The Price of Corporate Short-termism, and the Influence of Investor Horizons

Evidence from European mid- and large-cap companies

Master Thesis

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Abstract

This study aims to address the questions of whether short-horizon investor ownership induces corporate short-termism, and whether this comes at the cost of long-term value. The research provides evidence that executives knowingly shift the balance between short- and long-term to accommodate a short-horizon investor base, as the presence of short-horizon investors is associated with greater use of earnings management, higher probabilities of marginally beating targets, R&D investment cuts, and lower ESG scores. Subsequently, by investigating the three-day CAR around earnings announcements, the study shows that firms can gain a significant short-window valuation premium by marginally beating, over marginally missing earnings forecasts. This partly explains why executives engage in actions to inflate near-term earnings if they are just about to miss targets. With regards to the price of short-termism, this study provides evidence that corporate short-termism does indeed have a detrimental effect on long-term firm value, as firms that display short-termism exhibit financial underperformance relative to firms that do not. To address the concern that the causal effect of a short-horizon investor base on corporate decision-making is affected by endogeneity, an identification strategy is employed which exploits plausible exogenous variation in the presence of short-horizon investors around MSCI Europe index inclusions. Measuring inter-temporal choice is a far-reaching challenge in the advancement of the debate on short-termism. Extant literature has taken the approach of using investor horizons as an indirect proxy to assess the firm value consequences of short-termism. In an effort to capture corporate short-termism and its effect on financial performance more directly, this research conducts a principal component analysis which aims to capture the shared component between different measures associated with corporate short-termism. Most empirical research on short-termism is conducted for US samples, whereas surveys show that the issue of short-termism is not confined to the US. This research contributes by investigating whether the association between investor-horizons, corporate short-termism and financial performance holds for the EU.

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Preface

Tuesday 31st October, 2017

Dear reader,

Here it is. With one of the first sections to read, though last to write, I present the final work with which I hope to complete my time as a student.

First and foremost, I want to thank Kempen & Co and all the wonderful colleagues at Kempen Capital Management. I feel privileged to conduct this thesis in such an inspiring environment, and with such great support. Richard Klijnstra, I am grateful for the faith that you had in me by taking me on as your intern and teaching me some of what good business and good investing is. Janine Whittington, I truly felt we went on a quest together to disentangle short-termism, and you made me feel at ease right from the beginning. Mark Oud, I am very appreciative of the guidance and support that you gave me during our investment cases. Becoming acquaint with the practical side of investing, and being able to contribute directly to the team, made the process of writing my thesis even more rewarding than it already was.

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Looking back at the past years, it almost makes me sad to see my student life come to an end. During my time as a student, I always felt surrounded by infinite opportunities to discover new things. My curiosity may have thrown me off course a couple of times, but in return, I gained friendships and experiences that I will treasure the rest of my life. I would like to mention a few in particular. Firstly, my rowing crew, with whom I learned that believing is achieving. Secondly, my band Jazzwerk for helping me clear my mind during late-night music sessions. Thirdly, my colleagues at 'De Kleine Consultant', with whom I was able to cross-swords on some of the most intricate problems, and share some of the best conversations.

Last but not least, I want to give love to my parents and sister for always supporting me. I know that I haven't been around much, and if I was, my mind was likely occupied by other things. I hope that you know that you mean a lot to me, and that I am grateful for such a wonderful family.

Tobias Ouwerkerk
Amsterdam, The Netherlands

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Nomenclature

Acronym	**Definition**
AEM	Accrual-based Earnings Management
AQR	Applied Quantitative Research
CAAR	Cumulative Average Abnormal Return
CEO	Chief Executive Officer
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
ECRI	Economic Cycle Research Institute
EPS	Earnings Per Share
ERC	Earnings Response Coefficient
ESG	Environmental, Social and Governance
EU	European Union
FCLT	Focusing Capital on the Long-Term
IBES	Institutional Brokers' Estimate System
IV	Instrumental Variable
IVA	Intangible Value Assessment
LTO	Long-Term Orientation
M&A	Mergers & Acquisitions
MSCI	Morgan Stanley Capital International
NPV	Net Present Value
NTAM	Northern Trust Asset Management
OLS	Ordinary Least Squares
PCA	Principle Component Analysis
R&D	Research & Development
REM	Real Earnings Management
SG&A	Selling, General and Administrative expenses
SIC	Standard Industrial Classification
UK	United Kingdom
US	United States

Chapter 1
Introduction

The questions of whether short-horizon investors induce corporate short-termism, and whether this comes at the cost of long-term value, have been the subject of debate among leaders in business, government, and academia for decades.[1,2] First-hand evidence is provided by Graham et al. (2005), who surveyed executives and discovered that 78% were willing to forgo positive NPV projects to meet short-term earnings targets. Pillars of the financial business community have expressed their belief in the existence of short-termism and started to advocate for a more long-term view. In their 2006 report, The Conference Board expressed its concerns on short-termism as follows:

> *On a macro-economic level, short-term visions are the cause for market volatility and the instability of financial institutions. From a micro-economic standpoint, they undermine management continuity and expose a public company to the risk of losing sight of its strategic business model, compromising its competitiveness. In addition, the pressure to meet short-term numbers may induce senior managers to externalize a number of business costs (i.e., the cost of a state-of-the-art pollution system), often to the detriment of the environment and future generations* (Tonello, 2006).

Thereby hinting towards how short-termism might lead companies into inflating near-term earnings by under-investing in longer-term – yet more profitable – investments, and neglecting sustainability issues.

This research is motivated by the theoretical model in Bolton et al. (2006), which predicts a positive relation between short-horizon investors and executives' decisions to inflate near-term earnings, at the cost of long-term value. Executives, incentivized by short-horizon investors through short-term payment, take actions to temporarily inflate valuations. Short-horizon investors are able to benefit from these temporarily inflated stock prices by selling shortly afterwards to other, overly optimistic shareholders. In turn, investors that remain in the company suffer from a

[1] Short-termism is also referred to as 'myopia' and emphasizes the tendency of agents to overweight near-term outcomes at the expense of longer-term opportunities (Haldane, 2011). The terminology in this research refers to either short-termism on the investor or firm-level, dependent on the context.

[2] Discussions on short-termism trace back to the 1980s, when a wave of corporate takeovers occurred in the US. At the time, US companies found their attention diverted to short-term, defensive stances; peddling assets and reducing investments to stretch quarterly earnings and avoid becoming undervalued (see Stein, 1988).

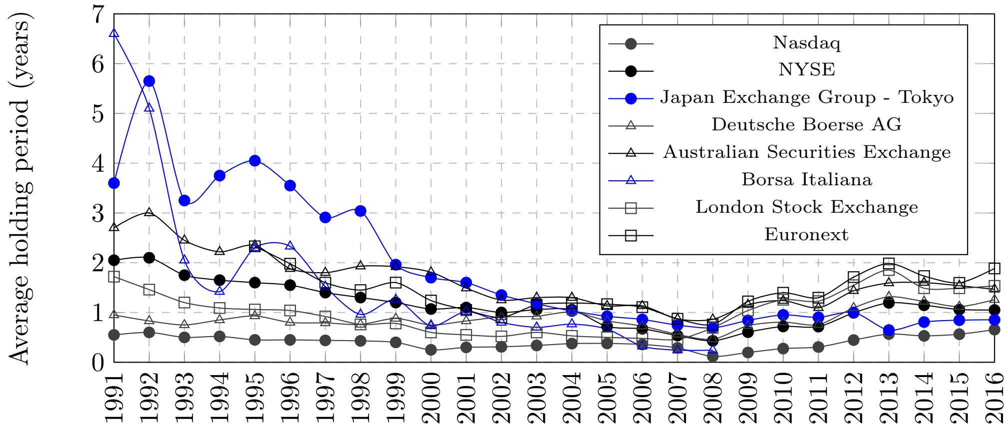

Figure 1.1: Average holding period across major exchanges, calculated as the average yearly market capitalization divided by the value of share trading. Source: WFE (2017).

reduction in firm-value caused by the negative effects of earnings manipulation and investment cuts, which, due to limited arbitrage and short-sales constraints, is only gradually reflected in the stock price. Given the conjectured relation between investor-horizons and corporate short-termism, it is a potential concern that average holding periods have dropped to about two years across the major exchanges (see Figure 1.1).[3]

This research aims to empirically test the theoretical predictions of the model put forth in Bolton et al. (2006). This boils down to testing three main components:

1. Firms with more short-horizon investors are more likely to engage in actions that inflate near-term earnings, and less likely to engage in actions whose benefits occur several years into the future
2. Firms are able to attain temporary valuation premia by inflating earnings and beating targets
3. Actions to inflate near-term earnings have a negative effect on long-term firm value

The first prediction is tested by examining whether short-horizon investor ownership is associated with earnings management, target beating, investment cuts and lower environmental, social and governance (ESG) scores. Subsequently, the second prediction is tested by conducting a short-window analysis centered around earnings announcements, to assess whether the market is able to discern and discount earnings inflation, and whether it rewards for the mere fact of marginally beating targets. Additionally, it is examined whether the sensitivity to unexpected earnings is greater for firms with short-horizon investor ownership. Lastly, the research attempts to answer the fundamental question of whether short-term actions have a detrimental effect on long-term value, using shareholder value as arbiter.

[3]Apart from a short-term focus by investors, shortened holding periods may emerge due to high-frequency trading, lower trading costs and derivatives hedging. To avoid the noise induced by high-frequency trading, Cremers and Pareek (2015) consider holding periods for non-market making investors. They report a similar trend.

The extant literature still faces problems in the identification of short-termism, which does not correspond to any single quantifiable metric, and can be considered a confluence of many factors. Previous studies have taken the approach of using investor horizons as an indirect proxy for short-termism at the firm-level. In an effort to capture corporate short-termism and its effect on financial performance more directly, this research conducts a principle component analysis which isolates the time-horizon component between different measures of corporate short-termism. This further assumes that short-term decision making manifests itself in a firm's financial disclosures.

First, the presence of short-horizon investors is proxied through a measure of institutional investor portfolio turnover. This measure has been previously employed in a string of articles focusing on investor horizons (e.g., Harford et al., 2016; Ghaly et al., 2015), and has commensurable properties, since it mitigates firm- and investor-specific shocks by calculating the quarterly turnover rate across each individual investor's portfolio, and value-weighing these turnover rates over a firms' investor base. It only considers institutional trading, as opposed to plain share-turnover, which covers all trading in a stock. This avoids contamination of the time-horizon measurement by high frequency traders (Cremers et al., 2016).

In turn, corporate short-termism is measured through a set of actions/symptoms that indicate an overemphasis on the short-term. First, it is expected that short-term firms exhibit higher levels of earnings management and target beating. Through earnings manipulation, earnings can be raised just enough to reach specific targets. As investors are misled into interpreting earnings as 'on target', the speculative component in the stock price is maintained or inflated, to the benefit of short-horizon investors. Second, short-term firms should be more prone to underinvestment, as the pressure to attain earnings targets leads executives into cutting investments.[4] Last, short-term firms expectedly exhibit lower ESG scores, as executives' attention is diverted away from externalities, and the long-term risks associated with the failure to act socially responsible.

A concern when estimating the causal effect of a short-horizon investor base on corporate decision-making is that the results may be affected by endogeneity. This issue is recognized only in recent studies (e.g., Harford et al., 2016; Cremers et al., 2016). Investor-horizons can be an endogenous outcome variable, caused by firm fundamentals, other investor characteristics or the market environment. In particular, unobservables (such as the arrival of new market information) may affect a firm's investment decisions, and at the same time the decisions of short-horizon investors to invest in a particular firm.[5]

To address this concern, the research employs an identification strategy which exploits plausible exogenous variation in the presence of short-horizon investors around MSCI Europe index inclusions. These inclusions are expectedly accompanied by temporary increases in the presence of short-horizon investors, as short-horizon investors that track the index buy more swiftly around inclusions, and are only gradually replaced by long-horizon investors. The instrument is believed to be exogeneous, since the changes in short-horizon ownership are not related to

[4] Long-term investments should be most prone to investment cuts, as for this type of investments, benefits typically occur only many years into the future.

[5] For example, Gaspar et al. (2005) show that firms attract short-term investors around periods of M&A.

differences in corporate policies, or unobservables such as market information, but merely the index inclusion themselves. Indeed, the research documents that the presence of short-horizon investors temporarily increases for firms that are added to the MSCI Europe index, and that the instrument is relevant. These findings are in line with Cremers et al. (2016), who initially put forth this identification strategy, using constituent changes in the Russel 2000 index.

This research documents that firms with more short-term investors exhibit greater use of earnings management, and that this translates into avoidance of small losses and a larger discontinuity between marginally beating and missing analysts' consensus forecasts. With regards to capital allocation, the research finds that the arrival of short-term investors leads to a reduction in research and development (R&D) expenditures. Apart from this, no clear evidence for a negative relation between investor horizons and investment is obtained. Lastly, the study finds that a short-horizon ownership predicts lower ESG scores in the subsequent year. The results remain robust after controlling for endogeneity. Overall, this corroborates that executives knowingly shift the balance between short- and long-term to accommodate a short-horizon investor base.

Subsequently, by investigating the three-day cumulative abnormal returns around earnings announcements, it is shown that firms can gain a significant valuation premium by marginally beating, over marginally missing earnings forecasts. Moreover, the results suggest that the market fails to discount the use of earnings management. This supports the mechanism put forth by Bolton et al. (2006), by showing that firms which are about to miss a target can indeed gain a temporary valuation premium by inflating earnings just enough to reach analysts' earnings forecasts. Surprisingly, this study finds that the stock price sensitivity to earnings surprises is negatively associated with a short-term investor base. This contradicts the widely held presumption that short-horizon investors exhibit greater reactions to unexpected earnings. Robustness tests show that higher levels of accrual-based earnings management (AEM) have a similar, negative effect on the sensitivity to unexpected earnings. Nevertheless, no clear evidence is obtained which proves that lower 'quality' of reported earning for short-term firms is what causes the effect of short-horizon ownership on the earnings response coefficient to be negative.

Finally, it is examined whether corporate short-termism has a detrimental effect on financial performance. First, portfolio sorts that use investor horizons as an indirect proxy for corporate short-termism suggest that short-horizon investor ownership is associated with higher risk-adjusted returns. In contrast, portfolios formed on quintile ranks of the principal component show that firms that exhibit less of the actions/symptoms associated with short-termism outperform firms associated with short-termism, and that they generate returns above and beyond what is explained by the common factors. This contradiction suggests that the time-orientation of a firm's investor base does not need to coincide with corporate short-termism. Nevertheless, the latter confirms the notion that an overemphasis on the short-term comes at the expense of long-term value.

This research contributes to a growing empirical literature on the link between short-horizon investors and corporate short-termism. Consistent with results obtained in this research, Harford et al. (2016) and Cremers et al. (2016) find that short-term ownership induces AEM, and that it increases the probability of positive earnings surprises. This research provides additional evidence, by showing that the relation also holds for measures of real earnings management (REM), and that the tendency to beat targets also presents itself when looking at the tendency to beat targets by marginal amounts. With regards to payout, the research confirms that the arrival of short-term investors leads to a reduction in R&D expenditures, as reported by Cremers et al. (2016). Moreover, the results point towards a negative association between short-horizon investors and dividend payout, which mirrors results obtained by Derrien et al. (2013) and Harford et al. (2016). Gaspar et al. (2013) report that repurchasing increases with short-horizon ownership, and suggest that reduced dividends are actually the consequence of payout choice. This research obtains similar results, but shows that the positive relationship between short-horizon investors and repurchasing does not remain robust when controlling for endogeneity. As for the relation between investor horizons and ESG scores, the findings complement results obtained by Cox et al. (2004) and Neubaum and Zahra (2006), by confirming that short-horizon ownership is associated with lower ESG scores, and by providing evidence that there is a causality which flows from investor time-horizons to the firm.

With regards to the effect of short-horizon ownership on financial performance, the literature provides mixed evidence. This research provides additional arguments to the discussion on whether short-termism detracts from long-term value, by showing that long-term firms outperform firms that display short-termism. The study documents that firms with short-term investors have higher risk-adjusted returns, which is consistent with Yan and Zhang (2007) and Cremers et al. (2016), who show that the presence of short-horizon investors is accompanied by an increase in firm value. In turn, it contrasts research by Harford et al. (2016), who report a decline in subsequent financial performance. Finally, by sorting portfolios on a principle component index of corporate short-termism, this research provides new evidence which suggests that the actions to inflate near-term earnings have by themselves, a negative effect on financial performance.

Most empirical research on short-termism is conducted using United States (US) based samples. Surveys show that the issue of short-termism is not confined to the US market (McKinsey, 2016). This research contributes by investigating whether the relationship between investor horizons, corporate short-termism and financial performance holds for the European Union (EU). It shows that the touchstone measure for investor horizons, institutional portfolio turnover, can be computed for EU firms, using an alternative data source. Moreover, the use of MSCI Europe index inclusions as an instrumental variable (IV) represents a novel application of the identification strategy recently put forth by Cremers et al. (2016). These advances allow replication of much of the extant time-horizon research that has been done for the US, and open up opportunities to delve into the extent with which short-termism differs across regions.

The remainder of this research is organized as follows. Chapter 2 discusses literature on the relationship between investor-horizons, corporate decision-making and value implications. Subsequently, Chapter 3 describes the data that is used throughout the research. Chapter 4 ascertains the methodology to test the predictions and supporting hypotheses, while Chapter 5 lists and analyzes the empirical results. Last, Chapter 6 presents conclusions, limitations and recommendations for future research.

Chapter 2

Literature Review and Hypothesis Development

In this chapter, the current standing of literature on the relationship between short-horizon investor ownership, corporate decision-making and possible value implications is examined. First, section 2.1 discusses the trade-offs between near-term earnings and long-term value that executives face in their decisions, and how executives may take a short-term focus to accommodate a short-horizon investor base. To better understand the mechanics underlying the relationship between investor horizons and corporate policies, section 2.2 elaborates on the significance of positive earnings surprises in the speculative component of a firm's stock price, and how short-horizon investors are believed to have a greater sensitivity to unexpected earnings. Last, section 2.3 delves into the long-term value implications of corporate decision-making affected by short-termism.

2.1 Short-termism and the theory of impatient capital

Although it has no off-the-shelf definition, short-termism is generally referred to as the tendency of agents to overweight near-term outcomes at the expense of longer-term opportunities (Haldane, 2011). Fundamental to the topic of short-termism is the concept of intertemporal choice; a characteristic in which the timing of costs and benefits associated with particular courses of actions are spread out over time (Loewenstein and Thaler, 1989).[1] Figure 2.1 graphically depicts such a choice between two mutually exclusive courses of action. As short-termism occurs, executives decide on A as the course of action, despite the superior returns associated with B.

Critics of short-termism cite the efficiency of markets and corporate governance in optimizing the trade-off between the short- and long-term (e.g., Dent, 2010; Jensen, 1986; Williamson, 1984). Under the condition that a market is informationally efficient, cashflows should be included

[1] Additional discussion on the topic of intertemporal choice is provided by Laverty (1996).

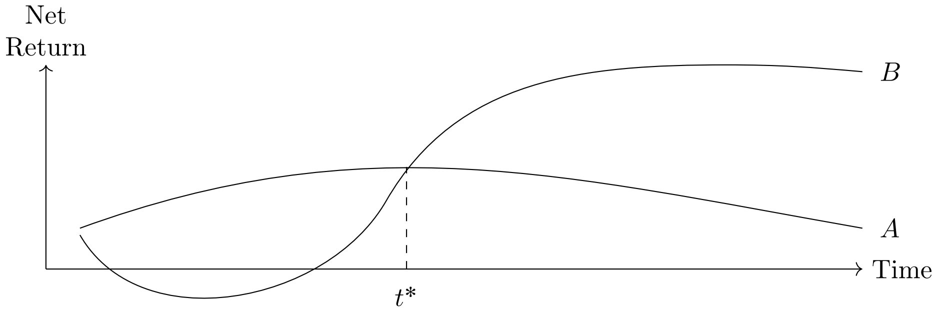

Figure 2.1: Graphical depiction of a representative intertemporal choice between two mutually exclusive courses of action. *A* leads to an incremental improvement against a relatively small investment, allowing profitability in the short-term, whilst *B* is a breakthrough improvement that requires substantial up-front investment.

in current prices, regardless of how far in the future they are projected to occur. As such, an investment that increases a firm's value should increase the stock price, no matter whether the realization of the value occurs now, or in the distant future. If this condition is met, and the firm is managed to maximize stock price (i.e., executives make value-maximizing decisions and do not dissipate wealth by focusing excessively on the short- or long-term), no inefficiencies in time-horizon should exist.[2]

If markets are not efficient however, anomalies may occur as distortions in intertemporal decision-making lead executives towards courses of action that either represent too much short-term, or too much long-term focus (Rappaport, 1992). A string of articles identifies managerial opportunism as a possible source of short-termism. Under this school of thought, pursuing short-term objectives is the optimal intertemporal choice for the manager, despite it not being in accordance with value-maximization. Examples include Holmstrom and i Costa (1986) and Narayanan (1985), who argue that executives display opportunism by selecting projects that offer relatively faster paybacks in order to more rapidly enhance their reputation, and that such enhancements have lasting effects. This is exacerbated by managerial mobility, as it diminishes the concern executives have on how decisions will affect the long-term; the period after their employment (Kaplan and Minton, 2012). Another explanation is that short-termism follows from informational frictions. Under this theory, near-term earnings are a means through which executives signal that the firm is being managed to maximize value. Investors extrapolate these short-term metrics (Hughes and Schwartz, 1988). However, due to private information, not all of a firm's value is reflected in the stock price (Brennan, 1990).[3] Miller and Rock (1985), Shleifer and Vishny (1990) and Von Thadden (1995) all provide evidence that the stock market's

[2] This contention is disputed by Stein (1989), who uses game theory to show that even under the condition of an efficient market, executives engage in suboptimal actions to inflate near-term earnings.

[3] The components of a firm's value that are not reflected in the stock price due to private information are commonly referred to as 'latent assets', see Brennan (1990).

incomplete information on how much a firm should invest to maximize its long-term value leads to an undervaluation of long-term projects, and consequently, to an overemphasis on near-term earnings.

The strand of literature that is most related to this research explains short-termism through the effect of short-horizon investors on corporate decision-making. Froot et al. (1991) and Jacobs (1991) provide an early discussion, in which they argue that as investors' horizons shorten, their attention shifts towards near-term price appreciation and timely portfolio rebalancing as opposed to long-term value creation. Consequently, the stock price reacts to near-term earnings rather than to fundamentals (i.e., the market operates efficiently only with respect to changes in current performance), and long-term projects are likely to result in longer mispricing of a firm's equity. Stein (1988) shows that if this is the case; temporary low earnings may cause the stock to become undervalued, increasing the likelihood of a takeover at an unfavorable price and driving managers to sacrifice long-term interests for near-term earnings. These papers however, do not provide a formal model to explain how short-horizon ownership influences corporate decision-making.

Another mechanism through which a short-horizon investor base can affect corporate decision-making is through the incentive effects of early 'exit' or intervention by short-term shareholders. Polk and Sapienza (2008) provide a model which shows that executives are more likely to focus on near-term earnings to cater to investment sentiment if investors have short-horizons, as these investors are more likely to terminate financing if near-term results do not meet expectations. In turn, Kahn and Winton (1998) show that it can be beneficial for short-horizon institutions to use shareholder rights to pressure firms into acting in their (short-term) interest.

To disentangle short-termism on a macro-economic scale, Bolton et al. (2006) present a theoretical model which explains how managerial short-termism does not arise against the wishes of shareholders, but is instead induced by optimal incentive schemes that would be chosen by shareholders in speculative markets. The mechanism predicts that short-horizon investors incentivize executives, through executive compensation, to inflate near-term earnings, generate positive earnings surprises, and temporarily inflate a firm's stock price at the expense of long-term firm value.[4] Under the assumption of a 'speculative stock market', the optimal managerial compensation is tilted towards short-term performance.[5] Specifically, short-horizon investors reap benefits from a temporary increase in the speculative component of stock prices, as their short-horizons imply that they are more likely to exit the firm shortly afterwards and sell to other investors with more optimistic beliefs. In turn, investors that remain in the company eventually suffer from a reduction in firm value caused by earnings management and investment cuts, which according to the theory is only gradually reflected in firm valuations due to limited arbitrage and short-sales constraints.

The theory by Bolton et al. (2006) has clear predictions regarding how the presence of short-

[4] In their research, Bolton et al. (2006) specifically mention investment cuts and earnings management. Nevertheless, the mechanism holds for any action that results in temporarily inflated stock prices.

[5] Incentive systems make use of stock options, and as the model predicts, are formed with a short-horizon in mind. Consequently, managers are incentivized to increase the speculative component of the stock price.

horizon investors is related to inflation of short-term earnings, cuts in investment, incentivization through the meeting and beating of earnings targets as well as consequent reversals in firm value. To test these, the following main components are derived:

Prediction 1 *Firms with more short-term investors are more likely to engage in actions that inflate near-term earnings, and less likely to engage in actions whose benefits occur several years into the future*

Prediction 2 *Firms are able to attain temporary valuation premia by inflating earnings and beating targets*

Prediction 3 *Actions that inflate near-term earnings have a negative effect on long-term firm value*

The predicted relationship between investor horizons and corporate decision-making is consistent with the view that causality flows from investors to the firm. A proximate strand of literature provides evidence that causality may also flow the other way, as short- or long-horizon investors select into firms displaying beneficial characteristics for their respective time-orientation. Shleifer and Vishny (1990) provide a model which shows that the opportunity costs of tying up resources to long-term investments diverts capital of short-horizon investors away from firms that focus on long-term investments. In turn, Brochet et al. (2012) use an identification strategy to establish that firms with a short-term orientation attract short-horizon clientèle.[6] These results substantiate that the relation between investor-horizons and corporate decision-making may be subject to endogeneity.

2.1.1 Earnings management and target beating

According to the theory presented in the previous section, short-horizon investors exert pressure on executives to inflate near-term earnings and generate positive earnings surprises. A vast amount of research is attributed to manipulation of earnings, and the positive relationship between a short-horizon investor base and earnings management is relatively well-established.

Earnings management is motivated by the assumption that investors can be misled into interpreting reported earnings as equivalent to economic profitability (Fields et al., 2001). Indeed, Bradshaw et al. (2001) document that even investors with considerable experience in finance, such as auditors and financial analysts, fail to detect earnings manipulation. The literature makes a distinction between two main forms of earnings management:

- Accrual-based earnings management (AEM): This form of earnings management involves the use of flexibility within accounting principles to increase reported earnings (Degeorge et al., 1999).[7] Its use amongst executives is widely reported as it involves a relatively low degree of business costs (for a literature review, see Healy and Wahlen, 1999).

[6] Brochet et al. (2012) analyze conference call transcripts to measure executive time-orientation directly.

[7] Examples include: choices of inventory methods, bad debt allowances, expensing of R&D and maintenance, recognition of sales not yet shipped and capitalization of leases and advertising expenses.

- Real earnings management (REM): This form of earnings management refers to managerial activities that deviate from normal business practices and that have real cash flow consequences. A temporary increase in reported earnings may follow from top-line, or bottom-line manipulation. Temporary revenue increases can be achieved by offering discounts to boost sales or by offering lenient credit terms (Jackson and Wilcox, 2000; Roychowdhury, 2006). In turn, bottom line growth can be achieved by overproducing to reduce cost of goods sold, cutting discretionary expenses, or, as a last resort; selling profitable assets (Roychowdhury, 2006; Bartov, 1993; Herrmann et al., 2003).

Additionally, a number of articles report repurchasing as an earnings management device. This involves management of the denominator of earnings per share (EPS). As the number of shares outstanding is decreased, EPS figures are boosted (e.g., Hribar et al., 2006; Brav et al., 2005)

Through these actions, earnings can be raised just enough to reach specific short-term thresholds, and to maintain or inflate the speculative component in the stock price.[8] Degeorge et al. (1999) provide evidence that companies raise earnings through accruals when they are close to missing analysts' expectations. Similarly Hribar et al. (2006) and Herrmann et al. (2003) find that firms take real actions such as selling assets to reach targets. Consistent with the idea that firms strategically manage earnings to avoid having to report negative short-term performance, research documents a discontinuity in the earnings surprise distribution around zero; a statistically small number of firms carry negative earnings surprises, and a statistically large number of firms carry positive earnings surprises (Bhojraj et al., 2009). Similar asymmetries around zero have been reported for plain earnings and earnings growth (Hayn, 1995; Burgstahler and Dichev, 1997).

The literature provides empirical evidence that short-horizon investor ownership is associated with higher levels of earnings management and target beating. This is in accordance with the notion that short-term investors incentivize executives to inflate near-term earnings to generate positive earnings surprises. Cremers et al. (2009) find that the proportion of returns from accruals is higher for firms with a short-horizon investor base. In a subsequent research, Cremers et al. (2016) report a causal effect, where an increase in short-horizon investors leads to higher reported earnings and a higher likelihood of positive earnings surprises. Burns et al. (2010) and Harford et al. (2016) categorize institutional ownership according to time-horizon, and find that a higher percentage of long-term ownership reduces earnings management, whilst ownership by quasi-indexing institutions induces such practices.[9] When considering REM, the literature provides some evidence, but does not employ formal measurement of investor horizons. Baghai (2012) concludes that public firms respond to short-term performance pressures by increasing prices relative to their private competitors. One last mention stems from a proximate strand of literature; Brochet et al. (2015) find that firms who use short-term language in their disclosures are more likely to exhibit AEM, REM (in the form of expense manipulation) and report small

[8] Similarly, earnings management can be used to smooth earnings and reduce volatility, by managing earnings downwards in case earnings targets are exceeded by large amounts (Degeorge et al., 1999).

[9] By doing so, they add to the understanding that institutional investors are not long-term by definition (see Rajgopal and Venkatachalam, 1997).

positive earnings surprises. In their research they also find that these firms have more short-term investors, which adds to the assertion that executives cater to their investor base. The tendency to marginally beat or miss targets is believed to have a profound connection with short-termism. Short-term firm that are close to achieving a target are believed to inflate performance just enough to reach the target, resulting in a marginal target beat. In turn, long-term firms will refrain from this. Consequently, to support Prediction 1, the following hypothesis is developed:

Hypothesis 1a *Firms with more short-term investors are more likely to engage in different forms of earnings management, and are more likely to marginally beat targets*

2.1.2 Investment

The theory outlined in the first section of this chapter predicts that pressure from short-term investors detracts from investment, as executives cut investment and undervalue long-term projects to inflate near-term earnings. Contrasting theory and empirical evidence however, suggest that this relationship may not be as clear-cut as predicted.

In support of the notion that the pressure to maintain near-term earnings detracts from investment, Graham et al. (2005) surveyed executives and discovered that 78% were willing to forgo positive NPV projects to meet short-term earnings targets. This is in line with previous findings by Baber et al. (1991), which suggest that R&D spending is reduced when spending jeopardizes the ability to report positive or increasing earnings. A related strand of literature provides indirect evidence in the form of excessive discounting of future cash-flows, by investigating undervaluation of long-maturity positive NPV projects through asset pricing frameworks (Miles, 1993; Cuthbertson et al., 1997; Black and Fraser, 2002).

The prediction that short-horizon investors detract from investment receives empirical support. Cremers et al. (2016) and Bushee (1998) document that ownership of shares by myopic institutional investors increases the prevalence of R&D cuts to boost earnings. In turn, Dobbs (2009) documents that the effect on investment does not only take the form of temporary cuts, but that it is continuous, as short-term institutional ownership leads firms into placing higher hurdles and shorter-payback thresholds to assess investment opportunities.

A contrasting theory contents that long-term investors strengthen corporate governance and restrain managerial misbehavior through monitoring and dialogue. This theory predicts an opposite relationship between short-horizon investors and investment, as under-monitored executives (i.e., lack of long-term investors) are more likely to exhibit over- or underinvestment (see Bebchuk and Stole, 1993). In line with this, Harford et al. (2016) show that a short-horizon investor base is associated with higher levels of investment in capital and R&D.

Whether a short-horizon investor base results in more or less investment is ultimately an empirical question which should be settled by the data. In support of Prediction 1, the following hypothesis is developed:

Hypothesis 1b *Firms with more short-term investors exhibit lower levels of long-term investment*

2.1.3 Environmental, social and governance scores

Apart from detracting from investment, pressure to reach near-term earnings is believed to divert executives' attention away from externalities that affect a firm's environment, and the long-term risks associated with the failure to act socially responsible.

ESG scores provide an integrative measurement of the sustainability and responsibility of firms, which in turn does not only affect human, societal and environmental well-being but also the firm itself (Fields et al., 2001). The separate pillars cover issues such as waste management, energy efficiency, impact on local communities, anti-corruption practices, income inequality and business ethics.[10] Bassen and Kovacs (2008) state that ESG scores are relevant for investors, as they convey information typically not included in traditional financial reporting. According to the authors, ESG scores provide insights into the risks and opportunities that a firm faces, and may even signal a companies' ability to maintain a competitive advantage in the long-term.

To the degree that short-horizon investors cause executives to shift their attention towards near-term earnings, a short-horizon investor base may keep firms from taking actions to improve their ESG performance. Tonello (2006) argues that the pressure to meet short-term targets induces managers to externalize business costs (e.g., a state-of-the art pollution control system) to the detriment of society, the environment and future generations. OECD (2011) adds to the argument by stating that the risks associated with not behaving socially responsible typically play out over larger horizons, and that these effects are likely underestimated by investors and executives with an excessive focus on the short-term.

The conjecture that short-horizon investor ownership is associated with lower levels of corporate sustainability receives support in the literature (most notably: Cox et al., 2004). Looking at ESG scores in specific, research provides evidence that the causation flows from investors to the firm. Neubaum and Zahra (2006) show that long-term institutional investors are significantly and positively linked to future ESG scores. This is in line with research by Eccles et al. (2012), who find that firms with a long-term investor base and firms who place emphasis on the long-term during conference calls are more likely to adopt sustainability policies. Consequently, the following hypothesis is developed to support Prediction 1:

Hypothesis 1c *Firms with more short-term investors exhibit lower ESG scores*

2.2 Stock price reactions to earnings surprises

The capital market rewards and penalizes firms for meeting, or not meeting analysts' earnings forecasts. Stock prices reflect the market's average interpretation of information (Ince and Trafalis, 2006). When actual earnings are above what is expected, the stock price reacts and the firm receives a short-term valuation premium (Bartov et al., 2002). In contrast, when earnings forecasts are missed, the firm is penalized through a reduction in stock price (Skinner and Sloan, 2002).

[10]For an overview of the different pillars and the underlying issues, see Barclays (2016).

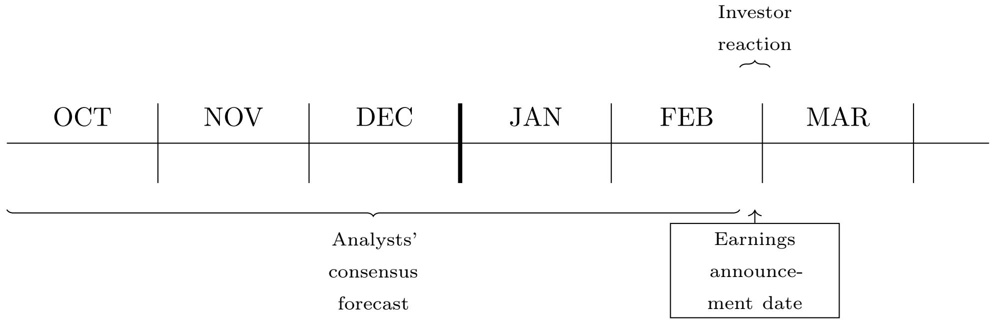

Figure 2.2: Graphical depication of the earnings announcement timeline

When the market is not able to discern and discount earnings management, executives can employ these practices to gain a valuation premium by beating consensus forecasts.

