The Signaling Role of Seemingly Myopic Investment Behavior

Finance Working Paper N° 862/2022
December 2022

Cyrus Aghamolla
University of Minnesota

Vivian W. Fang
University of Minnesota and ECGI

Renhui Fu
Shanghai Jiaotong University

ECGI Working Paper Series in Finance

The Signaling Role of Seemingly Myopic Investment Behavior

Working Paper N° 862/2022

December 2022

Cyrus Aghamolla
Vivian W. Fang
Renhui Fu

We thank Rajiv Banker, Pingyang Gao, Cam Harvey, Jon Glover, Wei Jiang, Chris Schwarz, Richard Thakor, Zheng Wang, TJ Wong, Gaoqing Zhang, and seminar participants at the Central University of Finance and Economics, Chinese University of Hong Kong, Peking University, and Shanghai Jiao Tong University for helpful comments. We are grateful to Todd Houge and Jay Wellman for sharing the list of implicated fund families during the 2003 mutual fund trading scandal.

Abstract

This paper exploits the 2003 mutual fund trading scandal to investigate firms' seemingly myopic investment behavior following negative stock price shocks. Firms affected by the scandal are more likely to meet or marginally beat earnings targets by cutting research and development and other investment. This behavior is greeted with a more favorable market reaction and analyst forecast revision to earnings surprise and a speedier price reversal following the scandal. These findings are predictably stronger among firms with greater information asymmetry, suggesting that cutting investment to boost earnings can be a signaling tool for temporarily underpriced firms to convey financial health.

Keywords: Myopia, Signaling, Investment, Mutual Fund Trading Scandals of 2003

JEL Classifications: G23, G31, G34, M41

Cyrus Aghamolla
Associate Professor
University of Minnesota
420 Delaware St. SE
Minneapolis, MN 55455, USA
phone: 612-624-5753
e-mail: caghamol@umn.edu

Vivian W. Fang*
Professor of Accounting
University of Minnesota, Carlson School of Management
321 19th Avenue South
Minneapolis, MN 55455, United States
phone: +1 612 301 9288
e-mail: fangw@umn.edu

Renhui Fu
Associate Professor
Shanghai Jiaotong University
1954 Huashan Road
Shanghai, Shanghai 200030, China
e-mail: renhuifu@sjtu.edu.cn

*Corresponding Author

The Signaling Role of Seemingly Myopic Investment Behavior

Cyrus Aghamolla
University of Minnesota

Vivian W. Fang
University of Minnesota, ECGI

Renhui Fu
Shanghai Jiao Tong University

December 1, 2022

Abstract

This paper exploits the 2003 mutual fund trading scandal to investigate firms' seemingly myopic investment behavior following negative stock price shocks. Firms affected by the scandal are more likely to meet or marginally beat earnings targets by cutting research and development and other investment. This behavior is greeted with a more favorable market reaction and analyst forecast revision to earnings surprise and a speedier price reversal following the scandal. These findings are predictably stronger among firms with greater information asymmetry, suggesting that cutting investment to boost earnings can be a signaling tool for temporarily underpriced firms to convey financial health.

JEL classifications: G23; G31; G34; M41

Keywords: Myopia; Signaling; Investment; Mutual Fund Trading Scandals of 2003

We thank Rajiv Banker, Pingyang Gao, Cam Harvey, Jon Glover, Wei Jiang, Chris Schwarz, Richard Thakor, Zheng Wang, TJ Wong, Gaoqing Zhang, and seminar participants at the Central University of Finance and Economics, Chinese University of Hong Kong, Peking University, and Shanghai Jiao Tong University for helpful comments. We are grateful to Todd Houge and Jay Wellman for sharing the list of implicated fund families during the 2003 mutual fund trading scandal. Aghamolla is at caghamol@umn.edu, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455; Fang is at fangw@umn.edu, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455; Fu is at renhuifu@sjtu.edu.cn, Antai College of Economics & Management, Shanghai Jiao Tong University, Shanghai, 200030, China.

The Signaling Role of Seemingly Myopic Investment Behavior

1. Introduction

Myopia (or short-termism) is a long-debated issue in U.S. corporate circles. Recently, the debate has come to the forefront of U.S. politics with regulators rushing to offer remedies for corporate myopia.[1] At the center of this debate are two issues. The first issue is whether corporate myopia exists. Survey evidence reports that U.S. companies face constant pressure to beat quarterly earnings targets and may yield to this pressure by cutting positive NPV projects, i.e., the so-called "quarterly capitalism" (e.g., Graham, Harvey, and Rajgopal (2005); Barton and Wiseman (2014); Tang and Greenwald (2016); McKinsey Co. (2017)). Recent studies provide large-scale evidence of myopic investment behavior (e.g., Edmans, Fang, and Lewellen (2017); Kraft, Vashishtha, and Venkatachalam (2018); Ladika and Sautner (2020)). The weight of this evidence suggests that the behavior of cutting (or delaying) research and development (R&D) and other long-term investment to boost short-term profits indeed exists in U.S. companies, at least under certain circumstances.

The second, and perhaps more important, issue is whether the observed behavior is myopic, i.e., boosting short-term profits at the expense of sacrificing long-term value. Here, evidence is much less conclusive. Empirically, Edmans, Fang, and Huang (2022) find that short-term stock price concerns induce CEOs to engage in value-decreasing share repurchases and M&A. Giannetti and Yu (2021), however, show that myopia can be efficient for firms operating in highly competitive environments. In view of the limited evidence, some researchers caution against going too far in reforming quarterly capitalism (e.g., Roe (2013); Summers (2017); Kaplan (2018)).

[1] For example, former presidential candidate Hillary Clinton proposed raising capital gains taxes for investments held for less than six years in 2016. In August 2018, former president Donald Trump asked the U.S. Securities and Exchange Commission (SEC) to investigate moving public companies from a quarterly to a semi-annual reporting cycle. Both had a stated objective of combatting corporate short-termism.

This paper adds to the second discussion by investigating whether seemingly myopic corporate actions can carry an *informative* role. Specifically, we seek to shed light on the following question: Might conventionally perceived myopic behavior, such as cutting R&D and other investment to meet or beat earnings targets, help convey private information about the firm?

We begin by building an analytical framework to motivate our empirical analyses, which weds features of the managerial myopia model of Stein (1989) with the signaling model of Spence (1973). Similar to Stein (1989), the framework features a dynamic (two-period) model in which the firm manager may "borrow" from the future (second period), such as by cutting R&D, to inflate earnings in the present (first period). Differing from Stein (1989), the framework introduces a negative stock price shock to the firm in the first period with some probability. This shock, if it occurs, causes information asymmetry: while the manager privately knows the nature of the shock, the market may construe it as either permanent (i.e., reflecting future performance) or transitory (i.e., temporary and unrelated to firm fundamentals).

Following a negative price shock, it is imperative for the manager to meet or beat the market's expectations by delivering strong performance at the earnings announcement, even at the expense of cutting investment, because doing so sends a signal to the market that the firm is not in serious financial distress for future periods (i.e., the shock is transitory). While all firms could benefit from such signaling, their costs to signal differ: cutting investment is arguably cheaper for a firm that is hit by a transitory shock, since the firm's long-run fundamental performance is minimally affected. In contrast, cutting investment can be extremely costly for a firm that is impacted by a permanent shock at a time when it is critical for the firm to devote resources to developing a new focus or direction.

The above discussion leads to our first prediction that firms with negative transitory price shocks in a quarter are more likely to meet or beat earnings targets set for the quarter by cutting R&D and other investment than firms without. A firm has an incentive to restore its price following a negative shock because a low price, even if transitory, can bear real effects (Bond, Edmans, and Goldstein (2012)). One way to boost price is to signal financial health by delivering strong profit at the earnings announcement at the cost of cutting investment; as discussed, this way of signaling is difficult for firms with permanent shocks to mimic because an investment cut would be too costly for them.

The second prediction follows that firms with transitory shocks elicit a stronger sensitivity of market reaction and analyst forecast revision to their earnings surprises, as well as a faster price reversal following the shocks upon beating earnings targets than firms without.[2] If investment cuts serve as credible signals that allow firms with transitory shocks to separate themselves from other firms, the market should anticipate this in rational expectations. Even though market participants may be uncertain as to the nature of an observed negative shock due to information asymmetry, investors update their beliefs that the shock to a firm is more likely transitory than permanent upon observing the firm meeting or beating its earnings target. This updating implies an upward revision in share price and expectations of future performance, which should be stronger for firms with transitory shocks.

The third prediction directly speaks to the signaling mechanism. Signaling is more valuable when the market has a less precise prior belief about the firm's fundamentals, as the market must

[2] Because the stock price-to-performance sensitivity is greater in the presence of a negative price shock, an investment cut may maximize the aggregate stock price across both periods because the increase in the first period's price due to boosted earnings can more than offset the decrease in the second period's price due to the real efficiency loss from investment distortion.

rely more heavily on new information released by the firm. If a negative price shock motivates the firm to use investment cuts and meet earnings targets to signal its financial health, we expect such motivation to be stronger in the presence of greater information asymmetry; that is, both the firm's propensity to signal and the value of signaling should increase with information asymmetry.

In testing the predictions, we exploit the 2003 mutual fund trading scandal to capture negative price shocks. From September 2003 to October 2004, a number of mutual fund companies were investigated by the Securities and Exchange Commission (SEC) and the New York Attorney General for illegal trading practices. These funds were accused of facilitating "late trading," "market timing trading," and "front-running" for selected clients, thus giving the "favored" investors a chance to profit from short-term trading schemes before other investors.[3] The investigation indicted a total of 25 mutual fund families and led to settlements of over $3.1 billion in fines and restitution.

Tainted fund families saw a significant negative market reaction upon disclosure of the regulatory inquires (Houge and Wellman (2005)) and experienced significant outflows well into the post-scandal period (Houge and Wellman (2005); Kisin (2011); Potter and Schwarz (2012)). This scandal provides a unique setting to test our predictions because price pressure induced by fire sales at the tainted funds could very well be transitory for their holding firms, but it may be difficult for the market to disentangle such price pressure from negative fundamental information because of information asymmetry (Huang, Ringgenberg, and Zhang (2022)). Moreover, the

[3] "Late trading" refers to the practice of allowing traders to purchase fund shares after market close (4:00 PM in the U.S.) at the closing price for that day. The law (such as Rule 22c-1 under the Investment Company Act) disallows this type of trading because it gives late traders an unfair advantage over the long-term investors of the fund (i.e., post-close market trades can be based on new developments that occurred after market closure).). "Market timing trading" occurs when a fund permits only selected clients to trade more frequently than specified in its fund documents and prospectus and thus profit from short-term market movements, while it typically bars or limits frequent trading. "Front running" occurs when a fund alerts selected clients and partners about its plan to buy or sell a large stock position so they can trade before the fund.

announcement dates of the investigations vary across mutual fund families. Features of this scandal allow us to minimize the impact of potential contemporaneous macroeconomic or industry shocks and more cleanly identify firms impacted only by the scandal-induced negative price pressure.

The price pressure induced by redemptions at the tainted funds shortly after the scandal is unlikely to be related to changes in their holding firms' fundamentals or management for two reasons. First, these funds were implicated for illegal trading practices and differential treatment of clients, which do not directly involve their holding firms. Second, these practices were unlikely to be known to firm management, and the investigation and revelation of such practices are outside of the firm's control and arguably exogenous. We code two measures to capture this price pressure. The first measure sums up a firm's ownership held by the 4,408 mutual funds tainted by the scandal (as a percentage of the firms' shares outstanding) after the scandal surfaced. The second measure denotes whether this ownership is above the median of the subsample of firms with positive ownership after the scandal surfaced.

