards external capital is testable directly by examining the financing response, in changes to leverage, cash holdings and external capital raised, in the years following a forced dividend. The prediction that the cost should be greatest for firms with the least financial slack could be examined by splitting the sample on size, leverage and cash holdings, which would distinguish the rigidity interpretation from the costly-signal interpretation more sharply than the aggregate estimate does. Finally, extending the analysis to markets where payout norms differ from the one in the United States would establish whether the results reflect a general mechanism or a payout convention restricted to a few markets.

Appendix

The tables below support the study and are placed here so that the main text is not interrupted by reference material.

Appendix A. Variable definitions

Variable	Definition	Role
BHAR (1y, 3y)	Buy-and-hold abnormal return over the 12 and 36 months beginning in the anchor month	Dependent
Forced dividend	Indicator equal to one when the ordinary dividend is maintained or raised while cash earnings deteriorate	Treatment
Below pre-decline level	Indicator equal to one while cash earnings remain below the reference level of the episode	Treatment
Cash earnings declined	Indicator equal to one when cash earnings fall year on year	Treatment component
DPS maintained	Indicator equal to one when ordinary dividend per share is maintained or raised	Treatment component
Size	Natural logarithm of total assets	Control
Leverage	Total debt over total assets	Control
Tobin's Q	Total liabilities plus market capitalisation, over total assets	Control
Capex intensity	Capital expenditure over total assets	Control
Cash holdings	Cash and equivalents over total assets	Control
Dividend yield	Total dividend per share over the fiscal year-end price	Control
Payout ratio	Total dividend per share over earnings per share, defined where earnings are positive	Control
Negative earnings	Indicator equal to one when earnings per share are non-positive	Control

Variable	Definition	Role
Dividend streak	Consecutive years in which the ordinary dividend was maintained or raised	Control
Working capital	Working capital over revenue	Control
Asset turnover	Revenue over total assets	Control
Buyback proxy	Indicator equal to one when shares outstanding fell year on year	Control

Appendix B. Sample composition and descriptive evidence

Table B1 - Maintainers and cutters compared

Means by group over the 1,647 deteriorating firm-years for the two payout responses.

Variable	Cutters	Maintainers	Difference
Size	23.1074	23.1486	0.0412
Leverage	0.4183	0.3252	-0.0931
Tobin's Q	1.6127	1.9559	0.3432
Capex intensity	0.0572	0.0511	-0.0061
Cash holdings	0.0497	0.0676	0.0178
Dividend yield	0.0603	0.0287	-0.0317
Payout ratio	1.0713	0.4968	-0.5745
Negative earnings	0.0684	0.0163	-0.0521
Dividend streak	4.6026	4.7841	0.1816
Working capital	0.0906	0.1288	0.0382
Asset turnover	0.6098	0.8641	0.2543
Buyback proxy	0.3843	0.5762	0.1919
One-year BHAR	0.0428	-0.0139	-0.0567
Three-year BHAR	0.0947	-0.0604	-0.1552

Table B2 - Distribution of the return measures

Shape of each return measure over the estimation window, before it enters any regression.

Measure	N	Mean	SD	Skew.	Kurt.
One-year BHAR, raw	4,674	-0.0275	0.2314	-1.123	34.329
One-year BHAR, winsorised	4,674	-0.0273	0.2043	0.090	3.670
Three-year BHAR, raw	3,914	-0.1271	0.4240	-3.393	67.414
Three-year BHAR, winsorised	3,914	-0.1232	0.3539	-0.083	3.925
One-year compounded AR	4,674	-0.0202	0.1748	0.296	3.388
Three-year compounded AR	3,914	-0.0754	0.2312	0.395	3.499
One-year cumulative AR	4,674	-0.0170	0.1793	-0.111	3.295
Three-year cumulative AR	3,914	-0.0501	0.2489	-0.089	3.337

Table B3 - Rolling five-factor estimation window

Panel A - Window length and coverage for the rolling five-factor estimation

Table reports how often a loading could be estimated and on what window length -

	Firm-months	% of estimated
Loading estimated	63,533	100.0
of which on a full 36-month window	58,999	92.9
of which on a shorter window (24-35)	4,534	7.1
No loading (insufficient history)	9,043	-

Panel B - Estimated loadings and first-stage fit for the rolling five-factor estimation

Table reports the distribution of the estimated loadings and the fit of those regressions across all firm-months for which they could be run.