Cases in which firms miss, or beat targets by marginal amounts (i.e., two cents) are of specific interest.[11] Both should be considered 'on target', considering that firms can easily bridge a two cent difference through earnings manipulation, and that there is no absolute number to manage towards.[12] Bhojraj et al. (2009) report that a statistically small number of firms miss targets by marginal amounts, relative to the number of firms that beat by marginal amounts. Moreover, they find that the discontinuity is larger for firms that are likely to have used earnings management.

In line with Prediction 2, rational executives would only engage in actions to inflate earnings just above targets if they perceive that the market rewards such behavior, or if they can avoid penalization. This link is an essential component in the mechanism proposed by Bolton et al. (2006). To test this, the following hypothesis is derived:

Hypothesis 2a *Firms can gain a short-term valuation premium by beating analysts' forecasts by marginal amounts, and are penalized for missing analysts' forecasts by marginal amounts*

The presumption that short-horizon investors are likely to show larger reactions around earnings announcements is widely held (e.g., Graham et al., 2005), but receives little empirical support. Bushee (1998) provides an early discussion on the topic, by stating that short holding periods, and a focus on near-term price movements may lead to extreme sensitivity. Indeed, the literature finds that dedicated and quasi-indexing institutions exhibit little trading around earnings announcements (e.g., Ke and Petroni, 2004), whereas for short-horizon investors, trading volumes are large (Hotchkiss and Strickland, 2003). Nevertheless, there is no clear evidence that short-horizon investor ownership, or selling by short-horizon investors, is related to greater price

[11] A point of discussion is whether the distance from zero should be measured in absolute cents, or in cents deflated by the stock price. The literature generally uses absolute cents, based on the argument that it is a behavioral phenomenon, and that the un-scaled error is what investors focus on (e.g., Bhojraj and Swaminathan, 2009; Zang, 2011). For a discussion, see McVay et al. (2006).

[12] Consensus forecasts may vary, as data providers use different methodologies or employ different sources of information.

reactions to unexpected earnings (e.g., Hotchkiss and Strickland, 2003; Hu et al., 2009).[13]

The theory by Bolton et al. (2006) provides an explanation that does not rely on overreactions in selling by investors, but on the speculative component of stock prices, to explain why firms with short-horizon investors will have larger price reactions to earnings surprises. In the model, the stock price has two components; a long-run fundamental, and short-term speculative component. As executives inflate near-term earnings to meet or beat targets, a subset of investors is fooled into believing that the firm value is higher than its true long-run fundamental value. Due to limited arbitrage and short-sale constraints, the subsequent trading actions of the fooled short-term investors increase the short-term speculative component of the stock price (a larger positive abnormal return). In turn, the moment investors realize that the stock is overvalued as the firm fails to meet targets, the trading actions of the fooled short-term investors lead to a correction, and the stock price falls further than it would have done without short-term investors (a larger negative abnormal return). Consequently, this translates into the following hypothesis:

Hypothesis 2b *Firms with more short-term investors exhibit greater price reactions to unexpected earnings*

2.3 Firm value consequences

The actions/symptoms of corporate short-termism outlined in section 2.1 have as a common thread between them that they inflate near-term earnings by borrowing from future earnings, and that they represent actions that deviate from the first-best. Consequently, they are expected to result in an adverse effect on long-term fundamental value.

Earnings management essentially entails shifting income, which increases the likelihood that future earnings will reverse and performance will suffer (Bowen et al., 1995). Moreover, to the degree that actions to manipulate earnings represent a significant departure from optimal operational decisions, the cost of these practices is believed to exceed the benefits associated with ‘normal’ earnings-smoothing.[14] Earnings cannot be inflated indefinitely. Hence, the moment performance begins to deteriorate, executives are caught and performance drops significantly (Myers et al., 2007). The reversal in stock returns is widely reported for AEM, and the failure to incorporate it into stock prices is considered an established anomaly (e.g., Sloan, 1996; Penman and Zhang, 2002; Dechow et al., 2008). REM is associated with similar reversal effects. Sales manipulation in the form of aggressive price discounts can lead customers to expect such discounts (and hence lower margins) in future periods as well. Moreover, Marn and Rosiello (1992) argue that prices should not be subject to short-term influences, since sales price reductions are to be be used in a way that is consistent with a firm’s long-term pricing strategy and objectives.

[13] Harford et al. (2016) find that firms with more long-term investors have higher earnings announcement returns. However, the research does not consider the earnings response coefficient, nor a two-sided earnings effect and is therefore unable to provide conclusions with regard to the magnitude of these reactions.

[14] Moderate levels of earnings management are generally not considered harmful to firm value, as long as they are motivated by earnings-smoothing to reduce volatility (Degeorge et al., 1999).

In turn, overproduction results in excess inventories that cannot be sold immediately, imposing greater inventory holding costs on the company (Bens et al., 2003). A contrasting argument is that inflation of earnings through real actions can be seen as a credible way of signaling future prospects, thereby bringing down future operating expenses (Bartov et al., 2002; Hughes and Schwartz, 1988). Yet, each of these actions comes with considerable business costs. Empirical research provides mixed evidence. Li (2010) finds that a high level of REM leads to inferior future performance. In contrast, Gunny (2010) shows that firms engaging in REM to avoid losses or earnings declines realize higher future performance in comparison to firms that miss targets without using REM.

Share repurchases driven by the inflation of near-term earnings rather than value creation can also destroy long-term value. Buybacks should only be conducted when a firm's stock is trading below management's best estimate of value and when no better investment opportunities are available (Pontiff and Woodgate, 2008). If the management's belief in undervaluation is correct, continuing shareholders receive gains at the expense of shareholders who voluntarily tender their shares. If however, a company repurchases shares to boost EPS when they are fairly valued- or overvalued, wealth is transferred from continuing shareholders to exiting shareholders (Rappaport, 2005). In line with this, Peyer and Vermaelen (2009) provide evidence that repurchases motivated by EPS-increase benefit selling investors in the short-run, but not continuing shareholders in the long-run. A similar result is obtained by Huang (2012) who proxy EPS-motivated repurchasing by considering a portfolio of firms with a low likelihood of undervaluation and high degree of short-term CEO incentives. The effect is further exacerbated if a firm's capital can be used for more productive purposes. Almeida et al. (2016) provide empirical support for this by showing that EPS-motivated repurchases are associated with reductions in employment and investment.

Firms that cut investments to inflate near-term earnings are more likely to miss positive NPV investment opportunities, to the detriment of long-term firm value. Additionally, to the degree that long-maturity projects are undervalued, value is lost since these projects may have had positive expected NPV's when discounted appropriately. This is further strengthened by the notion that firms held by long-horizon investors exhibit lower volatility, which leads to lower cost of capital (Brochet et al., 2012), allowing easier financing of positive NPV opportunities.

However, not all investments produce value. Investments at below-cost of capital returns actually subtract from value, despite adding to nominal earnings growth (Leibowitz and Kogelman, 1994). A large array of literature provides evidence that increased investment activity (including R&D) is negatively associated with future returns (e.g., Cooper et al., 2008; Watanabe et al., 2013; Fama and French, 2017). Executive's interests may not align perfectly with that of shareholders, as they tend to seek growth (empire building) rather than value (Jensen, 1986). Research provides evidence that managers with access to internal funds circumvent capital market pressure to pursue growth through over-investment (Pawlina and Renneboog, 2005). Possibly, the emphasis on near-term earnings associated with short-horizon ownership actually provides capital discipline, in which case the reduction in investment may have a positive effect on financial performance.

Failure to act on ESG issues may harm long-term value through reputational damage, higher stock price volatility and consequentially, higher cost of capital (Williams and Conley, 2005). Moreover, through inferior stakeholder engagement and a short-term focus on stakeholder relationship, low-ESG firms are believed to experience higher agency costs, transaction costs and costs associated with team production (Jones, 1995). This is supported by Hillman and Keim (2001), who provide evidence that stakeholder engagement is linked to superior financial performance in the long-term, as it enables firms to build intangible assets in the form of strong relationships. Friede et al. (2015) consolidate findings of about 2,200 individual studies. The results provide evidence for a positive relationship between ESG scores and stock returns, with roughly 90% of the studies finding a non-negative relation, and the majority documenting positive findings. Arguably, not paying attention to ESG factors can harm a firm's financial bottom line in the long-term.

To capture the overarching effect of short-termism on long-term firm value, the literature has so far used short-horizon investor ownership as an indirect proxy for corporate short-termism. Cremers et al. (2016) report a temporary increase in firm value as the presence of short-horizon investors in a firm increases, followed by a decline. Harford et al. (2016) provide evidence in support of a negative relation between short-horizon investor ownership and firm value, by forming long-short portfolios on investor horizons and assessing financial performance in the subsequent year. Similarly, Flammer and Bansal (2016) make use of executive compensation plans as a proxy for short-termism, to find that a short-term orientation leads to a decrease in firm value and operating performance in the long-term. In contrast, Yan and Zhang (2007) document that firms with short-term investors have higher abnormal returns, which do not reverse. The authors attribute this result to informational advantages, which are exploited through active, short-term trading.

Still, evidence that short-termism at the firm-level detracts from financial performance has remained scarce, possibly due to difficulties in measuring the phenomenon, which does not correspond to any single quantifiable metric and can be considered a confluence of many factors. One interesting mention is the factor model proposed by McKinsey (2017), which considers patterns in earnings management and investment to dinstinguish long-term firms from short-term firms. To investigate whether actions to inflate near-term earnings have a positive or negative effect on long-term firm value, shareholder value is used as arbiter. In support of Prediction 3, the following hypothesis is derived:

Hypothesis 3 *Firms that display short-termism by engaging in actions that inflate near-term earnings generate lower risk-adjusted returns*

Chapter 3

Sample Selection and Data Description

In this chapter, an overview is provided of the data used throughout the research. First, section 3.1 elaborates on the sample selection procedure. Second, section 3.2 discusses the main variables of interest, and the accompanying procedures to compute them. Subsequently, section 3.3 provides an outline of the control variables deemed relevant for the analysis. Last, section 3.4 examines the descriptives, and presents preliminary analysis with regards to Predictions 1 and 2.

3.1 Sample selection

The initial universe comprises firms whose primary listing is on major stock exchanges across the EU over the period 2000 – 2016. Data is obtained through Factset, a commercial datastream.[1] The subsequent selection procedure involves the exclusion of firms that have missing data on basic annual reporting information, or that have a negative book value of equity.[2] Moreover, firms in the financial services industry and regulated industries are excluded (i.e., Standard Industrial Classification (SIC) codes 6000 to 6999 and 4900 to 4999). A minimum market capitalization of € 1 billion is set for each firm-year, which is commonly regarded as the lower threshold for EU mid-cap companies (Petrella, 2005).[3] This leaves a sample of 10,275 firm-year observations comprising 1,446 unique mid- and large-cap firms. Results of the sample selection procedure are reported in Table B.1.

To compute variables that are not directly available through Factset, additional data is obtained from a variety of sources. For consistency, both forecast and reported earnings are

[1] Factset provides and integrates financial information and analytics software. Apart from its own data, Factset integrates third-party data from Worldscope, Compustat, Datastream and the MSCI Intangible Value Assessment (IVA) databases. Dai (2012) compares Factset to other international accounting databases, and finds that it provides the largest coverage of public companies across the EU.

[2] More specifically, financial reporting information on revenue, REV, cash flow from operations, CFO, net property plant & equipment, $NPPE$, and market value of equity, MV, has to be non-missing.

[3] In conjunction with Kempen & Co, this research focuses on mid- and large-cap companies to mirror the study done by McKinsey (2017).

obtained from the IBES historical database. Raw forecast data is used, unadjusted for stock splits to correct for the ex-post performance bias caused by excessive rounding in the adjusted database (see Diether et al., 2002). In turn, ESG data is obtained from the MSCI Intangible Value Assessment (IVA) database, which is available through Factset. This database only dates back to 2007, narrowing the scope of analysis with regards to ESG scores. Data on constituent changes of the MSCI Europe index is provided by Northern Trust Asset Management (NTAM), and cross-checked by means of quarterly reviews on the MSCI website. The data is limited to the period 2006 – 2016, since NTAM was not able to provide data preceding 2006. Information on EU market returns, traditional Fama and French (1993) factors, the Carhart (1997) momentum factor and liquidity portfolio returns is obtained through Styleresearch.[4] Additional robust-minus-weak, RMW, conservative-minus-aggressive, CMW, and quality-minus-junk, QMJ, factors are retrieved from K.R. French's website and AQR (see Fama and French, 2015; Asness et al., 2014).

3.2 Main variables

The presence of short-horizon investors is proxied through a measure of institutional investor portfolio turnover. In turn, corporate short-termism is measured by considering actions and symptoms that indicate an overemphasis on the short-term. First, a set of first-stage regressions is estimated to compute proxies for earnings management and underinvestment. Second, to identify whether short-termism is related to patterns in target beating, long-term investment, payout and corporate sustainability; additional variables are considered based on analysts' consensus forecasts, firm-fundamentals and ESG scores. All variables are defined in Appendix A.

3.2.1 Investor time-horizons

The investor time-horizon of a firm is believed to reveal itself through the trading behavior of its shareholders. Short-horizon investors buy and sell stocks frequently, whereas long-horizon investors hold their positions for a considerable length of time (Gaspar et al., 2005; Derrien et al., 2013). Based on this rationale, Gaspar et al. (2005) set forth institutional investor turnover as a quantifiable proxy, using data from US 13F filings. A string of articles focusing on the US has since used this as a proxy for investor horizons (e.g., Harford et al., 2016; Ghaly et al., 2015).[5]

This measure of institutional investor turnover has commensurable properties, since it mitigates firm-specific shocks by calculating the quarterly turnover rate across an investor's entire portfolio, and then calculating a four-quarter moving average. Subsequently, by value-weighing the investor turnover rates over a firm's entire investor base, investor-specific shocks are also eliminated. Limitations of the measure are that round-trip trades within a quarter are ignored, as institutional

[4] Styleresearch is a commercial organization that provides portfolio analytics for investment professionals.

[5] To our knowledge, this research is the first to compute such a measure for an EU sample. Reasons being that investor horizon measures have traditionally relied on US 13F filings, and that the European Amadeus database does not provide adequate data. Factset's ownership database does provide sufficient data, and has been found to be a reliable source of ownership information (e.g., Ferreira and Matos, 2008; Chen and Shiu, 2016).

holdings are only observed per quarter, and that it only considers institutional ownership as opposed to plain share-turnover, which covers all trading in a stock. The latter is considered less of a drawback, since institutional ownership has increased to a considerable level over time, and plain share-turnover has become contaminated by high frequency traders (Cremers et al., 2016).

Following Gaspar et al. (2005), investor turnover, TR, is computed in two steps. First, the portfolio churn rate, $CR_{j,t}$, of investor j over quarter t is calculated:

$$CR_{j,t} = \frac{\sum_{i \in Q_{j,t}} |N_{i,j,t}P_{i,t} - N_{i,j,t-1}P_{i,t-1} - N_{i,j,t-t}\Delta P_{i,t}|}{\sum_{i \in Q_{j,t}} \left(\frac{N_{i,j,t}P_{i,t} + N_{i,j,t-1}P_{i,t-1}}{2} \right)} \tag{3.1}$$

where $Q_{j,t}$ denotes the set of firms held by investor j in quarter t. In turn, $N_{i,j,t}$ and $P_{i,t}$ represent the number of shares and price, respectively, of firm i held by investor j in quarter t.[6] This measure is in line with those commonly used to assess portfolio rotation (e.g., Barber and Odean, 2000). Subsequently, to calculate $TR_{i,t}$, $CR_{j,t}$ is averaged with the previous three quarters for each investor, and value-weighted at the firm-level:

$$TR_{i,t} = \sum_{i \in S_{i,t}} W_{i,j,t} \left(\frac{1}{4} \sum_{r=1}^{4} CR_{j,t-r+1} \right) \tag{3.2}$$

where $W_{i,j,t}$ denotes the weight of investor j in the total fraction held by institutional investors in firm i at quarter t, and $S_{i,t}$ represents the set of instutional investors in firm i at quarter t.[7] Lastly, to match the quarterly TR with firm-year observations, TR is appended from the fourth quarter of the book year, which contains the average of quarterly churn rates for that entire year.

3.2.2 Earnings management

The research employs a set of first-stage regressions to identify different forms of earnings management.[8] To ensure statistical power in the cross-sectional regressions, at least 10 observations are required per industry (using two-digit SIC codes). Input variables are Winsorized at the top and bottom 1 percentiles to mitigate the impact of outliers.

AEM is measured by estimating an expected 'normal' level of accruals, and capturing a firm's abnormal accruals, AEM, in the residual. A range of accrual expectation models has been developed in the literature, out of which the modified-Jones model has been shown to perform best (Dechow et al., 1995; Balatbat and Lim, 2003). This model is based on the time-series Jones (1991) model, but on a cross-sectional basis, with adjustments for normal working capital accruals. There are a number of advantages to the cross-sectional approach, compared to a time-series one:

[6] By construction, CR is within the range [0,2]. Investors entering the investment universe are excluded since they will automatically have a maximum churn rate of 2.

[7] A small number of firm-qtr observations is detected for which the total weight held by investors exceeds 100%. These cases are excluded from the dataset.

[8] The importance of using multiple forms of earnings management is substantiated by Fields et al. (2001), who argue that examining only one form at a time cannot capture the full extent of earnings management.

the modified-Jones model imposes less restrictions on data, partially controls for industry-wide factors affecting accruals and allows coefficients to vary over time. A concern with using the modified-Jones model is that a firm's operating environment may also impact accruals, and that ignoring this in the regression may lead to spurious results (Dechow et al., 2010; Kothari et al., 2005).[9] To address this concern, an additional performance variable is included in the regression to control for underlying performance, as suggested by Mao and Renneboog (2015). To compute AEM, and its unsigned counterpart, $|AEM|$, the following cross-sectional regression is estimated for each industry (using two-digit SIC codes) on a yearly basis:

$$\begin{aligned}\frac{TA_{i,t}}{ASSET_{i,t-1}} =&\alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{(\Delta REV_{i,t} - \Delta ACR_{i,t})}{ASSET_{i,t-1}}\right)\\ &+ \beta_3\left(\frac{NPPE_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4 ROA_{i,t} + \varepsilon_{i,t}\end{aligned} \tag{3.3}$$

where i and t index firms and years, respectively. TA represents total accruals, which is calculated as the difference between earnings before extraordinary items, $EBXI$, and cashflow from operations, CFO: $TA_{i,t} = EXBI_{i,t} - CFO_{i,t}$.[10] As main explanatory variables, ΔREV and ΔACR depict the yearly change in revenue and accounts receivable, respectively. $NPPE$ depicts net property, plant and equipment, to control for changes caused by non-discretionary depreciation expenses.[11] Lastly, ROA represents return on assets, which is included to control for financial performance. After the coefficients have been estimated, $AEM_{i,t}$ and $|AEM_{i,t}|$ are obtained by calculating the value and absolute value of the residual for each firm-year. The first captures the signed impact of earnings management on earnings, whereas the latter captures executives' general propensity to manage earnings (see Hribar and Craig Nichols, 2007).[12]

The most common forms of REM are sales manipulation, production manipulation and expense manipulation. Roychowdhury (2006) and Gunny (2010) present a set of expectation models, which measure REM by estimating 'normal' levels of sales, production and selling, general and administrative (SG&A) expenditures, and classifying deviations from these estimates as REM.[13]

The first proxy for REM measures sales manipulation through abnormal cash flows from operations, $ACFO$. Sales manipulation is achieved by accelerating the timing of sales, and/or generating additional temporary sales by changing the sales price or loosening credit terms (Roychowdhury, 2006; Jackson and Wilcox, 2000; Mao and Renneboog, 2015). The increased sales volume that follows is likely to disappear when the firm re-establishes its old prices. Earnings increase as the additional sales are booked in the current period (assuming that margins are

[9] An implicit assumption in earnings management studies is that, under the null hypothesis of no earnings management, the earnings management measures are mean zero. Cohen et al. (2016) provide evidence that this is not the case, by showing that many earnings management models are misspecified with respect to type I errors.

[10] Accruals may also be estimated using balance sheets. Hribar and Collins (2002) however, state that this method is prone to measurement error, especially in the case of M&A activity.

[11] This deviates from Jones (1991), as gross PP&E is found missing for a substantial number of observations.

[12] The research focuses on $|AEM_{i,t}|$ to measure corporate short-termism. However, to capture the effect of AEM on unexpected earnings and abnormal returns around earnings announcements, AEM is employed.

[13] The exact procedures and specifications for the REM expectation models used in this research, are based on Call et al. (2016) and Chen et al. (2010), with the addition of ROA to control for underlying performance.

positive), but cash inflow per sale net of discounts is lower as margins decline. Similarly, through loosened credit terms, collection of current period's sales is decreased, which also results in lower cashflow. All in all, it is expected that sales manipulation leads to lower current-period CFO than what is normal given a specific sales level. $ACFO$ is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) on a yearly basis:

$$\begin{aligned}\frac{CFO_{i,t}}{ASSET_{i,t-1}} =&\alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_3\left(\frac{\Delta REV_{i,t}}{ASSET_{i,t-1}}\right) \\ &+ \beta_4 ROA_{i,t} + \varepsilon_{i,t}\end{aligned} \tag{3.4}$$

Only a CFO that lies below the 'normal' level is consistent with sales manipulation. In line with this, after the coefficients have been estimated, $ACFO_{i,t}$ is obtained by calculating the value of the residual for each firm-year and truncating values above zero. To ease interpretation, $ACFO_{i,t}$ is multiplied by minus one, such that higher values are consistent with more REM.

The second REM proxy measures production manipulation through abnormal production, $APROD$. Production manipulation is achieved by engaging in overproduction to lower cost of goods sold, $COGS$. As firms produce more goods than necessary to meet expected demand, fixed costs are spread over a larger number of units. Since the production is above its optimal level, marginal costs per unit increase, but as long as the reduction in fixed costs per unit is not offset by an increase in marginal cost per unit, total costs per unit decline. The firm reports better operating margins, but production costs and holding costs are incurred on the over-produced items which are not recovered through sales in the same period. This results in abnormally high production costs relative to sales. $APROD$ is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) on a yearly basis:

$$\begin{aligned}\frac{PROD_{i,t}}{ASSET_{i,t-1}} =&\alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t}}{ASSET_{i,t-1}}\right) \\ &+ \beta_3\left(\frac{\Delta REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4\left(\frac{\Delta REV_{i,t-1}}{ASSET_{i,t-1}}\right) + \beta_5 ROA_{i,t} + \varepsilon_{i,q}\end{aligned} \tag{3.5}$$

where $PROD$ is production costs, measured as the sum of $COGS$ and change in inventory, ΔINV: $PROD = COGS + \Delta INV$. A $PROD$ above the 'normal' level is consistent with production manipulation. Hence, after the coefficients have been estimated, $APROD_{i,t}$ is obtained by calculating the value of the residual for each firm-year, and truncating values below zero.

The last proxy for REM measures expense manipulation through abnormal SG&A expenditures, $ASGA$. Since SG&A is generally expensed in the same period as it is incurred, firms can reduce reported expenses and increase earnings. This results in unusually low discretionary expenses relative to sales. $ASGA$ is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) on a yearly basis:

$$\frac{SGA_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \beta_1 \left(\frac{1}{ASSET_{i,t-1}} \right) + \beta_2 \left(\frac{REV_{i,t-1}}{ASSET_{i,t-1}} \right) + \beta_3 ROA_{i,t} + \varepsilon_{i,t} \tag{3.6}$$

where SGA denotes SG&A expenditures. Negative $ASGA$ indicates that firms manipulate expenses. In line with this, after the coefficients have been estimated, $ASGA_{i,t}$ is obtained by calculating the value of the residual for each firm-year, truncating values above zero and multiplying by minus one, such that higher values are consistent with more REM.

Subsequently, REM, the aggregate measure of a firm's use of REM, is computed by summing the three z-scored real earnings management components: $REM_{i,t} = Z[ACFO_{i,t}] + Z[APROD_{i,t}] + Z[ASGA_{i,t}]$.

3.2.3 Target beating

Firms' tendency to beat targets is examined through a set of binary variables. First, the tendency of firms to just avoid having to report negative performance is measured by $LOSSAVOID$, a dummy variably which takes a value of one when a firm's earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by market value of equity, MV, ranges from 0 to 0.1, and zero otherwise. Second, beating and missing analysts' consensus forecasts is examined through $SBEAT$ and $SMISS$, respectively. $SBEAT$ is a dummy variable that takes a value of one when a firm reports unexpected earnings at or above zero, but within two cents from the consensus forecast $[0:2\rangle$, and zero otherwise. In turn, $SMISS$ is a dummy variable that takes a value of one when unexpected earnings are below zero, but within two cents of the consensus forecast $[-2:0\rangle$, and zero otherwise.[14] In addition, $NETBEAT$ is calculated by subtracting the dummy value of $SMALL$ from $SBEAT$, to capture both occurrences in one measure.

3.2.4 Capital allocation

The research employs a number of measures to capture the effect of a short-horizon investor base on capital allocation.

Investment is measured through capital expenditures, $CAPEX$, and R&D expenditures, $R\&D$, both scaled by total assets. These measures are geared towards long-term investment (Cremers et al., 2016; Harford et al., 2016), which is the type of investment that should be most prone to investment cuts as benefits typically occur only many years into the future. Moreover, the first captures investment in tangibles, whilst the latter does so for intangibles, allowing for a broad analysis.[15] Additionally, investment cuts are measured through the change in R&D,

[14] As mentioned before, it is a point of discussion whether the distance from zero for marginal beating should be scaled by the shareprice or not. Based on the argument that this is a behavioral phenomenon, and that the un-scaled error is what investors focus on, this research uses absolute cents. This is in line with the common practice in the literature. For a discussion, see McVay et al. (2006).

[15] Another measure of intangible investment is the change in non-current assets (Asker et al., 2014). However, this measure also captures goodwill, which may be contaminated by M&A. It is omitted from the analysis as there

$\Delta R\&D$. This measure captures less of the systematic differences in investment levels across firms, which may attract a certain investor base. To address the issue of missing R&D values, pseudo-blank R&D expenditures are replaced by the industry average, and a dummy variable is included to indicate blank R&D firms, as suggested by Koh and Reeb (2015).[16]

In addition, the research considers a proxy for 'underinvestment', $UINV$, which isolates the time-horizon component of investment by controlling for the noise induced by investment opportunities, capital constraints and agency problems (i.e., empire building). $UINV$ is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) with at least 10 observations, on a yearly basis:

$$\begin{aligned} CAPEX_{i,t} =& \alpha_0 + \beta_1 \left(\frac{1}{ASSET_{i,t-1}} \right) + \beta_2 ln[MV]_{i,t} + \beta_3 TQ_{i,t} + \beta_4 \left(\frac{REV_{i,t-1}}{ASSET_{i,t-1}} \right) \\ &+ \beta_5 CASH_{i,t-1} + \beta_6 LEV_{i,t-1} + \varepsilon_{i,t} \end{aligned} \tag{3.7}$$

where $ln[MV]$ depicts the natural log of market value of equity, and TQ represents Tobin's q; calculated as the sum of market value of equity, book value of preferred stock, long-term debt and short-term debt, scaled by total assets. The latter is included to control for investment opportunities. $CASH$ depicts the cash holdings scaled by total assets, and LEV represents long-term debt; also scaled by total assets. Once the coefficients have been estimated, $UINV_{i,t}$ is obtained by calculating the residual for each firm-year, truncating values above zero, and multiplying by minus one, such that higher values of $UINV_{i,t}$ are consistent with underinvestment.

Payout is measured through the value of shares repurchased, $REPUR$, and the value of dividend payout, DIV, both scaled by total assets. As stated in the previous chapter, it is believed that executives can repurchase as a form of earnings management. The inclusion of dividend payout in the research allows for a more holistic analysis that considers the effect of short-horizon investors on payout as a whole. Moreover, payout is of particular interest considering the results obtained by Harford et al. (2016), who document a negative association between short-horizon investors and payout, and attribute this to decreased monitoring.

3.2.5 Corporate sustainability

To capture a firm's performance with respect to environmental, social and governance issues, ESG scores are employed. These scores are assigned by analysts, after evaluating a firm's exposure and management of key sustainability themes. The weights of environmental and social themes may vary across industries, whereas governance issues are consistently evaluated. The outcome is a set of scores on a $0 - 10$ scale, which are normalized across industry peers.[17] Throughout the

are reasons to expect that the predictions in Bolton et al. (2006) do not hold for investments in another firm.

[16] Koh and Reeb (2015) show that a substantial number of missing R&D firms demonstrates patent activity, which suggests that these firms do engage in innovation and R&D. To ensure that the results are not sensitive to the treatment of R&D expenditures, the results are cross-validated with alternative approaches: leaving data as-is, treating missing as zero and treating missing as zero with a dummy variable to indicate blank R&D.

[17] This summarizes the methodology used by the MSCI ESG IVA database.

research, ESG is defined by the overall industry adjusted ESG score, whereas ENV, SOC and GOV represent the individual pillar scores.

3.2.6 Earnings announcements

To investigate stock price reactions to unexpected earnings, cumulative abnormal returns, CAR, and scaled unexpected earnings, SUE, are computed for annual earnings announcement events.

First, $SUE_{i,t}$ is calculated, which measures the percentage of unexpected earnings to the stockprice for an announcement event of firm i on day t:

$$SUE_{i,t} = \frac{UE_{i,t}}{P_{i,t}} \times 100 \tag{3.8}$$

where $UE_{i,t}$ depicts the unexpected earnings; the difference between reported earnings and the median analysts' consensus forecasts, and $P_{i,t}$ the stock price at the day of the forecast, all concerning the same earnings announcement of firm i on day t.[18] To avoid the effect of leakage, the median forecast closest to, but preceding the announcement by at least 5 days is used (Trueman et al., 2003).[19] If no forecast statistics are available over the quarter preceding the announcement, the observation is eliminated to avoid the effect of stale forecast errors. Additionally, the dispersion in analysts' forecasts, $DISP_{i,t}$, and the number of estimates, $EST_{i,t}$, are obtained for each announcement, where $DISP_{i,t}$ is calculated as the standard deviation of the earnings forecasts divided by $P_{i,t}$. As in Thomas (2002), observations with absolute unexpected earnings larger than the share price, and dispersion larger than 20% of the share price, are dropped.

Subsequently, CAR is computed around announcement events. First, the abnormal return, AR, is calculated for each day in the event window [-1:1] with $t = 0$ as the event day:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \beta_i \hat{R}m_t) \qquad \text{for} \quad t = -1, 0, 1 \tag{3.9}$$

where $R_{i,t}$ depicts the total return of firm i on day t and $Rm_{i,t}$ the market return. In turn, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the OLS estimates of regressing $R_{i,t}$ on $Rm_{i,t}$ over estimation window [-210,-10]. Subsequently, the abnormal returns are summed over the event window to obtain CAR:

$$CAR_{i,t} = \sum_{t=-1}^{t=1} AR_{i,t} \tag{3.10}$$

[18] In congruence with the use of raw forecast data, historical, unadjusted stock prices are employed.

[19] IBES provides monthly consensus forecasts. Given that this is the number that managers most likely manage towards, it is chosen not to complicate issues by self-computing a consensus using the individual forecast dataset.

3.3 Control variables

A multitude of control variables is selected, based on prior research concerning investor horizons and short-termist behavior by firms. For brevity, and to avoid data mining concerns, the research employs a specification that is standard in the literature, as well as consistent across the analysis. All variables are defined in Appendix A.

First, the research controls for ownership characteristics that may affect corporate decision-making. Institutional ownership, $INST$, is included to control for the fraction of shares owned by institutional investors. Their monitoring role is widely established in the literature (e.g., Shleifer and Vishny, 1986), and by controlling for institutional ownership, the measure of investor horizons captures the isolated effect of a short-horizon investor base. Blockholder ownership, $BLOCK$, and the Herfindahl-Hirschmann index of institutional holdings, $HERF$, are included to separate investor horizons from ownership concentration. Although blockholder ownership and ownership concentration are associated with mixed effects on corporate decision-making, the effects are very different from those associated with short-horizon investor ownership (Holderness, 2003). $BLOCK$ is calculated as the fraction of shares owned by institutional investors with an ownership stake of at least 5%. In turn, $HERF$ is calculated by taking the sum of squares of each investor's holdings as a proportion of the total institutional holding.

Second, controls are added for firm-specific characteristics that are associated with firms' tendency to manage earnings. As usual in the literature, size, growth and performance are controlled for, using $ln[MV]$, book-to-market, BTM, and ROA, respectively. Dechow and Dichev (2002) report that smaller firms have less stable and predictable operations, resulting in larger variation in accruals. Skinner and Sloan (2002) document that growth firms are penalized more for negative earnings surprises, and are therefore more inclined to use earnings management. In turn, Miller (2002) finds good financial performance to be negatively associated with earnings management. LEV, $CASH$ and capital intensity, $CAPINT$, are included to control for the effect of capital constraints, as Cohen (2008) reports a negative association between different forms of capital constraints and earnings management. Here, $CAPINT$ is calculated as net property plant & equipment scaled by total assets. Lastly, the length of a firm's operating cycle is controlled for, which is found to be positively associated with earnings management (Dechow and Dichev, 2002). Firms with longer operating cycles have greater flexibility for earnings management trough larger accrual accounts, and longer periods before accruals reverse. $ln[OPCYCLE]$ is included as the natural log of the operating cycle (in days), on the basis of turnover in accounts receivable and inventory: $360((ACR_{i,t} + ACR_{i,t-1})/REV_{i,t} + (INV_{i,t} + INV_{i,t-1})/COGS_{i,t})$.

For analysis related to capital allocation, the specification is expanded to control for characteristics associated with a firm's decision to investment. To control for investment opportunities, TQ is included, which is widely used throughout literature (e.g., Pawlina and Renneboog, 2005). Capital constraints are already controlled for in the standard specification. Additionally, $\sigma[CFO]$, the standard deviation of CFO over the last five years, is included to control for the risk associated with a firm's underlying business model and the availability of financing. Minton and Schrand (1999) find that higher cash flow volatility is associated with lower levels of investment, and attribute this to higher costs of capital, and firms not fully covering cashflow shortfalls but foregoing investments instead. Lastly, the specification controls for a firm's lifecycle, $LCYCLE$, which is the ratio of retained earnings scaled by total assets. This measure acts as a proxy for maturity, and is found to be positively related to paying dividend, and negatively to investment (DeAngelo et al., 2006; Asker et al., 2014).

Last, for the analysis of stock price reactions to earnings announcements, a designated specification is maintained in which $ln[MV]$, BTM, LEV, $BETA$, $DISP$ and EST are included separately, and as interaction terms with SUE. This controls for the effect of size, growth, leverage, risk and forecast accuracy on CAR, and the effect of SUE on CAR (commonly referred to as the earnings response coefficient, ERC). $BETA$ is the equity beta determined over the estimation window [-210,-10] with $t = 0$ as the event day. Each of these has been found an important determinant of the ERC (e.g., Collins and Kothari, 1989; Easton and Zmijewski, 1989).