To sharpen our identification strategy, we limit the analyses to a sample period of six years from 2000Q3-2006Q3, thus including three years before and after the quarter during which the scandal broke. Consistent with the first prediction, we find a significant positive association between both measures of price pressure and the propensity to meet or marginally beat earnings targets. A one-standard-deviation increase in the ownership by the tainted funds is associated with an increase of 0.34% in the likelihood of meeting or beating the analyst consensus earnings per share (EPS) forecast by up to one cent, which constitutes an increase of 2.1% relative to the sample mean likelihood. Moreover, firms with an above-median positive ownership held by the tainted funds in September 2003 are associated with a 0.8% greater likelihood of meeting or marginally beating the analyst consensus EPS forecast (5.1% of the mean) than those without.

Further, both measures of price pressure are positively associated with investment reduction: a one-standard-deviation increase in the ownership by the tainted funds in September 2003 is associated with a decline of 0.04% and 0.11% in the quarterly R&D-to-assets and total investment-to-assets growth rates, corresponding to an annualized decline of $5.2 and $14.3 million for the sample average firm, respectively. The indicator denoting above-median positive ownership by the tainted funds is associated with a decline of 0.2% and 0.4% in the quarterly R&D-to-assets and total investment-to-assets growth rates, corresponding to an annualized decline of $26 and $52 million for the average firm, respectively. Interestingly, while firms with better performance are less likely to cut investment on average, they are more inclined to do so if they have a larger ownership held by the tainted funds. Combined, these findings suggest that negative price shocks increase managers' incentives to beat earnings targets, partly through cutting investment, at least when their firms are financially sound.

Furthermore, consistent with the second prediction, we find that the market reacts more strongly to a firm's earnings surprise at the earnings announcement in the quarters following the scandal if the firm had a larger ownership held by the tainted funds (using either measure of ownership). We also observe a higher sensitivity of the subsequent analyst forecast revision for the next fiscal year to an earnings surprise of the current quarter if the firm had a larger ownership held by the tainted funds, but only for the subsample of firm-quarters that meet or beat the analyst consensus EPS forecast. We then study whether a higher sensitivity of market reaction and analyst forecast revision to earnings surprises for this subsample of firms are justified by their subsequent stock performance. We build a focal group, consisting of firms that have an above-median positive ownership by the tainted funds and meet or marginally beat the analyst consensus forecast following the negative price shock (i.e., firms likely hit by transitory shocks). On average, firms

in this group experience a price drop of 3.1% in the first quarter immediately following the shock but prior to the earnings announcement. We find that the share prices restore within three quarters for these firms after meeting or beating targets at the earnings announcement. For comparison, we also build two benchmark groups with comparable prior returns *but* marginally miss the analyst consensus forecast: the first group is pulled from firms with a below-median ownership by the tainted funds (i.e., firms unlikely hit by transitory shocks) and the second group from firms with an above-median ownership (i.e., firms likely hit by permanent shocks). Unlike the focal group, we observe no significant price reversals for either benchmark group. The results are thus consistent with the market perceiving meeting or beating by firms under negative price pressure as a credible signal of financial health.

Finally, we show that both the positive association between measures of price pressure and the firm's propensity to meet or marginally beat earnings targets and the positive association between measures of price pressure and investment reduction are stronger for firms with greater information asymmetry. We measure information asymmetry using either the average daily price impact (e.g., Amihud (2002)) or the readability of the firms' financial statements in a quarter (using an index built following Coleman and Liau (1975)). In the presence of greater information asymmetry, we also observe a higher sensitivity of market reaction and analyst forecast revision to earnings surprises by firms that are more affected by the scandal when they manage to meet or marginally beat earning targets. These results are thus consistent with the third prediction and help rationalize the behavior of using investment cuts to signal financial health: if information asymmetry about negative price shocks cannot be easily resolved, the value gains from signaling can outweigh the costs associated with investment cuts.

This paper makes three contributions to the literature. First, it adds to the prevalent debate about corporate myopia. While most theories focus on the negative consequences of myopia (e.g., Stein (1988, 1989); Bebchuk and Stole (1993); Bizjak, Brickley, and Coles (1993); Goldman and Slezak (2006); Benmelech, Kandel, and Veronesi (2010); Edmans, Gabaix, Sadzik, and Sannikov (2012); Marinovic and Varas (2019)), some point out that short-termism may also be efficient (e.g., Hackbarth, Rivera, and Wong (2022); Thakor (2021); Aghamolla and Hashimoto (2022)). Empirical studies examining the value-implications of myopia are scant. Edmans, Fang, and Huang (2022) document long-term value losses from repurchases and M&A induced by short-term price concerns. Giannetti and Yu (2021), however, document a case of efficient short-termism in competitive industries. Closer to Giannetti and Yu (2021), our study shows that the seemingly myopic investment behavior helps restore downward price shocks following mutual fund fire sales and can thus be efficient.

Second, this paper complements prior studies that link mutual fund fire sales (or purchases) to corporate decisions and outcomes. Our headline finding is that financially sound firms are willing to cut investment to meet or beat earnings targets in quarters following negative price shocks because doing so allows such firms to signal financial health and accelerate price reversal. To the best of our knowledge, this finding is the first in the literature to highlight the potential benefit of real manipulation in the presence of fire sales. In contrast, although three prior studies also find a link between investment cuts and fire sales, they either offer no particular explanation (Kisin (2011)) or view such cuts as a negative consequence of heightened financial constraints or less informative prices (Hau and Lai (2013); Lou and Wang (2018)).[4]

[4] The two latter studies establish the link using the mutual fund fire sale-based measure of underpricing, which is a common practice in this literature. Wardlaw (2020), however, points out that this measure may be a function of the stock's actual realized return during the outflow quarter and thus raises doubt about its exogeneity. Our measure of

Finally, our results highlight a signaling role of corporate investment decisions. Signaling, a tool fundamentally designed to communicate and reduce information asymmetry, has been formally studied since Spence (1973). In the context of corporate use of cash flows, prior studies have mostly focused on examining dividends and share repurchases as signals of future performance (Bhattacharya (1979); John and Williams (1985); Miller and Rock (1985); Babenko, Tserlukevich, and Vedrashko (2012); Wu (2018)). Our results suggest that investment, arguably a firm's most important day-to-day decision, may also be used as a credible signaling device when it is distorted to meet earnings targets.

2. Conceptual Framework and Hypothesis Development

This section outlines a simple theoretical framework to develop empirical hypotheses (see Appendix A for more details). Consider a two-period setting ($t \in \{1, 2\}$). The firm has assets in place with value V and generates stationary persistent earnings $e_t = e^n$ for both periods.[5]

At the beginning of the first period ($t = 1$), the firm experiences a negative price shock δ with probability $\gamma \in (0,1)$; "*NS-firm*" denotes firms that are not impacted by the shock. The market observes if the firm is initially affected by the shock but is uncertain as to the nature of the shock. In particular, the market assigns a probability of $\lambda \in (0,1)$ that the shock affects firm fundamentals (i.e., firm liquidation value is $V - \delta$ at the end of $t = 2$ for those affected by a *permanent* shock, "*PS-firm*") and a probability of $1 - \lambda$ that the shock does not affect firm fundamentals (i.e., firm liquidation value reverts to V by the end of $t = 2$ for those affected by

underpricing, derived from the 2003 mutual fund trading scandal, is less subject to this concern. Nevertheless, for robustness, we show that our results are qualitatively similar using the mutual fund fire sale-based measure.

[5] For simplicity, we assume that earnings are persistent to abstract away from other myopic incentives. Allowing for stochastic earnings or different types of firms to have a different underlying distribution of earnings adds complexity but would not substantively affect the insights of the model. See Appendix A for additional details.

a *transitory* shock, "*TS-firm*"). The manager privately knows the nature of the shock but cannot credibly communicate this information to the market, as such disclosure may be deemed "cheap talk" if unverifiable.

At the end of the first period, the market sets the firm's stock price P_1 based on the firm's reported earnings e_1 and its posterior beliefs. Understandably, the manager at either a *PS-firm* or a *TS-firm* has an incentive to deliver strong performance at the earnings announcement to help restore the firm's stock price, because a low price, even if temporary, can adversely affect firm operations and the manager's personal wealth. The manager may inflate the current period's earnings e_1 by borrowing from the next period's earnings e_2, such as in the form of an investment cut. The amount of borrowing, denoted by b, carries a cost of $c(b,\theta)$ on the second-period's earnings e_2, where θ is firm type (*PS-* or *TS-firm*); we assume that this cost increases with b (i.e., $\frac{dc(b,\theta)}{db} > 0$). At the end of the second period ($t = 2$), the market sets the firm's stock price P_2 based on the firm's reported earnings e_2 and its posterior beliefs (allowing e_2 to be lower for *PS-firms* would not affect our inferences). The manager chooses the optimal amount of borrowing, b^*, to maximize a weighted average of the two periods' stock prices.

The way that we model myopia (i.e., borrowing from future earnings at a cost) closely follows Stein (1989), but the two models differ in that we assume the marginal cost of cutting investment, $c(b,\theta)$, is lower for *TS-firms* than for *PS-firms*. This assumption—often referred to as the single-crossing property in signaling models (e.g., Spence (1973))—sets our model apart from Stein (1989) and allows the manager's borrowing from future earnings to convey information.[6] To illustrate this assumption, consider a situation where a *PS-firm* faces shrinking demand for its

[6] As such, this borrowing behavior is potentially value-enhancing in our model. In contrast, it is unambiguously value-destroying in Stein (1989) because it only leads to a deadweight loss.

products, thus leading to lower expected future cash flows. Since it is a critical time for the firm to spend on R&D and other expenditures to make product improvements, cutting investment in the present quarter to meet an earnings target is extremely costly and may perpetuate the declining performance. In comparison, cutting R&D and other investment for a *TS-firm* is not as costly, as doing so would not reverberate strongly in future periods. In other words, the *TS-firm* can afford to cut R&D and other investment to beat the earnings target whereas the *PS-firm* may not. Section 4.1 presents empirical evidence that sheds light on the validity of this assumption.

The model generates three hypotheses; formal details are provided in Appendix A:

Hypothesis 1*: TS-firms are more likely to meet or beat earnings targets by cutting R&D and other investment than PS- and NS-firms.*

Hypothesis 2*: The upward revision in share price and expectations of future performance upon meeting or beating earnings targets is stronger for TS-firms than for PS- and NS-firms.*

Hypothesis 1 is a direct implication of the key assumption that borrowing from future earnings through an investment cut is less costly for *TS-firms* than for *PS-firms*. To see *Hypothesis 2*, note that the market should conjecture the manager's borrowing behavior by rational expectations. By engaging in the costly action of cutting R&D and other investment, a *TS-firm* credibly signals that it is in good financial health. Again, the credibility comes from the assumption that it is less costly for *TS-firms* to cut investment, making it difficult for *PS-firms* to mimic. In the presence of information symmetry (i.e., $\lambda \in (0,1)$), the market is uncertain as to whether an observed negative price shock was transitory or permanent. Upon the firm meeting or beating the earnings target, market participants update their posterior beliefs that the shock was more likely transitory than permanent, even if meeting or beating was achieved in part through cutting investment. This belief updating implies an upward revision in share price and expectations of future performance.