	Mean	SD	Median	Min	Max
Window length (months)	35.54	1.91	36	24	36
Market	0.941	0.498	0.907	-1.017	6.028
SMB	0.239	0.709	0.192	-2.953	6.869
HML	0.037	0.735	0.009	-3.540	8.560
RMW	0.175	0.875	0.224	-6.892	8.521
CMA	0.273	1.026	0.241	-10.344	9.994
R^2	0.457	0.177	0.463	0.007	0.931

Table B4 - Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
(1) Forced dividend	1.00															
(2) Below pre-decline	0.66	1.00														
(3) Cash earnings declined	0.89	0.65	1.00													
(4) DPS maintained	0.21	-0.01	-0.10	1.00												
(5) Size	0.03	0.07	0.03	0.00	1.00											
(6) Leverage	-0.05	0.05	0.00	-0.20	0.03	1.00										
(7) Tobin's Q	-0.07	-0.16	-0.11	0.12	-0.11	-0.07	1.00									
(8) Capex intensity	-0.01	-0.03	-0.00	-0.02	-0.10	0.07	-0.13	1.00								
(9) Cash holdings	0.03	0.01	0.01	0.08	-0.15	-0.25	0.37	-0.23	1.00							
(10) Dividend yield	-0.02	0.09	0.11	-0.39	0.05	0.45	-0.32	0.07	-0.23	1.00						
(11) Payout ratio	-0.10	0.03	-0.04	-0.19	-0.03	0.25	-0.14	0.12	-0.17	0.40	1.00					
(12) Negative earnings	-0.06	0.09	-0.04	-0.19	-0.06	0.15	-0.15	0.05	-0.05	0.20	-0.14	1.00				
(13) Dividend streak	0.02	0.06	0.02	0.07	0.15	-0.12	0.20	-0.09	0.02	-0.20	-0.10	-0.13	1.00			
(14) Working capital	0.05	0.00	0.03	0.08	-0.34	-0.34	0.32	-0.27	0.65	-0.26	-0.20	-0.06	-0.03	1.00		
(15) Asset turnover	0.04	-0.02	0.01	0.13	-0.14	-0.33	0.25	-0.17	0.26	-0.28	-0.24	-0.11	0.07	0.30	1.00	
(16) Buyback proxy	0.11	0.08	0.08	0.11	0.09	-0.21	0.25	-0.22	0.26	-0.22	-0.23	-0.11	0.11	0.23	0.35	1.00

Appendix C. Diagnostics

Table C1 - Variance inflation factors by regressor

Regressor	Model 1 (1y)	Model 2 (1y)	Model 1 (3y)	Model 2 (3y)
Forced dividend	1.93	-	1.98	-
Below pre-decline level	2.03	-	2.06	-
DPS maintained	-	1.27	-	1.34
Size	1.15	1.15	1.15	1.15
Leverage	1.25	1.35	1.24	1.39
Tobin's Q	1.40	1.34	1.41	1.38
Capex intensity	1.16	1.16	1.16	1.21
Cash holdings	1.61	1.55	1.61	1.56
Dividend yield	1.49	1.68	1.51	1.76
Payout ratio	1.42	1.46	1.44	1.47
Negative earnings	1.16	1.07	1.17	1.09
Dividend streak	1.88	1.73	2.25	2.14
Working capital	1.44	1.44	1.43	1.45
Asset turnover	1.33	1.33	1.34	1.32
Buyback proxy	1.30	1.29	1.31	1.29
Mean, including year effects	3.24	3.44	3.09	3.17

Table C2 - Permutation test

Table reports the full null distribution underlying the permutation p-values. Ten thousand reshuffles of whole treatment, re-estimating Model 2 on each draw.

Window	Observed	Null mean	Null SD	2.5th	97.5th	p
Full year (0-11)	-0.0352	-0.0122	0.0224	-0.0567	0.0315	0.172
Announcement (0)	-0.0021	0.0004	0.0066	-0.0126	0.0132	0.753
Subsequent (1-11)	-0.0341	-0.0126	0.0214	-0.0555	0.0288	0.170
Three years (0-35)	-0.1122	0.0042	0.0443	-0.0834	0.0910	0.012
Three years, subsequent (1-35)	-0.0986	0.0021	0.0434	-0.0828	0.0862	0.024

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