3.4 Descriptive statistics

Panel A, B and C of Table B.2 report the final sample distribution over years, industries and countries respectively. The number of observations rises over the sample period, but shows a through around 2008 – 2009. This may be due to data availability. Alternatively, it may be caused by the 2008 financial crisis, which decreased valuations, causing firm-years to fall beneath the market capitalization threshold, and rebound in subsequent years.[20] Indeed, the average market value shows a decline around the crisis. The sample includes observations from a wide spectrum of business, with most observations occurring in the manufacturing, retail and business service industries. The United Kingdom (UK) represents the largest part of the sample, accounting for 26.7% of the observations, and 26.5% of the average total market value. France and Germany are second and third, accounting for 15.1% and 12.3% of the observations, respectively. The country distribution has been cross-validated with the MSCI Europe index, which exhibits a similar distribution.[21] As such, the sample is considered a good representation of the EU market.

Table B.3 reports summary statistics on measures of investor horizons, corporate decision-making, earnings announcements and controls. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. With regards to firm-characteristics; statistics on MV show the average market value is €8.73 billion. Moreover, mean BTM is 0.48, ROA is 0.06, LEV is 0.24, $CASH$ is 0.12 and $BETA$ is 0.84. Looking at ownership-characteristics, statistics on $INST$ and $BLOCK$ show that on average, 33.56% of the shares is owned by institutional investors, out of which 6.80% are blockholders.

With respect to investor horizons, Table B.3 shows that TR is on average 0.15, which translates

[20] Dungey and Gajurel (2014) report that the UK financial sector experienced a decrease in market capitalization of about 49%. For other EU countries, similar losses are documented, albeit not as severe.

[21] Similar to this research, the MSCI Europe index focuses on mid- and large-cap companies.

to a holding period of roughly 7 quarters, or 1.75 years.[22] Froot et al. (1991) provide a classification of time-horizons, in which they categorize investors with a holding period less than 2.5 years as short-term. Based on this cutoff, it can be concluded that on average, firms in the sample have a short-horizon investor base. Figure B.1 presents the evolution of TR over the sample period. The trend suggests that investor-horizons have lengthened over time. US-based research typically documents a decrease in institutional investor turnover, followed by an increase after 2010 (e.g., Harford et al., 2016). This discrepancy suggests that the dynamics over time have been different for the EU.[23] Table B.4 reports the persistence in TR between subsequent years. 61.9% of the firms initially ranked in the upper TR quintile also classifies as such in the subsequent year, which suggests that the time-horizon of a firm's investor base is reasonably persistent.[24]

Table B.5 depicts the average coefficient estimates for the expectation models that are used to measure different forms earnings management and underinvestment. For the estimation of TA, $NPPE$ and ROA are the most influential. The average sign of the scaled $NPPE$ coefficient is negative, which is to be expected since the parameter is related to depreciation, which negatively contributes to TA. The coefficient on ROA is on average positive, and significant, which justifies the performance adjustment to the modified-Jones model. The mean adjusted R^2 across the industry-years amounts to 47%, which is higher than what is typically obtained for the non-performance-adjusted Jones model, and similar to what other studies find (e.g., Roychowdhury, 2006; Stubben, 2010). Turning to the REM model estimates, contemporaneous sales is the most influential, and has an average positive coefficient. ROA loads on average positive on cash flows from operations, but negatively on $PROD$. The mean adjusted R^2 across industry-year observations is 63% for CFO, 91% for $PROD$ and and 46% for SGA. This is in line with results obtained in other studies (e.g., Roychowdhury, 2006; Mao and Renneboog, 2015). Throughout, the explanatory power of the REM models is higher than what is typically obtained by research that does not include ROA, which again justifies the inclusion of a performance variable. Lastly, in the estimation of $CAPEX$, TQ has an average positive loading. This is as expected, since firms with more investment opportunities should naturally invest more.

Table B.6 reports the mean statistics and tests of difference after partitioning the sample in above and below median TR. Compared to firms with long-horizon shareholders, firms with a short-horizon investor base exhibit significantly higher mean values for the earnings management proxies $|AEM|$, $ACFO$, $APROD$ and $ASGA$, and $LOSSAVOID$. This is in line with Hypothesis 1a, as it suggests that firms with a short-horizon investor base are more likely to use earnings management and have a greater tendency to just avoid having to report negative performance. With regards to capital allocation, low TR firms report on average lower values for $R\&D$ and

[22]The mean holding period for each firm-year is calculated as the inverse of expected TR: $E[TR_{i,t}]^{-1}$.

[23]The notion that European institutional investors exhibit different turnover characteristics then their US counterparts is supported by Aguilera et al. (2006) and Black and Coffee (1994). However, to our knowledge, no research has yet reported a time-trend in institutional investor turnover for a EU sample.

[24]Note that this is not caused by calculating moving averages, since for each firm-year observation, the instant of measurement of investor turnover is the fourth quarter of the book year, which contains the average of investors' churn rates over that particular year.

higher values for the underinvestment proxy $UINV$, which is conform to Hypothesis 1b. Looking at measures of corporate sustainability, the results are in accordance with Hypothesis 1c as short-horizon investor firms have lower average values for ESG, ENV SOC and GOV. A small discrepancy is observed for $CAPEX$, which is higher for firms with short-horizon ownership. Overall, the results provide preliminary evidence in favor of Prediction 1.

From the statistics on control variables, it becomes apparent that firms with a short-horizon investor base are on average significantly smaller, have lower ROA, larger cash holdings and a shorter operating cycle. Moreover, slightly higher mean $\sigma[CFO]$ and $BETA$ suggest that these firms carry greater risk. The lower mean values of TQ and $LCYCLE$ put forth that high TR firms have less investment opportunities whilst being less mature. Interestingly, there is no significant difference in the ownership characteristics, which suggests that the time-horizon of investors is distinct from other ownership characteristics.

Table B.7 reports the Pearson correlations between TR and measures of corporate decision-making. In line with Prediction 1, TR is positively correlated with the measures of earnings management and target beating ($LOSSAVOID$ and $SBEAT$). Moreover, there is a negative and significant correlation with ESG. As in Table B.6, the relation between short-horizon investors and investment appears somewhat ambiguous, since TR is positively correlated with the plain measures of investment, but also with the proxy for underinvestment, $UINV$. Looking at the correlations between the different earnings management and underinvestment proxies; all are positive and significant, which indicates that firms engage in AEM, REM and underinvestment at the same time, and that there is a common component amongst these proxies. Moreover, $|AEM|$ and $ACFO$ are both positively correlated with $LOSSAVOID$, whereas $ACFO$ and $APROD$ are positively correlated with $SBEAT$. This provides evidence in favor of the assertion that firms use earnings management to beat targets. Each of the earnings management proxies is negatively correlated with ESG, which corroborates that an overemphasis on the near-term indeed causes executives to shift their attention away from ESG issues. An interesting note is that ESG is negatively related with both $CAPEX$ and $UINV$. A possible explanation would be that ESG is related to capital discipline, and that executives who are closely monitored are not only restrained from over- or under-investment, but also incentivized to pay attention to ESG issues.

Overall, Table B.7 shows that individual measures of corporate short-termism are not highly correlated, which suggests that they capture different dimensions of short-termism. The highest correlations occur between the earnings management proxies and $UINV$. A possible explanation for this could be that these measures capture more of the contemporaneous signal of near-term earnings inflation, whereas the remaining proxies take longer to reflect a firm's focus on the near-term (e.g., ESG), or are subject to other influences.

With regards to earnings announcements, Table B.3 shows that SUE is on average -0.076%, against a median of 0.004%. This difference indicates that the SUE is left-skewed. Comparison between the mean $SBEAT$ (0.181) and $SMISS$ (0.143) yields a similar conclusion, as the number of firms marginally beating expectations exceeds the number of firms missing. Indeed, visual inspection of the UE distribution depicted in Figure B.2 suggests that there is a greater tendency to meet, or beat earnings targets by one or two cents, relative to what is expected by chance.[25] This is surprising considering that there is no absolute analysts' consensus (hence no single number to manage towards) and that investors are aware of the fact that executives have access to earnings management (hence should not reward such marginal differences).[26]

To better understand the discontinuity between marginal beating and missing of earnings forecasts, Table B.8 presents the mean CAR and tests of differences after partitioning the sample on marginal beating/missing of earnings forecasts, and firms falling above/below the median of $|AEM|$, REM and TR in a given year. Within all three samples, CAR is significantly higher for firms that beat analyst forecasts by one or two cents (i.e., $SBEAT = 1$) relative to firms that miss by one or two cents (i.e., $SMISS = 1$).[27] There is no direct evidence of a more positive price response for firms that have above median $|AEM|$, REM or TR relative to those that have not. Nevertheless, by considering the difference in the mean CAR between the diagonal cells (denoted by superscript 'a' and 'b'), firms that are 'earnings management suspects' can be distinguished from firms that are not. Throughout, firms that meet or beat earnings forecasts, despite having a high level of earnings management, outperform relative to firms that miss but maintain high quality earnings. The analysis suggests that firms can indeed gain a stock price benefit by using earnings management to marginally beat earnings forecasts, which is in accordance with Hypothesis 2a.

Subsequently, Figure B.3 investigates whether stock price reactions to earnings announcements are greater for firms with a short-horizon investor base. The cumulative average abnormal returns (CAAR) around earnings announcements are plotted, after partitioning on positive/negative SUE, and above/below median TR.[28] The figure suggests that firms with a high TR exhibit stronger reactions around earnings announcements relative to firms with a low TR, providing preliminary evidence in favor of hypothesis 2b.

Lastly, Table B.9 reports the distribution of MSCI Europe index constituent changes over years. These changes are used in the IV-procedure, as an instrument for investor horizons, TR. Note that additions and deletions that are not included in MSCI regular reviews are excluded, since irregular index changes are likely to be caused by corporate events such as mergers and acquisitions (M&A), delisting or bankruptcies (Chen and Shiu, 2016; Shleifer, 1986).[29] In total, this leaves 164 additions, and 134 deletions over the period 2006 – 2016.

[25]The distribution of unexpected earnings depicted in Figure B.2 is similar to ones reported for US samples (e.g., Hribar and Craig Nichols, 2007).

[26]A discontinuity in earnings surprises may also follow from analysts' pessimism (Durtschi and Easton, 2005).

[27]The difference in total results between the different samples is caused by not all firms having data on $|AEM|$, REM and TR. As such, the 'total' results are essentially results for subsets of the total sample.

[28]The cumulative average abnormal returns (CAAR) are computed by first calculating the average abnormal return across all stocks N for each day in the event window using: $AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t}$, and subsequently, summing the average abnormal returns over the T days in the event window: $CAAR_T = \sum_{t=1}^{T} AAR_t$.

[29]In response to corporate events such as M&A, bankruptcies or delistings, MSCI immediately announces the adjustment of an index, if needed.

Additional variables are used in the robustness tests, which for brevity, are not discussed. For summary statistics on these parameters, see Table B.3.

Chapter 4

Methodology

This chapter ascertains the methodology to test the predictions and supporting hypotheses. First, section 4.1 describes the model to assess whether a short-horizon investor base affects corporate decision-making. Moreover, it discusses the IV-procedure that is used to address endogeneity concerns. Second, section 4.2 presents a set of models to evaluate whether executives are able to attain temporary valuation premia by inflating near-term earnings and marginally beating targets, and whether firms with short-horizon ownership exhibit greater price reactions to unexpected earnings. Last, section 4.3 explains how portfolio returns are used to test whether actions to inflate near-term earnings have a detrimental effect on long-term value.

4.1 Investor horizons and corporate decision-making

To analyze whether short-horizon ownership affects corporate decision-making, different measures associated with corporate short-termism are regressed on the investor-horizon proxy, TR, using ordinary least squares (OLS) and probit estimations. The regression takes the following form:

$$Y_{m,i,t} = \alpha_0 + \beta_1 TR_{i,t} + \beta_2 TR_{i,t-1} + \sum_{n \in N} \gamma_n X_{n,i,t} + \sum IND/YR/CTRY + \varepsilon_{i,t} \tag{4.1}$$

where i and t index firms and years respectively. $TR_{i,t-1}$ is included to take into account that the effects of short-termism may not occur contemporaneously, and to capture possible reversal effects (see Cremers et al., 2016). Y_m represents the vector of measures associated with corporate short-termism, with individual measures denoted by $m \in M$. In turn, X_n is the vector of control variables, with individual controls $n \in N$. To test Hypotheses 1a, 1b and 1c, the primary coefficients of interest are β_1 and β_2. For brevity, and to avoid data mining concerns, the research employs a specification that is standard in the literature, as well as consistent across the analysis. Table 4.1 provides an overview of the measures contained in Y_m, the expected signs of β_1 or β_2 and the control variables that make up X_n. The specification controls for ownership and firm-specific characteristics that are associated with earnings management. If the dependent variable is computing using consensus forecasts, the forecast quality is further controlled for through $DISP$ and EST. For analysis related to capital allocation, the specification is expanded to control for characteristics associated with firms' decision to invest. Industry, year and country fixed effects are used to control for unobserved heterogeneity at the industry-year-country level.[1] Standard errors are clustered by industry-year to capture clustering across industries and years.[2]

Table 4.1: Measures of corporate short-termism, expected coefficient signs and controls

Measures of corporate short-termism ($Y_{m,i,t}$)			Control variables ($X_{n,i,t}$)		
Earnings man.	Capital alloc.	ESG issues	Ownership	Firm-specific	Optional
$+ \lvert AEM_{i,t}\rvert$	$-\ CAPEX_{i,t}$	$-\ ESG_{i,t}$	$INST_{i,t}$	$ln[MV]_{i,t}$	$DISP_{i,t}{}^{b}$
$+\ ACFO_{i,t}$	$-\ R\&D_{i,t}$	$-\ ENV_{i,t}$	$BLOCK_{i,t}$	$BTM_{i,t}$	$EST_{i,t}{}^{b}$
$+\ APROD_{i,t}$	$-\ \Delta R\&D_{i,t}$	$-\ SOC_{i,t}$	$HERF_{i,t}$	$ROA_{i,t}$	$TQ_{i,t}{}^{c}$
$+\ ASGA_{i,t}$	$+\ REPUR_{i,t}$	$-\ GOV_{i,t}$		$LEV_{i,t}$	$\sigma[CFO]_{i,t}{}^{c}$
$+\ LOSSAVOID_{i,t}$	$DIV_{i,t}{}^{a}$			$CASH_{i,t}$	$LCYCLE_{i,t}{}^{c}$
$-\ SMISS_{i,t}$				$CAPINT_{i,t}$	
$+\ SBEAT_{i,t}$				$ln[OPCYCLE]_{i,t}$	
$+\ NETBEAT_{i,t}$					

[a] for this measure, no predictions are made with regards to coefficient β_1
[b] only applicable for analysis related to analysts' consensus forecasts
[c] only applicable for analysis related to capital allocation

4.1.1 Instrumental variable procedure

A concern when estimating the causal effect of short-horizon investor ownership on corporate decision-making is that the results may be affected by endogeneity. Investor horizons, proxied by TR, can be an endogenous outcome variable, caused by firm fundamentals, other investor characteristics or the market environment. In particular, unobservables (e.g., market information) may affect a firm's investment decisions, and at the same time the decisions of short-horizon investors to invest in a particular firm.

To address this concern, an identification strategy is used which employs inclusions to the MSCI Europe index as an instrument for investor horizons.[3] For the IV to be valid, it has to meet the requirements of relevance and exogeneity (Verbeek, 2008). The instrument is believed to be relevant, as index inclusions are expectedly accompanied by a temporary increase in short-horizon investors. Short-horizon investors that track the index buy more swiftly, causing an inflow of short-horizon investors. Subsequently, as passive investors gradually replace the short-horizon investors, the balance is restored. Support is provided by Cremers et al. (2016), who document

[1] Gormley and Matsa (2013) argue that, on econometric grounds, the popular approach of including fixed effects dominates demeaning the dependent variable, or adding the mean of the dependent variable as a control.

[2] Note that there are reasons to believe that errors are correlated on country level as well. However, since the research ultimately focuses on portfolio choice, clustering at the industry-level is deemed appropriate.

[3] Alternatively, it can be considered to include additional leading/lagged variables and assessing granger causality. However, time orientation is believed to be inherently sticky (Brochet et al., 2012), as are ESG scores (Kim et al., 2014). This raises concerns on whether these methods truly mitigate problems of endogeneity.

that the presence of short-horizon investors temporarily increases for firms that are newly included to the Russel 2000.[4] The instrument is believed to be exogenous, since the changes in investor horizons are not related to differences in corporate policies, or unobservables such as market information, but merely the index inclusions themselves. In particular, it is assumed that it is largely random whether firms are just within, or outside of the index inclusion cutoffs. This is supported by Chang et al. (2014) who find that there is no discontinuity in firm-characteristics around the cutoffs for similar indices; the Russel 2000 and S&P 500. Moreover, the events do not have a direct effect on firm fundamentals, nor do they provide new information to the market, as index inclusions are relatively predictable (see Table B.9 for an MSCI methodology overview).

As usual in literature, deletions from the index, as well as irregular reconstitutions, are excluded from the analysis. The rationale behind this is that these are likely caused by corporate events such as M&A, delisting or bankruptcies (Chen and Shiu, 2016; Shleifer, 1986). Research that employs similar identification strategies has traditionally relied on US-based S&P 500 and Russel 2000 index inclusions to instrument for changes in ownership characteristics. Generally, research prefers using the Russel 2000, since its reconstitutions occur often, and are shown to have a more significant impact on firms (e.g., Petajisto, 2011; Appel et al., 2016; Crane et al., 2016). Indeed, a potential concern with using the MSCI Europe compared to the regularly used Russel 2000 is that the frequency with which additions occur is considerably lower, which might have a negative effect on the power of the instrument. Panel A of Table B.9 shows that the number of MSCI Europe additions per year is roughly 16, whereas that of the Russel 2000 is typically around 300 (see Cremers et al., 2016). Nevertheless, compared to the S&P 500, the frequency is similar (see Hegde and McDermott, 2003). A second concern is that, although MSCI has transparent and objective rules regarding addition and deletion from the index (see Panel B of Table B.9 for an overview), the procedure involves a set of screens that make the outcome less predictable than that of the Russel 2000, which is based on a firm's market capitalization.

Figure B.4 provides preliminary support for the use of MSCI Europe inclusions as an instrument for TR, by plotting the evolution of the average TR of firms that are added to the MSCI Europe relative to firms that are not. The graph shows that TR increases when a firm is added, followed by a reversion to the mean in the subsequent year. More specifically, TR of firms that are added increases by roughly 0.01 compared to observations that do not receive an addition. This mitigates the potential concern that index inclusions lead to the arrival of (inherently) long-horizon investors (e.g., index tracking investors), as opposed to short-horizon investors. Moreover, the reversion supports the notion that short-horizon investors are gradually replaced by long-horizon investors when firms have been in the index for some time.

To verify that the instrument is relevant, the following first stage OLS regression is estimated:

$$TR_{i,t} = \alpha_0 + \beta_1 ADDITION_{i,t} + \sum_{n \in N} \gamma_n X_{n,i,t} + \sum IND/YR/CTRY + \varepsilon_{i,t} \tag{4.2}$$

[4] These firms were previously outside the Russel 3000, but showed a substantive increase in market capitalization, legitimizing a direct entry into the Russel 2000.

where $ADDITION$ is a dummy variable that takes the value of one when firm i has been added to the MSCI Europe index in year t, and zero otherwise. Table C.1 presents the estimation results. The regression in column (1) only includes $ADDITION$. Column (2) controls for market value and ownership characteristics. Rationale for this is that index inclusions are largely dependent on a firm's market value. and that additions are associated with an increase in institutional ownership (Biktimirov et al., 2004; Goetzmann and Garry, 1986). Lastly, column (3) includes additional controls for firm-specific characteristics that may be associated with TR.

The results in Table C.1 establish that MSCI Europe inclusions are a relevant instrument for investor horizons. Across all specifications, TR increases in the year a firm is added to the MSCI Europe index, which is in line with the prediction. In column (3), the TR coefficient estimate is 0.013. This means that the fraction of a firm's average investors' portfolio turned over per quarter increases by about 1.3% in the year of an index inclusion. The effect is statistically significant at the 1% level, and remains robust after adding controls. As an additional robustness check, Table D.1 shows that unlike index inclusions, index exclusions have no significant effect on investor horizons. Considering instrumental relevance, it becomes apparent that the instrument is sufficiently strong. Across the specifications, the F-statistic is above the commonly used threshold of 10, which indicates that the maximum bias in the IV estimators is less than 10% (Staiger and Stock, 1994). Exogeneity cannot be formally tested, since there are exactly as many conditions as needed for identification of the model (Verbeek, 2008). Hence, plausible exogeneity is justified on logical grounds only. To predict the instrumented TR, equation 4.2 is used, with controls for ownership and firm-specific characteristics as depicted in Table 4.1.[5] To assess the economic significance of the instrumented TR in the subsequent chapter, the standard deviation of the instrumented variable is used instead, which is equal to 0.022.

4.2 Short-window analysis: Returns around earnings announcements

Hypothesis 2a predicts that executives are able to attain temporary valuation premia by inflating near-term earnings and marginally beating targets. To test this hypothesis, the research makes use of a basic abnormal returns/unexpected earnings specification, which is modified to evaluate the effect of earnings management and marginal target beating (see Lopez and Rees, 2002).

To test Hypothesis 2a, the basic regression takes the following form:

$$\begin{aligned} CAR_{i,t} =& \alpha_0 + \beta_1 SBEAT_{i,t} + \beta_2 SMISS_{i,t} + \beta_3 AEM_{i,t} + \beta_4 REM_{i,t} \\ &+ \beta_5 SUE_{i,t} + \sum_{k \in K} \gamma_k Z_{k,i,t} + \sum IND/YR/CTRY + \varepsilon_{i,t} \end{aligned} \tag{4.3}$$

[5] The F-statistic of the instrument may vary across the different regressions as sample sizes differ and optional controls for forecast accuracy and firms' decision to invest are added (see Table 4.1). Throughout, the F-statistic remains above the commonly used threshold of 10 (see Staiger and Stock, 1994).

where i and t index firms and years respectively. CAR is the cumulative abnormal return and SUE represents the scaled unexpected earnings. Dummy variables $SBEAT$ and $SMISS$ are included to investigate whether a firm is rewarded or penalized for marginally beating or missing earnings forecasts. AEM measures the signed abnormal accruals and REM is the sum of the three z-scored REM measures. Z_k denotes the vector of control variables, interacted with SUE to control for the effect of these variables on CAR and the accompanying ERC. More specifically, the specification controls for the effect of forecast accuracy, size, growth, leverage and risk, through $DISP$ and EST, $ln[MV]$, BTM, LEV and $BETA$, respectively. Rationale behind the inclusion of individual controls is presented in section 3.3. All variables are standardized, to avoid issues of multicollinearity.[6] Industry, year and country fixed effects are used to control for unobserved heterogeneity at the industry-year-country level. Standard errors are clustered by industry-year to capture clustering across industries and years. All variables are defined in Appendix A.

The primary coefficients of interest in regression equation 4.3 are β_1 and β_2. In accordance with Hypothesis 2a, it is expected that firms can gain a valuation premium for the mere fact of beating consensus forecasts, even if this is by marginal amounts. Conversely, firms are penalized for marginally missing forecasts. By including SUE in the specification, the effect of marginal target beating and earnings management on CAR is estimated for a fixed earnings surprise. Hence, the coefficients β_3 and β_4 allow additional investigation of whether the market is able to discern and discount earnings manipulation over SUE. Moreover, since earnings management is controlled for, the specification allows analysis of whether the market rewards marginal target beating over the use of earnings management. This results in the following formalized hypothesis:

$$\text{H2a}: \quad \begin{array}{rll} \textit{null} & \beta_1 \leqslant 0, & \beta_2 \geqslant 0 \\ \textit{alt.} & \beta_1 > 0, & \beta_2 < 0 \end{array}$$

Hypothesis 2b predicts that firms with short-horizon ownership exhibit greater price reactions to unexpected earnings. To test this, the specification is modified to evaluate the effect of a firm's investor horizons. This leads to the following regression equation:

$$\begin{aligned} CAR_{i,t} =& \alpha_0 + \beta_1 TR_{i,t} + \beta_2(SUE_{i,t} \times TR_{i,t}) + \beta_3 AEM_{i,t} + \beta_4 REM_{i,t} + \beta_5 SUE_{i,t} \\ &+ \sum_{k \in K} \gamma_k Z_{k,i,t} + \sum IND/YR/CTRY + \varepsilon_{i,t} \end{aligned} \tag{4.4}$$

where TR is interacted with SUE to detect whether the ERC, is different for firms with a short-horizon investor base.[7] Additional controls are contained in the vector Z_k, covering ownership characteristics. $INST$, $BLOCK$ and $HERF$ are included directly, and as interaction terms with SUE, to control for the effect of these variables on CAR and the accompanying ERC.

The primary coefficients of interest in equation 4.4 is β_2. In accordance with Hypothesis 2b,

[6] The standardized value (Z-score) of the random variable X is calculated as $\frac{(X-E[X])}{\sigma[X]}$.

[7] As mentioned before, the earnings response coefficient (ERC) is the coefficient of the independent variable SUE on the dependent variable CAR, measuring the sensitivity of a firm's stock price to unexpected earnings.

it is expected that firms with a short-horizon investor base are more sensitive to unexpected earnings, which should be reflected in the ERC. As such, it is expected that ERC coefficient β_2 increases in TR. This results in the following formalized hypothesis:

$$\text{H2b}: \begin{array}{rl} null & \beta_2 \leqslant 0 \\ alt. & \beta_2 > 0 \end{array}$$

In the final specification, equation 4.4 is further expanded to take into account that there may be a constant reward or punishment for the mere fact of beating or missing analysts' forecasts, and to examine whether this reward differs for firms with a short-horizon investor base, compared to firms with a long-horizon investor base. The following regression equation is derived:

$$\begin{aligned} CAR_{i,t} =& \alpha_1 BEAT_{i,t} + \alpha_2 MISS_{i,t} + \beta_1 (BEAT_{i,t} \times TR_{i,t}) + \beta_2 (MISS_{i,t} \times TR_{i,t}) \\ &+ \beta_3 (SUE_{i,t} \times TR_{i,t}) + \beta_4 AEM_{i,t} + \beta_5 REM_{i,t} + \beta_6 SUE_{i,t} \\ &+ \sum_{k \in K} \gamma_k Z_{k,i,t} + \sum IND/YR/CTRY + \varepsilon_{i,t} \end{aligned} \tag{4.5}$$

where $MISS$ is a dummy variable taking the value of one when SUE is negative and zero otherwise. In turn, $BEAT$ takes the value of one if SUE is zero or positive.

The coefficients β_1 and β_2 allow additional analysis of whether the difference in stock price reactions to earnings announcements between short- and long-horizon investor ownership is caused only by a greater sensitivity to unexpected earnings (i.e., an increase in the ERC), or also by a greater reward or punishment for the mere fact of beating or missing earnings forecasts. Naturally, a positive (negative) SUE is expected to result in a positive (negative) CAR (Beaver et al., 1979). As such, greater premia or penalties for meeting or missing targets for firms with a short-horizon investor base should reflect in β_1 being positive, and β_2 being negative.

4.3 Long-window analysis: Risk-adjusted portfolio returns

To test whether the actions to inflate near-term earnings have a detrimental effect on long-term firm value, shareholder value is used as arbiter. First, portfolios are formed on short-horizon investor ownership, which is used as an indirect proxy for corporate short-termism. To capture corporate short-termism more directly, portfolios are sorted on the shared component between the different measures of corporate short-termism. Subsequently, excess returns are analyzed after regressing the portfolio returns on traditional factors.

First, size-diversified long and long-short portfolio returns are computed based on the quintile ranks of investor horizons, TR, and measures of corporate short-termism. The portfolios are value-weighted using the most recent market value. Reconstitution of the portfolios takes place on a yearly basis, with June as the rebalancing date and a minimum of 6 months between the rebalancing date and the end of a firms' financial reporting year. For portfolios sorted on

TR, information from the first quarter is used. Size-diversified means that each of the quintile portfolios consists of an equal amount of small and big stocks, to avoid that small stocks end up in the extreme quintiles. Hence, portfolio returns are calculated as: $R_{i,t} = \frac{1}{2}(R_{i,t}^{Small} + R_{i,t}^{Big})$ where i and t index asset portfolios and months respectively. $R_{i,t}$ denotes the monthly portfolio return. Additionally, value-weighted returns are computed for diversified long-short portfolios that are long in one quintile and short in another quintile of the characteristic.[8]

Subsequently, the excess stock returns of these portfolios are regressed on the returns of traditional factors in time-series. The excess returns are measured as the portfolio returns minus the risk free rate: $R_{i,t} - Rf_t$.[9] In the first specification, monthly excess returns are regressed on the Fama and French (1993) 3-Factor model:

$$R_{i,t} - Rf_t = \alpha_i + \beta_1(Rm_t - Rf_t) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_{i,t} \tag{4.6}$$

where $(Rm_t - Rf_t)$ is the market risk premium, and SMB denotes the small-minus-big factor; the return on a diversified portfolio of small stocks, minus the return on a diversified portfolio of big stocks, measured by market capitalization.[10] In turn, the high-minus-low factor, HML, is the return on a diversified porfolio of value stocks minus the return on a diversified portfolio of growth stocks, measured by BTM. In the second model specification, the Carhart (1997) momentum factor, MOM, is added:

$$R_{i,t} - Rf_t = \alpha_i + \beta_1(Rm_t - Rf_t) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_{i,t} \tag{4.7}$$

where MOM is the difference between the returns on diversified portfolios of 'winner', and 'loser' stocks (based on a stock's cumulative return for month $t = -12$ to month $t = -2$). The third specification is the Fama and French (2015) 5-factor model:

$$R_{i,t} - Rf_t = \alpha_i + \beta_1(Rm_t - Rf_t) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 CMA_t + \beta_5 RMW_t + \varepsilon_{i,t} \tag{4.8}$$

where RMW depicts the 'robust-minus-weak' operating profitability factor; the return on a diversified portfolio of stocks with robust operating profitability minus the return on a diversified portfolio of stocks with weak operating profitability.[11] In turn, CMA depicts the 'conservative-minus-aggressive' investment factor, the return on a diversified portfolio of stocks of firms that invest conservatively minus the return on a diversified portfolio of stocks of firms that invest aggressively.[12] The last model is an aggregate of the previous models, with the addition of the 'quality-minus-junk factor', QMJ, as put forward by Asness et al. (2014). It is calculated as the difference between portfolios of companies which are profitable, growing and well managed and

[8]The exact sorting depends on the characteristic. Generally, the long-short portfolio's are chosen such that they are long in the portfolio considered long-term, and short in the portfolio considered short-term.

[9]As riskfree rate, the 3-month Euribor is used.

[10]Diversified means that the average return is calculated over multiple stock portfolios with different styles.

[11]Here, operating profitability is defined by: $OP = \frac{\text{revenue-cogs-selling-administrative expenses - interest expenses}}{\text{book value of equity}}$

[12]Here, investment is defined by a firm's yearly total asset growth: $Inv = (ASSET_{t-1} - ASSET_{t-2})/ASSET_{t-1}$

those unprofitable, stagnant or poorly managed:[13]

$$\begin{aligned} R_{i,t} - Rf_t = &\alpha_i + \beta_1(Rm_t - Rf_t) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t \\ &+ \beta_5 CMA_t + \beta_6 RMW_t + \beta_7 QMJ_t + \varepsilon_{i,t} \end{aligned} \tag{4.9}$$

To test Hypothesis 3, the primary coefficient of interest is α, which signifies the excess returns that portfolios generate over and above what is explained by traditional factors. The general prediction is that short-horizon ownership incentivizes executives to inflate near-term earnings, and that it is these actions that have a detrimental effect on financial performance. Hence, for portfolios sorted on TR, it is expected that firms in the bottom quintile generate higher abnormal returns than those in the upper quintile. To measure the effect of corporate short-termism more directly, the research conducts a principal component analysis (PCA) to extract the time-horizon component from the individual measures of corporate short-termism, and form a composite corporate horizon index, denoted by CHI (see section 4.3.1).[14] Subsequently, risk-adjusted returns are computed for portfolios sorted on CHI and regressed on the common factors. In line with Hypothesis 3, it is expected that firms in the bottom quintile of CHI generate higher abnormal returns than those in the upper quintile, leading to the following formalized hypothesis:

$$\text{H3}: \quad \begin{array}{lll} \textit{null} & \alpha_{q1,m} - \alpha_{q5,m} \leqslant 0, & \alpha_{q1-q5,m} \leqslant 0 \\ \textit{alt.} & \alpha_{q1,m} - \alpha_{q5,m} > 0, & \alpha_{q1-q5,m} > 0 \end{array} \qquad m = TR, CHI$$

where $q5$ and $q1$ index the upper and bottom quintile portfolios, respectively, sorted on characteristic m. In turn, $q1 - q5$ indexes the long-short portfolio.

4.3.1 Principal component analysis

Evidence that short-termism detracts from corporate performance has remained scarce, possibly due to difficulties in measuring the phenomenon, which does not correspond to any single quantifiable metric and can be considered a confluence of many factors. The individual proxies for corporate short-termism are likely to include a time-horizon component, as well as an idiosyncratic, non-horizon-related component. In an attempt to measure short-termism at the firm-level, PCA is conducted to isolate the common component amongst the different measures of corporate short-termism. The resulting composite index serves as an input for portfolio sorting.

A limited set of variables is considered as inputs to the PCA, based on data availability and the degree to which they are believed to coincide with a firm's time-horizon. Measures related to R&D drop out, because of data availability. In turn, $UINV$ is included as a proxy for underinvestment, as plain $CAPEX$ is likely contaminated by a firm's investment opportunities, capital constraints and agency problems (i.e., empire building). Since PCA is sensitive to scaling,

[13] Asness et al. (2014) measure quality by the z-scored combination: Quality = Z[Profitability] + Z[Payout] + Z[Safety] + Z[Growth], where each underlying component is also a z-scored combination of various measures.

[14] The approach is similar to Baker and Wurgler (2006), who use PCA to form an index of sentiment.

all remaining measures of corporate short-termism are standardized. Subsequently, the principal component is estimated, resulting in the following parsimonious corporate horizon index, CHI':

$$\begin{aligned} CHI'_{i,t} =& 0.291Z[|AEM_{i,t}|] + 0.428Z[ACFO_{i,t}] + 0.555Z[APROD_{i,t}] \\ &+ 0.605Z[ASGA_{i,t}] + 0.013Z[NETBEAT_{i,t}] - 0.1613Z[UINV_{i,t}] \\ &- 0.0504Z[REPUR_{i,t}] - 0.175Z[ESG_{i,t}] \end{aligned} \tag{4.10}$$

In equation 4.10, each variable except for $REPUR$, has a loading of the expected sign. However, not all variables have explanatory power in CHI'. Moreover, the first component accounts for only 27% of the sample variance, which is not a substantial amount. This is as expected, since the correlations between the individual input measures are relatively low (see Table B.7).