The model also generates an interesting cross-sectional hypothesis. Intuitively, if it is true that the manager of the *TS-firm* strives to convey information by meeting or beating the earnings target through an investment cut, this incentive is amplified if the market is less certain about the nature of the shock to begin with. We formally state this hypothesis below.

Hypothesis 3*: The propensity of TS-firms to meet or beat earnings targets by cutting R&D and other investment and the upward revision in share price and expectations of future performance upon them meeting or beating earnings targets are both stronger when there is greater information asymmetry about the nature of the price shock.*

Before turning to empirical analyses, we note that our model solves a separating equilibrium in which only a *TS-firm* is able to signal by engaging in costly investment cuts to attain earnings targets. It is possible that a myopic manager of a *PS-firm* personally benefits from reporting higher earnings (e.g., she may have myopic incentives from her compensation contract or career horizon), even though doing so hurts shareholder value. While this kind of mimicry may arise in a partial separating/pooling equilibrium, our hypotheses remain valid as long as a *TS-firm* has a higher likelihood of meeting or beating the earnings target than a *PS-firm*.

3. Data and variable measurement

In this section, we discuss the main variables used in this study. Detailed definitions of all variables are in Appendix B.

3.1 Measuring negative price shock

We identify negative price shocks using the 2003 mutual fund trading scandal. The scandal initially surfaced on September 3, 2003 when New York Attorney General Eliot Spitzer announced issuance of a complaint against Canary Capital Partners LLC for the hedge fund's engagement in

"late trading" in collusion with Bank of America's Nations Funds. Following Spitzer's move, the SEC launched its own investigation into the matter. The far-reaching investigations by Spitzer and the SEC further revealed the illegal trading practices of "late trading," "market timing," and "front running" at a number of mutual funds. The initial announcement dates of the investigation vary across fund companies and span from September 2003 to October 2004. A total of 25 mutual fund families were implicated (see Houge and Wellman (2005, p.134) for the list), nearly all of which settled with Spitzer's office and the SEC between 2004 and 2006.

For the publicly traded asset management firms involved in the scandal, there was a significant negative market reaction upon disclosure of the regulators' formal inquiries. Houge and Wellman (2005) report a three-day announcement return of -5.14% for the average firm. The tainted fund families continued to be penalized by investors well after the scandal initially surfaced. Kisin (2011) estimates that the tainted fund families on average lost 14.1% and 24.3% of their capital within the one- and two-year period post September 2003, respectively. In comparison, fund families that were not tainted observed a respective increase of 5.4% and 12% in flows over the same one- and two-year period. Similarly, Choi and Kahan (2007) document that within a year of the scandal revelations, net redemptions from the tainted fund families reached nearly 20% of pre-scandal assets under management. Potter and Schwarz (2012) show that, from September 2003 to September 2005, funds for which investigations were made public before the end of 2003 experienced a decline in flows of about 1.4% per month, on average.

The significant outflows observed at the tainted fund families (and the downward price pressure induced by investor redemptions) are less likely to be related to changes in their holding firms' fundamentals or management, because these funds were accused of illegal trading practices rather than being blamed for bad performance and such practices were unknown to and unexpected

by firm management. We thus consider these scandals as exogenous shocks to fund outflows, as in Kisin (2011) and Anton and Polk (2014).

We identify an initial sample of 4,408 equity funds that belonged to the 25 tainted mutual fund families from the Thomson Reuters' Mutual Fund Holdings Database. We obtain quarterly portfolio holdings of U.S. domestic equity mutual funds from this database and then merge them with data retrieved from CRSP, Compustat, I/B/E/S, and the SEC Analytics Suite Database. After merging, we arrive at a sample of 4,408 US equity funds that are likely tainted by the scandal.

We define two measures of negative price pressure induced by the outflows at the tainted funds. The first measure, labeled *Tainted Fund Ownership*, aggregates a firm's ownership held by the individual mutual funds that are likely tainted by the scandal (as a percentage of the firms' shares outstanding) for post-scandal quarters; we set the variable to zero for pre-scandal quarters. The second measure, labeled *Above-Median Ownership Y/N*, equals one if the firm's *Tainted Fund Ownership* is above the median of the subsample of firms with positive ownership held by the tainted funds and zero otherwise. These two measures build on the observation that mutual funds that experience large outflows scale down their existing holdings. Indeed, Lou (2012) shows that when facing redemptions, mutual fund managers sell their holdings dollar-for-dollar to meet capital demands. We use these two measures to separate *TS-firms* from *PS-firms* and *NS-firms*.

3.2 Measuring propensity to meet and beat and investment cut

We measure a firm's incentive to beat market expectations using the firms' propensity to meet or marginally beat analyst consensus forecasts at the earnings announcement, as is standard in the literature. Following prior research (e.g., Bhojraj, Hribar, Picconi, and McInnis (2009); Fang, Huang, and Karpoff (2016)), we code an indicator *Meet or Beat≤1ct* to equal one if a firm meets

the analyst consensus EPS forecast or beats it by up to one cent in a quarter and zero otherwise.[7] Reported EPS and analyst EPS forecasts are both retrieved from I/B/E/S.

The statistical discontinuity seen in the distribution of earnings surprise—firms' reported EPS minus the analyst consensus forecasts—indicates a conscious effort by firms to attain earnings targets (Terry (2022)). In making such effort, managers reportedly resort to "decrease discretionary spending" (such as R&D expenditure) and "delay starting a new project" as two preferred tools (Graham, Harvey, and Rajgopal (2005)). To capture this effort, we first compute the negative of the change in R&D expenditures from the same quarter of the prior year and scale it by total assets at the end of the prior quarter; we denote this variable *ΔRD*. We focus on R&D cuts because it has a direct effect on a firm's reported earnings due to the immediate R&D expensing rule under the U.S. GAAP. For robustness, we also use a more comprehensive measure of investment cut, labeled *ΔINV*, the negative seasonally-adjusted quarterly change in the overall net investment (including both R&D and capital expenditures), also scaled by total assets at the end of the prior quarter. Investment data is retrieved from the Compustat quarterly files.[8]

3.3 Measuring market reaction to earnings announcement and analyst forecast revision

To assess how the market perceives meeting and beating by firms that experience negative price shocks, we calculate *CAR*, the firm's two-day market-adjusted abnormal return surrounding its earnings announcement for a given quarter, as the sum of daily abnormal returns over [0, +1], with 0 indicating the announcement day. The daily abnormal return is the firm's daily raw return

[7] Our results are quantitatively similar when we measure the firms' propensity to meet or marginally beat analyst consensus forecasts as the indicator of meeting the analyst consensus EPS forecast or beating it by up to two cents or three cents. However, we find that negative price pressure does not lead to even stronger performance, as defined as beating the analyst consensus EPS forecast by more than three cents. The results are reported in the Internet Appendix.
[8] Although capital expenditures are not expensed, they may depress earnings by increasing depreciation expenses. In addition, they are typically financed through debt, which increases a firm's net interest expenses, reducing earnings, and worsens the firm's solvency ratios, which may enter into market valuations (Edmans, Fang, and Lewellen (2017)). The results based on capital expenditure are robust, as shown in the Internet Appendix.

minus the corresponding return on the CRSP value-weighted index. Firm raw returns and market returns are both from the CRSP daily files.

To assess how the market revises its estimates of a firm's value, we calculate *ALYREV* as the earliest analyst consensus EPS forecast of the firm's earnings of the next fiscal year immediately after the firm's earnings announcement of a quarter minus the latest one immediately before, scaled by the stock price at the end of the quarter. The variable captures how analysts, who represent a group of sophisticated market participants, revise their estimates of the firm's future earnings given the realization of current earnings.

3.4 Controls

Following Fang, Huang, and Karpoff (2016), we include as basic controls: the log of total assets (*SIZE*), return-on-assets ratio (*ROA*), leverage (*LEV*), and market-to-book ratio (*MB*), all measured at the end of quarter *q-1*. In examining the effect of negative price pressure on firms' tendency to meet or marginally beat analyst forecasts, we further include three forecast-related variables of quarter *q*, namely the log of analyst coverage (*ALY_N*), the log of average forecast horizon in days (*ALY_HRZN*), and analyst forecast dispersion (*ALY_DISP*) as in Fang, Huang, and Karpoff (2016). We label basic controls and the three analyst-related variables as *Control1*. In examining the effect of price pressure on investment cuts, we add to the basic controls: Tobin's Q (*Q*) at the end of quarter *q* and quarter *q-1*, firm age as of the year prior to the year of quarter *q* (*AGE*), cash holdings and retained earnings at the end of quarter *q-1* (*CASH* and *RETEARN*), and buy-and-hold abnormal returns over quarter *q*-1 (*BHAR*). For the control variables related to investment cuts, we label them *Control2*.[9] Edmans, Fang, and Lewellen (2017) use these variables

[9] To check for robustness, we use all three sets of variables as controls when examining the impact on the propensity of meeting and beating market consensus and investment behavior and find similar results, as reported in the Internet Appendix.

to control for firms' investment opportunities, profitability, and financial strength. Because of the inclusion of Q variables, we omit *MB* in this specification to avoid multicollinearity. In terms of data sources, we obtain firm financials from the Compustat quarterly files and analyst coverage and forecast properties from I/B/E/S.

3.5 Sample and summary statistics

The main sample spans from September 2000 to September 2006 and contains 82,237 firm-quarter observations. Table 1 reports descriptive statistics for the sample. As shown, funds tainted by the scandal in aggregate hold an average ownership of 0.098% (0.23% in September 2003) and firms with above-median tainted-fund ownership represent 23.8% of the whole sample. The average likelihood of meeting or marginally beating the analyst consensus EPS forecast is 15.7%. The negative quarterly R&D (investment) change-to-assets is -0.05% (-0.07%). The average two-day market-adjusted cumulative returns to earnings announcements is 0.3%. The average analyst forecast revision for the next fiscal year, scaled by quarter-end price, upon observing the quarterly earnings announcement is -0.8%. The average firm in our sample has total assets of $3.26 billion, a return-on-assets of -1%, a leverage ratio of 0.2, a market-to-book ratio of 3.1, and 4.8 analysts following it.

4. Empirical findings

4.1 Negative price pressure, propensity to meet or beat earnings targets, and investment cut

Our first prediction posits that firms with negative transitory price shocks in a quarter are more likely to meet or beat earnings targets set for the quarter by cutting R&D and other investment than firms without (*Hypothesis 1*). We start by studying the relation between the negative price pressure

induced by the 2003 mutual fund trading scandal and firms' propensity to meet or marginally beat earnings targets. We run the following probit model on a panel of firm-quarters:

$$Meet\ or\ Beat \leq 1ct_{i,q} = \alpha + \beta Price\ Pressure_{i,q-1} + \gamma Control1_{i,q} + FE + \varepsilon_{i,q}, \quad (1)$$

where *Meet or Beat ≤ 1ct* denotes whether a firm meets or beats the analyst consensus EPS forecast by up to one cent in fiscal quarter *q*, *Price Pressure* captures the negative price pressure induced by the outflows at the tainted funds (measured using either *Tainted Fund Ownership* or *Above Median Ownership Y/N*) in quarter *q-1*, and *Control1* is discussed in Section 3.4. Equation (1) parallels the main specification of Lou and Wang (2018, p. 183) that links firm investment to price pressure from mutual fund fire sales. We lag the measurement of price pressure relative to the measurement of meet/beat propensity to give firms adequate time to adjust their investment (as in Lou and Wang (2018)). We include industry fixed effects to control for the cross-sectional variation in the likelihood of meeting or marginally beating the analyst consensus forecast at the industry level, and year-quarter fixed effects to control for the intertemporal variation. We do not include firm fixed effects in a probit model due to the incidental parameters problem, which prevents the model from converging. Standard errors are clustered by firm and year-quarter.