In an effort to construct an index that has a higher degree of commonality between its inputs, the PCA procedure is limited to measures of AEM, REM and underinvestment. Table B.7 shows that the highest correlations occur between measures of earnings management and underinvestment, whereas the $NETBEAT$, $REPUR$ and ESG correlation coefficients are generally below 0.10. A possible explanation for this is that the proxies with higher coefficients capture more of the contemporaneous signal of near-term earnings inflation, whereas the remaining proxies take longer to reflect a firm's focus on the near-term (e.g., ESG), or are subject to other influences. In line with this, ESG is excluded from the procedure, since ESG scores are inherently sticky. Moreover, proxies that have a small (<0.1) loading in the principle component are omitted. This results in the following corporate horizon index, CHI:

$$\begin{aligned} CHI_{i,t} =& 0.331Z[|AEM_{i,t}|] + 0.466Z[ACFO_{i,t}] + 0.527Z[APROD_{i,t}] \\ &+ 0.593Z[ASGA_{i,t}] + 0.210Z[UINV_{i,t}] \end{aligned} \tag{4.11}$$

Again, the components load with the expected sign. $NETBEAT_{i,t}$ and $REPUR_{i,t}$ are excluded since they remain to have no substantial explanatory power in the principle component. The first component captures 37% of the sample variance, which is considerably higher than the previous specification.[15] Moreover, it has an eigenvalue of 2.38, whereas the second component has an eigenvalue of 1.13. This suggests that there is indeed one dimension on which there is a lot of information, and mitigates concerns that the index captures another commonality between the proxies.[16] Considering all this, the final specification is used to extract CHI.

Figure B.5 presents the evolution of CHI over the sample period, together with a recession indicator. The corporate horizon measure roughly lines up with anecdotal accounts of fluctuations in short-termism. McKinsey (2017) mentions that during the 2008 financial crisis, corporate

[15] No formal threshold exists for the acceptance of a principal component. Comparison with research that employs PCA to extract a signal for portfolio sorting shows that similar explanatory levels are obtained. Brown and Cliff (2004) and Baker and Wurgler (2006) extract principal components of sentiment, which explain 25% and 49% of the sample variance, respectively. Adebambo and Yan (2016) use a similar approach to extract the principal component in managerial overconfidence, which explains 25% of the sample variance.

[16] The Kaiser-Meyer-Olkin (KMO) test is an alternative test on how adequate the sample data is for PCA. Overall, the KMO value is 0.53, which suggests that the sampling adequacy is mediocre, but still acceptable.

horizons have temporarily shortened, as firms struggled to survive. Indeed, CHI points to high levels of corporate short-termism, just before periods of recession. This is consistent with firms initially trying to avoid having to report a turnaround in performance, by inflating earnings. The correspondence with anecdotal accounts corroborates that CHI captures the intended variation. Table B.10 reports the persistence in CHI quintiles between subsequent years. 49.9% of the firms initially ranked in the upper CHI quintile also classifies as such in the subsequent year, which suggests that corporate short-termism is reasonably persistent.

Panel A of Table B.11 reports the value-weighted raw returns for portfolios sorted on investor horizons, measures of corporate short-termism and the composite index, CHI. The monthly returns of firms in the bottom quintile of AEM, REM, $UINV$ and CHI are higher than those of firms in the upper quintile, which is in line with Hypothesis 3. The portfolios sorted on $CAPEX$ exhibit a convex shape, with the highest returns occurring in the middle/bottom quintiles. This is consistent with the widely reported asset growth anomaly, which associates high levels of investment with financial underperformance (e.g., Cooper et al., 2008; Fama and French, 2015). Nevertheless, comparison between the lowest, and second-lowest quintiles suggests that under-investment can also be harmful to financial performance, which further justifies the use of $UINV$. Discrepancies are observed for sorts on TR and ESG. With regards to investor horizons, the short-horizon quintile generates the highest excess returns, which is against the prediction. In turn, the bottom ESG quintile exhibits the highest returns. Regressing the excess returns on the common factors should reveal whether these results bear on Hypothesis 3.

Panel B of Table B.11 further reports the correlations between the value-weighted long-short portfolio returns. The similarity in returns of $|AEM|$, $ACFO$, $APROD$, $ASGA$ and $UINV$ portfolios complements Table B.7, by showing that not only the individual measures, but also their returns, are related. The correlations between CHI and the other sorts confirm that CHI captures a substantial amount of the information contained in other measures. Moreover, comparison with the correlation magnitudes between individual measures suggests that extracting the common component significantly improves the measurement.

4.4 Robustness tests

To verify the obtained results, additional robustness tests are performed. A potential concern when analyzing the effect of short-horizon ownership on corporate decision-making is that it may be related to other governance mechanisms. To investigate whether this is the case, the research employs additional controls for insider ownership, government ownership, founder leadership and CEO turnover. First, the variable $INSID$ is added to the standard specification, which denotes the percentage of shares owned by non-buy-side entities.[17] Large controlling shareholders are prevalent across the EU (Becht and Röell, 1999). Although institutional ownership is controlled

[17] Any officer or director of a company, as well as any non-buy-side public or private entity that holds shares in a company, is considered an inside owner. An example would be Heineken Holding N.V., which owns a majority stake in Heineken N.V. to retain the family involvement and vision.

for in the standard specification, large stakes by non-buy side entities may diminish the influence of institutional investors, and lead to effects that are very different from those associated with short-horizon investor ownership.[18] Second, government-owned enterprises are relieved of many of the short-term pressures induced by the market (Liljeblom and Vaihekoski, 2009; La Porta et al., 2002). As such, the dummy variable $GOVOE$ is included in the specification, which takes a value of one for government-owned enterprises, and zero otherwise. Third, founder executives are believed to focus more on longevity and growth, and engage less in opportunistic behavior (e.g., Randøy and Goel, 2003). To control for this, the dummy variable $FOUNDLED$ is included in the specification, which takes a value of one when a firm's CEO is also the founder, and zero otherwise. Last, a dummy for CEO turnover is included, as incoming CEOs may use earnings management to depress earnings in the transition year as to positively influence earnings in future periods (Guan et al., 2005).[19] The dummy $NEWCEO$ takes a value of one in the year an incoming CEO obtains power, and zero otherwise.[20] Including these variables drastically reduces the sample size, and limits the sample period (the data becomes available around 2003). Moreover, data availability is tilted towards firms that are larger and more mature. As such, it is chosen not to include these controls in the standard specification.

Second, it is investigated whether the results on financial performance are a compensation for lower liquidity, and whether abnormal portfolio returns differ during periods of recession. Long-horizon investors trade less, which might be reflected in stock liquidity, and subsequently, returns (see Pástor and Stambaugh, 2003). To mitigate this concern, additional regressions are estimated which include a liquidity factor based on trading volume.[21] Data on this factor is available from 2001 onward, as such it is chosen not to include this factor in the standard specification. In turn, there are reasons to believe that the financial performance of short- or long-term firms may differ during periods of recession returns (see McKinsey, 2017). To investigate whether abnormal portfolio returns differ, the recession variable REC is computed for each month in the sample period. Individual country recession indicators are obtained from the Economic Cycle Research Institute (ECRI), and weighted according to the average total market value of each country in the sample, to obtain the recession variable (see Table B.2).

Third, it is examined whether the results hold when the sample is geographically segmented according to the Hofstede (1993) 'long-versus short-term orientation' dimension (LTO). This separation is believed to provide a good contrast between countries in terms of short-termism. Data to cluster high LTO and low LTO countries is obtained from Hofstede's website. Not only does this allow further validation of the result in different environments, it also provides insight into the variation in possible abnormal returns across these markets.

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[18] The two are mechanically related in that a larger stake by non-buy side entities is likely accompanied by a smaller stake by institutional investors.

[19] The notion that incoming CEOs depress earnings is commonly referred to as the 'big bath' theory.

[20] This would be the year prior to their first annual meeting. However, if the incoming CEO obtains power in the last quarter of the financial year, the subsequent year is marked one instead.

[21] Returns on diversified liquidity portfolios are obtained from Styleresearch, who measure liquidity by trading volume (similar to Lam and Tam (2011)). Subsequently, the liquidity factor is calculated as the return of a size-diversified portfolio of high liquidity stocks (i.e., top 30%) minus the low liquidity stocks (i.e., bottom 30%).

Chapter 5

Results

In this chapter, empirical results are listed and analyzed. First, section 5.1 discusses whether the presence of short-term investors is associated with earnings management, target beating, investment cuts and lower ESG scores. Second, 5.2 documents whether executives are able to attain temporary valuation premia by inflating near-term earnings and beating targets by marginal amounts, and whether the market is able to discern and discount such practices. Moreover, the sensitivity of short-horizon investors to earnings surprises is discussed. Third, 5.3 conducts a long-window analysis to examine whether corporate short-termism detracts from long-term firm value. Finally, 5.4 reports the results obtained from additional robustness tests.

5.1 Investor-horizons and corporate decision-making

The research first studies whether a short-horizon investor base induces corporate short-termism. By doing so, component 1 of the theory by Bolton et al. (2006) is tested, which predicts that short-term investors incentivize executives to inflate near-term earnings and generate positive earnings surprises. As executives' focus shifts towards the short-term, concerns on how their decisions affect the long-term are diminished. Consequently, a short-horizon investor base is believed to result in earnings management, target beating, underinvestment and neglect of environmental, social and governance issues.

Results are reported after regressing measures of corporate short-termism on the proxy for investor horizons, TR (see regression equation 4.1). To take into account that not all short-term corporate decision-making occurs contemporaneously, and to capture possible reversal effects, the analysis also considers investor horizons in the preceding year (see Cremers et al., 2016). An overview of the dependent variables and accompanying controls is provided in Table 4.1.

5.1.1 Short-horizon investors, earnings management and target beating

Hypothesis 1a predicts that short-horizon investor ownership is associated with higher levels of earnings management and target beating. Table C.2 reports the regression results with different measures of earnings management as dependent variables. Controls are included for ownership and firm-specific characteristics that are associated with earnings management.

The OLS regressions depicted in columns (1) through (4) show that short-horizon investor ownership is positively associated with different forms of earnings management. Specifically, firms with a short-horizon investor base use more AEM, production manipulation and expense manipulation, as shown by the main coefficient of interest, TR, which is positive and statistically significant for the dependent variables $|AEM|$, $APROD$ and $ASGA$ (at the 1% level and 5% levels, respectively). This result is as expected, since each of these can be used to raise earnings just enough the reach specific targets. For $|AEM|$, the coefficient estimate is 0.059, which suggests that a standard deviation increase in TR (0.061) is associated with an increase in $|AEM|$ of $(0.061 \times 0.059 =)$ 0.36% of total assets.[1] The economic magnitudes of $APROD$ and $ASGA$ are similar, with 0.74% and 0.65% of total assets, respectively. The lagged variable TR_{t-1} is positive and significantly related to $ACFO$ and $APROD$. This implies that the effect of short-horizon ownership need not occur in the same year, but may also present itself in a delayed reaction. Possibly, managers need more time to carry out REM relative to AEM, as suggested by Bhojraj et al. (2009). Overall, the relationship between investor horizons and earnings management is both statistically and economically significant.

The 2SLS regressions depicted in columns (5) through (8) show that the previously obtained results remain robust after controlling for possible endogeneity. The identification strategy employs MSCI Europe index inclusions as an instrument for TR. To assess the economic significance of the instrumented TR, the standard deviation of the instrumented variable is used instead, which is equal to 0.022. The TR coefficients in columns (5), (7) and (8) suggest that a standard deviation increase in instrumented TR is associated with an increase of 2.73% for $|AEM|$, 4.85% for $APROD$ and 3.30% for ASGA, as percentage of total assets.

Notably, the economic magnitudes of the 2SLS estimates are larger than their OLS counterparts. This occurs throughout the regressions. Possibly, the 2SLS procedure identifies the local average treatment effect, which is the effect of changes in investor horizons for the subset of firms that are added to the MSCI Europe index. In contrast, OLS regressions capture the effect among the average sample firm. If the treatment effect is heterogeneous across sample firms (e.g., firms that are added to the index have stronger incentives to respond to the pressure of incoming short-horizon investors), the relation between the instrumented TR and measures of corporate decision-making can be larger for observations with additions (see Angrist and Pischke, 2008).

The robustness check presented in Table D.2 confirms that the difference in economic magnitudes is likely caused by the local average treatment effect. OLS regressions are run after

[1] Throughout this chapter, economic magnitudes are calculated using the relevant coefficient estimates, and the summary statistics depicted in Table B.3.

partitioning the sample in firm-year observations with, and without index inclusions. This allows comparison of the estimated economic magnitudes between the two partitions. Only a small number of firm-year observations is available with index inclusions, which leads to a lack of precision in the estimates. Hence, for brevity, only coefficient estimates are presented that are statistically significant across both partitions. The regression specifications are identical to columns (1) and (3) of Table C.2 , column (4) of Table C.3 and column (1) of Table C.5. As expected, the estimated coefficients of TR and TR_{t-1} are several magnitudes larger for firm-years with an addition to the index, relative to firms without. This suggests that the economic magnitude estimates need not be representative for the average sample firm. Nevertheless, it also corroborates that the associations found throughout the 2SLS regressions reflect a causal effect caused by the arrival of short-horizon investors. From now on, the results obtained through 2SLS are used as a robustness test for the OLS results, and on stand-alone basis, treated with caution. Only statistical significance is reported for 2SLS coefficient estimates, as a way of establishing evidence of causality.

Next, Table C.3 reports the results of regressing measures of target beating on investor-horizons. The tendency to beat targets is captured through a set of dummy variables. $LOSSAVOID$ takes a value of one when EBITDA scaled by MV ranges from 0 to 0.1. $SBEAT$ ($SMISS$) takes a value of one when the unexpected earnings are above (below) the consensus forecast, by less than 2 cents. Lastly, $NETBEAT$ is calculated by subtracting $SMALL$ from $SBEAT$, to capture both occurrences in one measure. Columns (1) through (3) report PROBIT estimates, since the dependent variables are dichotomous. In turn, column (4) reports OLS estimates. Again, columns (5) through (8) present the results obtained through 2-stage regressions.

The OLS coefficient estimates in columns (1) through (4) show that firms with a short-horizon investor base are more likely to just avoid losses, less likely to marginally miss earnings forecasts, and more likely to marginally beat earnings forecasts. This is in line with the expectation. As investors are misled into interpreting reported metrics as 'on target', the speculative component in the stock price is maintained or inflated. Column (1) reports a TR coefficient estimate of 2.038 on dependent variable $LOSSAVOID$, which is statistically significant at the 5% level. Estimating the marginal effects; a standard deviation increase in TR is associated with an 0.51% increase in the probability of a firm just avoiding a negative EBITDA.[2] Columns (2) and (3) report TR coefficient estimates of -2.500 and 2.489 on $SMISS$ and $BEAT$, respectively, which are also significant at the 5% level. The effects are similar; a standard deviation increase in TR results in a 1.39% decrease in the probability of marginally missing consensus forecasts, against a 1.55% increase in the probability of marginally beating. Column (4) reports a positive TR coefficient, with a statistical significance that is slightly higher than on the individual $SMISS$ and $SBEAT$ dummy variables. This further confirms the results obtained with individual dummies. Throughout, the coefficients of the effects of TR on target beating indicate an economically meaningful effect. Interestingly, comparison of the expected signs of the TR_{t-1} coefficients with those of TR suggests a reversal pattern (although not statistically significant). This is

[2]The economic magnitude from the output of PROBIT cannot be interpreted directly using the coefficient. To report the *ceteris paribus* effect of changes in the regressor, the marginal effects are estimated at the means.

line with results obtained by Cremers et al. (2016) who find that earnings increase temporarily in the presence of short-horizon investors, and reverse in the subsequent year. Controlling for endogeneity, only $LOSSAVOID$ remains significant.

In summary, the results largely support Hypothesis 1a. OLS regressions consistently report that firms with a short-horizon investor base are more likely to use earnings management, and are more likely to marginally beat targets. The association between TR, different forms of earnings management and loss avoidance remains robust after controlling for endogeneity. This provides evidence that there is a causality in time orientation, which flows from investors to the firm. Marginally beating analysts' forecasts receives no support from the IV-procedure. Possibly, the results obtained through OLS can be attributed to reverse causality, in which firms with a history of (small) positive earnings surprises attract short-horizon investors. The attraction may follow, as short-horizon investors benefit from temporary stock price inflations when earnings targets are reached, by selling shortly afterwards. In turn, as firms are able to attain a valuation premium for consecutive positive earnings surprises (Ke, 2004), past occurrences may indeed be predictive for future marginal target beatings. Alternatively, the IV may not have the statistical power to detect the relation, as both MSCI Europe index inclusions and marginally beating/missing consensus forecasts are by themselves, relatively rare events.

5.1.2 Short-horizon investors and capital allocation

Hypothesis 1b predicts that short-horizon investor ownership detracts from investment, as the pressure to report higher near-term earnings leads executives into cutting long-term investment. Table C.4 provides the coefficient estimates after regressing different measures of capital allocation on investor horizons. Long-term investment is measured through $CAPEX$ and $R\&D$. In turn, R&D investment cuts are measured through $\Delta R\&D$. The latter should capture less of the systematic differences in investment levels across firms, which may attract a certain investor base. Payout measures DIV and $REPUR$ are further included to allow for a more holistic analysis. Repurchasing is of particular interest, since a number of articles report that it can be used as an alternative earnings management device (see section 3.2.2). The regressions in columns (1) through (5) are OLS regressions, while those in columns (6) through (10) are 2SLS. The specification controls for ownership and firm-specific characteristics that are associated with earnings management and firms' decision to invest.

In general, statistical significance of the coefficients on measures of investment is very low, which indicates that investor horizons have very little explanatory power on firms' decision to invest. Column (1) reports a TR_{t-1} coefficient estimate of -0.025, which is statistically significant at the 5% level. Economically, this means that a standard deviation increase in TR_{t-1} predicts a decrease in capital expenditures of 0.15% of total assets in the subsequent year. Controlling for endogeneity, the coefficient becomes insignificant. Column (3) provides more convincing evidence, by showing that TR_t is positive, and significantly related to R&D investment cuts (at the 10% level), and that the result remains robust when controlling for endogeneity (see column 8). This is in line with the prediction that short-horizon investors lead executives into cutting long-term investments to reach near-term targets. The coefficient estimate is -0.008, which suggests that a standard deviation increase in TR is associated with a decrease in $\Delta R\&D$ of 0.05% of total assets. Despite the statistical significance, this is not considered a meaningful effect.

With regards to other measures related to capital allocation, the table provides mixed evidence. Columns (4) and (5) report TR coefficient estimates of 0.042 and -0.042 on dependent variables $REPUR$ and DIV, respectively, which are both statistically significant at the 1% level. In economic terms, this suggests that a standard deviation increase in TR increases the value of shares repurchased by 0.26% of total assets, whereas dividend payout is decreased by 0.18% of total assets. Controlling for endogeneity, the contemporaneous effect of TR becomes insignificant for both forms of payout. Instead, the coefficient estimate of the lagged, instrumented TR_{t-1} becomes negative and statistically significant for both $REPUR$ and DIV (at the 1% level). This possible decrease in subsequent years' dividend payout is in line with results previously obtained by Harford et al. (2016).[3] With regards to repurchasing, the sign turnaround of the coefficient substantiates that previously reported positive associations between short-horizons investors and repurchasing may not be endogeneity robust (e.g., Gaspar et al., 2013). Possibly, short-horizon investors select into firms operating a repurchasing program, as they simply prefer capital gains over dividends. Alternatively, following the principle outlined by Bolton et al. (2006), short-horizon investors may be attracted by the opportunity to benefit from temporary stock price inflations caused by repurchasing, by exiting shortly afterwards.[4]

Taken as a whole, the results on capital allocation provide some support for Hypothesis 1b, as both OLS and 2SLS regressions report a negative and statistically significant relation between short-horizon ownership and $R\&D$ investment cuts. Nevertheless, there is no persistence in the results, since short-term ownership has no clear explanatory power over other measures of investment. A possible explanation is that short-term investors weaken corporate governance through under-monitoring. Consequently, capital discipline is decreased, leading to lower payout and over-investment (see Bebchuk and Stole, 1993), which might offset the effect of investment cuts to inflate near-term earnings.

5.1.3 Short-horizon investors and ESG scores

Hypothesis 1c predicts that short-horizon investor ownership is associated with lower ESG scores. The underlying principle is that pressure to reach near-term earnings diverts executives' attention away from externalities that affect a firm's environment, and long-term risks associated with the failure to act socially responsible.

Table C.5 shows that a short-horizon investor base leads to lower ESG scores in the subsequent

[3] Again, the economic magnitude of the 2SLS coefficients may not be representative for the average sample firm due to the local average treatment effect. As such, the results obtained through 2SLS are used as a robustness test for the OLS results, and on stand-alone basis, treated with caution.

[4] As firms repurchase, share prices inflate temporarily as pessimistic investors are 'bought out of the market', and management signals their belief that the company is undervalued.

year. Column (1) reports a TR_{t-1} coefficient estimate of -3.945, which is statistically significant at the 1% level. Economically, this means that a standard deviation increase in TR predicts a decrease of 0.24 in next year's ESG score. With regards to the individual ESG pillars, firms with a short-horizon investor base receive lower social scores in the same year, and lower governance scores in the subsequent year, as shown by the coefficients on SOC and GOV, which are negative and statistically significant at the 10% and 1% levels, respectively. The economic magnitudes are similar to that of the overall score, which leads to the conclusion that, despite the statistical significance, the economic effect of investor horizons on ESG scores is insignificant. Throughout, the results remain robust when controlling for endogeneity. The results largely support Hypothesis 1c, as both OLS and 2SLS regressions show that short-horizon ownership is negatively associated with overall ESG, and that it leads to a reduction in two out of three ESG pillar scores.

5.2 Short-window analysis: Earnings surprises and their valuation premia

To investigate the short-term dynamics of stock price reactions to earnings, the research uses a short-window analysis centered around annual earnings announcements. First, the relation between earnings management, target beating and abnormal returns is further delved into. This provides additional evidence with regards to the mechanism behind Prediction 1. Subsequently, it is tested whether short-horizon investors exhibit greater sensitivity to earnings surprises compared to long-horizon investors. This presumption is widely held (see section 2.2), and further explains why executives focus more on the near-term in case of short-horizon investor ownership.

5.2.1 Short-term actions and stock price reactions

Hypothesis 2a predicts that firms can gain a temporary valuation premium by inflating earnings to beat analysts' earnings forecasts, even if this is by marginal amounts. This link is essential, as rational executives only engage in actions to inflate near-term earnings if they perceive that the market rewards such behavior, or if they can avoid penalization for missing earnings.

Table C.6 reports the coefficient estimates after regressing cumulative abnormal returns on measures of target beating and earnings management. Stock price reactions are measured through the three day CAR around annual earnings announcements. Earnings management is measured by AEM and REM. The specifications control for the effect of forecast accuracy, size, growth, leverage and risk on CAR and the accompanying ERC. Independent variables are standardized.

The OLS regressions in columns (1) to (3) provide evidence that firms can gain a significant valuation premium by marginally beating, over marginally missing earnings forecasts. The main coefficients of interest are $SBEAT$ and $SMISS$. Throughout the specifications, the coefficient estimates on $SBEAT$ are positive and statistically significant at the 5% level. In turn, for $SMISS$, they are negative and statistically significant at the 1% level. The results remain robust when SUE and interaction controls are included to model a fixed earnings surprise (column 2), and when earnings management is controlled for (column 3). Economically, the coefficients reported in column (3) suggest that beating forecasts by less then two cents results in a 45.2 basis points increase in CAR, whereas missing forecasts by less then two cents leads to a 85.1 basis points decrease. These magnitudes are quite significant, especially considering that they are caused by unexpected earnings that are only marginally different from zero (and should be considered 'on target'). It seems as though the market disproportionately rewards and penalizes for the mere fact of beating targets, regardless of the size of the earnings surprise. Doing a parsimonious calculation; a firm that is about to miss its earnings target by two cents can gain an equity premium of (85.1 + 54.2 =) 139.3 basis points, by raising EPS with 4 cents. This partly explains why executives engage in actions to inflate earnings.

Next, the AEM and REM coefficients provide insight into whether executives can gain a valuation premium by engaging in earnings management, and whether the market is able to discern, and discount such practices. Column (1) presents OLS regression results, without including SUE and interaction controls. By doing so, the 'dry' effect of earnings management on CAR is investigated, which would otherwise be absorbed by SUE.[5] With regards to AEM, column (1) reports no significant effect. For REM however, the coefficient is positive and statistically significant (at the 5% level). Economically, a one standard deviation increase in REM leads to an increase in CAR of 17.2 basis points. The first is surprising, whereas the latter is as expected, since the use of earnings management increases unexpected earnings, which should lead to a positive market reaction. Still, the difference between the REM and AEM coefficients is in line with Chen et al. (2010), who show that there is a market benefit to the use of REM over AEM. The sign of the AEM coefficient switches when SUE is controlled for (column 3). Nevertheless it remains insignificant, which suggests that the market fails to discount the use of AEM over SUE. The same holds for REM, which also becomes insignificant.

Overall Hypothesis 2a is accepted, as the results show that firms are able to attain temporary valuation premia by marginally beating earnings forecasts, whereas marginally missing earnings forecasts leads to a penalty. Moreover, the results suggest that the market fails to discount the use of earnings management.

No discrepancies are detected with regards to the coefficients of the control variables. As expected, a higher forecast accuracy (proxied by $DISP$ and EST) significantly increases the ERC (e.g., Teoh and Wong, 1993). Consistent with Collins and Kothari (1989) and Dhaliwal et al. (1991), the interaction coefficients on book-to-market and leverage are negative. Column (3) shows that the complete model explains 2.8% of the variation in CAR. Although this is similar to Lopez and Rees (2002), it implies that the model has a low explanatory power.

[5] The effect of earnings management on stock prices occurs indirectly. First, earnings are inflated to increase earnings surprises. Subsequently, these earnings surprises drive a market reaction. By including SUE in the specification, the effect of earnings management on CAR is estimated for a fixed earnings surprise.

5.2.2 Short-horizon investors and sensitivity to earnings surprises

Hypothesis 2b further examines stock price reactions, by considering the effect of a short-horizon investor base on the sensitivity to earnings surprises. The theory by Bolton et al. (2006) predicts that firms with short-horizon investors have larger price reactions to earnings surprises. As executives inflate near-term earnings and beat targets, the trading actions of a subset of overly optimistic investors temporarily increases the speculative component of stock price. In turn, the moment a company fails to meet targets, the speculative component in the stock price cannot be maintained and the stock price falls further than it would have done without short-term investors. This sensitivity should be reflected in the ERC, but may also reveal itself through a larger reward (punishment) for the mere fact of having nonnegative (negative) unexpected earnings.

Table C.7 presents the estimation results after regressing CAR on TR and the interaction term $SUE \times TR$, to capture the effect of short-horizon investors on the ERC. As in Table C.6, the regressions control for the effect of forecast accuracy, size, growth leverage and risk on CAR and the accompanying ERC. For brevity, these not reported. Additional controls are added, and interacted with SUE, to control for ownership characteristics.

Columns (1) to (3) provide evidence against Hypothesis 2b, by showing that investor horizons have a negative impact on the earnings surprise sensitivity, and that the results remain robust after adding controls and including dummies for negative and positive earnings surprises. Throughout, the coefficient estimate for $SUE \times TR$ is negative and statistically significant, which is against the expectation. Possibly, SUE is less informative for firms with short-term investors, as these firms are more likely to report lower 'quality' earnings due to earnings manipulation. The notion that investors respond less when they perceive the credibility of reported earnings to be low is supported in the literature (e.g., Teoh and Wong, 1993; Wysocki, 2009). Column (3) shows that the punishment for the mere fact of missing analysts' forecasts is larger for firms with a short-horizon investor base, by categorizing coefficient TR for positive or negative earnings surprises. The coefficient estimate for $MISS \times TR$ is -0.505, at a statistical significance of 5%. This itself is in line with the expectation. However, no greater reward is detected for positive earnings surprises. Notably, the coefficient of $BEAT \times TR$ is negative, which suggests that the result may be driven by CAR simply being lower for firms with short-horizon ownership, as shown in columns 1 and 2. Together, this leads to Hypothesis 2b being rejected.

As a robustness test, Table D.3 depicts results of regressions with additional interaction terms between measures of earnings management and SUE. This approach allows investigation of the notion that earnings surprises become less informative to investors when earnings management is used, and possible vindication of the result if the interaction terms clearly absorb the effect. Columns (1) and (2) report negative and statistically significant coefficient estimates for the interaction term $SUE \times |AEM|$. Nevertheless, the association between interaction term $SUE \times TR$ and CAR remains negative and statistically significant. Although the results confirm the notion that earnings management reduces the ERC, no clear evidence is obtained that proves that this effect is what keeps the effect of short-horizon ownership on the ERC from being positive.

5.3 Long-window analysis: The price of short-termism

Component 3 of the theory by Bolton et al. (2006) predicts that, as corporate decision-making is biased towards the short-term, actions follow that borrow from future earnings and deviate from the first-best, to the detriment of long-term firm value. The negative effect of earnings management on future profitability is relatively well-established. Moreover, there is evidence that neglect of ESG issues can also harm a firm's bottom line. In contrast, the theoretical prediction with regards to investment affected by short-termism is relatively unclear (see section 2.3). To test whether the actions to inflate near-term earnings have a negative effect on long-term firm value, shareholder value is used as arbiter. First, portfolios are formed using investor horizons as an indirect proxy for short-termism at the firm level. Second, to investigate the effect of corporate short-termism more directly, portfolios are formed on the composite index CHI, which is obtained by isolating the principle component of measures related to corporate short-termism.

5.3.1 Portfolio sorts on investor horizons

Table C.8 provides the risk-adjusted returns for portfolios sorted according to the investor horizon quintile rank. The results are not as expected. The portfolio long in the bottom quintile generates negative and statistically significant abnormal returns across the different factor specifications. Looking at the commonly used Carhart (1997) model (FFCF), the constant coefficient estimate is -0.425, at a statistical significance of 1%. Economically, this means that a portfolio long in the lowest TR quintile generates a negative abnormal return of 42.5 basis points per month, or roughly 5.22% annually. The short-horizon quintile portfolio has a constant coefficient of 0.480 at a significance level of 5%, which translates to a positive abnormal return of 48.0 basis points per month, or 5.92% annualy. In line with this, the long-short portfolio generates a negative and significant abnormal return of 90.5 basis points per month (11.42% annually).[6] Overall, investor horizons have an economically significant contribution to creating a spread in portfolio returns.

The difference between the upper- and bottom-quintile abnormal returns becomes more pronounced for the FF5F and 7-Factor models. This is mostly caused by the upper quintile loading negatively on RMW for the FF5F model, and QMJ for the 7-Factor model. The negative coefficients show that firms in the short-horizon quintile exhibit return characteristics that are similar to stocks with weak profitability and stocks identified as 'junk' (on the basis of profitability, payout, safety and growth), whilst the increased returns across these specifications suggest that the portfolio is an effective hedge against these market factors. The three traditional risk factors do not show substantial variation throughout the portfolios. Both the upper- and bottom quintile portfolios have a positive and significant loading on the MRP and SMB factors, and a negative loading on HML. For MRP, the coefficient estimate is close to one, which implies that the

[6] A potential concern is that the outer quintiles capture firms whose institutional ownership is less diversified, resulting in 'extreme' values of TR. The risk-adjusted returns of the intermediary quintiles however, show a gradual shift from negative- to positive abnormal returns across the quintiles, which suggests that the return result is not driven by extreme cases. Nevertheless, the alpha's for these quintiles are not significantly different from zero.

returns of both portfolios move in unison with the market. Moreover, both quintiles exhibit return characteristics similar to those of smaller firms, and firms that lean towards growth as opposed to value. MOM is negative and statistically significant for the $FFCF$ model, with a significantly larger magnitude for the short-horizon portfolio. As suggested by Kamara et al. (2016), short-horizon investors may be more sensitive to the risk imposed by the MOM factor, as momentum investing tends to be short-term in nature.

5.3.2 Portfolio sorts on short-termism at the firm-level

Table C.9 depicts the risk-adjusted returns for portfolios sorted on individual measures associated with corporate short-termism. The specifications control for the common Carhart (1997) factors. The long-short portfolio's are chosen such that they are long in the portfolio considered long-term, and short in the portfolio considered short-term.

Across all sorts, the abnormal returns for the long-short portfolios exhibit a positive sign, which is as expected. The only exception is the long-short portfolio on ESG, which exhibits a negative but statistically insignificant abnormal return. With regards to earnings management, long-short portfolios sorted on $|AEM|$ and REM both have a positive and statistically significant abnormal return (at the 10% and 5% levels, respectively). This conveys confidence in the negative consequences of earnings management on firm-value (see Sloan, 1996; Penman and Zhang, 2002; Dechow et al., 2008). Looking at sorts on investment, the risk-adjusted returns of $CAPEX$ exhibit a convex shape across the portfolios, with positive abnormal returns located in the middle quintile, and no significant abnormal returns in the upper- and bottom quintiles. This is consistent with research reporting negative effects on financial performance in case of either over- or underinvestment (e.g., Xing, 2007). This research does not consider observations in the highest investment quintile to be the consequence of long-horizons, since this is likely caused by agency problems (i.e., empire building). Instead, to capture the consequences of 'underinvestment', the long-short portfolio is long in the mid quintile and short in the lowest quintile. The constant coefficient of the long-short portfolio is positive, and statistically significant at the 10% level. However, with respect to the long-short portfolio sorted on $UINV$, no significant abnormal return is detected. Nevertheless, the results provide some evidence that underinvestment is indeed harmful to financial performance. Lastly, looking at the ESG sorts, the table reports no significant abnormal returns for firms in the upper quintile. This is in line with previous studies that report a neutral relation between ESG scores and shareholder returns (see Friede et al., 2015).

Finally, Table C.10 presents the risk-adjusted returns after sorting portfolios on the common component between different measures of corporate short-termism (denoted by CHI). In line with Hypothesis 3, firms that exhibit less of the actions/symptoms associated with short-termism generate greater risk-adjusted returns than firms associated with short-termism. Moreover, the portfolio long in the lowest quintile of CHI generates returns above and beyond what is explained by the common risk factors. Nevertheless, the research finds no significant evidence of negative abnormal returns for firms in the upper quintile of CHI. Looking at the FFCF specification, the constant coefficient for the bottom quintile portfolio is 0.507, which is statistically significant at the 5% level. This translates to an outperformance of 50.7 basis points per month, or 6.26% annually. In turn, the constant for the short-horizon portfolio is statistically insignificant. The long-short portfolio captures the difference between long- and short-term firms, as shown by the coefficient estimate of 0.983, which is statistically significant at the 5% level. The spread in quintile portfolio returns created by CHI suggests an economically meaningful effect.

The magnitudes of the risk-adjusted returns of the long-short portfolio become smaller across the FF5F and 7-Factor models, as the CMA and RMW factors explain part of the variation in the portfolio returns. Nevertheless, the abnormal returns remain statistically significant. A positive and statistically significant loading on SMB suggests that long-horizon firms exhibit return characteristics more similar to those of large firms, whereas short-horizon firms display returns similar to small firms. This is interesting, considering that the portfolio returns are size-diversified. In turn, the coefficient on HML implies that long-term firms tend to behave like growth firms, whereas short-term oriented firms lean more towards the value side. Lastly, the CMA coefficient is positive and statistically significant. Despite having $UINV$ feed into CHI, firms in the bottom quintile invest more conservatively. Possibly, the composite index of corporate short-termism captures opportunistic behavior by executives, which does not only translate to short-termist behavior, but also aggressive investment.[7]

In summary, the portfolio sorts on investor turnover and the corporate horizon index provide contradictory evidence with regards to Hypothesis 3. First, sorts that use investor horizons as an indirect proxy for corporate short-termism suggest that short-horizon investor ownership is associated with higher risk-adjusted stock returns. In contrast, portfolios formed on the composite corporate horizon index show that firms that exhibit less of the actions/symptoms associated with short-termism outperform firms associated with short-termism, and that they generate returns above and beyond what is explained by the common factors. Possibly, the time-orientation of a firm's investor base does not fully coincide with corporate short-termism because of frictions in portfolio change. Moreover, the portfolio sorts on investor horizons may not fully capture the effect of short-term actions that firms take, but misvaluation caused by the in-flow and out-flow of short-term investors. This is supported by Cremers et al. (2016) who report a temporary increase in market value relative to fundamentals, as the presence of short horizon investors in a firm increases. Alternatively, abnormal returns may be caused by superior stock selection. Yan and Zhang (2007) report positive abnormal returns for firms with short-term investors, and attribute this to investors exploiting informational advantages through active, short-term trading.

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[7] Indeed, some authors consider short-termism to be a type of agency problem (e.g., Laverty, 1996).

With regards to portfolio sorts, additional robustness test are conducted:

- Sorting portfolio's on TR in the preceding year. No clear reversal pattern is detected, as the long-horizon quintile still generates the lowest (though insignificant) abnormal return. Interestingly, the middle quintile does generate a positive and statistically significant abnormal return
- Using a rebalancing period of 2 years. For both TR and CHI, abnormal returns become less pronounced
- Sorting portfolios on the 3-year moving average of TR and CHI. No significant abnormal returns are detected

5.4 Robustness

Table D.4 shows that the previously obtained results on the relation between short-horizon ownership and corporate decision-making remain robust after controlling for additional governance mechanisms. Variables $INSID$, $GOVOE$, $FOUNDLED$ and $NEWCEO$ are added to the standard regression specifications, to capture the effect of insider ownership, government ownership, founder leadership and CEO turnover. Throughout, the regressions report no substantial changes with regards to the TR and TR_{t-1} coefficient estimates.[8] The results further show that other governance related parameters also have a significant effect on measures of corporate short-termism. Most notably, firms who have a founding CEO use less AEM, production manipulation and exhibit higher levels of R&D. This is in line with the notion that a founding executive focuses more on longevity. Moreover, government owned enterprises use less AEM, production manipulation and sales manipulation, but display lower levels of R&D, and strikingly, lower ESG scores. Lastly, insider ownership by non-buy side entities is positively associated with ESG scores.

Table D.5 investigates whether the superior financial performance previously associated with short-horizon ownership is a compensation for lower liquidity, and whether abnormal returns differ during periods of recession. This is done by including the liquidity factor, LIQ, and the recession variable, REC, to the standard factor specifications. The results show that stocks in the upper quintile of investor horizons are indeed more liquid than those in the bottom quintile, and that part of the long-short portfolio returns are a compensation for this liquidity. Nevertheless short-horizon investor ownership continues to outperform long-horizon ownership financially. No significant differences are detected between the sorts during periods of recessions. Table D.6 reports portfolio sorts on CHI, with the additional recession variable. Although the coefficient estimates on the variable are statistically insignificant, the positive abnormal returns previously reported on the lower quintile and long-short portfolios are absorbed. This suggests that the outperformance of long-term firms occurs for a large part during periods of recession.

To further test the validity of the financial performance results across different markets, an in-sample country segmentation is performed, on the basis of the ‘long-versus short-term orientation’ dimension by Hofstede (1993). The portfolio sorts depicted in Table D.6 mirror the results obtained in section 5.3, by showing that for both sub-samples, firms in the upper quintile of TR outperform firms in the bottom quintile, whereas firms in the upper quintile of CHI underperform those in the bottom quintile.

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[8] This follows also from the 2-stage IV regressions, which for brevity, are not reported.

Additional robustness test are conducted. The following tests do not influence the qualitative results:

- In the estimation of earnings management and underinvestment measures: increasing the minimum required amount of firm-year observations per industry (using two-digit SIC codes) to 20
- Excluding country fixed effects
- Appending quarterly investor horizons, TR, from the third quarter of the financial book year
- Classifying marginal target beating on the basis of unexpected earnings deflated by stock price (<0.5%)
- Changing the event window to the five days centered around the annual earnings announcement
- Using quarterly earnings announcements to assess investor sensitivity to earnings surprises
- Using equal-weighted and un-size-diversified portfolio returns to assess financial performance

Chapter 6

Conclusions

In this chapter, results, limitations and recommendations for future research are presented. Section 6.1 ascertains the research's main findings, and how these relate to results obtained in proximate literature. Section 6.2 elaborates on the limitations of the study. Finally, section 6.3 provides recommendations for further research.

6.1 Discussion

This research aims to answer two main questions; does short-horizon investor ownership induce corporate short-termism, and second, does this come at the expense of long-term firm-value. The research provides evidence that executives knowingly shift the balance between short- and long-term to accommodate a short-horizon investor base, as the presence of short-horizon investors is associated with greater use of earnings management, higher probabilities of marginally beating targets, R&D investment cuts, and lower ESG scores. Moreover, the findings suggest that corporate short-termism does indeed have a negative effect on long-term firm value, as firms that display short-termism exhibit financial underperformance relative to firms that do not. These results are consistent with the theoretical model put forth in Bolton et al. (2006).

First, it is shown that firms with more short-term investors exhibit greater use of earnings management, and that this translates into avoidance of small losses, and a larger discontinuity between beating and missing analysts' consensus forecasts by marginal amounts. The result is consistent with Harford et al. (2016) and Cremers et al. (2016) who find that short-term ownership induces AEM, and that it increases the probability of positive earnings surprises. This research provides additional evidence, by showing that the relation also holds for measures of REM, and that the tendency to beat targets also presents itself when looking at the tendency to beat targets by marginal amounts.[1] The study further documents that the arrival of short-term

[1] The tendency to marginally beat or miss targets is believed to have a profound connection with short-termism.

investors leads to a reduction in R&D expenditures. This is in line with Cremers et al. (2016), and consistent with the notion that executives cut long-term investments to reach near-term targets. With regards to other measures of long-term investment however, the research finds no clear evidence for a negative relation. Results do point towards a negative association between short-horizon investors and dividend payout, which mirrors results obtained by Derrien et al. (2013) and Harford et al. (2016). Gaspar et al. (2013) report that repurchasing increases with short-horizon ownership, and suggest that the reduction in dividends is actually the consequence of payout choice. This research obtains similar results, but shows that the positive relationship between short-horizon investors and repurchasing does not remain robust after controlling for endogeneity. Lastly, the study finds that a short-horizon investor base predicts lower ESG scores in the subsequent year. This complements results obtained by Cox et al. (2004) and Neubaum and Zahra (2006), by confirming that short-horizon investors are associated with lower ESG scores, and by providing additional evidence that there is a causality which flows from investor time-horizons to the firm. Moreover, this research contributes by showing that the relationship is most profound for the social, and governance pillars. Overall, the results support Prediction 1 of the theory by Bolton et al. (2006), which posits that short-term investors incentivize executives to inflate near-term earnings and generate positive earnings surprises, whereas concerns on how their decisions affect the long-term are diminished.

A concern when estimating the causal effect of a short-horizon investor base on corporate decision-making is that the results may be affected by endogeneity. To address this concern, an identification strategy is employed which exploits plausible exogenous variation in the presence of short-horizon investors around MSCI Europe index inclusions. Index inclusions are expectedly accompanied by temporary increases in investor horizons, as short-horizon investors that track the index buy more swiftly around inclusions, and are only gradually replaced by long-horizon investors. The instrument is believed to be exogeneous, since the changes in short-horizon ownership are not related to differences in corporate policies, or unobservables such as market information, but merely the index inclusions themselves. Indeed, the research documents that the presence of short-horizon investors temporarily increases for firms that are added to the MSCI Europe index, and that the instrument is relevant. This is in line with Cremers et al. (2016), who initially put forth this identification strategy, using constituent changes in the Russel 2000 index.

Subsequently, by investigating the three-day CAR around earnings announcements, it is shown that firms can gain a significant valuation premium by marginally beating, over marginally missing earnings forecasts. Moreover, the results suggest that the market fails to discount the use of earnings management over the level of unexpected earnings. This is consistent with Bhojraj et al. (2009), who document that firms are able to gain a temporary stock price premium by engaging in either real- or accrual-based earnings management to raise earnings just above consensus forecasts. Moreover, it supports the significance of beating targets put forth by Chen et al. (2010), who find that (marginally) positive earnings surprises generate positive abnormal returns, regardless

Short-term firm that are close to achieving a target are believed to inflate performance just enough to reach the target, resulting in a marginal target beat. In turn, long-term firms will refrain from this.

of whether firms use earnings management or not. The difference in abnormal returns between marginally beating and missing forecasts is surprising, considering that both cases are essentially 'on target', and that firms can easily bridge the EPS difference through earnings manipulation. Overall, this result supports Prediction 2 of the mechanism put forth in Bolton et al. (2006), by showing that firms which are about to miss a target can indeed gain a temporary valuation premium by inflating earnings just enough to reach analysts' earnings forecasts.

The research further documents that the stock price sensitivity to earnings surprises is negatively associated with short-term investors. This contradicts the presumption that short-horizon investors show larger reactions around earnings announcements (see section 2.2). Moreover, it does not align with Hotchkiss and Strickland (2003) and Hu et al. (2010), who find no relation between short-horizon ownership or selling by short-horizon investors, and price reactions to unexpected earnings. Robustness tests show that higher levels of AEM have a similar negative effect on the sensitivity to unexpected earnings. Nevertheless, no clear evidence is obtained which proves that lower 'quality' of reported earning for short-term firms is what causes the effect of short-horizon ownership on the earnings response coefficient to be negative.

Finally, a long-window analysis is conducted, which employs shareholder value as arbiter of whether the actions to inflate near-term earnings have a negative effect on long-term value. Evidence that short-termism detracts from financial performance has remained scarce, possibly due to difficulties in measuring the phenomenon, which does not correspond to any single quantifiable metric and can be considered a confluence of many factors. Extant literature has taken the approach of using investor horizons as an indirect proxy to assess the firm value consequences of short-termism. In an effort to capture corporate short-termism and its effect on financial performance more directly, this research conducts a principal component analysis which aims to capture the shared component between different measures of corporate short-termism.

The research obtains contradictory evidence with regards to the relation between short-termism and financial performance. First, sorts that use investor horizons as an indirect proxy for corporate short-termism suggest that long-horizon investor ownership is associated with lower risk-adjusted returns. In contrast, portfolios formed on the composite corporate horizon index show that firms that exhibit less of the actions/symptoms associated with short-termism outperform firms associated with short-termism, and that they generate returns above and beyond what is explained by the common factors. This contradictory evidence may follow, as the time-orientation of a firm's investor base does not need to coincide with corporate short-termism, for instance, because of frictions in portfolio change. Moreover, the result on investor horizons sorts may reflect misvaluation caused by the in-flow and out-flow of short-horizon investors. This is supported by Cremers et al. (2016) who report a temporary increase in a firm's equity valuations relative to fundamentals, as the presence in short-horizon investors in a firm increases. Alternatively, it may be caused by certain investors having informational advantages. Yan and Zhang (2007) report a similar positive relation between short-horizon institutional ownership and stock returns, and attribute this to investors with an informational advantage, who exploit this through active, short-term trading. On the other hand, the result seemingly contrasts Harford et al. (2016), who report lower financial performance for firms with short-horizon ownership in the subsequent year.[2] Nevertheless, by showing that long-term firms outperform firms that display short-termism, the research supports Prediction 3 in Bolton et al. (2006), and provides additional arguments to the discussion on whether short-termism detracts from long-term value.

6.2 Limitations

Measuring inter-temporal choice is a far-reaching challenge in the advancement of the debate on short-termism. To quantify investor horizons, the research employs a proxy of institutional investor portfolio turnover which has been previously employed in a string of articles focusing on US investor horizons (see Harford et al., 2016; Ghaly et al., 2015). The measure has commensurable properties, since it mitigates firm- and investor-specific shocks, but is limited in that round-trip trades within a quarter are ignored, since institutional holdings are only observed per quarter. Moreover, it only considers institutional ownership, as opposed to plain share-turnover which covers all trading in a stock.[3] Lastly, it assigns a single number to each institutional investor, which does not allow the same asset manager to operate different investment strategies.

Availability of EU ownership data is a limiting factor, as it leads to a substantial reduction in the amount of firm-year observations. Investor horizon measures traditionally rely on US 13F filings, whereas this research makes use of Factset's ownership database to collect EU data. Although Factset has been found to be a reliable source of ownership data (e.g., Ferreira and Matos, 2008; Chen and Shiu, 2016), concerns are that data availability is biased towards certain firm characteristics such as size, since Factset partly collects their ownership data by aggregating holdings on the company level, as opposed to the investor level.[4]

The research is further constrained by the availability and subjectiveness of ESG data. The MSCI IVA database provides data from 2007 onwards, which limits the precision in estimating risk-adjusted returns through time-series regressions. Moreover, ESG scores are inherently subjective, and have no fully accepted worldwide reporting standard (Schäfer, 2009; Cheng et al., 2014). As a result, different ESG data providers may lead to different research outcomes.

The identification strategy used in this research represents a European variation of the identification strategy recently put forth by Cremers et al. (2016), who use US Russel 2000 index inclusions as an instrument for investor time-horizons. A potential concern with using the MSCI Europe compared to the regularly used Russel 2000 is that the frequency with which additions occur is considerably lower, which might have a negative effect on the power of the instrument.

[2] As a robustness test, this research also performs portfolio sorts on TR in the preceding year. No clear reversal pattern is detected, as the long-horizon quintile still generates the lowest (though insignificant) abnormal return. Interestingly, the middle quintile does generate a positive and statistically significant abnormal return.

[3] This considered less of a drawback, as the ownership of institutions has increased to a considerable level over time and plain turnover has become contaminated by high frequency traders (Cremers et al., 2016).

[4] Aggregating holdings on the investor level will average out effects of missing datapoints across a large number of firms.

Panel A of Table B.9 shows that the number of additions per year is roughly 16, whereas that of the Russel is typically around 300 (see Cremers et al., 2016). A second concern is that, although MSCI has transparent and objective rules regarding index re-constitutions (see Panel B of Table B.9), the procedure involves a number of screens that make the outcome less predictable than that of the Russel 2000, which is based merely on a firm's market capitalization. Lastly, this research provides evidence that the instrument identifies the local average treatment effect, which is the effect of changes in investor horizons for the subset of firms that are added to the MSCI Europe index. As such, the economic magnitude estimates obtained through the IV-procedure need not be representative for the average sample firm. For now, the strategy suffices as a robustness check for endogeneity. However, for it to be used as a touchstone methodology for research on EU investor horizons, more work is required to further vindicate its workings.

6.3 Recommendations

This study represents another step towards understanding the sources and consequences of corporate short-termism. The advancements made provide essential knowledge for investors, leaders in business and governments, and can be used to design interventions to restore the balance between short-term accountability and long-term value creation. Academics should continue to unravel the inner-workings of short-termism, its costs and potential solutions. Recommendations for further research include the following:

- **Additional geographies:** Most empirical research on short-termism is conducted for US samples. Surveys show that the issue of short-termism is not confined to the US (McKinsey, 2016). This study contributes by investigating whether the relationship between investor-horizons, corporate short-termism and financial performance holds for the EU market. It shows that the touchstone measure for investor-horizons, institutional portfolio turnover, can be computed for EU companies using an alternative data source. Moreover the use of MSCI Europe index inclusions as an instrumental variable represents a novel application of the identification strategy recently put forth by Cremers et al. (2016). These advances allow replication of much of the fundamental time-horizon research that has already been done for the US, and opens up opportunities to delve into the extent with which short-termism differs across regions, what drives these differences and whether short-termism is linked to macro-economic phenomena such as secular stagnation.

- **Endogeneity robustness:** Endogeneity is a central concern to research that investigates the association between a short-horizon investor base, and corporate decision-making. This research employs an indentification strategy based on index inclusions, which has been put forth by Cremers et al. (2016), and is the first of its kind in research related to investor horizons. To test the validity of index inclusions as an instrument for investor horizons, more work is required to apply the strategy across different indices, different investor horizon proxies, and to further tests its assumptions with regards to exogeneity. Finally, the endogenous character of investor-horizons and corporate short-termism reveals the importance of replicating studies that are subject to the same endogeneity issues.

- **Indexers vs. non-indexers:** Arguably, investors that track the returns of a benchmark are less likely to influence managerial decision making, as they have a lower degree of control over their portfolio composition (McConnell and Servaes, 1990). A future avenue for research would be to split the measure of investor horizons into indexers and non-indexers. Such a classification scheme might reveal a more important role for active investors in influencing a firm's time-horizon. Possibly, active share can be measured by the distance between the weights in an investor's portfolio and the weights in a benchmark index, as put forth by Cremers and Petajisto (2009).

- **Tradeability:** Practically, this research provides long-term value investors with a number of factors that indicate a firm's short- or long-term orientation. As short-term decision-making manifests itself in a company's financial disclosures, an additional, quantitative source of information is presented which complements the more qualitative inputs typically used to assess long-term value. This study provides evidence of the existence of an anomaly. Naturally the next step would be to investigate whether this anomaly is tradeable. The methodology used to assess financial performance is already geared towards a tradeable strategy; portfolios are rebalanced on a yearly basis, employ public data, and are value weighted, making the strategy less costly to execute (Novy-Marx and Velikov, 2015). The yearly portfolio turnover is considerable (see Table B.10), hence it would be interesting to see if there are simple cost mitigation techniques, that maintain a similar level of profitability.

- **Consistency vs. momentum:** The presumption that consistently long-term companies outperform short-term companies over the long-run is widely held. The underlying rationale is that these companies are less likely to let short-term pressures deviate their decisions from the first-best. Initially, investors might see them as 'junk' for not meeting earnings targets, and short-term investors might undervalue the future payoffs from the long-maturity assets on their books. As the future becomes the present, the assets pay off, resulting in price appreciation. Difficulty is that in reality, there are no firms that implement only short- or long-term projects. Payoffs from projects occur continuously, and are reinvested in other projects. Moreover, firms balance their investment portfolios in terms of maturity. Simply put, the long-term company will continue to be a long-term company, and will not receive a price appreciation as short-horizon investors continue to undervalue the firm. Nevertheless, investigation of firms that exhibit a movement in rank (i.e., switching from being long-term to being short-term, or the reverse) should provide an interesting avenue for future research, as it might be able to capture a momentum in returns.

Throughout, further research should be geared towards formulating a defence against short-termism, by proving that a balance between short and long-term is in any case, superior.

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Appendix A

Variable Definitions

This section provides an overview of the functions, operators and notations that are used throughout the research. Panel A presents the procedure and accompanying formulae to measure investor time-horizons. Panel B presents the first-stage regression procedures that are used to identify different forms of earnings management and underinvestment. Panel C presents the remaining variable definitions. Variables are computed for each firm-year observation. Investor information is obtained on a quarterly basis, and appended to the firm-year at the fourth quarter of the book year such that the measure contains information on the average of quarterly churn rates for that entire year. In turn, information regarding annual earning announcements is obtained per event, but appended to the firm-year to which the announcement applies.

Panel A: Measurement of investor time-horizons

Variable	Definition
$TR_{i,t}$	Value-weighted institutional investor portfolio turnover of firm i at year t, which functions As a proxy for the time-horizon of a firm's investor base. First, the portfolio churn rate, $CR_{j,t}$, of investor j over quarter t is calculated: $$CR_{j,t} = \frac{\sum_{i \in Q_{j,t}} \lvert N_{i,j,t}P_{i,t} - N_{i,j,t-1}P_{i,t-1} - N_{i,j,t-t}\Delta P_{i,t} \rvert}{\sum_{i \in Q_{j,t}} \left(\frac{N_{i,j,t}P_{i,t} + N_{i,j,t-1}P_{i,t-1}}{2} \right)} \qquad \text{(A.1)}$$ where $Q_{j,t}$ denotes the set of companies held by investor j in quarter t. In turn, $N_{i,j,t}$ and $P_{i,t}$ represent the number of shares and price, respectively, of firm i held by investor j in quarter t. Subsequently, to calculate $TR_{i,t}$, $CR_{j,t}$ is averaged with the previous three quarters for each investor, and value-weighted at the firm-level: $$TR_{i,t} = \sum_{i \in S_{i,t}} W_{i,j,t} \left(\frac{1}{4} \sum_{r=1}^{4} CR_{j,t-r+1} \right) \qquad \text{(A.2)}$$ where $W_{i,j,t}$ denotes the weight of investor j in the total fraction held by institutional investors in firm i at quarter t, and $S_{i,t}$ represents the set of instutional investors in firm i at quarter t. Lastly, to match the quarterly TR with firm-year observations, TR is appended from the fourth quarter of the book year, which contains the average of quarterly churn rates for that entire year.

Panel B: Measurement of earnings management and underinvestment

Variable	Definition
$AEM_{i,t}$	Abnormal accruals of firm i at year t. To estimate AEM, and its unsigned counterpart, $\|AEM\|$, the following cross-sectional regression is estimated for each industry (using two-digit SIC codes) with at least 10 observations, on a yearly basis: $$\begin{aligned}\frac{TA_{i,t}}{ASSET_{i,t-1}} =& \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{(\Delta REV_{i,t} - \Delta ACR_{i,t})}{ASSET_{i,t-1}}\right) \\ &+ \beta_3\left(\frac{NPPE_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4 ROA_{i,t} + \varepsilon_{i,t}\end{aligned} \quad (A.3)$$ where i and t index firms and years, respectively. TA represents total accruals, which is calculated as the difference between earnings before extraordinary items, $EBXI$, and cashflow from operations, CFO: $TA_{i,t} = EXBI_{i,t} - CFO_{i,t}$. As main explanatory variables, ΔREV and ΔACR depict the yearly change in revenue and accounts receivable, respectively. $NPPE$ depicts net property, plant and equipment, to control for changes caused by non-discretionary depreciation expense. Lastly, ROA represents return on assets, which is included to control for financial performance. After the coefficients have been estimated, $AEM_{i,t}$ and $\|AEM_{i,t}\|$ are obtained by calculating the value and absolute value of the residual for each firm-year. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles.
$ACFO_{i,t}$	Abnormal cash flows from operations of firm i at year t. As a proxy for sales manipulation, abnormal operating cash flows, $ACFO$, is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) with at least 10 observations, on a yearly basis: $$\begin{aligned}\frac{CFO_{i,t}}{ASSET_{i,t-1}} =& \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_3\left(\frac{\Delta REV_{i,t}}{ASSET_{i,t-1}}\right) \\ &+ \beta_4 ROA_{i,t} + \varepsilon_{i,t}\end{aligned} \quad (A.4)$$ where i and t index firms and years respectively. CFO depicts cash flow from operations, REV is revenue, and ROA is return on assets. The model is based on the specification used by Call et al. (2016), with the addition of ROA. Only a CFO that lies below the 'normal' level is consistent with sales manipulation. In line with this, after the coefficients have been estimated, $ACFO_{i,t}$ is obtained by calculating the value of the residual for each firm-year and truncating values above zero. To ease interpretation, $ACFO_{i,t}$ is multiplied by minus one, such that higher values are consistent with more earnings management. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles.
$APROD_{i,t}$	Abnormal production of firm i at year t. As a proxy for production manipulation, abnormal production costs, $APROD$, is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) with at least 10 observations, on a yearly basis: $$\begin{aligned}\frac{PROD_{i,t}}{ASSET_{i,t-1}} =& \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t}}{ASSET_{i,t-1}}\right) \\ &+ \beta_3\left(\frac{\Delta REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4\left(\frac{\Delta REV_{i,t-1}}{ASSET_{i,t-1}}\right) + \beta_5 ROA_{i,t} + \varepsilon_{i,q}\end{aligned} \quad (A.5)$$

where i and t index firms and years respectively, and $PROD$ is production costs, measured as the sum of $COGS$ and change in inventory $\Delta INVT$: $PROD = COGS + \Delta INVT$. REV depicts revenue. Only a $PROD$ that lies above the 'normal' level is consistent with production manipulation. Hence, after the coefficients have been estimated, $APROD_{i,t}$ is obtained by calculating the value of the residual for each firm-year, and truncating values below zero. The model specification is identical to Chen et al. (2010), with the addition of ROA. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles.

$ASGA_{i,t}$ Abnormal SG&A expenditures of firm i at year t. As a proxy for expense manipulation, abnormal SG&A expenditures, $ASGA$, is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) with at least 10 observations, on a yearly basis:

$$\frac{SGA_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \beta_1 \left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2 \left(\frac{REV_{i,t-1}}{ASSET_{i,t-1}}\right) + \beta_3 ROA_{i,t} + \varepsilon_{i,t} \tag{A.6}$$

where i and t index firms and years respectively, SGA denotes SG&A expenditures, and REV revenue. The model is identical to the specification used by Call et al. (2016), with the addition of ROA. Negative $ASGA$ indicates that firms manipulate expenses. In line with this, after the coefficients have been estimated, $ASGA_{i,t}$ is obtained by calculating the value of the residual for each firm-year, truncating values above zero and multiplying by minus one, such that higher values are consistent with more earnings management. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles.

$UINV_{i,t}$ Underinvestment of firm i at year t. As a proxy for underinvestment, $UINV$ is computed by estimating the following cross-sectional regression for each industry (using two-digit SIC codes) with at least 10 observations, on a yearly basis:

$$\begin{aligned} CAPEX_{i,t} = &\alpha_0 + \beta_1 \left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2 ln[MV]_{i,t} + \beta_3 TQ_{i,t} + \beta_4 \left(\frac{REV_{i,t-1}}{ASSET_{i,t-1}}\right) \\ &+ \beta_5 CASH_{i,t-1} + \beta_6 LEV_{i,t-1} + \varepsilon_{i,t} \end{aligned} \tag{A.7}$$

where i and t index firms and years respectively. $CAPEX$ denotes capital expenditures, and $ln[MV]$ depicts the natural log of market value of equity. TQ represents Tobin's q, which is included to control for investment opportunities and calculated as the sum of market value of equity, book value of preferred stock, long-term debt and short-term debt, scaled by total assets. The subsequent variables proxy for capital constraints. $CASH$ depicts the cash holdings scaled by total assets, REV is revenue and LEV represents long-term debt, also scaled by total assets. After the coefficients have been estimated, $UINV_{i,t}$ is obtained by calculating the residual for each firm-year, truncating values above zero, and multiplying by minus one, such that higher values of $UINV_{i,t}$ are consistent with underinvestment. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles.

Panel C: Remaining variable definitions

Operators	Definition
$E[X]$	Expectation of the random variable X
$\sigma[X]$	Standard deviation of the random variable X
$Z[X]$	Standardized value (Z-score) of the random variable X, calculated as: $\frac{(X-E[X])}{\sigma[X]}$
Notations	**Definition**
i	index of firm
j	index of investor
t	index of time in days/quarters/years
Main variables	**Definition**
$AEM_{i,t}$	Abnormal accruals of firm i at year t (see panel A)
$APROD_{i,t}$	Abnormal production of firm i at year t (see panel A)
$ASGA_{i,t}$	Abnormal SG&A expenditures of firm i at year t (see panel A)
$CAPEX_{i,t}$	Capital expenditures of firm i at year t, scaled by total assets
$CAR_{i,t}$	Three-day abnormal return, cumulated from one trading day before to one trading day after the earnings announcement date covering the results of firm i over year t. Abnormal returns are estimated using a market model over a [-210,-10] day window preceding the earnings announcement
$DIV_{i,t}$	Dividend payout of firm i at year t, scaled by total assets
$ENV_{i,t}$	Numerical Environmental Pillar Score of firm i at year t
$ESG_{i,t}$	Numerical industry adjusted ESG score of firm i at year t
$GOV_{i,t}$	Numerical Governmental Pillar Score of firm i at year t
$LOSSAVOID_{i,t}$	Dummy variable taking the value of one when EBITDA scaled by MV ranges from zero to 0.1 for firm i over year t, and zero otherwise
$NETBEAT_{i,t}$	Net value of the $SBEAT$ and $SMISS$ dummy values of firm i at year t, calculated as: $NETBEAT_{i,t} = SBEAT_{i,t} - SMISS_{i,t}$
$R\&D_{i,t}$	Investment in R&D of firm i at year t, calculated as R&D expenditures scaled by total assets.
$REM_{i,t}$	Sum of the three z-scored real earnings management components of firm i at year t, calculated as: $REM_{i,t} = Z[ACFO_{i,t}] + Z[APROD_{i,t}] + Z[ASGA_{i,t}]$
$REPUR_{i,t}$	Value of shares repurchased of firm i at year t, scaled by total assets
$SBEAT_{i,t}$	Dummy variable taking the value of one when the unexpected earnings, UE, of firm i over year t are at or above zero, but within two cents from the consensus forecast $[0:2\rangle$, and zero otherwise
$SMISS_{i,t}$	Dummy variable taking the value of one when the unexpected earnings, UE, of firm i over year t are below zero, but within two cents from the consensus forecast $[-2:0\rangle$, and zero otherwise
$SOC_{i,t}$	Numerical Social Pillar Score of firm i at year t
$SUE_{i,t}$	Scaled unexpected earnings; the unexpected earnings, $UE_{i,t}$, as percentage of the share price $P_{i,t}$ at the time of the forecast, covering the results of firm i over year t
$TR_{i,t}$	Value-weighted institutional investor portfolio turnover of firm i at year t (see panel A)
$UINV_{i,t}$	Underinvestment of firm i at year t (see panel A)
Control variables	**Definition**
$BETA_{i,t}$	Equity beta of firm i at year t, estimated over a [-210,-10] day window preceding the earnings announcement
$BLOCK_{i,t}$	Percentage of shares of firm i owned by institutional investors with an ownership stake of at least 5% at year t
$BTM_{i,t}$	Book-to-market ratio of firm i at year t, calculated as the book value of equity scaled by market value of equity at the end of the year
$CAPINT_{i,t}$	Capital intensity of firm i at year t, calculated as $NPPE_{i,t}$ scaled by total assets
$CASH_{i,t}$	Cash holdings of firm i at year t, calculated as cash and cash equivalents scaled by total assets

$\sigma[CFO]_{i,t}$	Variability of cash flows from operations, CFO, of firm i at year t, calculated as the standard deviation of CFO over the current and previous 5 years, scaled by total assets
$DISP_{i,t}$	Dispersion in analysts' forecasts, calculated as the standard deviation of the earnings forecasts divided by the share price at the time of the forecast, covering the results of firm i over year t
$EST_{i,t}$	Number of analysts reporting annual earnings forecasts for firm i over year t
$HERF_{i,t}$	Herfindahl-Hischman index, as a measure of institutional ownership concentration of firm i at year t. Calculated by taking the sum of the squares of each investor's holdings as a proportion of the total institutional holding
$INST_{i,t}$	Percentage of shares of firm i owned by institutional investors at year t
$LCYCLE_{i,t}$	Lifecycle of firm i at year t, calculated as retained earnings scaled by total assets
$LEV_{i,t}$	Leverage of firm i at year t, calculated as long-term debt scaled by total assets
$ln[MV]_{i,t}$	Size of firm i at year t, calculated as the natural log of the market value of equity
$ln[OPCYCLE]_{i,t}$	Natural log of the operating cycle of firm i at year t (in days), based on turnover in accounts receivable and inventory. Calculated as: $360((ACR_{i,t} + ACR_{i,t-1})/REV_{i,t} + (INV_{i,t} + INV_{i,t-1})/COGS_{i,t})$
$ROA_{i,t}$	Return on assets of firm i at year t, calculated as net income scaled by total assets
$TQ_{i,t}$	Tobin's q of firm i at year t, calculated as the market value of equity + book value of preferred stock + long-term debt + short-term debt, scaled by total assets

Misc. variables	Definition
$ACR_{i,t}$	Accounts receivable of firm i at year t
$ASSET_{i,t}$	Book value of total assets of firm i at year t
$BEAT_{i,t}$	Dummy variable taking the value of one when the actual earnings of firm i over year t meet or exceed analysts' forecasts, and zero otherwise
$CFO_{i,t}$	Cash flow from operations of firm i at year t
$COGS_{i,t}$	Cost of goods sold of firm i at year t
$CR_{j,t}$	Portfolio churn rate of investor j at quarter t
$EXBI_{i,t}$	Earnings before extraordinary items of firm i at year t
$FOUNDLED_{i,t}$	Dummy variable taking the value of one when firm i is led by a CEO at year t, who is also the founder, and zero otherwise
$GOVOE_{i,t}$	Dummy variable taking the value of one when firm i is government owned at year t, and zero otherwise
$INSID_{i,t}$	Percentage of shares of firm i owned by non-buy side entities at year t
$INV_{i,t}$	Inventory of firm i at year t
$MISS_{i,t}$	Dummy variable taking the value of one when the actual earnings of firm i over year t fall below analysts' forecasts, and zero otherwise
$N_{i,j,t}$	Number of shares of firm i held by investor j at quarter t
$NEWCEO_{i,t}$	Dummy variable taking the value of one when firm i has an incoming CEO who obtains power at year t, and zero otherwise
$NPPE_{i,t}$	Net property, plant and equipment of firm i at year t
$P_{i,t}$	Price of shares of firm i at time t
$PROD_{i,t}$	Production costs of firm i at year t, calculated as: $PROD_{i,t} = COGS_{i,t} + \Delta INV_{i,t}$
$Q_{j,t}$	Set of firms held by investor j at quarter t
REC_t	Recession indicator for month t, calculated by weighting individual country recession indicators according to the average total market value of each country in the total sample
$REV_{i,t}$	Revenue of firm i at year t
$S_{i,t}$	Set of institutional investors invested in firm i at quarter t
$SGA_{i,t}$	SG&A expenditures of firm i at year t
$TA_{i,t}$	Total accruals of firm i at year t, calculated as: $TA_{i,t} = EXBI_{i,t} - CFO_{i,t}$
$UE_{i,t}$	Unexpected earnings, calculated as the difference between reported earnings and the median consensus forecast, covering the results of firm i over year t
$W_{i,j,t}$	Weight of investor j in the total fraction of institutional holdings in firm i at quarter t

Appendix B

Descriptives

Table B.1: Sample selection procedure

This table reports the sample selection procedure. The initial universe comprises firms whose primary listing is on major stock exchanges across the European Union (EU) over the period 2000 to 2016. Data is obtained through Factset, a commercial datastream. The subsequent selection procedure involves the exclusion of firms that have missing data on basic annual reporting information, or that have a negative book value of equity. More specifically, financial reporting information on revenue (REV), cash flow from operations (CFO), net property plant & equipment ($NPPE$) and market value of equity (MV) has to be non-missing. Moreover, firms in the financial services industry and regulated industries are excluded (i.e., Standard Industrial Classification (SIC) codes 6000 to 6999 and 4900 to 4999). A minimum market capitalization of € 1 billion is set for each firm-year, which is commonly regarded as the lower threshold for EU mid-cap companies (Petrella, 2005). The sample selection procedure leaves a sample of 10,275 firm-year observations comprising 1,446 unique mid- and large-cap firms.

	Firm-year observations	Unique firms
Common firms found on Factset	127,044	14,135
Less:		
Missing data on financial reporting information	(13,324)	(4,814)
Firms with a market capitalization below € 1 billion	(98,158)	(7,561)
Firms in the financial services industry and the regulated industries	(5,287)	(314)
Final sample	10,275	1,446

Table B.2: Sample distribution

This table reports the distributions of firm-year observations by year (panel A), by industry (panel B) and by country (panel C) over the period 2000 – 2016. Industries are classified using the Fama and French (1997) 12-industry classification, with industries categorized as 'Utilities' and 'Financial services' excluded. In turn, Fama-French's 'Other' category is further divided, by segregating construction and business service industries, leaving 12 categories. Countries are classified according to the location of primary listing.