Column (1) of Table 2 presents the regression results of estimating equation (1) with price pressure measured using *Tainted Fund Ownership*. Consistent with our prediction, the coefficient estimate on *Tainted Fund Ownership* is positive, significant at the 5% level. The marginal effect indicates that a one-standard-deviation increase in the ownership by the tainted funds in September 2003 is associated with an increase of 0.34% in the likelihood of meeting or beating the analyst consensus EPS forecast by up to one cent (i.e., 0.224 multiplied by the marginal effect 0.015), which represents an increase of 2.1% over the sample mean likelihood (i.e., 0.34% divided by

15.7%). Column (2) of Table 2 presents the results estimating equation (1) replacing *Tainted Fund Ownership* with *Above Median Ownership Y/N*. The marginal effect indicates that firms with above-median implicated-fund ownership are associated with a 0.8% greater likelihood of meeting or marginally beating the analyst consensus EPS forecast than those without—an increase of 5.1% over the sample mean likelihood. These findings indicate that affected firms are more inclined to demonstrate strong performance through meeting or marginally beating earnings benchmarks following negative price pressure.

The signs of the coefficient estimates on controls are mostly consistent with those found in prior literature: return-on-assets, market-to-book, analyst coverage, and forecast horizon are positively related to the likelihood of meeting or marginally beating the analyst consensus forecast, while size, leverage, and forecast dispersion are negatively related to this likelihood.

Graham, Harvey, and Rajgopal (2005) report that firms may cut or delay R&D and other discretionary expenditures to attain earnings goals. The following analysis seeks to more directly link negative price pressure to the firm's tendency to meet or beat earnings goals by cutting R&D and other investment. We run the following ordinary least squares (OLS) regressions:

$$Investment\ Cut_{i,q} = \alpha + \beta Price\ Pressure_{i,q-1} + \gamma Control2_{i,q} + \varepsilon_{i,q}, \quad (2)$$

where the dependent variable, *Investment Cut*, is either *ΔRD* or *ΔINV*, *Price Pressure* is defined as before, and *Control2* is discussed in Section 3.4. Equation (2) parallels the main specification of Edmans, Fang, and Lewellen (2017, p. 2239) that links changes in firm investment to managers' myopic incentives derived from vesting. For this OLS model, we include firm and year-quarter fixed effects and cluster standard errors by firm and year-quarter.

Column (1) of Table 3 reports the regression results of estimating equation (2) with *ΔRD* as the dependent variable and price pressure measured using *Tainted Fund Ownership*. As shown in

the table, *Tainted Fund Ownership* exhibits a positive coefficient estimate, significant at the 1% level. Based on this coefficient, a one-standard-deviation increase in the ownership by the tainted funds in September 2003 is associated with a decline of 0.04% in the quarterly R&D-to-assets growth rate (i.e., 0.224 multiplied by the coefficient estimate 0.002), corresponding to an annualized decline of $5.2 million for the sample average firm (i.e., 0.04% multiplied by the sample average total assets of $3.26 billion and times four). Column (2) of Table 3 reports the regression results of estimating equation (2) with ΔRD as the dependent variable and price pressure measured using *Above Median Ownership Y/N*. This indicator denoting above-median positive ownership by the tainted funds is associated with a decline of 0.2% in quarterly R&D-to-assets, corresponding to an annualized decline of $26 million for the average firm. Columns (3) and (4) repeat the analysis with ΔINV as the dependent variable and find similar results. Based on the reported coefficients, a one-standard-deviation increase in the ownership by the tainted funds in September 2003 is associated with a decline of 0.11% in the quarterly total investment-to-assets growth rate, corresponding to an annualized decline of $14.3 million for the sample average firm. The indicator denoting above-median positive ownership by the tainted funds is associated with a decline of 0.4% in the quarterly investment-to-assets, corresponding to an annualized decline of $52 million for the average firm. These findings suggest that negative price shocks increase managers' incentives to meet or marginally beat earnings targets, at least partly through cutting investment.

While all firms could benefit from beating earnings targets, they bear different costs if they cut investment to do so. As discussed in Section 2, we assume that cutting or delaying investment is less costly for a firm that is hit by a transitory shock than for a firm that is impacted by a permanent shock. This assumption is sensible because, arguably, firms hit by transitory shocks can afford to

temporarily cut or delay investment without severely damaging their long-term fundamentals. To shed light on this assumption, we augment equation (2) by including return-on-assets of the next quarter and its interaction with negative price pressure. Table 4 reports the OLS regression results estimating the augmented specification. Interestingly, firms with better performance are *more* likely to cut investment if they have a larger ownership held by the tainted funds, as the interaction term between either measure of negative price pressure and *ROA* carries a significantly positive coefficient estimate. In other words, firms with stronger fundamentals are more inclined to signal their financial health, which suggests that investment distortions are less costly for these firms.

In summary, the results in this section support our first model prediction and suggest that negative price shocks induced by outflows at the funds tainted by the 2003 trading scandal increase firms' incentives to beat earnings targets, partly through cutting investment.[10]

4.2 Market reaction to earnings announcement

In this section, we examine how the market perceives firms that deliver strong performance versus firms that deliver weak performance at earnings announcements following negative price shocks. As discussed in Section 2, we predict that the market revises its beliefs upward and reacts more strongly upon observing firms meeting their earnings benchmarks following downward price pressure (*Hypothesis 2*).

Specifically, we estimate the following OLS specification:

$$Belief\ Revision_{i,q} = \alpha\ + \beta_1 Price\ Pressure_{i,q-1} \times UEA_{i,q} + \beta_2 Price\ Pressure_{i,q-1} + \beta_3 UEA_{i,q} + \gamma Controls_{i,q} + \varepsilon_{i,q}, \quad (3)$$

[10] We also regress *Meet or Beat ≤ 1ct* on a measure of discretionary accruals and finds that managing accruals does not help meeting or beating, as reported in the Internet Appendix. This is consistent with Cohen, Dey, and Lys's (2008) finding of a significant shift from accruals management to changes in investment and other discretionary expenditures after the passage of the Sarbanes-Oxley Act of 2002, suggesting that changes in investment are more relevant during our sample period. Graham, Harvey, and Rajgopal (2005) also find that "most earnings management is achieved via real actions as opposed to accounting manipulations" after Sarbanes-Oxley.

where the dependent variable, *Belief Revision*, represents the market revision in beliefs about a firm immediately following the firm's earnings announcement. We define two measures of belief revision. The first measure is the two-day cumulative abnormal return for a firm following the earnings announcement in quarter q (denoted *CAR*), which reflects the aggregate belief revision by general market participants. The second measure is the change in the analyst consensus earnings forecast for the next fiscal year immediately following the firm's earnings announcement, which reflects the belief revision by more sophisticated market participants. *Price Pressure* is defined as above, representing either a continuous ownership variable or an above-median ownership indicator. *UEA* denotes the "unexpected" earnings for a firm in a quarter, i.e., the difference between the reported earnings and the latest analyst consensus forecast. Of particular interest is β_1, the coefficient estimate on the interaction between *Price Pressure* and UEA, which aims to capture the incremental market belief revision for a firm impacted by the price shock conditional on its level of unexpected earnings. We continue to include firm and year-quarter fixed effects and cluster standard errors by firm and year-quarter.

Tables 5 presents the results using the first measure of belief revision, cumulative abnormal returns immediately following the earnings announcement. In columns (1) and (2), we estimate equation (3) using our two measures of price pressure for the full sample. As the table shows, β_1, the coefficient estimate of interest, is positive and significant at the 1% level in both columns, which suggests that, on average, the market reacts more strongly to the unexpected earnings of firms impacted by the scandal-induced negative price pressure.

We then repeat this analysis partitioning the sample on whether firms meet earnings targets at quarterly announcements. We reestimate equation (3) using the subsample of firms that meet or beat earnings targets (*NoMiss* = 1) in columns (3)-(4) and the subsample of firms that miss earnings

targets (*NoMiss* = 0) in columns (5)-(6). As shown, β_1 is significantly positive only for the first subsample (and becomes larger in magnitude) but turns statistically insignificant for the second subsample; the difference in β_1 between columns (3) and (5) and that between columns (4) and (6) are both significant at the 1% level. Results from this subsample analysis suggest that the market reaction is more pronounced for firms that were impacted by the scandal-induced negative price pressure than for firms that were not impacted, but only when the former manage to meet or beat market expectations. In other words, the fact that a firm is hit by a negative price shock but still manages to meet or exceed earnings targets sends a signal of its being a *TS-firm* and the market revises its beliefs accordingly. On the contrary, missing earnings does not entail a significant belief revision for impacted firms relative to those that were not impacted by the scandal. This suggests that the market is assigning a non-trivial probability that a firm undergoing negative price pressure without meeting expectations is a *PS-firm*. Together, these results suggest that meeting and beating the analyst consensus forecast (a commonly used proxy for market expectations) is crucial when firms experience negative price shocks.

In Table 6, we estimate equation (3) using the second measure of belief revision, the change in the analyst forecast for the next year immediately following the earnings announcement. Results are qualitatively similar to those reported in Table 5. As before, analysts are more responsive in revising next year's earnings forecasts based on current quarter's unexpected earnings for the firms impacted by the scandal than those that are not impacted, but only for the subsample that manages to meet or beat earnings targets at quarterly announcements. In contrast, there does not appear to be measurable difference in analyst forecast revisions between impacted firms and non-impacted firms for the subsample that misses earnings targets at quarterly announcements.

4.3 Long-run stock performance

In prior sections, we document that negative price pressure induces managers to adjust investment levels and meet earnings targets and such behavior is met with an immediate upward revision in beliefs. In this section, we use long-term stock returns to examine the value implication of this behavior.

For each firm-quarter observation, we compute the firm's buy-and-hold abnormal return (BHAR) for quarter q, $BHAR_q$, and its subsequent cumulative BHAR from the end of quarter q to the end of quarter $q+n$, $BHAR_{q \text{ to } q+n}$, with $n = 1$ to $n = 8$. For a given period, BHAR is defined as the firm's geometrically-compounded monthly raw returns over the period minus the corresponding return on the CRSP value-weighted index.[11]

We investigate whether there are differences in the BHARs between impacted firms that meet or marginally beat earnings targets (the focal group) and a benchmark group of firms that marginally miss earnings targets, and whether differences in the long-term returns justify the differential market belief revisions observed at the short-term earnings announcements. We consider two disparate benchmark groups. The first group is comprised of firms that had below-median implicated-fund ownership, including those with zero ownership, and reported earnings that missed the analyst consensus forecast by one cent or less for quarter q. This group aims to capture firms not hit by transitory shocks (i.e., *NS*- or *PS-firms* that did not experience the scandal-induced negative price pressure). The second group is comprised of firms that had above-median implicated-fund ownership but still reported earnings that missed the analyst consensus forecast

[11] The results are similar if we define BHAR as the firm's geometrically-compounded monthly raw returns minus the corresponding return on the CRSP equal-weighted index or the Fama-French 49 industry portfolios. The results are untabulated for brevity.

by one cent or less for quarter *q*. This group aims to capture firms likely also hit by permanent shocks (i.e., *PS-firms* that experienced the scandal-induced negative price pressure).