Panel A: Sample distribution over time

Year	Firm-year observations	Percentage of total sample (%)	Average market value
2000	571	5.6	10,201.0
2001	487	4.7	10,018.3
2002	421	4.1	8,114.3
2003	448	4.4	8,008.9
2004	502	4.9	7,899.7
2005	615	6.0	7,942.9
2006	714	6.9	7,961.3
2007	732	7.1	8,350.3
2008	445	4.3	7,610.1
2009	537	5.2	7,864.9
2010	623	6.1	8,267.3
2011	564	5.5	8,404.4
2012	607	5.9	8,897.8
2013	687	6.7	9,264.4
2014	733	7.1	9,228.3
2015	783	7.6	9,640.9
2016	806	7.8	9,612.6
Total	10,275	100.0	8,728.2

The average market value is displayed in € millions.

Panel B: Sample distribution across industries

Industry	Firm-year observations	Percentage of total sample (%)
Business equipment	392	3.8
Business service	1,188	11.6
Chemicals and allied products	457	4.5
Construction	450	4.4
Consumer durables	409	4.0
Consumer non-durables	985	9.6
Healthcare	815	7.9
Manufacturing	1,748	17.0
Petroleum	583	5.7
Retail and wholesale	1,271	12.4
Telecom	844	8.2
Other	1,133	11.0
Total	10,275	100.0

After segregating 'Construction' and 'Business service', the 'Other' category includes mines, transportation, hotels and entertainment.

Panel C: Sample distribution across countries

Country	Firm-year observations	Percentage of total sample (%)	Average total market value	Percentage average total market value (%)
Austria	165	1.6	34,595.3	0.6
Bulgaria	2	0.0	2,798.4	0.0
Croatia	21	0.2	6,852.5	0.1
Czech rep.	41	0.4	6,826.5	0.1
Denmark	293	2.9	144,552.1	2.4
Estonia	3	0.0	1,089.5	0.0
Finland	364	3.5	125,078.4	2.4
France	1,549	15.1	1,004,737.0	18.7
Germany	1,259	12.3	829,843.0	14.6
Greece	118	1.1	27,406.0	0.5
Hungary	51	0.5	10,156.8	0.2
Ireland	112	1.1	29,142.6	0.5
Italy	562	5.5	229,951.4	4.4
Luxembourg	12	0.1	34,894.1	0.7
Netherlands	523	5.1	325,999.9	6.0
Norway	294	2.9	127,034.2	2.3
Poland	143	1.4	26,440.3	0.4
Portugal	134	1.3	29,818.3	0.6
Romania	16	0.2	9,009.6	0.2
Slovenia	20	0.2	5,579.7	0.1
Spain	478	4.7	238,986.0	4.4
Sweden	654	6.4	264,605.8	4.6
Switzerland	711	6.9	640,906.8	11.3
United Kingdom	2,750	26.7	1,449,130.9	26.5
Total	10,275	100.0	5,517,097.1	100.0

The average total market value is displayed in € millions.

Table B.3: Summary statistics

This table reports reports summary statistics on the main variables, control variables and variables used for robustness tests. Investor information is obtained on a quarterly basis, and appended to the firm-year at the fourth quarter of the book year. In turn, information regarding earnings announcements is obtained per event, but appended to the firm-year to which the announcement applies. Market value of equity (MV) is displayed in € billions. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

	Obs.	Mean	St. Dev	P25	Median	P75
Main variables:						
TR	8714	0.152	0.061	0.114	0.139	0.170
$\|AEM\|$	6531	0.047	0.054	0.013	0.030	0.058
AEM	6531	0.000	0.066	-0.028	0.002	0.031
$ACFO$	6539	0.024	0.039	0.000	0.002	0.033
$APROD$	5359	0.059	0.103	0.000	0.001	0.081
$ASGA$	4854	0.050	0.092	0.000	0.004	0.068
REM	4072	-0.218	2.024	-1.641	-0.892	0.349
$LOSSAVOID$	10275	0.034	0.182	0.000	0.000	0.000
$SMISS$	8901	0.143	0.350	0.000	0.000	0.000
$SBEAT$	8901	0.181	0.385	0.000	0.000	0.000
$NETBEAT$	8901	0.037	0.568	0.000	0.000	0.000
$CAPEX$	10265	0.059	0.054	0.027	0.045	0.072
$R\&D$	6186	0.027	0.042	0.002	0.012	0.034
$\Delta R\&D$	5128	0.002	0.010	-0.000	0.000	0.002
$UINV$	6389	0.021	0.041	0.000	0.003	0.026
$REPUR$	9751	0.010	0.038	0.000	0.000	0.004
DIV	10247	0.030	0.065	0.008	0.019	0.033
ESG	4828	6.193	2.250	4.660	6.230	7.900
ENV	4828	5.773	1.927	4.400	5.700	7.060
SOC	4828	6.152	1.774	5.000	6.200	7.300
GOV	4828	5.364	1.835	4.190	5.400	6.620
CAR (%)	8901	0.283	5.685	-2.895	0.244	3.590
SUE (%)	8901	-0.076	1.458	-0.207	0.004	0.232
Control variables:						
MV	10275	8.728	17.836	1.625	3.006	7.247
BTM	10275	0.483	0.387	0.235	0.393	0.635
ROA	10275	0.057	0.076	0.025	0.050	0.084
LEV	10274	0.238	0.166	0.120	0.230	0.331
$CASH$	10272	0.120	0.111	0.046	0.087	0.155
$CAPINT$	10275	0.265	0.202	0.103	0.220	0.380
$ln[OPCYCLE]$	8716	4.786	0.696	4.423	4.822	5.184
TQ	8644	1.827	3.540	0.837	1.252	2.007
$\sigma[CFO]$	7298	0.029	0.027	0.014	0.022	0.036
$LCYCLE$	9989	0.205	0.270	0.061	0.195	0.342
$INST$ (%)	8714	33.564	20.181	17.689	29.379	44.981
$BLOCK$ (%)	8714	6.808	9.425	0.000	5.012	10.708
$HERF$	8714	0.011	0.016	0.002	0.006	0.014
$DISP$	8901	0.012	0.024	0.001	0.004	0.013
EST	8901	5.499	3.587	3.000	4.000	8.000
$BETA$	8901	0.838	0.344	0.603	0.821	1.066
Robustness variables:						
$INSID$ (%)	5553	24.221	24.799	4.148	16.163	33.886
$FOUNDLED$	5212	0.061	0.239	0.000	0.000	0.000
$NEWCEO$	6365	0.104	0.298	0.000	0.000	0.000
$GOVEO$	5212	0.025	0.155	0.000	0.000	0.000

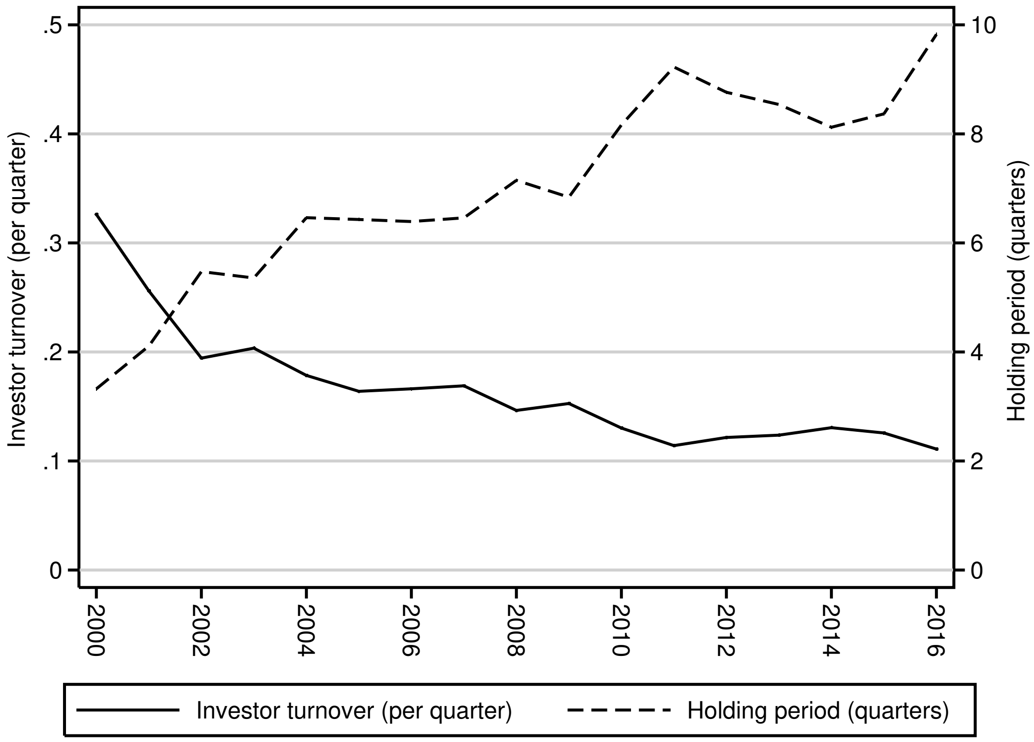

Figure B.1: Average investor turnover and holding period over time

This figure presents the average institutional investor turnover (TR) and holding period in quarters over the period 2000 – 2016. TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. The mean holding period for each firm-year is calculated as the inverse of expected TR: $E[TR_{i,t}]^{-1}$. For further details regarding the calculation of TR, see Appendix A

Table B.4: Persistence in investor turnover

This table reports the persistence in institutional investor turnover (TR) over subsequent years. TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. For the initial year t, firms are ranked in quintiles according to TR, where Q1 denotes the bottom TR quintile, and Q5 denotes the upper TR quintile. Subsequently, the percentage of firms that are classified within their initial quintiles over the year $t+1$ is tracked, and presented in the form of quintile transition probabilities. For each firm-year, the instant of measurement of TR is the fourth quarter of the book year, which contains the average of investors' quarterly churn rates for that entire year. For further details regarding the calculation of TR, see Appendix A

	$t+1$ Quintile transition probability (%)					
t Quintile	Q1	Q2	Q3	Q4	Q5	Total
Q1	61.9	26.8	8.2	2.6	0.5	100.0
Q2	38.5	34.0	17.0	8.6	1.9	100.0
Q3	12.4	25.3	30.5	23.9	8.0	100.0
Q4	5.8	15.8	30.9	30.3	17.3	100.0
Q5	0.7	5.3	17.0	31.7	45.2	100.0

Table B.5: Earnings management and underinvestment model estimates

This table reports the model estimates that are used to compute earnings management and underinvestment proxies. Accrual-based earnings management (AEM) is measured by the difference between actual total accruals (TA) and the estimated values from the expectation model. Similarly, measurements for real earnings management, $ACFO$, $APROD$ and $ASGA$ are obtained by first calculating the deviation of cash flows from operations (CFO), production expenditures ($PROD$), and SG&A expenditures (SGA) from the estimated values. In turn, a proxy for underinvestment ($UINV$) is obtained by first computing the difference between the actual, and expected capital expenditures ($CAPEX$). Subsequently, the residual values are truncated and transformed such that higher values are consistent with more earnings management and underinvestment. In the estimation procedure, the following expectation models are used:

$$\frac{TA_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{(\Delta REV_{i,t} - \Delta ACR_{i,t})}{ASSET_{i,t-1}}\right) + \beta_3\left(\frac{NPPE_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4 ROA_{i,t} + \varepsilon_{i,t}$$

$$\frac{CFO_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_3\left(\frac{\Delta REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4 ROA_{i,t} + \varepsilon_{i,t}$$

$$\frac{PROD_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_3\left(\frac{\Delta REV_{i,t}}{ASSET_{i,t-1}}\right) + \beta_4\left(\frac{\Delta REV_{i,t-1}}{ASSET_{i,t-1}}\right) + \beta_5 ROA_{i,t} + \varepsilon_{i,t}$$

$$\frac{SGA_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2\left(\frac{REV_{i,t-1}}{ASSET_{i,t-1}}\right) + \beta_3 ROA_{i,t} + \varepsilon_{i,t}$$

$$CAPEX_{i,t} = \alpha_0 + \beta_1\left(\frac{1}{ASSET_{i,t-1}}\right) + \beta_2 ln[MV]_{i,t} + \beta_3 TQ_{i,t} + \beta_4\left(\frac{REV_{i,t-1}}{ASSET_{i,t-1}}\right) + \beta_5 CASH_{i,t-1} + \beta_6 LEV_{i,t-1} + \varepsilon_{i,t}$$

The regressions are estimated cross-sectionally for each industry-year (using two-digit SIC codes) with at least 10 observations. Input variables are Winsorized at the top and bottom 1 percentiles to mitigate the impact of outliers. The reported coefficients represent the mean coefficients across industry-years and t-statistics from standard errors across industry-years. The exact first-stage regression procedures and variable definitions are further explained in Appendix A.

Dependent variable:	TA	CFO	$PROD$	SGA	$CAPEX$
Proxy of interest:	$\|AEM\|$	$ACFO$	$APROD$	$ASGA$	$UINV$
α_0	-0.036	0.053	-0.052	0.061	0.080
t-stat.	(-1.53)	(1.79)	(-0.82)	(0.97)	(0.23)
β_1	-15.655	13.355	0.915	30.974	-31.929
t-stat.	(-0.49)	(0.44)	(-0.24)	(0.81)	(-0.19)
β_2	-0.047	0.010	0.842	0.122	-0.083
t-stat.	(-0.53)	(0.38)	(11.13)	(1.91)	(-0.03)
β_3	-0.080	0.073	0.050	0.280	0.039
t-stat.	(-1.18)	(0.72)	(0.21)	(0.46)	(0.96)
β_4	0.368	0.655	0.008		-0.010
t-stat.	(1.77)	(2.79)	(0.04)		(-0.29)
β_5			-1.055		-0.018
t-stat.			(-1.51)		(0.01)
β_6					-0.019
t-stat.					(-0.08)
ε	0.00	0.00	0.00	0.00	0.00
Mean proxy value	0.05	0.02	0.06	0.05	0.02
Mean adj. R^2	0.472	0.631	0.912	0.464	0.484
Mean firm-year obs.	21.4	21.5	20.4	20.8	21.3
Ind-year obs.	397	398	335	292	372

Table B.6: Summary statistics by investor turnover

This table reports the mean statistics and tests of difference after partitioning the sample in above/below median investor turnover (TR). TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. For each firm-year, the instant of measurement of TR is the fourth quarter of the book year, which contains the average of investors' quarterly churn rates for that entire year. Market value of equity (MV) is displayed in € billions. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

	Mean		Test of difference
	High TR	Low TR	High - low
Main variables:			
TR	0.181	0.128	0.053***
$\|AEM\|$	0.050	0.041	0.009***
AEM	0.002	0.000	0.002
$ACFO$	0.026	0.021	0.005***
$APROD$	0.066	0.052	0.014***
$ASGA$	0.057	0.044	0.013***
REM	0.008	-0.358	0.366***
$LOSSAVOID$	0.037	0.023	0.014***
$SMISS$	0.138	0.146	-0.008
$SBEAT$	0.189	0.170	0.019
$NETBEAT$	0.051	0.024	0.027
$CAPEX$	0.058	0.056	0.002**
$R\&D$	0.026	0.028	-0.002*
$\Delta R\&D$	0.002	0.002	-0.000
$UINV$	0.022	0.018	0.003***
$REPUR$	0.011	0.011	0.000
DIV	0.029	0.033	-0.005***
ESG	5.882	6.415	-0.534***
ENV	5.658	5.842	-0.184***
SOC	6.021	6.264	-0.244***
GOV	5.247	5.429	-0.182***
CAR (%)	0.455	0.194	0.261*
SUE (%)	-0.120	-0.048	-0.072*
Control variables:			
MV	5.314	11.822	-6.508***
BTM	0.484	0.481	0.003
ROA	0.056	0.063	-0.007***
LEV	0.240	0.234	0.006
$CASH$	0.126	0.116	0.010***
$CAPINT$	0.258	0.261	-0.003
$ln[OPCYCLE]$	4.732	4.815	-0.083***
TQ	1.718	1.813	-0.095**
$\sigma[CFO]$	0.031	0.027	0.004***
$LCYCLE$	0.191	0.237	-0.046***
$INST$ (%)	33.396	33.700	-0.303
$BLOCK$ (%)	6.696	6.897	-0.201
$HERF$	0.011	0.011	-0.000
$DISP$	0.011	0.013	-0.002*
EST	4.752	5.996	-1.245***
$BETA$	0.856	0.832	0.023**

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B.7: Cross-correlations matrix of variables related to short-termism

This table reports the Pearson correlation matrix between measures of investor horizons, earnings management, target beating, capital allocation and corporate sustainability for the period 2000 – 2016. The expected sign of the variables in relation to short-termism is attached as a suffix to the variable names. ESG data becomes available around the second half of 2006, hence the correlations that involve ESG only cover the period 2007 – 2016. All variables are defined in Appendix A.

		Investor horizons	Earnings management				Target beating				Capital allocation						ESG scores
	Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
1	TR (+)	1.00															
2	$\|AEM\|$ (+)	0.14***	1.00														
3	$ACFO$ (+)	0.09***	0.39***	1.00													
4	$APROD$ (+)	0.09***	0.10***	0.28***	1.00												
5	$ASGA$ (+)	0.10***	0.10***	0.14***	0.62***	1.00											
6	$LOSSAVOID$ (+)	0.06***	0.08***	0.06***	-0.01	0.02	1.00										
7	$SMISS$ (−)	-0.02	-0.00	-0.01	-0.01	-0.02	0.03*	1.00									
8	$SBEAT$ (+)	0.06***	-0.02	0.04*	0.04*	-0.02	0.01	-0.18***	1.00								
9	$NETBEAT$ (+)	0.04	-0.01	0.02	0.02	-0.01	-0.01	-0.75***	0.79***	1.00							
10	$CAPEX$ (−)	0.08***	0.18***	-0.07***	-0.01	-0.00	0.01	-0.02	-0.00	0.01	1.00						
11	$R\&D$ (−)	0.05***	0.17***	0.06***	-0.08***	-0.10***	0.03**	0.04*	0.04	-0.00	-0.04***	1.00					
12	$\Delta R\&D$ (−)	0.06***	0.16***	0.06***	-0.04**	-0.03	0.02	0.05**	-0.00	-0.03	0.02	0.41***	1.00				
13	$UINV$ (+)	0.11***	0.19***	0.23***	0.03**	0.06***	0.06***	0.06***	-0.01	-0.04**	-0.13***	0.03*	0.04***	1.00			
14	$REPUR$ (+)	0.02	0.05***	0.00	0.02	0.11***	-0.02**	0.03	0.00	-0.02	-0.01	0.17***	0.06***	0.04***	1.00		
15	DIV (+/−)	-0.04***	0.08***	-0.01	0.07***	0.07***	-0.05***	0.03	0.05***	0.02	0.04***	0.05***	-0.01	0.04***	0.09***	1.00	
16	ESG (−)	-0.08***	-0.09***	-0.04**	-0.09***	-0.12***	-0.02	-0.00	-0.04*	-0.03	-0.07***	0.02	-0.01	-0.05***	0.02*	-0.02	1.00

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

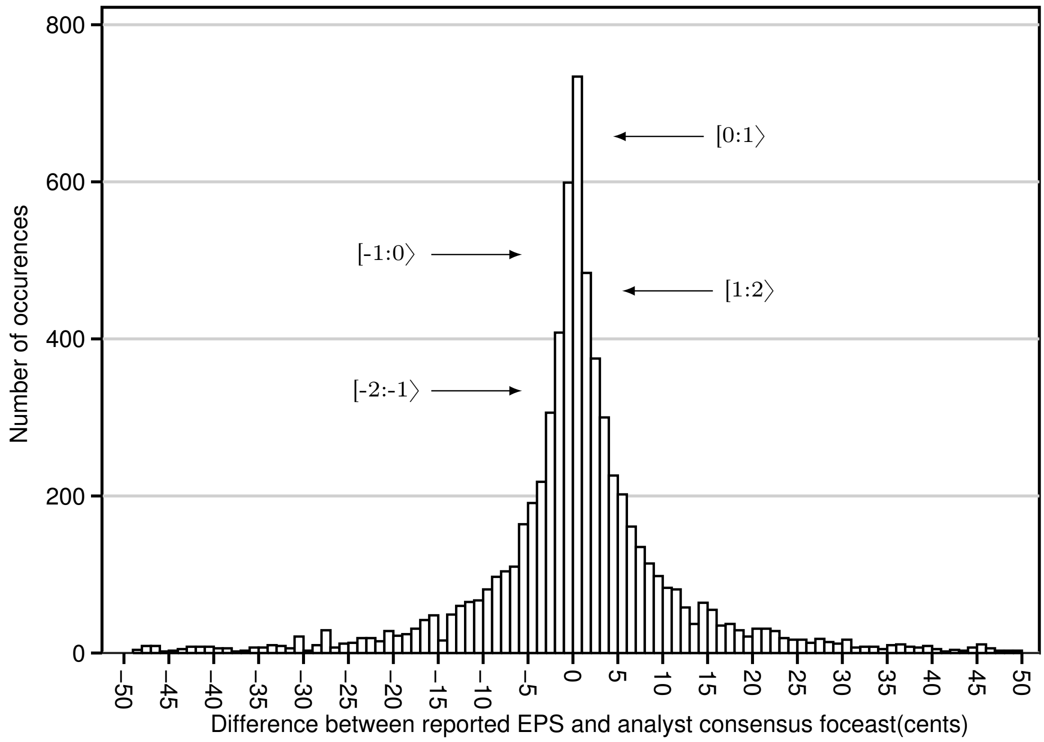

Figure B.2: Distribution of unexpected earnings

This figure reports the distribution of unexpected earnings (UE), calculated as the difference in cents between actual earnings per share and the median analysts' consensus forecasts. To avoid the effect of leakage, the median forecast closest to, but preceding the announcement by at least 5 days is used. If no forecast statistics are available over the quarter preceding the announcement, the observation is eliminated to avoid the effect of stale forecast errors. Raw forecast data is used, unadjusted for stock splits to correct the ex-post performance bias caused by excessive rounding in the adjusted IBES database (see Diether et al., 2002). A firm reporting UE at or above zero, but within two cents from the consensus forecast $[0 : 2\rangle$ for a given year receives a value of one for the dummy variable $SBEAT$. Conversely, a firm whose unexpected earnings are below zero, but within two cents of the consensus forecast $[-2 : 0\rangle$ receives a value of one for the dummy variable $SMISS$.

Table B.8: CAR around earnings announcements by unexpected earnings

This table presents the mean cumulative abnormal return (CAR) and tests of differences after partitioning the sample on marginal beating/missing of earnings forecasts, and firms falling above/below the median level of accrual-based earnings management ($|AEM|$), real earnings management (REM) and investor turnover (TR), in a given year. $SBEAT$ is a dummy variable that takes a value of one when a firm reports unexpected earnings at or above zero, but within two cents from the consensus forecast $[0:2\rangle$, and zero otherwise. In turn, $SMISS$ is a dummy variable that takes a value of one when unexpected earnings are below zero, but within two cents of the consensus forecast $[-2:0\rangle$. The ordering of high and low earnings management categories is such that the high categories contain firms that are likely to engage in earnings management and present 'low quality' earnings. In accordance, the superscript 'a' denotes low quality beaters, while the superscript 'b' denotes high quality missers. CAR is the three-day abnormal return, cumulated from one trading day before to one trading day after the earnings announcement date covering the results of firm i over year t. Abnormal returns are estimated using a market model over a [-210,-10] day window preceding the earnings announcement. REM is an aggregate measure of the three measures of real earnings management, calculated as the sum of the three z-scored REM proxies: $REM_{i,t} = Z[ACFO_{i,t}] + Z[APROD_{i,t}] + Z[ASGA_{i,t}]$. TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. All variables are defined in Appendix A.

Variable of interest:	CAR (%)			
Sort:	$SBEAT$	$SMISS$	$SBEAT$ - $SMISS$	All firms
High $\lvert AEM\rvert$	0.905^a	-0.331	1.237***	0.194
Low $\lvert AEM\rvert$	0.720	-0.462^b	1.182***	0.150
Total	0.813	-0.398	1.210***	0.172
t-stat. high - low	0.186	0.131		0.044
t-stat. a - b	1.368***			
High REM	0.904^a	-0.415	1.319***	0.233
Low REM	0.732	-0.348^b	1.080***	0.200
Total	0.961	-0.135	1.096***	0.328
t-stat. high - low	0.172	-0.067		0.033
t-stat. a - b	1.252***			
High TR	1.154	-0.079	1.233***	0.304
Low TR	0.717	-0.130	0.846***	0.368
Total	0.924	-0.105	1.029***	0.336
t-stat. high - low	0.339	0.078		-0.064

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

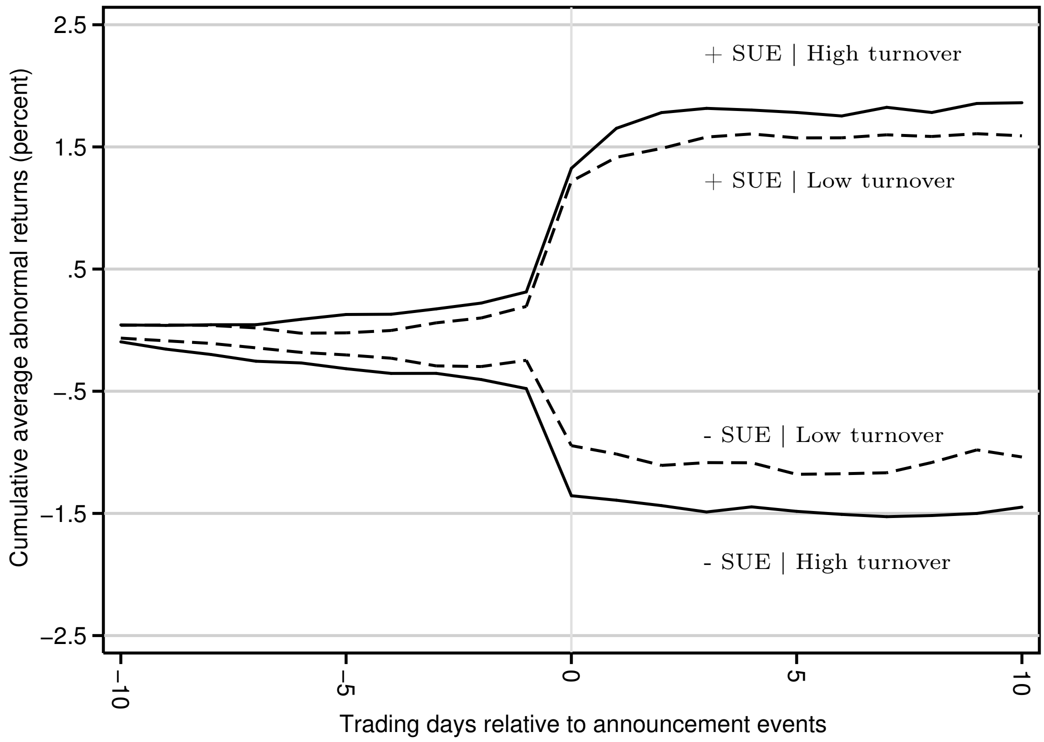

Figure B.3: Average CAAR around earnings announcements by investor turnover

This graph plots the cumulative average abnormal returns (CAAR) around annual announcement events, after partitioning on positive/negative SUE, and above/below median TR. The cumulative abnormal returns are determined using a market model with an estimation window of [-210,-10] days and the announcement date as t=0. TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. It is obtained on a quarterly basis, and appended to the firm-year at the fourth quarter of the book year. A firm doing an earnings announcement is considered a high (low) turnover firm if TR is above (below) the sample median in the quarter preceding the earnings announcement. SUE denotes the scaled unexpected earnings; the unexpected earnings as percentage of the stock price at the time of the forecast. All variables are defined in Appendix A.

Table B.9: IV-Procedure: MSCI Europe index constituent changes

This table reports information regarding MSCI Europe index constituent changes over the period 2006 – 2016. Panel A reports the frequency distribution of changes to the MSCI Europe index constituents. Panel B summarizes the main characteristics of the MSCI re-balancing methodology. Additions and deletions that are not included in MSCI regular reviews are excluded, since irregular changes are likely to be caused by corporate events such as mergers and acquisitions (M&A), delisting or bankruptcies (Chen and Shiu, 2016; Shleifer, 1986). The MSCI Europe belongs to the set of MSCI Standard indexes, which consider large- and mid-cap companies. Constituent changes are determined by MSCI's global investable market index methodology (see MSCI.com). Data on constituent changes to the MSCI Europe index is provided by Northern Trust Asset Management (NTAM), and cross-checked by means of quarterly reviews on the MSCI website.

Panel A: Distribution over time

Year	Additions	Deletions
2006	20	2
2007	32	13
2008	18	24
2009	9	29
2010	19	11
2011	6	8
2012	13	19
2013	13	11
2014	10	7
2015	8	5
2016	16	5
Total	164	134

Panel B: MSCI methodology

Characteristic	MSCI methodology
Minimum market cap.	$236 million, adjusted annually
Liquidity	>20% quarterly turnover
Public float	>50%
Domicile	Listed equity securities
Financial viability	Should satisfy continuity rules
Announcement period	Two weeks in advance
Timing of rebalancing	Quarterly

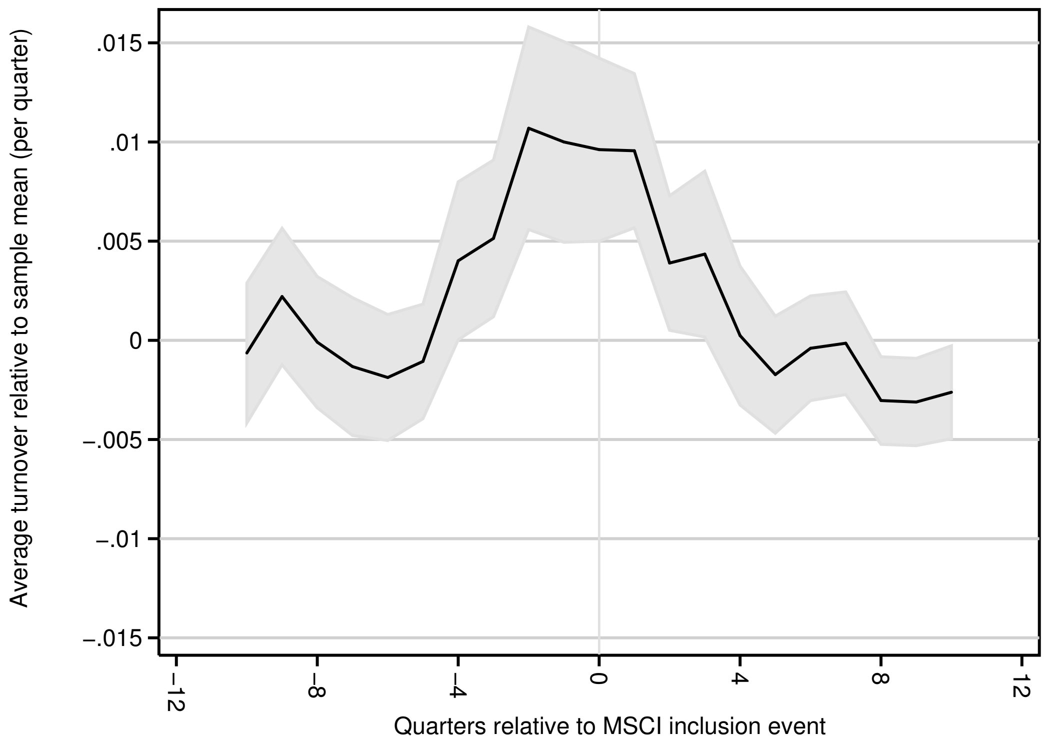

Figure B.4: IV-Procedure: Investor turnover around MSCI Europe index inclusions

This graph plots the evolution of the average investor turnover (TR) of firms that are added to the MSCI Europe relative to firms that are not. The plot spans a period of 5 years, centered around the MSCI Europe index inclusion. The 95% confidence interval is plotted as a tinted band around the expectation line. TR is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors, and is depicted using quarterly increments. The data on MSCI inclusions consists of 164 additions, over the period 2006 – 2016. Additions that are not included in MSCI regular reviews are excluded, since changes in index constituents that occur on an irregular basis are likely to be caused by corporate events such as mergers and acquisitions (M&A), delisting or bankruptcies (Chen and Shiu, 2016; Shleifer, 1986). Data on constituent changes of the MSCI Europe index is provided by Northern Trust Asset Management (NTAM), and cross-checked by means of quarterly reviews on the MSCI website.

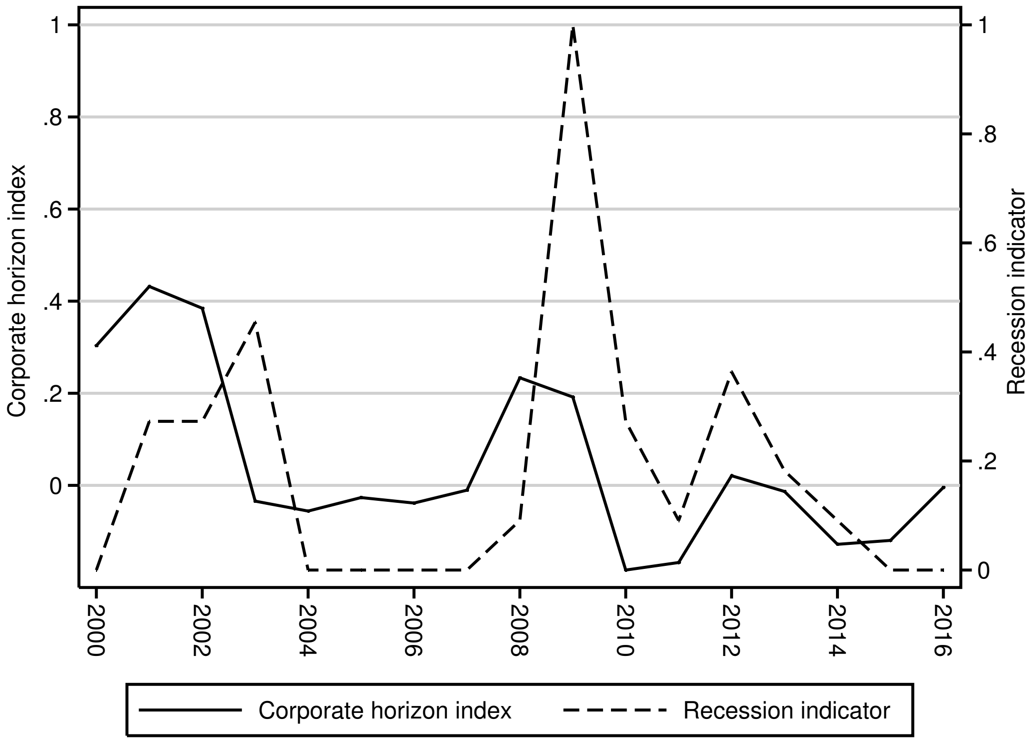

Figure B.5: Average corporate horizon index and recessions over time

This figure presents the average corporate horizon index (CHI) and recession indicator (REC) over the period 2000 – 2016. CHI is obtained by computing the principle component of measures of corporate short-termism (see section 4.3.1). Both are depicted using yearly increments. To compute REC, individual country recession indicators are obtained from the Economic Cycle Research Institute (ECRI), and weighted according to the average total market value of each country in the sample (see Table B.2).

Table B.10: Persistence in the corporate horizon index

This table reports the persistence in the corporate horizon index (CHI) over subsequent years. CHI is obtained by computing the principle component of measures of corporate short-termism (see section 4.3.1). For the initial year t, firms are ranked in quintiles according to CHI, where Q1 denotes the bottom CHI quintile, and Q5 denotes the upper CHI quintile. Subsequently, the percentage of firms that are classified within their initial quintiles over the year $t+1$ is tracked, and presented in the form of quintile transition probabilities.

	$t+1$ Quintile transition probability (%)					
t Quintile	Q1	Q2	Q3	Q4	Q5	Total
Q1	49.9	27.4	13.6	7.4	1.7	100.0
Q2	29.9	31.9	21.4	12.5	4.2	100.0
Q3	16.4	23.8	30.5	21.7	7.6	100.0
Q4	6.8	15.0	24.9	32.0	21.2	100.0
Q5	3.4	6.0	9.9	24.9	55.8	100.0

Table B.11: Value-weighted excess portfolio returns

This table reports descriptives of monthly excess portfolio returns (in percentages). The portfolios are size-diversified and value-weighted. Size-diversified means that each of the portfolios consists of an equal amount of small and big stocks. The portfolios are value-weighted using the most recent market value. Reconstitution of the portfolio's takes placed on a yearly basis, with June as the rebalancing date and a minimum of 6 months between the rebalancing date and the end of a firms' financial reporting year. For portfolios sorted on investor horizon, TR, investor information from the first quarter is used. Panel A reports the portfolio excess returns, sorted on investor horizons and measures of corporate short-termism. Panel B reports the correlations of monthly excess returns of long-short portfolios. To detect whether long-term firms outperform short-term firms, the long-short portfolio's are chosen such that they are long in the portfolio considered long-term, and short in the portfolio considered short-term. The sample period runs from 2000 to 2016, with the exception of sorts on ESG scores, for which the sample period runs from 2007 to 2016. All variables are defined in Appendix A.

Panel A: Portfolio excess returns

Investor horizon		AEM		REM		Investment		Underinvestment		ESG scores		Corporate horizon	
TR	Return	$\|AEM\|$	Return	REM	Return	$CAPEX$	Return	$UINV$	Return	ESG	Return	CHI	Return
Shortterm	0.973	High	-0.029	High	-0.049	High	0.236	High	0.121	High	0.045	Shortterm	-0.212
4	0.750	4	0.184	4	0.141	4	0.394	4	0.101	4	0.040	4	0.122
3	0.713	3	0.433	3	0.315	3	0.655	3	0.215	3	0.126	3	0.408
2	0.520	2	0.397	2	0.602	2	0.668	2	0.489	2	0.167	2	0.393
Longterm	0.172	Low	0.577	Low	0.619	Low	0.416	Low	0.334	Low	0.448	Longterm	0.561

Panel B: Correlations of value-weighted long-short portfolio returns

			Investor horizons	Earnings management					Capital allocation		Corporate horizon	ESG scores
	Measure	Sort	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	TR	Low-high	1.00									
2	$\|AEM\|$	Low-high	0.18**	1.00								
3	$ACFO$	Low-high	0.36***	0.56***	1.00							
4	$APROD$	Low-high	-0.06	0.08	0.24***	1.00						
5	$ASGA$	Low-high	0.03	0.05	0.18***	0.44***	1.00					
6	REM	Low-high	0.06*	0.19***	0.42***	0.48***	0.51***	1.00				
7	$CAPEX$	Mid-low	0.01	0.04	0.07	-0.08	0.10*	-0.12	1.00			
8	$UINV$	Low-high	-0.13	0.14**	0.14**	-0.03	0.09	0.04	0.11	1.00		
9	ESG	High-low	0.06	-0.11	-0.14	0.15*	-0.30***	-0.11	-0.24*	-0.17	1.00	
10	CHI	Low-high	0.04	0.19***	0.41***	0.43***	0.52***	0.72***	0.07	0.29***	-0.09	1.00

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results

Table C.1: IV-Procedure: First-stage regressions

This table examines whether firms that are added to the MSCI Europe index experience a decrease in institutional investor turnover (TR). $ADDITION$ is a dummy variable which takes the value of one if a firm is added to the MSCI index in that particular year, and 0 otherwise. Data on MSCI Europe index constituent changes is only available for the period 2006 – 2016, hence the 2SLS regressions are conducted for this subsample only. F-Statistic is the Kleibergen and Paap (2006) F-Statistic of the instrument. # Events is the number of inclusion events in the final sample. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. Industry, year and country fixed effects are included. Standard errors are clustered by industry-year. All variables are defined in Appendix A.

Dependent variable:	TR		
Model:	OLS		
	(1)	(2)	(3)
$ADDITION$	0.012***	0.013***	0.013***
	(3.96)	(4.24)	(3.97)
$ln[MV]$		-0.008***	-0.007***
		(-21.21)	(-18.27)
BTM			-0.004***
			(-3.56)
ROA			-0.015**
			(-2.04)
LEV			0.006*
			(1.78)
$CASH$			0.017***
			(3.57)
$CAPINT$			-0.002
			(-0.38)
$OPCYCLE$			-0.003***
			(-3.67)
$INST$		-0.000	-0.000
		(-1.52)	(-0.49)
$BLOCK$		-0.000***	-0.000***
		(-3.00)	(-2.62)
$HERF$		0.099	0.051
		(1.10)	(0.22)
Constant	0.192***	0.251***	0.163***
	(10.72)	(13.35)	(20.04)
Industry/year/country FE	Yes	Yes	Yes
Observations	6638	6638	5754
Adjusted R^2	0.248	0.293	0.304
# Events (MSCI addition)	157	157	157
F-statistics (MSCI addition)	15.74	18.05	15.78

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.2: Short-horizon investor ownership and earnings management

This table reports the results of OLS and 2SLS regressions with different measures of earnings management as dependent variables. The main variable of interest is TR, which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. In the 2SLS regressions, MSCI Europe index inclusions are used as an instrument for TR. The instrument is only available for the period 2006 – 2016, hence the 2SLS regressions are conducted for this subsample only. Accrual-based earnings management (AEM) is measured by the difference between actual total accruals (TA) and the estimated values from an expectation model. Similarly, measurements for real earnings management, $ACFO$, $APROD$ and $ASGA$ are obtained by first calculating the deviation of cash flows from operations (CFO), production expenditures ($PROD$) and SG&A expenditures (SGA) from the estimated values. Subsequently, these residual values are truncated and transformed such that higher values are consistent with more earnings management. Controls are included for ownership and firm-specific characteristics that are associated with earnings management. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. The exact first-stage regression procedures and variable definitions are further explained in Appendix A.

Dependent variable:	$\|AEM\|$	$ACFO$	$APROD$	$ASGA$	$\|AEM\|$	$ACFO$	$APROD$	$ASGA$
Model:	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TR	0.059***	0.021	0.122**	0.106**	1.243**	0.355	2.203**	1.500**
	(2.81)	(1.09)	(2.08)	(2.18)	(2.24)	(1.11)	(2.56)	(2.08)
TR_{t-1}	0.031	0.042**	0.094*	0.024	0.230	0.453**	1.329**	0.808*
	(1.61)	(2.52)	(1.88)	(0.56)	(0.80)	(2.16)	(2.53)	(1.82)
$ln[MV]$	-0.006***	-0.005***	-0.019***	-0.014***	0.004	0.002	0.005	0.002
	(-9.62)	(-9.50)	(-13.45)	(-12.21)	(1.13)	(0.74)	(0.81)	(0.50)
BTM	-0.015***	0.002	0.002	0.001	-0.009***	0.008***	0.020***	0.012***
	(-6.84)	(1.18)	(0.46)	(0.29)	(-3.34)	(3.75)	(4.18)	(3.01)
ROA	0.034	0.034**	0.136***	0.095**	0.056*	0.073***	0.196***	0.071**
	(1.41)	(2.25)	(3.62)	(2.50)	(1.92)	(3.84)	(4.41)	(2.07)
LEV	0.012	-0.007	-0.036**	-0.009	-0.004	-0.008	-0.077***	-0.058***
	(1.47)	(-1.61)	(-1.99)	(-0.60)	(-0.59)	(-1.52)	(-6.35)	(-5.45)
$CASH$	0.068***	-0.001	-0.046**	0.033	0.042***	-0.023**	-0.119***	-0.055***
	(7.00)	(-0.09)	(-2.47)	(1.63)	(3.24)	(-2.48)	(-4.79)	(-2.58)
$CAPINT$	-0.013**	-0.036***	-0.031***	0.049***	0.007	-0.024***	0.014	0.067***
	(-2.16)	(-8.48)	(-2.74)	(4.76)	(0.87)	(-4.85)	(1.06)	(5.77)
$OPCYCLE$	0.003*	0.004***	-0.033***	-0.028***	0.007***	0.006***	-0.027***	-0.030***
	(1.66)	(3.01)	(-8.32)	(-7.62)	(2.76)	(3.73)	(-5.28)	(-6.18)
$INST$	-0.000	0.000	-0.000*	0.000*	0.000	0.000***	0.000	0.001***
	(-1.36)	(0.93)	(-1.66)	(1.89)	(0.90)	(3.60)	(1.56)	(3.33)
$BLOCK$	-0.000	0.000	0.001**	0.000	0.000	0.000**	0.001***	0.001**
	(-0.50)	(1.27)	(2.53)	(1.00)	(0.29)	(2.13)	(2.60)	(2.48)
$HERF$	0.243*	-0.009	-0.345*	-0.399**	0.113	-0.316***	-0.738***	-1.056***
	(1.90)	(-0.08)	(-1.92)	(-2.21)	(0.82)	(-4.04)	(-3.01)	(-3.17)
Constant	0.061***	-0.004	0.475***	0.392***	-0.125	-0.095	-0.117	-0.018
	(4.68)	(-0.24)	(6.97)	(10.03)	(-1.02)	(-1.47)	(-0.63)	(-0.13)
Industry/year/country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5250	5103	4328	4002	3580	3044	2903	2494
Adjusted R^2	0.151	0.096	0.113	0.126	0.158	0.081	0.122	0.148

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.3: Short-horizon investor ownership and target beating

This table reports the results of PROBIT, OLS and 2-stage regressions with different measures of target beating as dependent variables. The main variable of interest is TR, which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. In the 2-stage regressions, MSCI Europe index inclusions are used as an instrument for TR. The instrument is only available for the period 2006 – 2016, hence the 2SLS regressions are conducted for this subsample only. The tendency to beat targets is captured through a set of dummy variables. $LOSSAVOID$ takes a value of one when EBITDA scaled by MV ranges from 0 to 0.1. $SBEAT$ ($SMISS$) takes a value of one when the unexpected earnings are above (below) the consensus forecast, by less than 2 cents. Lastly, $NETBEAT$ is calculated by subtracting $SMALL$ from $SBEAT$, to capture both occurrences in one measure. Controls are included for ownership and firm-specific characteristics that are associated with earnings management. Additionally, if the dependent variable is computed on the basis of analysts' consensus forecasts, controls for forecast accuracy are included. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

Dependent variable:	$LOSSAVOID$	$SMISS$	$SBEAT$	$NETBEAT$	$LOSSAVOID$	$SMISS$	$SBEAT$	$NETBEAT$
Model:		PROBIT		OLS		2S/PROBIT		2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TR	2.038**	-2.500**	2.489**	0.796***	10.961**	-16.511	1.413	2.861
	(2.43)	(-2.01)	(2.30)	(2.84)	(2.20)	(-0.90)	(0.09)	(0.69)
TR_{t-1}	-0.360	1.430	-1.258	-0.373	15.384	7.822	-0.082	-1.068
	(-0.39)	(1.25)	(-1.08)	(-1.35)	(1.11)	(0.84)	(-0.01)	(-0.47)
$ln[MV]$	-0.039	-0.076*	0.030	0.017*	-0.303	-0.120	0.010	0.022
	(-1.04)	(-1.85)	(0.81)	(1.78)	(-1.00)	(-0.86)	(0.08)	(0.68)
BTM	-0.133	-0.042	-0.170	-0.019	-0.411**	-0.122	-0.122	0.000
	(-1.40)	(-0.45)	(-1.42)	(-0.91)	(-2.12)	(-0.99)	(-0.88)	(0.02)
ROA	-5.371***	1.593***	1.511***	0.019	-8.466***	1.275*	1.658***	0.099
	(-9.94)	(3.18)	(2.98)	(0.14)	(-6.86)	(1.85)	(2.62)	(0.60)
LEV	-0.651**	0.408**	-0.200	-0.108*	-0.806*	0.493**	-0.162	-0.117*
	(-2.50)	(2.11)	(-0.84)	(-1.72)	(-1.88)	(2.17)	(-0.65)	(-1.67)
$CASH$	0.179	-0.209	-0.926***	-0.110	0.263	-0.278	-0.857**	-0.085
	(0.45)	(-0.64)	(-2.90)	(-1.38)	(0.36)	(-0.62)	(-2.06)	(-0.79)
$CAPINT$	0.113	-0.066	-0.487**	-0.072	0.257	-0.164	-0.491**	-0.059
	(0.49)	(-0.30)	(-2.27)	(-1.18)	(0.68)	(-0.64)	(-2.04)	(-0.87)
$OPCYCLE$	-0.084	-0.054	-0.181***	-0.027	-0.226	-0.107	-0.195**	-0.022
	(-1.21)	(-0.82)	(-2.85)	(-1.53)	(-1.28)	(-1.05)	(-2.27)	(-0.86)
$INST$	0.000	0.003	0.009***	0.002**	0.002	0.002	0.010***	0.002**
	(0.09)	(1.02)	(3.73)	(2.32)	(0.35)	(0.81)	(3.58)	(2.25)
$BLOCK$	0.007	0.004	-0.008	-0.002	-0.000	-0.003	-0.011	-0.002
	(0.83)	(0.63)	(-1.44)	(-1.26)	(-0.02)	(-0.37)	(-1.42)	(-0.79)
$HERF$	-5.689	-4.762	2.600	1.054	-15.163*	-0.359	3.105	0.656
	(-0.94)	(-0.90)	(0.81)	(1.11)	(-1.71)	(-0.07)	(0.87)	(0.67)
$DISP$		0.178	2.288***	0.529**		0.317	1.908**	0.437
		(0.21)	(3.03)	(2.06)		(0.37)	(2.40)	(1.62)
EST		0.009	-0.007	-0.003*		0.008	-0.005	-0.002
		(1.62)	(-1.30)	(-1.95)		(1.31)	(-0.99)	(-1.58)
Constant	-1.115*	-0.504	-0.548	-0.027	5.613	1.017	-0.277	-0.269
	(-1.89)	(-0.63)	(-0.68)	(-0.17)	(0.72)	(0.26)	(-0.08)	(-0.25)
Industry/year/country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6364	5290	5290	5290	3947	3690	3690	3690
Adjusted R^2				0.019				0.016
Pseudo R^2	0.119	0.054	0.083		0.145	0.059	0.083	

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.4: Short-horizon investor ownership and capital allocation

This table reports the results of OLS and 2SLS regressions with different measures of capital allocation as dependent variables. The main variable of interest is TR, which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. In the 2-stage regressions, MSCI Europe index inclusions are used as an instrument for TR. The instrument is only available for the period 2006 – 2016, hence the 2SLS regressions are conducted for this subsample only. $CAPEX$ is capital expenditures, $R\&D$ is R&D expenditures, $\Delta R\&D$ is the change in R&D expenditures, $REPUR$ is the value of shares repurchased and DIV is the value of dividend payout. All are deflated by total assets. Missing values of R&D are replaced by the industry average, as suggested by Koh and Reeb (2015) and a dummy variable is included to indicate blank R&D firms. Controls are included for ownership and firm-specific characteristics that are associated with earnings management and firms' decision to invest. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. $\sigma[CFO]$ is Winsorized at the 99th percentile. All variables are defined in Appendix A.

Dependent variable:	$CAPEX$	$R\&D$	$\Delta R\&D$	$REPUR$	DIV	$CAPEX$	$R\&D$	$\Delta R\&D$	$REPUR$	DIV
Model:			OLS					2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TR	-0.003	-0.005	-0.008*	0.042***	-0.042***	-0.168	0.103	-0.261**	0.194	-0.329
	(-0.27)	(-0.55)	(-1.92)	(2.78)	(-2.90)	(-0.66)	(0.34)	(-1.97)	(0.60)	(-1.17)
TR_{t-1}	-0.025**	-0.008	-0.007	0.029**	-0.014	-0.070	0.010	-0.017	-0.633***	-2.066***
	(-2.25)	(-1.04)	(-1.46)	(2.15)	(-1.16)	(-0.40)	(0.06)	(-0.22)	(-2.62)	(-8.96)
$ln[MV]$	-0.001***	0.001***	-0.000*	0.001***	-0.002***	-0.003	0.002	0.001*	-0.002	-0.016***
	(-2.60)	(3.29)	(-1.90)	(2.92)	(-3.99)	(-1.57)	(0.87)	(1.81)	(-0.97)	(-7.85)
BTM	-0.007***	0.000	0.001	0.001	-0.006***	-0.008***	0.000	0.002***	0.000	-0.014***
	(-6.01)	(0.52)	(1.57)	(0.79)	(-3.91)	(-4.49)	(0.22)	(2.83)	(0.07)	(-6.56)
ROA	-0.014	-0.023**	0.005	0.132***	0.264***	-0.011	-0.024*	0.009	0.129*	0.265***
	(-0.99)	(-2.41)	(0.76)	(2.87)	(11.15)	(-0.54)	(-1.81)	(1.14)	(1.88)	(9.13)
LEV	0.005	-0.018***	-0.000	0.016***	0.012	0.008*	-0.020***	0.000	0.014**	0.015
	(1.50)	(-6.89)	(-0.19)	(3.28)	(1.51)	(1.95)	(-6.49)	(0.24)	(2.32)	(1.58)
$CASH$	-0.019***	0.060***	0.001	-0.002	-0.002	-0.023***	0.049***	-0.004	0.010	0.032**
	(-2.96)	(9.37)	(0.22)	(-0.24)	(-0.16)	(-2.66)	(5.70)	(-1.19)	(0.86)	(2.55)
$CAPINT$	0.106***	-0.001	-0.001	-0.007**	-0.001	0.103***	-0.001	-0.000	-0.015***	-0.019***
	(22.66)	(-0.61)	(-1.47)	(-2.10)	(-0.29)	(16.76)	(-0.39)	(-0.18)	(-3.65)	(-2.71)
$OPCYCLE$	-0.002**	0.004***	-0.001*	0.000	-0.001	-0.002	0.005***	0.000	-0.001	-0.007***
	(-2.06)	(6.24)	(-1.75)	(0.04)	(-0.88)	(-1.27)	(4.64)	(0.11)	(-1.08)	(-3.95)
$INST$	-0.000**	-0.000	0.000	0.000	0.000	-0.000**	-0.000	0.000	0.000	-0.000**
	(-2.49)	(-1.25)	(0.43)	(0.88)	(0.40)	(-2.32)	(-1.32)	(0.44)	(0.45)	(-2.05)
$BLOCK$	0.000	0.000	-0.000	0.000***	-0.000*	0.000	-0.000	0.000	0.000	-0.001***
	(0.78)	(0.72)	(-1.21)	(2.92)	(-1.76)	(1.10)	(-0.23)	(1.02)	(1.48)	(-3.85)
$HERF$	0.006	-0.002	0.013	-0.126***	0.063	-0.091	0.056	-0.025	-0.101	0.362***
	(0.06)	(-0.05)	(0.92)	(-2.65)	(0.93)	(-1.11)	(0.84)	(-0.74)	(-1.24)	(3.35)
TQ	0.003***	0.005***	0.001***	0.002	0.003**	0.002**	0.005***	0.001***	0.003	0.002
	(4.16)	(7.35)	(4.85)	(1.53)	(2.03)	(2.27)	(5.46)	(4.05)	(1.36)	(0.89)
$\sigma[CFO]$	0.248***	0.045**	-0.023*	0.175***	0.293***	0.293***	0.054*	-0.034**	0.198***	0.488***
	(7.77)	(2.09)	(-1.88)	(4.19)	(2.99)	(6.74)	(1.83)	(-2.24)	(3.74)	(3.09)
$LCYCLE$	0.005***	-0.003	0.001	0.011**	0.009*	0.002	-0.005	0.003**	0.006	-0.003
	(2.69)	(-1.39)	(1.05)	(2.50)	(1.88)	(0.79)	(-1.61)	(2.41)	(1.25)	(-0.39)
Constant	0.024***	-0.027**	-0.033***	-0.051**	0.008	0.112**	-0.080	-0.053**	0.128**	0.546***
	(3.19)	(-2.02)	(-8.76)	(-2.06)	(0.70)	(2.06)	(-1.05)	(-2.03)	(2.17)	(8.53)
Industry/year/country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R&D missing dummies	No	Yes	No	No	No	No	Yes	No	No	No
Observations	5624	5611	3587	5419	5615	3856	3846	2563	3746	3848
Adjusted R^2	0.428	0.446	0.086	0.175	0.277	0.446	0.431	0.080	0.173	0.290

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.5: Short-horizon investor ownership and ESG scores

This table reports the results of OLS and 2SLS regressions, with the overall ESG score *ESG*, and individual pillar scores *ENV SOC* and *GOV* as dependent variables. The main variable of interest is *TR*, which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. In the 2-stage regressions, MSCI Europe index inclusions are used as an instrument for *TR*. *ESG* information is obtained from MSCI ESG research. ESG data becomes available around the second half of 2006, hence the regressions that employ ESG data are only conducted for the sample period 2007 – 2016. Controls are included for ownership and firm-specific characteristics that are associated with earnings management. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

Dependent variable:	*ESG*	*ENV*	*SOC*	*GOV*	*ESG*	*ENV*	*SOC*	*GOV*
Model:	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TR	-1.563	-0.084	-1.540*	0.360	-37.552*	-26.616*	-36.465**	-12.170
	(-1.30)	(-0.08)	(-1.71)	(0.38)	(-1.67)	(-1.67)	(-2.17)	(-0.79)
TR_{t-1}	-3.945***	0.022	-0.824	-2.569***	-28.793***	-11.679	-11.454	-17.117**
	(-3.52)	(0.02)	(-0.84)	(-2.91)	(-2.62)	(-1.33)	(-1.32)	(-2.01)
$ln[MV]$	0.608***	0.556***	0.170***	0.155***	0.150	0.277**	-0.176	-0.067
	(17.24)	(19.25)	(6.03)	(5.56)	(0.92)	(2.38)	(-1.45)	(-0.58)
BTM	0.217**	0.177**	-0.136*	0.102	0.029	0.061	-0.307***	0.011
	(2.49)	(2.43)	(-1.87)	(1.43)	(0.23)	(0.62)	(-3.09)	(0.11)
ROA	-0.555	-1.430***	0.491	-0.490	-1.635**	-1.918***	-0.548	-0.627
	(-0.95)	(-3.12)	(1.08)	(-1.04)	(-2.00)	(-3.17)	(-0.89)	(-1.00)
LEV	-0.736***	0.254	-0.294	-0.466**	-0.448	0.403*	-0.103	-0.279
	(-2.92)	(1.20)	(-1.55)	(-2.48)	(-1.55)	(1.71)	(-0.48)	(-1.29)
$CASH$	-0.729*	-0.690**	0.080	-0.352	-0.284	-0.764**	0.717*	-0.181
	(-1.91)	(-2.21)	(0.27)	(-1.22)	(-0.55)	(-1.97)	(1.80)	(-0.48)
$CAPINT$	0.722***	-0.124	0.315	0.621***	0.531*	-0.430*	0.168	0.578**
	(2.93)	(-0.62)	(1.62)	(3.01)	(1.84)	(-1.88)	(0.74)	(2.39)
$OPCYCLE$	0.231***	-0.015	-0.073	0.265***	0.036	-0.148*	-0.247***	0.220***
	(3.24)	(-0.27)	(-1.33)	(4.89)	(0.33)	(-1.80)	(-2.97)	(2.67)
$INST$	0.021***	0.005**	0.024***	0.012***	0.018***	0.001	0.024***	0.009***
	(8.13)	(2.10)	(11.63)	(5.38)	(5.84)	(0.28)	(10.23)	(3.64)
$BLOCK$	-0.015**	-0.021***	-0.022***	-0.003	-0.034***	-0.033***	-0.038***	-0.012
	(-2.18)	(-3.51)	(-4.01)	(-0.53)	(-3.35)	(-4.11)	(-4.75)	(-1.57)
$HERF$	-10.073**	7.278	5.048	-14.107***	-3.832	12.783***	7.135*	-10.325**
	(-2.56)	(1.64)	(1.54)	(-3.38)	(-0.85)	(2.68)	(1.94)	(-2.11)
Constant	-0.157	0.946*	5.407***	2.516***	13.856***	10.167***	15.692***	8.836**
	(-0.25)	(1.85)	(11.24)	(5.04)	(2.77)	(2.87)	(4.19)	(2.47)
Industry/year/country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4322	4322	4322	4322	3802	3802	3802	3802
Adjusted R^2	0.160	0.229	0.116	0.213	0.149	0.239	0.122	0.209

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.6: Stock price reaction to beating or missing earnings forecasts

This table reports the results from regressing the cumulative abnormal return (CAR) around earnings announcement events on measures of target beating and earnings management. $SBEAT$ is a dummy variable that takes a value of one when a firm reports unexpected earnings at or above zero, but within two cents from the consensus forecast $[0:2\rangle$, and zero otherwise. In turn, $SMISS$ is a dummy variable that takes a value of one when unexpected earnings are below zero, but within two cents of the consensus forecast $[-2:0\rangle$. Accrual-based earnings management (AEM) is measured by the difference between actual total accruals (TA) and the estimated values from an expectation model. REM is an aggregate measure of the three measures of real earnings management, calculated as the sum of the three z-scored REM proxies: $REM_{i,t} = Z[ACFO_{i,t}] + Z[APROD_{i,t}] + Z[ASGA_{i,t}]$. CAR is the three-day abnormal return, cumulated from one trading day before to one trading day after the earnings announcement, and estimated using a market model over a [-210,-10] day window preceding the earnings announcement. SUE is computed by subtracting the median consensus forecasts from the actual earnings per share, and deflating by the stock price. Controls are included for the effect of forecast accuracy, size, growth, leverage and risk on CAR and the accompanying ERC. Independent variables are standardized. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. $DISP$ is winsorized at the 99th percentile. All variables are defined in Appendix A.

Dependent variable:	CAR (%)		
Model:	OLS		
	(1)	(2)	(3)
$SBEAT$	0.524**	0.431**	0.452**
	(2.51)	(2.43)	(2.03)
$SMISS$	-0.874***	-0.765***	-0.851***
	(-3.57)	(-3.51)	(-3.23)
AEM	0.100		-0.095
	(0.93)		(-0.89)
REM	0.172**		0.008
	(2.50)		(0.08)
SUE		1.217***	1.298***
		(7.90)	(7.07)
$DISP$	0.186*	0.115	0.270**
	(1.90)	(1.21)	(2.44)
EST	-0.151	-0.247**	-0.153
	(-1.29)	(-2.44)	(-1.24)
$ln[MV]_{t-1}$	0.066	-0.106	-0.005
	(0.60)	(-1.18)	(-0.04)
BTM	-0.151	-0.128	-0.141
	(-1.53)	(-1.48)	(-1.29)
LEV	-0.141	-0.005	-0.081
	(-1.49)	(-0.06)	(-0.77)
$BETA$	0.143	0.019	0.086
	(1.40)	(0.22)	(0.81)
$SUE \times DISP$		0.019	-0.176**
		(0.18)	(-2.51)
$SUE \times EST$		0.318***	0.176
		(2.72)	(1.36)
$SUE \times ln[MV]_{t-1}$		-0.145	-0.020
		(-1.07)	(-0.11)
$SUE \times BTM$		-0.247***	-0.182***
		(-4.66)	(-3.15)
$SUE \times LEV$		-0.417***	-0.403***
		(-3.92)	(-3.32)
$SUE \times BETA$		0.033	-0.018
		(0.39)	(-0.13)
Constant	0.419	0.578	0.335
	(0.34)	(1.10)	(0.49)
Industry/year/country FE	Yes	Yes	Yes
Observations	5885	7668	5885
Adjusted R^2	0.008	0.029	0.028

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.7: Short-horizon investor ownership and sensitivity to earnings surprises

This table reports the results from regressing the cumulative abnormal return (CAR) around earnings announcement events on TR, and the interaction term $SUE \times TR$. TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. Accrual-based earnings management (AEM) is measured by the difference between actual total accruals (TA) and the estimated values from an expectation model. REM is an aggregate measure of the three measures of real earnings management, calculated as the sum of the three z-scored REM proxies: $REM_{i,t} = Z[ACFO_{i,t}] + Z[APROD_{i,t}] + Z[ASGA_{i,t}]$. CAR is the three-day abnormal return, cumulated from one trading day before to one trading day after the earnings announcement, and estimated using a market model over a [-210,-10] day window preceding the earnings announcement. SUE is computed by subtracting the median consensus forecasts from the actual earnings per share, and deflating by the stock price. Controls are included for the effect of forecast accuracy, size, growth, leverage and risk on CAR and the accompanying ERC. Additional controls are added, and interacted with SUE to control for ownership characteristics. Independent variables are standardized. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

Dependent variable:	CAR (%)		
Model:	OLS		
	(1)	(2)	(3)
TR	-0.340**	-0.336**	
	(-2.40)	(-2.36)	
$SUE \times TR$	-0.250*	-0.303**	-0.286**
	(-1.96)	(-2.43)	(-2.26)
$BEAT$			1.607**
			(2.22)
$MISS$			-0.476
			(-0.66)
$BEAT \times TR$			-0.226
			(-1.43)
$MISS \times TR$			-0.505**
			(-2.58)
AEM	-0.044	-0.074	-0.083
	(-0.42)	(-0.68)	(-0.76)
REM	-0.019	-0.020	0.000
	(-0.18)	(-0.19)	(0.00)
SUE	1.337***	1.343***	0.438*
	(6.05)	(5.78)	(1.90)
$INST$		-0.217	-0.214
		(-1.16)	(-1.16)
$BLOCK$		-0.084	-0.083
		(-0.38)	(-0.38)
$HERF$		0.387	0.365
		(1.28)	(1.22)
$SUE \times INST$		0.527*	0.355
		(1.68)	(1.29)
$SUE \times BLOCK$		-0.108	-0.226
		(-0.22)	(-0.47)
$SUE \times HERF$		-0.284	0.038
		(-0.46)	(0.06)
Constant	0.362	0.397	
	(0.53)	(0.55)	
Unreported controls	Yes	Yes	Yes
Industry/year/country FE	No	Yes	Yes
Observations	5066	5066	5066
Adjusted R^2	0.023	0.024	0.048

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.8: Portfolio sorts on investor turnover

This table reports the results from regressing monthly excess returns (in percentages) of value-weighted long and long-short portfolios on common factors for the period 2000 – 2016. The portfolios are sorted on investor turnover (TR), which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. The first four columns present regression results for the bottom TR quintile portfolio, whilst the subsequent four columns do so for the upper quintile. The long-short portfolio goes long in the bottom quintile (i.e., the long-term portfolio) and short in the upper quintile (i.e., the short-term portfolio). The portfolios are size-diversified (i.e., each of the portfolios consists of an equal amount of small and big stocks) and rebalanced in June, with a minimum of 6 months between the rebalancing date and the end of the bookyear. For each portfolio, FF3F represents the Fama and French (1993) 3-Factor model, where MRP depicts the market risk premium, SMB the 'small-minus-big' factor and HML the 'high-minus-low factor'. In specification FFCF, the Carhart (1997) momentum factor (MOM), is added. FF5F is the Fama and French (2015) 5-factor model, which includes the CMA ('conservative-minus-aggressive') and RMW ('robust-minus-weak') factors. The 7-Factor specification is an aggregate of the previous models, with the addition of the 'quality-minus-junk' factor, as put forward by Asness et al. (2014); which takes into account profitability, payout, safety and growth as indicators of quality. Constant signifies the portfolio returns over and above what is projected in the models.

	Long-horizon quintile				Short-horizon quintile				Long-short			
	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor
MRP	1.103***	1.062***	1.100***	1.077***	1.213***	1.123***	1.152***	0.996***	-0.110*	-0.060	-0.052	0.081
	(36.66)	(32.53)	(30.87)	(25.00)	(27.08)	(23.71)	(22.48)	(16.63)	(-1.94)	(-0.96)	(-0.79)	(1.01)
SMB	0.358***	0.375***	0.350***	0.388***	0.330***	0.367***	0.328***	0.256**	0.028	0.009	0.023	0.132
	(4.70)	(5.02)	(4.48)	(4.79)	(2.91)	(3.38)	(2.91)	(2.27)	(0.20)	(0.06)	(0.16)	(0.87)
HML	-0.202***	-0.218***	-0.160	-0.195*	-0.226**	-0.266**	-0.401***	-0.507***	0.024	0.048	0.241	0.312*
	(-2.78)	(-3.05)	(-1.57)	(-1.94)	(-2.09)	(-2.57)	(-2.73)	(-3.63)	(0.18)	(0.35)	(1.28)	(1.67)
MOM		-0.116***		-0.152***		-0.256***		-0.085		0.139*		-0.067
		(-2.95)		(-2.93)		(-4.47)		(-1.18)		(1.84)		(-0.69)
CMA			-0.049	0.090			-0.091	0.171			0.042	-0.081
			(-0.42)	(0.74)			(-0.54)	(1.01)			(0.20)	(-0.36)
RMW			0.058	0.204			-0.619***	0.096			0.677***	0.108
			(0.48)	(1.25)			(-3.54)	(0.42)			(3.03)	(0.36)
QMJ				-0.006				-0.725***				0.718***
				(-0.04)				(-3.65)				(2.70)
Constant	-0.564***	-0.425***	-0.580***	-0.502***	0.185	0.480**	0.506**	0.861***	-0.749***	-0.905***	-1.086***	-1.363***
	(-3.74)	(-2.76)	(-3.55)	(-2.99)	(0.82)	(2.14)	(2.15)	(3.68)	(-2.63)	(-3.06)	(-3.61)	(-4.35)
Observations	204	204	204	204	204	204	204	204	204	204	204	204
Adjusted R^2	0.888	0.893	0.887	0.893	0.812	0.829	0.823	0.843	0.007	0.019	0.046	0.075

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.9: Portfolio sorts on measures associated with corporate short-termism

This table reports the results from regressing monthly excess returns (in percentages) of value-weighted long and long-short portfolios on common factors for the period 2000 – 2016. The portfolios are sorted on different measures associated with short-termism at the firm-level. Panel A depicts the portfolio sorts on proxies for AEM and REM. In turn, panel B depicts sorts related to investment. Lastly, panel C presents sorts on ESG scores. The portfolios are size-diversified (i.e., each of the portfolios consists of an equal amount of small and big stocks) and rebalanced in June, with a minimum of 6 months between the rebalancing date and the end of the bookyear. Throughout, the long-short portfolio's are chosen such that they are long in the portfolio considered long-term, and short in the portfolio considered short-term. ESG data becomes available around the second half of 2006, hence the regressions that employ ESG data are only conducted for the sample period 2007 – 2016. The Carhart (1997) model specification includes the common risk factors; MRP depicts the market risk premium, SMB the 'small-minus-big' factor, HML the 'high-minus-low factor' and MOM the momentum factor. Constant signifies the return over and above what is projected in the model. All sorting variables are defined in Appendix A.