To alleviate the concern that the inherent differences between focal and benchmark groups are related to price reversal, we apply a propensity score matching (PSM) algorithm to minimize such differences. We first estimate a probit model. The dependent variable is coded one (zero) if a firm-quarter belongs to the marginally beat (miss) sample. The independent variables include the log of total assets, return-on-assets, leverage, and market-to-book from quarter *q-1*, BHAR in quarter *q*, as well as industry and year-quarter fixed effects, with *q* being the fire sale quarter. We then use the predicted probabilities, or propensity scores, from the model to perform a one-to-one nearest neighbor matching, with replacement. The PSM procedure ensures that the difference in the BHARs following the scandal between the matched samples is less likely to be driven by differences in observable market, industry, or firm characteristics.

Columns (1) and (2) of Table 7 report the mean BHARs for the nine periods for our focal group and both sets of benchmark groups, as well as their differences. We see that a firm's stock price significantly declines in the quarter of the price shock; the mean $BHAR_q$ is -3.1% for our focal firms and is not significantly different for either benchmark group. Following the investment adjustment and meeting the earnings target, we see that the price begins to recover for the focal group but not for either of the benchmark groups. Specifically, the focal firms have an average $BHAR_{q\ to\ q+1}$ of 1.4%, while this number continues to be negative for both sets of benchmark groups. The difference is also statistically significant. In the second quarter following the price shock, the difference in BHARs is more pronounced between the focal and benchmark groups and shows a similar pattern. For the remaining six quarters, focal firms' stock prices revert to the original level in the third quarters and continues to climb for the rest of the period. This suggests

that meeting the earnings benchmark signals the focal firms as *TS-firms* and thus has a persistent effect on the firm's valuation following the decline at the time of the price shock, consistent with the market revising beliefs as to the nature of the shock. In contrast, for benchmark firms that did not show strong performance at the time of the earnings announcement, their BHARs continue to be negative for the remaining six quarters. This is particularly striking for the second group that is more likely comprised of *PS-firms*; these firms experience a price decline even eight quarters after the exogenous pricing pressure. Taken together, these results suggest that meeting the earnings target carries persistent valuation benefits and reinforces the notion that investment cuts for the purpose of meeting targets carries an informative signaling value for firms.

4.4 Information asymmetry and signaling incentives

An important feature of our conceptual framework is the presence of information asymmetry between the firm and the market regarding the nature of the shock. This gives rise to signaling incentives to convey this information credibly. One implication of our framework is that the incentive to signal should be greater when there is greater market uncertainty over the firm's fundamentals following the negative price shock (*Hypothesis 3*).

To investigate this implication, we partition our sample based on the degree of information asymmetry and then estimate equations (1)-(3) for each of the resulting subsamples. To measure information asymmetry, we first consider a firm's price impact in quarter *q* (e.g., Amihud (2002)). The market microstructure literature uses price impact to measure information asymmetry because it is positively related to adverse selection, an indication that market participants possess different information. We additionally use a firm's 10-Q financial statement readability, or the readability index of Coleman and Liau (1975), in quarter *q-1* as a second measure of information asymmetry. The rationale for this measure is that firms with less readable financial statements are less

understood by investors, resulting in greater information asymmetry. We partition the full sample based on the median values of these two measures.

Table 8, Panel A reports the results of this analysis using price impact to proxy for information asymmetry. We see that, across equations (1)-(3), the coefficient estimates are larger and more significant for the above-median information asymmetry subsample than the below-median subsample. While we present the results using the *Tainted Fund Ownership* variable of price pressure, the results are similar using the *Above Median Ownership Y/N* measure. Table 8, Panel B repeats this analysis using the Coleman-Liau readability index to proxy for information asymmetry. The results are consistent with those of Panel A. These findings suggest that firms have a heightened incentive to signal financial health following downward price shocks when information asymmetry is high. Moreover, these findings are consistent with the primary hypothesis that investment distortion to meet earnings targets can be used as a signaling device when the market is uncertain as to the nature of downward price pressure on the firm.

4. Conclusion

In this study, we develop a conceptual framework to understand the signaling role of myopic behavior by firm managers. In the face of stock price declines, managers have an incentive to signal that their firms are in sound financial health and that shocks to firm stock prices are not indicative of a deterioration of long-run value. To achieve this credibly, managers must present strong performance at the time of the earnings announcement by meeting or beating market expectations. To achieve this goal, managers may "borrow from the future" by scaling back on R&D and other investment. We conjecture that such seemingly myopic behavior is not as costly for firms that do not experience real declines in their fundamental value as for firms that do.

Consequently, the market revises its beliefs more strongly for firms that meet their earnings targets after experiencing downward movement in their share prices and assesses such price declines as transitory or unrelated to future performance of the firm.

Our empirical analyses test the implications of this conceptual framework. Using the mutual fund trading scandal that lasted from September 2003 to October 2004, we identify exogenous downward price movements for firms held by tainted funds. Our findings indicate that firms indirectly exposed to the scandal through outflows of the tainted funds are more inclined to meet or marginally beat earnings targets in the following period. Moreover, these firms are more likely to cut R&D and other investment to meet these targets. Among firms that meet or exceed their earnings targets, the market, in terms of both share price revision and analysts' forecast revisions, responds more strongly to the earnings surprise of firms that experienced downward price shocks from the scandal-induced fund outflows. Such belief revision is consistent with our conceptual framework that meeting market expectations imparts an informative signaling value for firms that experience downward price pressure in the previous quarter (that is unrelated to firm fundamentals). We also find that the impacted firms that meet market expectations exhibit accelerated price reversal relative to firms that do not meet in subsequent periods. Finally, the results are stronger for firms with higher levels of information asymmetry, consistent with signaling being both more valuable and more informative for these firms.

It is widely believed that myopia (or short-termism) is a first-order problem that faces U.S. companies. Indeed, there exist plenty of anecdotes, surveys, and industry reports suggesting that pressures to beat quarterly earnings targets may prompt managers to hold back investment that will benefit their firms in the long run. However, large-scale, well-identified evidence proving that myopic investment behavior causes declines in the firm's long-term value is surprisingly scant,

which raises the debate about whether the myopia criticism of U.S. companies and their managers is warranted (Summers (2017); Kaplan (2018)). Our findings help inform this debate by showing that the seemingly myopic corporate actions—cutting long-term investment to meet or beat short-term earnings targets—can be beneficial under certain circumstances. That is, for firms impacted by transitory negative stock price shocks, meeting earnings targets through investment cuts helps convey financial health and accelerate stock price reversal. Mispricing events frequently occur in the modern financial markets (Duffie (2010)). While difficult to gauge the exogenous arrival rate of underpricing ex ante, it is fair to conjecture that a manager may encounter situations in which his firm's stock is underpriced. In such situations, cutting investment to boost earnings can be a signaling tool and thus beneficial for the firm.

References

Aghamolla, C., and T. Hashimoto. "Managerial Myopia, Earnings Guidance, and Investment." *Contemporary Accounting Research* (2022): Forthcoming.

Amihud, Y. "Illiquidity and Stock Returns: Cross-section and Time-series Effects." *Journal of Financial Markets* 5 (2002): 31-56.

Anton, M., and C. Polk. "Connected Stocks." *Journal of Finance* 69 (2014): 1099-1127.

Babenko, I., Y. Tserlukevich, and A. Vedrashko. "The Credibility of Open Market Share Repurchase Signaling." *Journal of Financial and Quantitative Analysis* 47 (2012): 1059-1088.

Barton, D., and M. Wiseman. "Focusing Capital on the Long Term." *Harvard Business Review* 92 (2014): 18-19.

Bebchuk, L. A., and L. Stole. "Do Short-Term Managerial Objectives Lead to Under- or Over-Investment in Long-Term Projects?" *Journal of Finance* 48 (1993): 719-729.

Benmelech, E., E. Kandel, and P. Veronesi. "Stock-based Compensation and CEO (dis)Incentives." *Quarterly Journal of Economics* 125 (2010): 1769–1820.

Bhattacharya, S. "Imperfect Information, Dividend Policy, and "The Bird in the Hand" Fallacy." *The Bell Journal of Economics* 10 (1979): 259-270.

Bhojraj, S., P. Hribar, M. Picconi, and J. McInnis. "Making Sense of Cents: An Examination of Firms that Marginally Miss or Beat Analyst Forecasts." *Journal of Finance* 64 (2009): 2361-2388.

Bizjak, J. M., Brickley, J. A., and J. L., Coles. "Stock-based Incentive Compensation and Investment Behavior." *Journal of Accounting and Economics* 16 (1993): 349-372.

Choi, S., and M. Kahan. "The Market Penalty for Mutual Fund Scandals." *Boston University Law Review* 87 (2007): 1021-1055.

Bond, P., A. Edmans, I. Goldstein. "The Real Effects of Financial Markets." *Annual Review of Financial Economics* 4 (2012): 339-360.

Cohen, D. A., A. Dey, and T. Z. Lys. "Real and Accrual-based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods." *The Accounting Review* 83 (2008): 757-787.

Coleman, M., and T. L. Liau. "A Computer Readability Formula Designed for Machine Scoring." *Journal of Applied Psychology* 60 (1975): 283-284.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney. "Detecting Earnings Management." *The Accounting Review* 70 (1995): 193-225.

Duffie, D. "Presidential Address: Asset Price Dynamics with Slow-moving Capital." *Journal of Finance* 65 (2010): 1237-1267.

Edmans A, X. Gabaix, T. Sadzik, and Y. Sannikov. "Dynamic CEO Compensation." *Journal of Finance* 67 (2012): 1603-1647.

Edmans, A., I. Goldstein, and W. Jiang. "The Real Effects of Financial Markets: The Impact of Prices on Takeovers." *Journal of Finance* 67 (2012): 933-971.

Edmans, A., V. W. Fang, and K. A. Lewellen. "Equity Vesting and Investment." *Review of Financial Studies* 30 (2017): 2229-2271.

Edmans, A., V. W. Fang, and A. H. Huang. "The Long-term Consequences of Short-term Incentives." *Journal of Accounting Research* 60 (2022): 1007-1046.

Fang, V. W., A. H. Huang, and J. M. Karpoff. "Short Selling and Earnings Management: A Controlled Experiment." *Journal of Finance* 71 (2016): 1251-1294.

Giannetti, M., and X. Yu. "Adapting to Radical Change: The Benefits of Short-horizon Investors." *Management Science* 67 (2021): 3985-4642.

Goldman, E., and S. L. Slezak. "An Equilibrium Model of Incentive Contracts in the Presence of Information Manipulation." *Journal of Financial Economics* 80 (2006): 603–626.

Graham, J. R., C. R. Harvey, and S. Rajgopal. "The Economic Implications of Corporate Financial Reporting." *Journal of Accounting and Economics* 40 (2005): 3-73.

Hackbarth, D., A. Rivera, and T. Wong. "Optimal Short-termism." *Management Science* 68 (2022): 6355-7064.

Hau, H., and S. Lai. "Real Effects of Stock Underpricing." *Journal of Financial Economics* 108 (2013): 392-408.

Houge, T., and J. Wellman. "Fallout from the Mutual Fund Trading Scandal." *Journal of Business Ethics* 70 (2005): 129-139.

Huang, S., M. C. Ringgenberg, and Z. Zhang. "The Information in Fire Sales." *Management Science* (2022): Forthcoming.

John, K., and J. Williams. "Dividends, Dilution and Taxes: A Signalling Equilibrium." *Journal of Finance* 40 (1985): 1053-1070.

Kaplan, S. N. "Are US Companies Too Short-term Oriented? Some Thoughts." *Journal of Applied Corporate Finance* 30 (2018): 8-18.

Kraft, A. G., R. Vashishtha, and M. Venkatachalam. "Frequent Financial Reporting and Managerial Myopia." *The Accounting Review* 93 (2018): 249–275.

Kisin, R. "The Impact of Mutual Fund Ownership on Corporate Investment: Evidence from a Natural Experiment." Working paper, 2011.

Ladika, T., and Z. Sautner. "Managerial Short-Termism and Investment: Evidence from Accelerated Option Vesting." *Review of Finance* 24 (2020): 305-344

Lou, D. "A Flow-based Explanation for Return Predictability." *Review of Financial Studies* 25 (2012): 3457-3489.

Lou, X., and A. Y. Wang. “Flow-Induced Trading Pressure and Corporate Investment.” *Journal of Financial and Quantitative Analysis* 53 (2018): 171-201.

Marinovic, I., and F. Varas. “CEO Horizon, Optimal Pay Duration, and the Escalation of Short-Termism.” *Journal of Finance* 74 (2019): 2011-2053.

McKinsey & Company. “Measuring the Economic Impact of Short-termism.” *McKinsey Global Institute Discussion Paper* (2017).

Miller, M. H., and K. Rock. “Dividend Policy under Asymmetric Information.” *Journal of Finance* 40 (1985): 1031-1051.

Potter, M., and C. G. Schwarz. “The Mutual Fund Scandal and Investor Response.” *Journal of Index Investing* 3 (2012): 29-38.

Roe, M. J. “Corporate Short-termism—In the Boardroom and In the Courtroom.” *The Business Lawyer* (2013): 977-1006.

Spence, M. “Job Market Signaling.” *Quarterly Journal of Economics* 87 (1973): 355-374.

Stein, J. C. “Takeover Threats and Managerial Myopia.” *Journal of Political Economy* 96 (1988): 61-80.

Stein, J. C. “Efficient Capital Markets, Inefficient Firms: A model of Myopic Corporate Behavior.” *Quarterly Journal of Economics* 104 (1989): 655-669.

Summers, L. H. “Is Corporate Short-Termism Really a Problem? The Jury’s Still Out.” *Harvard Business Review* (2017).

Tang, K., and C. Greenwald. “Long-Termism Versus Short-Termism: Time for the Pendulum to Shift?” *S&P Dow Jones Indices Global Research* (2016).

Terry, S. J. “The Macro Impact of Short-termism.” Working paper, 2022.

Thakor, R. T. “Short-termism, Managerial Talent, and Firm Value.” *Review of Corporate Finance Studies* 10 (2021): 473-512.

Wardlaw, M. “Measuring Mutual Fund Flow Pressure as Shock to Stock Returns.” *Journal of Finance* 75 (2020): 3221-3243.

Wu, Y. “What’s Behind Smooth Dividends? Evidence from Structural Estimation.” *Review of Financial Studies* 31 (2018): 3979-4016.

Appendix A: Model

In this Appendix, we present and solve a very simple model to develop empirical hypotheses and formally illustrate the economic forces discussed in Section 2. We adopt and modify a simplified version of the Stein (1989) model in a two-period setting, $t \in \{1,2\}$, by incorporating differential costs of inflating earnings upward in the present period at the expense of earnings in the future.

The firm's assets have a liquidation value of V. The firm also generates a stationary persistent earnings $e_t = e^n$ in each of two periods, $t = 1, 2$. We assume that earnings are perfectly persistent for parsimony and to abstract away from other myopic incentives. (The presence of stochastic earnings would not qualitatively affect the results, as discussed following this analysis.) At the beginning of $t = 1$, a publicly observable downward shock $\delta > 0$ impacts underlying firm fundamentals with probability $\gamma \in (0,1)$. Conditional on the arrival of a shock, with probability $\lambda \in (0,1)$, the shock is *permanent*, in which case the shock permanently affects the firm's underlying fundamental, such that the firm's liquidation value at the end of $t = 2$ is $V - \delta$. With probability $1 - \lambda$, the shock is transitory, whereby the shock reverses prior to the end of $t = 2$ such that underlying value reverts to V. Whether the shock is temporary or permanent is the private information of the manager. Earnings e_1 are distributed as dividends after the end of the first period and the firm is liquidated at the end of the second period.

In the first period, the manager may "borrow" from the future, such as in the form of an investment cut, and inflate the current-period earnings. The manager can inflate earnings by b in the first period through investment manipulation, but this carries a cost of $c(b, \theta)$ that comes out of second-period earnings, where $\theta \in \{TS, PS\}$ represents whether the manager was hit by the permanent (PS) or temporary shock (TS). The key condition is that the type of shock also affects the manager's cost of real earnings distortion. As discussed in Section 2, a firm that is impacted with the permanent shock finds earnings manipulation to be more costly. Formally, we assume that $c(0, \theta) = 0, c_b(b, \theta) > 0$, that is, the cost of manipulation is increasing in the level b, and that $c_{b\theta}(b, \theta) < 0$, which implies that manipulation is relatively less costly for the firm impacted by the transitory shock. We also note that we can allow second-period earnings to be lower for PS firms relative to TS firms (e.g., second-period earnings for PS firms can be reduced by $\kappa > 0$). This additional feature would not qualitatively impact any of the results.

The post manipulation earnings are given as

$$e_1 = e^n + b,$$
$$e_2 = e^n - c\,(b, \theta).$$

The market observes e_1 at the end of the first period and then prices the firm:

$$P_1 = E(V|\Omega) + e_1 + E(e_2|\Omega),$$

where Ω is the market's information set at the end of the first period, which includes e_1 and the manager's manipulation strategy. At the beginning of the second period, the first-period earnings e_1 are distributed as dividends. Second-period earnings are reported in $t = 2$ and the firm is liquidated at the end of $t = 2$. The manager's utility function is

$$u_m = \alpha P_1 + (1 - \alpha)P_2,$$

where $\alpha \in (0,1)$ represents the degree to which the manager cares about the first-period price.

We conjecture an equilibrium where the TS firm can perfectly separate from the PS firm through the reported first-period earnings. For this to be the case, $\theta = TS$ must set the (minimum) manipulation level b^* such that $\theta = PS$ does not find deviation profitable. From successful mimicry, $\theta = PS$ receives the first-period price

$$P_1 = E(V|\Omega) + e^n + b^* + E(e_2|\Omega) = V + e^n + b^* + e^n - c(b^*, PS)\,.$$

However, in the second period, the market observes $e_2 = e^n - c(b, \theta)$ and realizes that the firm was impacted by the permanent shock due to the lower e_2 than expected by a TS firm (from a higher cost). The second-period price becomes

$$P_2 = V - \delta + e^n - c(b^*, TS).$$

Hence, in order to deter mimicry, b^* must satisfy the following condition:

$$\begin{aligned}\alpha\,[V - \delta + e^n + e^n] + (1 - \alpha)[V - \delta + e^n] \\ = \alpha[V + e^n + b^* + e^n - c(b, TS)] + (1 - \alpha)[V - \delta + e^n - c(\,b^*, PS)]\end{aligned}$$

That is, $\theta = PS$ is just indifferent between fully revealing herself and mimicking $\theta = TS$. This condition can be reduced to:

$$b^* = c(b^*, TS) + \frac{1 - \alpha}{\alpha} c(b^*, PS) - \delta.$$

In order for this to be an equilibrium, $\theta = TS$ must not want to deviate. Hence, we must have the following condition satisfied as well:

$$\begin{aligned}\alpha[V + e^n + b^* + e^n - c(b^*, TS)] + (1 - \alpha)[V + e^n - c(b^*, TS)] \\ \geq \alpha[V - \delta + e^n + e^n] + (1 - \alpha)(V + e^n).\end{aligned}$$

Plugging in for b^*, this condition reduces to $c(b^*, PS) \geq c(b^*, TS)$, which is true since $c_{b\theta}(b, \theta) < 0$.[12] We can similarly show that the price jumps upon observing the earnings announcement from $\theta = TS$.

To see the price jump upon meeting or beating at the end of the first period, note that the price prior to the announcement is the conditional expectation given that a shock has been observed:

$$\lambda P_1(PS\ firm) + (1-\lambda)P_1(TS\ firm) \\ = \lambda(V - \delta + 2e^n) + (1-\lambda)\big(V + 2e^n + b^* - c(b^*, TS)\big).$$

This is strictly less than the price at the end of the first period for the TS firm that separates through distortion, given as $V + 2e^n + b^* - c(b^*, TS)$ since (after some calculations)

$$\frac{1-\alpha}{\alpha} c(b^*, TS) > 0,$$

is satisfied, as $b^* > 0$ under separation.

The above shows Hypotheses 1 and 2. Hypothesis 3 also immediately follows from the above; as the market uses earnings to update more about θ, the less costly it is for the TS firm to signal her type, and the greater the price impact of the separation. As uncertainty over the type increases, the more the TS firm is willing to signal. Finally, both the price reaction and the incentive to signal are monotonically increasing in the extent of mispricing.

Stochastic Earnings

In the above analysis, we assume that earnings are stationary and persistent to cleanly show how real manipulation can be used to signal financial health for firms impacted by a temporary price shock. We briefly discuss the setting under stochastic earnings. Allowing for stochastic earnings in each period that depend on the type of the firm would not qualitatively affect the insights generated from the simple model above. The presence of stochastic earnings adds distributional features of the earnings announcement that can influence market beliefs.

Moreover, two additional forms of mimicry are present in this extended setup that are not present in the above model. First, even under separation, a firm with low earnings can have an incentive to mimic a firm with higher earnings (e.g., a low-earnings TS firm can have an incentive to mimic a high-earnings TS firm). Second, PS firms now have multiple options of firm types to mimic; for example, while a high-earnings PS firm may still find it too costly to mimic a high-

[12] To complete the analysis, market beliefs following off-equilibrium-path realizations of earnings at the announcement need to be specified. In this case, any off-equilibrium-path earnings announcement observed by the market is met with the off-equilibrium-path belief that the firm is a PS firm with probability one.

earnings TS firm, it may be worthwhile to mimic a low-earnings TS firm. As such, additional incentive conditions must be satisfied for separation. These conditions are similar to those in the above analysis.

To see this, suppose that earnings can be either high or low, $e^n \in \{e^L, e^H\}$, where $e^H > e^L$ and the likelihood of the high earnings realization is higher for TS firms than for PS firms. A TS firm generates e^H with probability q, while a PS firm generates e^H with probability p, where $q > p > 0$. The other aspects of the model are the same as above. Specifically, prior to the earnings announcement in the first period, the market's prior probability is that the shock is permanent with probability $\lambda \in (0,1)$ and transitory with probability $1-\lambda$. Firms that are impacted by the permanent shock continue to have a liquidation value of $V-\delta$, while this value reverts to V for TS firms. Prior to the earnings announcement, managers observe the earnings realization e^n and take an investment distortion action b. Earnings e_t are announced at the end of each period and then distributed as dividends at the end of each period, and the firm is liquidated at the end of the second period.