Panel A: Earnings management sorts

	Factor loadings						
	MRP	SMB	HML	MOM	Constant	Obs.	Adj. R^2
High $\lvert AEM \rvert$	1.059***	0.571***	0.034	-0.187***	-0.483**	204	0.813
	(25.17)	(5.88)	(0.43)	(-3.58)	(-2.25)		
Low $\lvert AEM \rvert$	1.027***	0.452***	-0.183**	-0.079	0.175	204	0.766
	(21.41)	(4.09)	(-2.05)	(-1.33)	(0.72)		
Low-high	-0.033	-0.119	-0.217*	0.108	0.658*	204	0.033
	(-0.49)	(-0.78)	(-1.76)	(1.31)	(1.95)		
High REM	1.178***	0.922***	-0.203	-0.380***	-0.386	204	0.741
	(17.06)	(5.79)	(-1.58)	(-4.43)	(-1.10)		
Low REM	0.976***	0.434***	-0.357***	-0.141**	0.389	204	0.754
	(18.16)	(3.50)	(-3.56)	(-2.11)	(1.42)		
Low-high	-0.203***	-0.488***	-0.154	0.239**	0.775**	204	0.068
	(-2.67)	(-2.79)	(-1.09)	(2.54)	(2.01)		

Panel B: Investment sorts

	Factor loadings						
	MRP	SMB	HML	MOM	Constant	Obs.	Adj. R^2
High $CAPEX$	1.093***	0.525***	-0.031	-0.125**	-0.231	204	0.798
	(24.78)	(5.16)	(-0.37)	(-2.28)	(-1.03)		
Mid $CAPEX$	1.034***	0.288***	-0.184***	-0.144***	0.362**	204	0.890
	(35.65)	(4.30)	(-3.40)	(-4.01)	(2.45)		
Low $CAPEX$	1.056***	0.406***	-0.043	-0.098***	-0.030	204	0.904
	(38.12)	(6.36)	(-0.84)	(-2.84)	(-0.21)		
Mid-low	-0.022	-0.118	-0.140*	-0.047	0.392*	204	0.020
	(-0.52)	(-1.22)	(-1.79)	(-0.89)	(1.83)		
High $UINV$	1.048***	0.631***	-0.057	-0.208***	-0.288	204	0.809
	(24.77)	(6.48)	(-0.72)	(-3.97)	(-1.34)		
Low $UINV$	1.051***	0.459***	-0.183***	-0.241***	0.057	204	0.907
	(37.70)	(7.14)	(-3.53)	(-6.96)	(0.40)		
Low-high	0.004	-0.172	-0.127	-0.033	0.346	204	0.031
	(0.07)	(-1.52)	(-1.38)	(-0.54)	(1.38)		

Panel C: ESG sorts

	Factor loadings						
	MRP	SMB	HML	MOM	Constant	Obs.	Adj. R^2
High ESG	1.060***	0.271**	0.072	-0.091	-0.197	114	0.889
	(24.24)	(2.46)	(0.66)	(-1.43)	(-0.90)		
Low ESG	1.114***	0.405***	-0.195**	-0.172***	0.160	114	0.936
	(33.49)	(4.83)	(-2.35)	(-3.57)	(0.96)		
High-low	-0.054	-0.134	0.268**	0.082	-0.357	114	0.044
	(-1.09)	(-1.07)	(2.16)	(1.13)	(-1.44)		

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C.10: Portfolio sorts on the corporate horizon index

This table reports the results from regressing monthly excess returns (in percentages) of value-weighted long and long-short portfolios on common factors for the period 2000 – 2016. The portfolios are sorted on the corporate horizon index (CHI), which is obtained by computing the principle component of measures of corporate short-termism (see section 4.3.1). The first four columns present regression results for the bottom CHI quintile portfolio, whilst the subsequent four columns do so for the upper quintile. The long-short portfolio goes long in the bottom quintile (i.e., the long-term portfolio) and short in the upper quintile (i.e., the short-term portfolio). The portfolios are size-diversified (i.e., each of the portfolios consists of an equal amount of small and big stocks) and rebalanced in June, with a minimum of 6 months between the rebalancing date and the end of the bookyear. For each portfolio, FF3F represents the Fama and French (1993) 3-Factor model, where MRP depicts the market risk premium, SMB the 'small-minus-big' factor and HML the 'high-minus-low factor'. In specification FFCF, the Carhart (1997) momentum factor (MOM), is added. FF5F is the Fama and French (2015) 5-factor model, which includes the CMA ('conservative-minus-aggressive') and RMW ('robust-minus-weak') factors. The 7-Factor specification is an aggregate of the previous models, with the addition of the 'quality-minus-junk' factor, as put forward by Asness et al. (2014); which takes into account profitability, payout, safety and growth as indicators of quality. Constant signifies the portfolio returns over and above what is projected in the models.

	Long-horizon quintile				Short-horizon quintile				Long-short			
	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor
MRP	1.112***	1.044***	1.086***	1.033***	1.298***	1.175***	1.140***	1.090***	-0.186**	-0.131	-0.054	-0.057
	(26.38)	(23.43)	(21.60)	(17.09)	(20.06)	(17.43)	(15.03)	(11.89)	(-2.41)	(-1.56)	(-0.58)	(-0.50)
SMB	0.351***	0.414***	0.362***	0.420***	0.902***	1.017***	0.825***	0.928***	-0.551***	-0.603***	-0.463**	-0.508**
	(3.36)	(4.04)	(3.48)	(3.82)	(5.62)	(6.55)	(5.25)	(5.57)	(-2.88)	(-3.12)	(-2.39)	(-2.42)
HML	-0.362***	-0.430***	-0.613***	-0.719***	-0.046	-0.169	-0.132	-0.268	-0.316**	-0.261*	-0.481**	-0.451*
	(-4.32)	(-5.17)	(-4.84)	(-5.63)	(-0.36)	(-1.35)	(-0.69)	(-1.39)	(-2.06)	(-1.67)	(-2.05)	(-1.85)
MOM		-0.209***		-0.172**		-0.380***		-0.262**		0.170		0.090
		(-3.80)		(-2.55)		(-4.56)		(-2.56)		(1.64)		(0.70)
CMA			0.178	0.370**			-0.404	-0.162			0.582*	0.531
			(1.08)	(2.16)			(-1.63)	(-0.62)			(1.91)	(1.62)
RMW			-0.584***	-0.296			-1.006***	-0.690**			0.422	0.394
			(-3.50)	(-1.40)			(-4.00)	(-2.15)			(1.36)	(0.97)
QMJ				-0.169				-0.101				-0.067
				(-0.87)				(-0.34)				(-0.18)
Constant	0.303	0.507**	0.556**	0.679***	-0.847**	-0.477	-0.244	-0.118	1.150***	0.983**	0.801*	0.797*
	(1.32)	(2.22)	(2.31)	(2.78)	(-2.41)	(-1.38)	(-0.67)	(-0.32)	(2.74)	(2.29)	(1.79)	(1.70)
Observations	204	204	204	204	204	204	204	204	204	204	204	204
Adjusted R^2	0.774	0.788	0.785	0.796	0.677	0.706	0.704	0.715	0.074	0.081	0.085	0.085

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Robustness

Table D.1: IV-Procedure: First-stage regressions with index exclusions

This table presents an additional robustness test to Table C.1 by examining whether firms deleted from the MSCI Europe index also experience a change in institutional investor turnover (TR). $ADDITION$ is a dummy variable which takes the value of one if a firm is added to the MSCI index in a particular year, and 0 otherwise. $DELETION$ is a dummy variable which takes the value of one if a firm is deleted from the MSCI index in a particular year, and 0 otherwise. Data on MSCI Europe index constituent changes is only available for the period 2006 – 2016, hence the 2SLS regressions are conducted for this subsample only. F-Statistic is the Kleibergen and Paap (2006) F-Statistic of the instrument. # Events is the number of inclusion or exclusion events in the final sample. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. Industry, year and country fixed effects are included. Standard errors are clustered by industry-year. All variables are defined in Appendix A.

Dependent variable:	TR		
Model:	OLS		
	(1)	(2)	(3)
$ADDITION$	0.012***	0.013***	0.013***
	(3.95)	(4.25)	(3.97)
$DELETION$	0.002	-0.002	-0.000
	(0.94)	(-1.00)	(-0.21)
$ln[MV]$		-0.008***	-0.007***
		(-21.17)	(-18.17)
BTM			-0.004***
			(-3.54)
ROA			-0.015**
			(-2.04)
LEV			0.006*
			(1.78)
$CASH$			0.017***
			(3.57)
$CAPINT$			-0.001
			(-0.38)
$OPCYCLE$			-0.003***
			(-3.67)
$INST$		-0.000	-0.000
		(-1.51)	(-0.49)
$BLOCK$		-0.000***	-0.000***
		(-3.01)	(-2.62)
$HERF$		0.099	0.051
		(1.10)	(0.22)
Constant	0.192***	0.252***	0.163***
	(10.69)	(13.39)	(20.03)
Industry/year/country FE	Yes	Yes	Yes
Observations	6638	6638	5754
Adjusted R^2	0.248	0.293	0.304
# Events (MSCI addition)	157	157	157
F-statistics (MSCI addition)	15.74	18.05	15.78
# Events (MSCI deletion)	136	136	136
F-statistics (MSCI deletion)	0.88	1.00	0.04

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.2: IV-Procedure: Local average treatment effect

This table provides an additional robustness test by reporting regression results after partitioning the sample in firm-year observations with, and without MSCI Europe index inclusions. This approach allows comparison of the coefficient magnitudes between the two partitions. The main variable of interest is TR, which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. Only a small number of firm-year observations is available with index inclusions, which leads to a lack of precision in the estimates. Hence, for brevity, only regressions are presented that yield statistically significant TR coefficient estimates across both partitions. The regression specifications are identical to columns (1) and (3) of Table C.2, column (4) of Table C.3 and column (1) of Table C.5. ESG information is obtained from MSCI ESG research. Controls are included for ownership and firm-specific characteristics that are associated with earnings management. For $NETBEAT$, additional forecast accuracy controls are included. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

Dependent variable:	$\|AEM\|$		$APROD$		$NETBEAT$		ESG	
Model:	OLS		OLS		OLS		OLS	
Sample:	With MSCI inclusion	Without MSCI inclusion	With MSCI inclusion	Without MSCI inclusion	With MSCI inclusion	Without MSCI inclusion	With MSCI inclusion	Without MSCI inclusion
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TR	0.208**	0.054***	1.772**	0.120**	-3.541**	0.454**	-4.310	-0.627
	(2.05)	(2.63)	(2.65)	(2.07)	(-2.35)	(2.34)	(-0.99)	(-0.48)
TR_{t-1}	0.006	0.028	0.262	0.056	-0.919	-0.376*	-5.486**	-4.133***
	(0.07)	(1.48)	(0.50)	(1.11)	(-1.29)	(-1.95)	(-2.27)	(-3.22)
$ln[MV]$	-0.016***	-0.006***	0.019	-0.020***	0.045	0.001	0.410	0.611***
	(-2.67)	(-9.39)	(0.50)	(-13.73)	(0.48)	(0.14)	(0.74)	(16.92)
BTM	-0.026**	-0.015***	-0.037	0.001	0.127	-0.006	0.198	0.218**
	(-2.15)	(-6.91)	(-0.68)	(0.40)	(0.90)	(-0.34)	(0.19)	(2.47)
ROA	-0.022	0.026	0.155	0.142***	-0.695	0.172	-0.129	-0.631
	(-0.59)	(1.13)	(0.92)	(3.82)	(-1.29)	(1.45)	(-0.05)	(-1.04)
LEV	0.007	0.012	-0.048	-0.033*	-0.932***	-0.065	0.751	-0.777***
	(0.31)	(1.50)	(-0.42)	(-1.89)	(-2.91)	(-1.27)	(0.40)	(-3.05)
$CASH$	0.065**	0.064***	0.178	-0.046**	0.127	-0.150**	-1.606	-0.765**
	(2.52)	(6.48)	(1.29)	(-2.48)	(0.32)	(-2.15)	(-0.66)	(-1.97)
$CAPINT$	0.017	-0.014**	0.200**	-0.035***	-0.657*	-0.020	-0.904	0.759***
	(0.74)	(-2.25)	(2.19)	(-3.08)	(-1.82)	(-0.39)	(-0.47)	(3.06)
$OPCYCLE$	0.012	0.003	0.003	-0.034***	-0.308***	-0.040***	0.597	0.231***
	(0.87)	(1.60)	(0.13)	(-8.45)	(-2.64)	(-2.76)	(1.22)	(3.16)
$INST$	0.000	-0.000*	-0.001	-0.000**	0.004	0.002***	0.044*	0.021***
	(0.55)	(-1.67)	(-1.01)	(-2.01)	(0.94)	(3.32)	(1.71)	(7.83)
$BLOCK$	-0.001	-0.000	0.004	0.001**	-0.011	-0.003	-0.144**	-0.015**
	(-1.37)	(-0.39)	(1.21)	(2.57)	(-1.05)	(-1.57)	(-2.18)	(-2.23)
$HERF$	0.089	0.264**	-1.478	-0.312*	7.019	1.057	43.887	-9.710**
	(0.28)	(2.01)	(-0.73)	(-1.70)	(0.95)	(1.19)	(1.46)	(-2.46)
$DISP$					0.354	0.512***		
					(0.25)	(2.60)		
EST					-0.002	-0.001		
					(-0.21)	(-0.72)		
Constant	0.103	0.062***	-0.358	0.435***	1.050	0.263*	-1.613	-0.352
	(1.08)	(4.27)	(-0.98)	(13.03)	(0.80)	(1.79)	(-0.23)	(-0.54)
Industry/year/country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	152	5098	110	4218	137	5153	121	4201
Adjusted R^2	0.006	0.151	0.145	0.112	0.234	0.021	0.268	0.162

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.3: Earnings management and sensitivity to earnings surprises

This table presents an additional robustness test to Table C.7, by reporting the results from regressing the cumulative abnormal return (CAR) around earnings announcement events on TR, and the interaction term $SUE \times TR$, with additional interaction terms between proxies of earnings management and SUE. TR acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. Accrual-based earnings management (AEM) is measured by the difference between actual total accruals (TA) and the estimated values from an expectation model. REM is an aggregate measure of the three measures of real earnings management, calculated as the sum of the three z-scored REM proxies: $REM_{i,t} = Z[ACFO_{i,t}] + Z[APROD_{i,t}] + Z[ASGA_{i,t}]$. CAR is the three-day abnormal return, cumulated from one trading day before to one trading day after the earnings announcement, and estimated using a market model over a [-210,-10] day window preceding the earnings announcement. SUE is computed by subtracting the median consensus forecasts from the actual earnings per share, and deflating by the stock price. Controls are included for the effect of forecast accuracy, size, growth, leverage and risk on CAR and the accompanying ERC. Additional controls are added, and interacted with SUE to control for ownership characteristics. Independent variables are standardized. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. All variables are defined in Appendix A.

Dependent variable:	CAR (%)	
Model:	OLS	
	(1)	(2)
TR	-0.332***	
	(-2.61)	
$SUE \times TR$	-0.327**	-0.294*
	(-2.11)	(-1.76)
$BEAT$		1.524***
		(2.62)
$MISS$		-0.485
		(-0.83)
$BEAT \times TR$		-0.229*
		(-1.70)
$MISS \times TR$		-0.495***
		(-2.63)
$\|AEM\|$	0.038	0.021
	(0.41)	(0.23)
REM	-0.037	-0.013
	(-0.43)	(-0.16)
SUE	1.511***	0.577**
	(6.19)	(2.24)
$SUE \times \|AEM\|$	-0.356***	-0.229**
	(-3.33)	(-2.33)
$SUE \times REM$	0.243*	0.261*
	(1.90)	(1.81)
Constant	0.337	
	(0.58)	
Unreported controls	Yes	Yes
Industry/year/country FE	Yes	Yes
Observations	5066	5066
Adjusted R^2	0.027	0.049

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.4: Additional governance mechanisms and corporate decision-making

This table reports the results of OLS regressions with different measures associated with earnings management (panel A), target beating (panel B), capital allocation (panel C) and ESG performance (panel D) as dependent variables. Variables $INSID$, $GOVOE$, $FOUNDLED$ and $NEWCEO$ are added to the standard regression specifications, to capture the effect of insider ownership, government ownership, founder leadership and CEO turnover, respectively. The main variable of interest is TR, which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. The specifications are identical to those depicted in tables C.2, C.3, C.4 and C.5. For brevity, controls are not reported. To mitigate the impact of outliers, continuous variables are Winsorized at the top and bottom 1 percentiles. The exact first-stage regression procedures and variable definitions are further explained in Appendix A.

Panel A: Short-horizon investor ownership and earnings management

Dependent variable:	$\lvert AEM \rvert$	$ACFO$	$APROD$	$ASGA$
Model:	OLS			
	(1)	(2)	(3)	(4)
TR	0.055***	0.019	0.132**	0.088*
	(2.62)	(1.02)	(2.18)	(1.80)
TR_{t-1}	0.040**	0.054***	0.114**	0.043
	(2.01)	(3.18)	(2.17)	(1.05)
$INSID$	0.000	0.000	-0.000	-0.000
	(0.59)	(1.06)	(-1.57)	(-0.30)
$FOUNDLED$	-0.006*	-0.004	-0.014**	-0.004
	(-1.70)	(-1.46)	(-2.15)	(-0.64)
$NEWCEO$	-0.004	0.001	0.008	0.007
	(-0.67)	(0.26)	(0.63)	(0.53)
$GOVEO$	-0.021***	-0.007	-0.021**	-0.015**
	(-4.69)	(-1.34)	(-2.10)	(-2.00)
Constant	0.055***	0.001	0.380***	0.174***
	(3.80)	(0.13)	(9.98)	(4.96)
Unreported controls	Yes	Yes	Yes	Yes
Industry/year/country FE	Yes	Yes	Yes	Yes
Observations	4113	4010	3239	2933
Adjusted R^2	0.154	0.096	0.116	0.128

Panel B: Short-horizon investor ownership and target beating

Dependent variable:	$LOSSAVOID$	$SMISS$	$SBEAT$	$NETBEAT$
Model:	PROBIT			OLS
	(1)	(2)	(3)	(4)
TR	1.325*	-2.354*	2.509**	0.784***
	(1.72)	(-1.92)	(2.32)	(2.80)
TR_{t-1}	-0.216	1.393	-1.216	-0.368
	(-0.22)	(1.23)	(-1.05)	(-1.33)
$INSID$	0.002	-0.003**	-0.001	0.000
	(0.95)	(-2.02)	(-0.88)	(0.80)
$FOUNDLED$	-0.228	0.202	0.091	-0.015
	(-0.96)	(1.28)	(0.57)	(-0.30)
$NEWCEO$	0.230	-0.447	-0.054	0.038
	(0.83)	(-1.44)	(-0.23)	(0.74)
$GOVEO$	-0.169	-0.321	0.267	0.094
	(-1.12)	(-0.90)	(1.02)	(1.24)
Constant	-1.042*	-0.425	-0.556	-0.037
	(-1.69)	(-0.53)	(-0.68)	(-0.23)
Unreported controls	Yes	Yes	Yes	Yes
Industry/year/country FE	Yes	Yes	Yes	Yes
Observations	5027	4030	4030	4030
Adjusted R^2				0.020
Pseudo R^2	0.125	0.057	0.085	

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel C: Short-horizon investor ownership and capital allocation

Dependent variable:	$CAPEX$	$R\&D$	$\Delta R\&D$	$REPUR$	DIV
Model:	OLS				
	(1)	(2)	(3)	(4)	(5)
TR	-0.006	-0.003	-0.007*	0.038**	-0.048***
	(-0.48)	(-0.34)	(-1.68)	(2.37)	(-2.99)
TR_{t-1}	-0.018	-0.002	-0.008	0.040**	-0.025*
	(-1.47)	(-0.24)	(-1.32)	(2.46)	(-1.66)
$INSID$	-0.000	-0.000	0.000	0.000	0.001
	(-1.01)	(-0.58)	(0.76)	(0.85)	(0.46)
$FOUNDLED$	-0.006	0.002*	0.001	-0.004**	0.000
	(-0.92)	(1.69)	(1.38)	(-2.14)	(0.14)
$NEWCEO$	-0.001	0.002	-0.000	0.002	-0.002
	(-0.20)	(0.66)	(-0.07)	(0.57)	(-0.64)
$GOVEO$	-0.004	-0.008***	-0.001**	-0.006	-0.001
	(-1.10)	(-4.28)	(-2.02)	(-1.57)	(-0.12)
Constant	0.032***	-0.027***	0.004	-0.057***	0.027*
	(3.73)	(-4.23)	(1.39)	(-5.28)	(1.88)
Unreported controls	Yes	Yes	Yes	Yes	Yes
Industry/year/country FE	Yes	Yes	Yes	Yes	Yes
Observations	4272	4261	2874	4092	4263
Adjusted R^2	0.437	0.432	0.072	0.179	0.282

Panel D: Short-horizon investor ownership and ESG scores

Dependent variable:	ESG	ENV	SOC	GOV
Model:	OLS			
	(1)	(2)	(3)	(4)
TR	-1.698	-0.185	-1.625*	0.259
	(-1.42)	(-0.18)	(-1.80)	(0.27)
TR_{t-1}	-4.113***	-0.087	-0.816	-2.660***
	(-3.67)	(-0.09)	(-0.84)	(-3.01)
$INSID$	0.006***	0.003**	-0.002	0.003**
	(3.70)	(2.28)	(-1.11)	(2.50)
$FOUNDLED$	-0.035	-0.111	0.191	0.109
	(-0.22)	(-0.71)	(1.55)	(0.82)
$NEWCEO$	0.051	-0.074	-0.110	0.044
	(0.22)	(-0.35)	(-0.53)	(0.21)
$GOVEO$	-1.733***	-1.121***	-0.777***	-1.273***
	(-7.79)	(-4.67)	(-3.11)	(-6.42)
Constant	-0.014	1.043**	5.405***	2.593***
	(-0.02)	(2.03)	(11.26)	(5.22)
Unreported controls	Yes	Yes	Yes	Yes
Industry/year/country FE	Yes	Yes	Yes	Yes
Observations	4120	4120	4120	4120
Adjusted R^2	0.166	0.231	0.118	0.217

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.5: Portfolio sorts on investor turnover with additional liquidity factor and recession indicator

This table presents an additional robustness test to Table C.8 by including a liquidity factor (LIQ), as well as a recession indicator (REC) to the standard regression specifications. Liquidity portfolio returns are obtained from Styleresearch, who sort on the basis of 3-month share turnover. Data on liquidity portfolio returns becomes available at the start of 2001, hence the regressions are only conducted for the sample period 2001 – 2016. As in Lam and Tam (2011), the 'high-minus-low' liquidity factor is calculated as the return of a size-diversified portfolio of high liquidity stocks (i.e., top 30%) minus the low liquidity stocks (i.e., bottom 30%). Individual country recession indicators are obtained from the Economic Cycle Research Institute (ECRI), and weighted according to the average total market value of each country (see Table B.2). The results are obtained by regressing monthly excess returns (in percentages) of value-weighted long and long-short portfolios on common factors. The portfolios are sorted on investor turnover (TR), which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. The first four columns present regression results of the bottom TR quintile portfolio, whilst the subsequent four columns do so for the upper quintile. The long-short portfolio goes long in the bottom quintile (i.e., the long-term portfolio) and short in the upper quintile (i.e., the short-term portfolio). The portfolios are size-diversified (i.e., each of the portfolios consists of an equal amount of small and big stocks) and rebalanced in June, with a minimum of 6 months between the rebalancing date and the end of the bookyear. For each portfolio, FF3F represents the Fama and French (1993) 3-Factor model, where MRP depicts the market risk premium, SMB the 'small-minus-big' factor and HML the 'high-minus-low factor'. In specification FFCF, the Carhart (1997) momentum factor (MOM), is added. FF5F is the Fama and French (2015) 5-factor model, which includes the CMA ('conservative-minus-aggressive') and RMW ('robust-minus-weak') factors. The 7-Factor specification is an aggregate of the previous models, with the addition of the 'quality-minus-junk' factor, as put forward by Asness et al. (2014); which takes into account profitability, payout, safety and growth as indicators of quality. Constant signifies the portfolio returns over and above what is projected in the models.

	Long-horizon quintile				Short-horizon quintile				Long-short			
	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor
MRP	1.069***	1.057***	1.068***	1.081***	1.059***	1.039***	1.067***	1.000***	0.010	0.018	0.001	0.081
	(28.46)	(27.93)	(27.33)	(25.03)	(20.13)	(19.66)	(19.46)	(16.56)	(0.14)	(0.25)	(0.01)	(0.99)
SMB	0.370***	0.383***	0.363***	0.420***	0.319***	0.341***	0.335***	0.294***	0.050	0.042	0.028	0.126
	(4.89)	(5.09)	(4.72)	(5.22)	(3.02)	(3.24)	(3.11)	(2.61)	(0.35)	(0.29)	(0.19)	(0.82)
HML	-0.197***	-0.210***	-0.121	-0.133	-0.210**	-0.233**	-0.327**	-0.431***	0.013	0.023	0.206	0.299
	(-2.78)	(-2.94)	(-1.21)	(-1.31)	(-2.11)	(-2.34)	(-2.33)	(-3.04)	(0.10)	(0.17)	(1.09)	(1.54)
MOM		-0.084*		-0.145***		-0.138**		-0.078		0.053		-0.067
		(-1.93)		(-2.80)		(-2.26)		(-1.07)		(0.64)		(-0.68)
CMA			0.010	0.097			0.059	0.183			-0.049	-0.086
			(0.08)	(0.79)			(0.35)	(1.07)			(-0.22)	(-0.37)
RMW			0.226*	0.190			-0.257	0.080			0.482*	0.111
			(1.71)	(1.18)			(-1.38)	(0.35)			(1.94)	(0.36)
QMJ				0.192				-0.479**				0.671**
				(1.17)				(-2.09)				(2.15)
LIQ	0.120**	0.072	0.168***	0.171**	0.416***	0.338***	0.370***	0.212**	-0.296***	-0.266**	-0.202*	-0.041
	(2.28)	(1.25)	(2.75)	(2.37)	(5.64)	(4.20)	(4.31)	(2.10)	(-2.98)	(-2.41)	(-1.75)	(-0.30)
REC	1.010	0.917	0.908	0.615	0.623	0.485	0.687	0.638	0.388	0.432	0.221	-0.023
	(1.61)	(1.47)	(1.43)	(0.97)	(0.71)	(0.56)	(0.77)	(0.72)	(0.33)	(0.36)	(0.19)	(-0.02)
Constant	-0.716***	-0.616***	-0.783***	-0.733***	0.254	0.409	0.328	0.601**	-0.970**	-1.025***	-1.111***	-1.334***
	(-3.56)	(-3.01)	(-3.83)	(-3.48)	(0.90)	(1.43)	(1.14)	(2.04)	(-2.56)	(-2.62)	(-2.89)	(-3.33)
Observations	192	192	192	192	192	192	192	192	192	192	192	192
Adjusted R^2	0.892	0.894	0.893	0.896	0.840	0.844	0.840	0.846	0.042	0.039	0.051	0.065

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.6: Portfolio sorts on the corporate horizon index with additional recession indicator

This table presents an additional robustness test to Table C.10 by adding a recession indicator (REC) to the standard regression specifications. To compute REC, individual country recession indicators are obtained from the Economic Cycle Research Institute (ECRI), and weighted according to the average total market value of each country (see Table B.2). The results are obtained by regressing monthly excess returns (in percentages) of value-weighted long and long-short portfolios on common factors for the period 2000 – 2016. The portfolios are sorted on the corporate horizon index (CHI), which is obtained by computing the principle component of measures of corporate short-termism (see section 4.3.1). The first four columns present regression results of the bottom CHI quintile portfolio, whilst the subsequent four columns do so for the upper quintile. The long-short portfolio goes long in the bottom quintile (i.e., the long-term portfolio) and short in the upper quintile (i.e., the short-term portfolio). The portfolios are size-diversified (i.e., each of the portfolios consists of an equal amount of small and big stocks) and rebalanced in June, with a minimum of 6 months between the rebalancing date and the end of the bookyear. For each portfolio, FF3F represents the Fama and French (1993) 3-Factor model, where MRP depicts the market risk premium, SMB the 'small-minus-big' factor and HML the 'high-minus-low factor'. In specification FFCF, the Carhart (1997) momentum factor (MOM), is added. FF5F is the Fama and French (2015) 5-factor model, which includes the CMA ('conservative-minus-aggressive') and RMW ('robust-minus-weak') factors. The 7-Factor specification is an aggregate of the previous models, with the addition of the 'quality-minus-junk' factor, as put forward by Asness et al. (2014); which takes into account profitability, payout, safety and growth as indicators of quality. Constant signifies the portfolio returns over and above what is projected in the models.

	Long-horizon quintile				Short-horizon quintile				Long-short			
	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor	FF3F	FFCF	FF5F	7-Factor
MRP	1.122***	1.053***	1.093***	1.039***	1.293***	1.165***	1.138***	1.083***	-0.171**	-0.112	-0.045	-0.044
	(25.93)	(22.98)	(21.50)	(16.96)	(19.42)	(16.79)	(14.80)	(11.65)	(-2.15)	(-1.30)	(-0.47)	(-0.38)
SMB	0.364***	0.424***	0.372***	0.426***	0.896***	1.007***	0.822***	0.921***	-0.532***	-0.583***	-0.450**	-0.495**
	(3.46)	(4.11)	(3.55)	(3.86)	(5.53)	(6.44)	(5.19)	(5.50)	(-2.76)	(-3.00)	(-2.31)	(-2.35)
HML	-0.356***	-0.424***	-0.599***	-0.708***	-0.049	-0.175	-0.136	-0.281	-0.307**	-0.249	-0.464*	-0.427*
	(-4.24)	(-5.08)	(-4.71)	(-5.49)	(-0.38)	(-1.39)	(-0.71)	(-1.44)	(-2.00)	(-1.59)	(-1.96)	(-1.73)
MOM		-0.206***		-0.169**		-0.383***		-0.265**		0.176*		0.096
		(-3.74)		(-2.50)		(-4.58)		(-2.58)		(1.70)		(0.74)
CMA			0.163	0.356**			-0.399	-0.146			0.562*	0.502
			(0.99)	(2.06)			(-1.60)	(-0.56)			(1.83)	(1.52)
RMW			-0.582***	-0.301			-1.007***	-0.684**			0.425	0.383
			(-3.49)	(-1.42)			(-3.99)	(-2.12)			(1.37)	(0.94)
QMJ				-0.163				-0.107				-0.056
				(-0.84)				(-0.36)				(-0.15)
REC	1.013	0.808	0.908	0.605	-0.458	-0.838	-0.289	-0.701	1.471	1.646	1.196	1.306
	(1.06)	(0.87)	(0.97)	(0.66)	(-0.31)	(-0.60)	(-0.20)	(-0.50)	(0.84)	(0.95)	(0.69)	(0.75)
Constant	0.097	0.340	0.375	0.555*	-0.754	-0.304	-0.187	0.026	0.852	0.644	0.561	0.529
	(0.32)	(1.14)	(1.23)	(1.80)	(-1.64)	(-0.67)	(-0.41)	(0.06)	(1.55)	(1.15)	(0.99)	(0.90)
Observations	204	204	204	204	204	204	204	204	204	204	204	204
Adjusted R^2	0.874	0.888	0.885	0.895	0.776	0.806	0.803	0.814	0.072	0.081	0.090	0.083

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.7: In-sample segmentation according to Hofstede's time-dimension

This table presents additional robustness tests to Tables C.8 and C.10 by performing an in-sample country segmentation, on the basis of the 'long-versus short-term orientation' (LTO) dimension by Hofstede (1993). The results are obtained by regressing monthly excess returns (in percentages) of value-weighted long and long-short portfolios on common factors for the period 2000 – 2016. Panel A lists the two sub-samples. Panel B reports sorts on investor turnover (TR), which acts as a proxy for investor horizons and is calculated as the weighted average of the individual portfolio churn rates of a firm's institutional investors. Panel C reports sorts on the corporate horizon index (CHI), which is obtained by computing the principle component of measures of corporate short-termism (see section 4.3.1). The long-short portfolios go long in the bottom quintiles (i.e., the long-term portfolios) and short in the upper quintiles (i.e., the short-term portfolios). The portfolios are size-diversified (i.e., each of the portfolios consists of an equal amount of small and big stocks) and rebalanced in June, with a minimum of 6 months between the rebalancing date and the end of the bookyear. The Carhart (1997) model specification includes the common risk factors; MRP depicts the market risk premium, SMB the 'small-minus-big' factor, HML the 'high-minus-low factor' and MOM the momentum factor. Constant signifies the return over and above what is projected in the model. Data on the country scores is obtained from Hofstede's website.

Panel A: Segmentation on Hofstede's long-term orientation dimension

High LTO countries		Low LTO countries	
Country	LTO score	Country	LTO score
Germany	83	Hungary	58
Belgium	82	Sweden	53
Estonia	82	Romania	52
Switzerland	74	United Kingdom	51
Czech rep	70	Slovenia	49
Bulgaria	69	Spain	48
Netherlands	67	Greece	45
Luxembourg	64	Finland	38
France	63	Poland	38
Italy	61	Norway	35
Austria	60	Denmark	35
Croatia	58	Portugal	28
		Ireland	24

Panel B: Portfolio sorts on investor turnover

	High LTO countries			Low LTO countries		
	Low TR	High TR	Low-high	Low TR	High TR	Low-high
MRP	1.093***	1.144***	-0.051	1.017***	1.079***	-0.062
	(25.99)	(15.63)	(-0.60)	(25.09)	(14.90)	(-0.72)
SMB	0.387***	0.578***	-0.191	0.204**	0.454***	-0.251
	(4.01)	(3.45)	(-0.98)	(2.19)	(2.74)	(-1.27)
HML	-0.160*	-0.797***	0.637***	-0.361***	-0.144	-0.217
	(-1.74)	(-4.98)	(3.41)	(-4.07)	(-0.91)	(-1.15)
MOM	-0.185***	-0.426***	0.240**	-0.076	-0.381***	0.305***
	(-3.64)	(-4.81)	(2.33)	(-1.55)	(-4.35)	(2.93)
Constant	-0.312	0.523	-0.835**	-0.173	0.556	-0.729*
	(-1.57)	(1.51)	(-2.07)	(-0.90)	(1.63)	(-1.80)
Observations	204	204	204	204	204	204
Adjusted R^2	0.851	0.787	0.060	0.822	0.788	0.082

Panel C: Portfolio sorts on the corporate horizon index

	High LTO countries			Low LTO countries		
	Low CHI	High CHI	Low-high	Low CHI	High CHI	Low-high
MRP	1.092***	1.192***	-0.100	0.842***	1.199***	-0.357***
	(22.14)	(14.99)	(-1.05)	(15.53)	(13.96)	(-3.45)
SMB	0.584***	0.825***	-0.241	0.048	1.052***	-1.003***
	(5.14)	(4.51)	(-1.10)	(0.39)	(5.32)	(-4.22)
HML	-0.385***	0.101	-0.486***	-0.013	-0.196	0.183
	(-4.19)	(0.68)	(-2.74)	(-0.13)	(-1.22)	(0.95)
MOM	-0.183***	-0.318***	0.135	-0.133**	-0.378***	0.245*
	(-2.99)	(-3.23)	(1.15)	(-1.98)	(-3.56)	(1.92)
Constant	0.473*	-0.065	0.537*	0.202	-0.681	0.883*
	(1.87)	(-0.76)	(1.70)	(0.73)	(-1.55)	(1.67)
Observations	204	204	204	204	204	204
Adjusted R^2	0.865	0.735	0.058	0.724	0.704	0.142

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$