As in the previous case, to deter mimicry from a PS firm who has observed e^H, b^* must satisfy the following condition by a TS firm that has received e^H:

$$\begin{aligned}\alpha[V-\delta+e^H+pe^H+(1-p)e^L] \; &+(1-\alpha)[\,V-\delta+e^{PS}] \\ &= \alpha[V+e^H+b^*+qe^H+(1-q)e^L-c(b,TS) \\ &+(1-\alpha)[V-\delta+e^{PS}-c(b^*,PS)],\end{aligned}$$

where e^{PS} denotes the expectation of earnings for a PS firm, $e^{PS} = pe^H + (1-p)e^L$. This reduces to

$$b^* = c(b^*,TS) - qe^H - (1-q)e^L + \frac{1-\alpha}{\alpha}c(b^*,PS) - \delta + e^{PS}.$$

Plugging this into the incentive condition for a TS firm that has observed e^H, we find that it satisfies this type's incentive to separate from a PS firm since $c(b^*,PS) \geq c(b^*,TS)$, as in the previous case.

Since a TS firm who has observed e^H cannot be mimicked by a PS firm who has observed e^H, it follows that PS firms who observe e^L will similarly have no incentive to mimic the high-earnings TS firm. We can likewise derive the optimal manipulation for separation by a TS firm that has observed e^L to separate from a low-earnings PS firm. Furthermore, we can derive conditions under which the high-earnings PS firm does not mimic the low-earnings TS firm, as well as conditions under which the low-earnings firm of either type does not mimic a high-earnings firm of the same type (i.e., a TS firm that has observed e^L does not mimic a TS firm firm that has observed e^H). For parsimony, we do not include this analysis here (it is available upon request). As one case see, this analysis is much more involved but does not change the underlying insights developed by the simple model under stationary earnings.

Appendix B: Definition of variables

This appendix describes the calculation of variables used in the main analyses of this study. Underlined variables refer to variable names within Compustat. Subscript *q* indicates a given fiscal quarter of firm *i*, while firm subscript *i* is omitted for brevity.

Variable	Definition
Measures of negative price pressure	
Tainted Fund Ownership	The aggregate ownership by the 4,408 individual US domestic equity mutual funds that belonged to the 25 implicated mutual fund families since the scandal broke, as the percentage of the number of shares outstanding. Zero is assigned for firm-quarter observations before the scandal broke.
Above-Median Ownership Y/N	An indicator variable that equals one if *Tainted Fund Ownership* is above the sample median of positive ownership and zero otherwise. Zero is assigned for firm-quarter observations before the scandal broke.
Measures of dependent variables	
$Meet\ or\ Beat\leq 1ct_q$	An indicator variable that equals one if the reported EPS of quarter *q* falls between the latest mean analyst consensus forecast prior to the earnings announcement of quarter *q* and that plus one cent, and zero otherwise.
$\Delta R\&D_q$	The negative of the change in R&D expenditures (XRDQ) from the same quarter of the prior year to quarter *q* of the current year, scaled by total assets (ATQ) at the end of quarter *q-1*. Missing R&D expenditures are set to zero.
ΔINV_q	The negative of the change in the sum of R&D expenditures (XRDQ) and capital expenditures (inferred from CAPXY) from the same quarter of the prior year to quarter *q* of the current year, scaled by total assets (ATQ) at the end of quarter *q-1*. Missing R&D and capital expenditures are set to zero.
CAR_q	The two-day market-adjusted abnormal return surrounding the earnings announcement of quarter *q*, as the sum of daily abnormal returns over [0, +1], with 0 indicating the announcement day. The daily abnormal return is the firm's daily raw return minus the corresponding return on the CRSP value-weighted index.
$ALYREV_q$	The earliest mean analyst consensus forecast for the next fiscal year immediately following the earnings announcement date of quarter *q* minus the latest mean analyst consensus forecast for the next fiscal year immediately prior to the earnings announcement date of quarter *q*, scaled by the stock price at the end of quarter *q-1*.
Controls used in the regressions	
$SIZE_{q-1}$	Natural logarithm of total assets at the end of quarter *q-1*.
ROA_{q-1}	Return-on-assets ratio, calculated as net income (NIQ) during quarter *q-1* divided by the average total assets of quarter *q-1*.
LEV_{q-1}	Leverage, calculated as book value of debt (DLTTQ+DLCQ) scaled by the sum of book value of debt and total shareholders' equity (SEQQ) at the end of quarter *q-1*.
MB_{q-1}	Market-to-book ratio, calculated as the market value of equity (PRCCQ×CSHOQ) divided by the book value of equity (CEQQ) at the end of quarter *q-1*.
ALY_N_q	Natural logarithm of one plus the number of analysts following the firm during quarter *q* from I/B/E/S.
ALY_HRZN_q	Natural logarithm of one plus the mean forecast horizon, where forecast horizon is the number of days between analyst forecast date and the earnings announcement date for quarter *q*.

ALY_DISP_q	Analyst forecast dispersion, calculated as the standard deviation of analyst forecasts divided by the absolute value of the analyst consensus forecast, both measured for quarter *q*.
Q_q (Q_{q-1})	Tobin's Q at the end of quarter *q* (quarter *q-1*). For quarter *q*, it is calculated as [market value of equity plus liquidating value of preferred stock (PSTKQ) plus book value of debt minus balance sheet deferred taxes and investment tax credit (TXDITCQ)] (all measured for quarter *q*), divided by total assets at the end of quarter *q-1*.
AGE_{q-1}	Firm's age as of the year for which quarter *q* belongs minus one, approximated by the number of years listed on Compustat.
$CASH_{q-1}$	Cash and short-term investments (CHEQ) divided by total assets at the end of quarter *q-1*.
$RETEARN_{q-1}$	Retained earnings (REQ) divided by total assets at the end of quarter *q-1*.
$BHAR_{q-1}$ ($BHAR_q$)	A firm's buy-and-hold abnormal return over quarter *q-1* (quarter *q*). It is calculated as the firm's geometrically-compounded monthly returns minus the corresponding returns on the CRSP value-weighted index.
UEA_q	The unexpected earnings during the earnings announcement period (i.e., announced earnings minus the consensus forecast), scaled by share price at the end of the prior quarter.
Additional variables	
$NoMiss_q$	An indicator variable that equals one if the reported EPS of quarter *q* equals or exceeds the latest mean analyst consensus forecast prior to the earnings announcement of quarter *q*, and zero otherwise.
$Miss \leq 1ct_q$	An indicator variable that equals one if the reported EPS of quarter *q* falls between the latest mean analyst consensus forecast prior to the earnings announcement of quarter *q* and that minus one cent, and zero otherwise.
$BHAR_{q\ to\ q+n}$	A firm's buy-and-hold abnormal return (BHAR) from the end of quarter *q* to the end of *q+n* with *q* being the quarter in which the firm experiences large flow-driven selling pressure, and *n* = 1 to 8. Quarterly BHAR is calculated as the firm's geometrically-compounded monthly returns minus the corresponding returns on the CRSP value-weighted index. We then sum quarterly abnormal returns to obtain cumulative abnormal returns.

Table 1
Descriptive statistics

This table reports summary statistics of the variables used in the main analyses. Negative price pressure is measured using *Tainted Fund Ownership*, the aggregate ownership by funds that belonged to the 25 implicated mutual fund families, and *Above Median Ownership Y/N*, an indicator variable that denotes whether this ownership is above the sample median. Dependent variables include *Meet or Beat≤1ct*, the likelihood of meeting or beating the analyst consensus EPS forecast by up to one cent; *ΔRD*, the negative change in R&D expenditures from the prior quarter; *ΔINV*, the negative change in total investment from the prior quarter; *CAR*, the two-day announcement return surrounding a quarterly earnings announcement; *ALYREV*, the revision in the analyst consensus EPS forecast for the next quarter surrounding the earnings announcement of the current quarter. Controls include *SIZE*, natural logarithm of total assets; *ROA*, return-on-assets; *LEV*, leverage; *MB*, market-to-book; *ALY_N*, analyst coverage; *ALY_HRZN*, analyst forecast horizon; *ALY_DISP*, analyst forecast dispersion; *Q*, Tobin's Q; *AGE*, firm age; *CASH*, cash-to-assets; *RETEARN*, retained earnings-to-assets; and *BHAR*, buy-and-hold abnormal returns. All samples span from 2000Q3 to 2006Q3, thus covering three years before the initial revelation of the scandal and three years after. Sample size is 82,237. Variable definitions are in Appendix B. All continuous variables are winsorized at the 1% and 99% levels.

Variable	N	5%	Mean	Median	95%	SD
Measures of negative price pressure						
Tainted Fund Ownership	82,237	0.000	0.098	0.000	0.528	0.224
Above-Median Ownership Y/N	82,237	0.000	0.238	0.000	1.000	0.426
Measures of dependent variables						
$Meet\ or\ Beat{\leq}1ct_q$	82,237	0.000	0.157	0.000	1.000	0.363
$\Delta R\&D_q$	82,237	-0.011	-0.001	0.000	0.005	0.029
ΔINV_q	82,237	-0.022	-0.001	0.000	0.024	0.037
CAR_q	82,237	-0.084	0.003	-0.002	0.115	0.070
$ALYREV_q$	82,237	-0.035	-0.008	0.000	0.005	0.039
Controls						
$SIZE_{q-1}$	82,237	2.466	5.592	5.486	9.263	2.018
ROA_{q-1}	82,237	-0.145	-0.011	0.007	0.046	0.064
LEV_{q-1}	82,237	0.000	0.195	0.150	0.573	0.194
MB_{q-1}	82,237	0.489	3.113	1.905	9.520	3.990
ALY_N_q	82,237	0.000	1.242	1.099	2.944	1.041
ALY_HRZN_q	82,237	0.000	2.930	4.094	4.796	2.013
ALY_DISP_q	82,237	0.000	0.138	0.018	0.627	0.399
Q_q	82,237	0.427	1.779	1.189	5.224	1.768
Q_{q-1}	82,237	0.429	1.835	1.195	5.549	1.886
AGE_{q-1}	82,237	4.000	17.839	12.000	50.000	13.922
$CASH_{q-1}$	82,237	0.003	0.212	0.108	0.747	0.240
$RETEARN_{q-1}$	82,237	-3.676	-0.414	0.085	0.657	1.584
$BHAR_{q-1}$	82,237	-0.406	0.027	0.004	0.545	0.281
UEA_q	82,237	-0.016	-0.001	0.000	0.012	0.009

Table 2

Negative stock price pressure and the likelihood of meeting/beating analyst EPS forecasts

This table reports the probit regression results on the relation between negative stock price pressure and the likelihood of meeting or marginally beating the analyst consensus EPS forecast. *Meet or Beat≤1ct* denotes the likelihood of meeting or beating up to one cent. Negative price pressure is measured using *Tainted Fund Ownership* in column (1) and *Above Median Ownership Y/N* in column (2). Controls include *SIZE* (natural logarithm of total assets), *ROA* (return-on-assets), *LEV* (leverage), *MB* (market-to-book), *ALY_N* (analyst coverage), *ALY_HRZN* (analyst forecast horizon), and *ALY_DISP* (analyst forecast dispersion). Detailed variable definitions are in Appendix B. The inclusion of fixed effects is as indicated in the table. The sample spans from 2000Q3 to 2006Q3. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. For measures of price pressure, the marginal effects are displayed below the standard error. ***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

	Probit	
	(1)	(2)
Dependent variable:	*Meet or Beat ≤ 1ct$_q$*	
Tainted Fund Ownership	**0.073****	
	(0.027)	
	[0.015**]	
Above-Median Ownership Y/N		**0.042****
		(0.017)
		[0.008**]
SIZE$_{q-1}$	-0.041***	-0.042***
	(0.005)	(0.005)
ROA$_{q-1}$	3.209***	3.205***
	(0.141)	(0.141)
LEV$_{q-1}$	-0.319***	-0.317***
	(0.038)	(0.038)
MB$_{q-1}$	0.016***	0.016***
	(0.002)	(0.002)
ALY_N$_q$	0.182***	0.182***
	(0.011)	(0.011)
ALY_HRZN$_q$	0.355***	0.355***
	(0.005)	(0.005)
ALY_DISP$_q$	-0.279***	-0.278***
	(0.019)	(0.019)
Fixed effects	Industry, Year-Quarter	
No. of observations	82,237	82,237
Pseudo R^2	0.177	0.177

Table 3
Negative stock price pressure and investment reduction
This table reports the ordinary least squares (OLS) regression results on the relation between negative stock price pressure and investment reduction. Investment reduction is measured using *ΔRD* (the negative change in R&D expenditures from the prior quarter) in columns (1) and(2), and *ΔINV* (the negative change in total investment from prior quarter) in columns (3) and(4). Negative price pressure is measured using *Tainted Fund ownership* in columns (1) and (3) and *Above-Median Ownership Y/N* in columns (2) and (4). Controls include *SIZE* (natural logarithm of total assets), *ROA* (return-on-assets), *LEV* (leverage), *Q* (Tobin's Q), *AGE* (firm age), *CASH* (cash-to-assets), *RETEARN* (retained earnings-to-assets), and *BHAR* (buy-and-hold abnormal returns). Detailed variable definitions are in Appendix B. The inclusion of fixed effects is as indicated. The sample spans from 2000Q3 to 2006Q3. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. ***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

	OLS			
	(1)	(2)	(3)	(4)
Dependent variable:	ΔRD_q		ΔINV_q	
Tainted Fund Ownership	**0.002*****		**0.005*****	
	(0.000)		(0.001)	
Above-Median Ownership Y/N		**0.002*****		**0.004*****
		(0.000)		(0.000)
$SIZE_{q-1}$	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
ROA_{q-1}	0.000	0.000	-0.004	-0.004
	(0.004)	(0.004)	(0.005)	(0.005)
LEV_{q-1}	0.000	0.001	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)
Q_q	-0.002***	-0.002***	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Q_{q-1}	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
AGE_{q-1}	0.000	0.000	0.001*	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)
$CASH_{q-1}$	-0.005***	-0.005***	-0.013***	-0.013***
	(0.002)	(0.002)	(0.002)	(0.002)
$RETEARN_{q-1}$	-0.004***	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
$BHAR_{q-1}$	0.002***	0.002***	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.001)
Fixed effects	Firm, Year-Quarter			
No. of observations	82,237	82,237	82,237	82,237
Adjusted R^2	0.059	0.059	0.049	0.049

Table 4

Negative stock price pressure and investment reduction: the effect of operating performance

This table reports the OLS regression results on the relation between negative stock price pressure and investment reduction and the effect of operating performance on this relation. Investment reduction is measured using *ΔRD* (the negative change in R&D expenditures from prior quarter) in columns (1) and (2) and *ΔINV* (the negative change in total investment from prior quarter) in columns (3) and(4). Negative price pressure is measured using *Tainted Fund Ownership* in columns (1) and (3) and *Above-Median Ownership Y/N* in columns (2) and (4). Operating performance is measured using *ROA* (return-on-assets) of the next quarter. The effect of operating performance is captured using the interaction terms between ROA_{q+1} and the two measures of negative price pressure. Controls include those described in Table 3. Detailed variable definitions are in Appendix B. The inclusion of fixed effects is as indicated. The sample spans from 2000Q3 to 2006Q3. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. ***, **, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

	OLS			
	(1)	(2)	(3)	(4)
Dependent variables	ΔRD_q		ΔINV_q	
Tainted Fund Ownership×ROA_{q+1}	**0.030***		**0.054*****	
	(0.016)		(0.017)	
Above-Median Ownership Y/N×ROA_{q+1}		**0.013***		**0.025*****
		(0.008)		(0.008)
Tainted Fund Ownership	0.002***		0.004***	
	(0.001)		(0.001)	
Above-Median Ownership Y/N		0.002***		0.003***
		(0.000)		(0.000)
ROA_{q+1}	-0.005	-0.005	-0.006	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)
$SIZE_{q-1}$	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.002)
ROA_{q-1}	0.001	0.000	-0.002	-0.003
	(0.004)	(0.004)	(0.005)	(0.005)
LEV_{q-1}	0.001	0.001	0.010***	0.010***
	(0.002)	(0.002)	(0.003)	(0.003)
Q_q	-0.002***	-0.002***	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Q_{q-1}	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
AGE_{q-1}	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
$CASH_{q-1}$	-0.004**	-0.004**	-0.012***	-0.012***
	(0.002)	(0.002)	(0.002)	(0.002)
$RETEARN_{q-1}$	-0.004***	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
$BHAR_{q-1}$	0.002***	0.002***	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Fixed effects	Firm, Year-Quarter			
Observations	76,569	76,569	76,569	76,569
Adjusted R^2	0.049	0.049	0.045	0.045

Table 5

Negative stock price pressure and market reaction at earnings announcements

This table reports the OLS regression results on the relation between negative stock price pressure and cumulative abnormal returns (*CAR*) at earnings announcements. Negative price pressure is measured using *Tainted Fund Ownership* in columns (1), (3), and (5), and *Above-Median Ownership Y/N* in columns (2), (4), and (6). *CAR* is measured using the cumulative market-adjusted abnormal returns during the period [0,1] around announcement date. Columns (1) and(2) report results for the full sample, columns (3) and(4) for the subsample with *NoMiss* equaling one, and columns (5) and(6) for the subsample with *NoMiss* equaling 0. The difference in the key regressor of interest between columns (3) and (5) ((4) and (6)) is reported at the bottom of this table. The sample spans from 2000Q3 to 2006Q3. All variable definitions are in Appendix B. The inclusion of fixed effects is as indicated. Standard errors, displayed in parentheses, are clustered by firm and quarter. ***,**, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

Dependent variable:	OLS CAR_q					
	Full sample		*NoMiss=1*		*NoMiss=0*	
	(1)	(2)	(3)	(4)	(5)	(6)
*Tainted Fund Ownership*UEA$_q$*	**1.478*****		**1.972*****		**-0.016**	
	(0.228)		(0.468)		(0.265)	
*Above-Median Ownership Y/N *UEA$_q$*		**0.756*****		**0.867*****		**0.001**
		(0.085)		(0.197)		(0.108)
UEA$_q$	0.695***	0.670***	1.847***	1.814***	0.461***	0.460***
	(0.036)	(0.036)	(0.106)	(0.109)	(0.050)	(0.051)
Tainted Fund Ownership	0.000		-0.006**		-0.007***	
	(0.002)		(0.002)		(0.003)	
Above-Median Ownership Y/N		-0.001		-0.004***		-0.005***
		(0.001)		(0.001)		(0.001)
SIZE$_{q-1}$	-0.009***	-0.009***	-0.007***	-0.006***	-0.012***	-0.012***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
MB$_{q-1}$	-0.001***	-0.001***	-0.001***	-0.001***	-0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BHAR$_{q-1}$	-0.005***	-0.005***	-0.004**	-0.004**	-0.005***	-0.005***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
Fixed effects	Firm, Year-Quarter					
Observations	82,237	82,237	33,518	33,518	48,719	48,719
Adjusted R^2	0.045	0.046	0.062	0.062	0.051	0.051
*Diff. in Tainted Fund Ownership *UEA$_q$:* (3)-(5)					1.988***(0.589)	
*Diff. in Above-Median Ownership Y/N *UEA$_q$* : (4)-(6)					0.865***(0.257)	

Table 6

Negative stock price pressure and analyst forecast revision following earnings announcements

This table reports the OLS regression results on the relation between negative stock price pressure and the revision in the annual analyst consensus forecast (*ALYREV*) following earnings announcements. Negative price pressure is measured using *Tainted Fund Ownership* in columns (1), (3), and (5), and *Above-Median Ownership Y/N* in columns (2), (4), and (6). $ALYREV_q$ is defined as the earliest mean analyst consensus forecast for next fiscal year immediately following the earnings announcement date of quarter *q* minus the latest mean analyst consensus forecast for next fiscal year immediately prior to the earnings announcement date of quarter *q*, scaled by the stock price at the end of quarter *q-1*. Columns (1)-(2) report results for the full sample, columns (3)-(4) for the subsample with *NoMiss* equaling one, and columns (5)-(6) for the subsample with *NoMiss* equaling 0. The difference in the key regressor of interest between columns (3) and (5) ((4) and (6)) is reported at the bottom of this table. The sample spans from 2000Q3 to 2006Q3. All variable definitions are in Appendix A. The inclusion of fixed effects is as indicated in the table. Standard errors, displayed in parentheses, are clustered by firm and quarter. ***,**, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

Dependent variables	OLS $ALYREV_q$					
	Full sample		*NoMiss = 1*		*NoMiss = 0*	
	(1)	(2)	(3)	(4)	(5)	(6)
Tainted Fund Ownership $^{*}UEA_q$	**0.445****		**1.209*****		**0.346**	
	(0.178)		(0.325)		(0.273)	
Above-Median Ownership Y/N $^{*}UEA_q$		**0.314*****		**0.893*****		**0.153**
		(0.092)		(0.155)		(0.136)
UEA_q	1.672***	1.651***	0.906***	0.801***	1.904***	1.901***
	(0.039)	(0.040)	(0.088)	(0.090)	(0.061)	(0.062)
Tainted Fund Ownership	0.003***		-0.003***		0.006***	
	(0.001)		(0.001)		(0.001)	
Above-Median Ownership Y/N		0.002***		-0.003***		0.003***
		(0.000)		(0.001)		(0.001)
$SIZE_{q-1}$	-0.006***	-0.006***	-0.004***	-0.004***	-0.007***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ROA_{q-1}	0.011**	0.010**	0.013**	0.011*	-0.000	-0.000
	(0.004)	(0.004)	(0.006)	(0.006)	(0.005)	(0.005)
ALY_N_q	-0.002***	-0.002***	0.001**	0.001**	-0.008***	-0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
ALY_HRZN_q	-0.001***	-0.001***	-0.001*	-0.001*	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ALY_DISP_q	-0.002***	-0.002***	0.000	0.000	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Q_{q-1}	0.000*	0.000*	0.000***	0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed effects			Firm, Year-Quarter			
Observations	82,237	82,237	33,518	33,518	48,719	48,719
Adjusted R^2	0.435	0.435	0.297	0.302	0.491	0.491
Diff. in Tainted Fund Ownership $^{*}UEA_q$ *:* (3)-(5)					0.863*(0.477)	
Diff. in Above-Median Ownership Y/N $^{*}UEA_q$: (4)-(6)					0.740***(0.214)	

Table 7

Stock price reversal following negative stock price pressure

This table reports the mean buy-and-hold abnormal return (*BHAR*) during the eight quarters following the negative stock price shocks. The sample spans from 2003Q3 to 2006Q3 and includes the focal group (firm-quarters that meet or beat the analyst consensus EPS forecast by up to one cent (*Meet or Beat≤1ct*) among the firms impacted by the negative stock price shocks (*Above-median Ownership Y/N* =1)), benchmark group 1 (firm-quarters that miss the forecast by one cent or less (*Miss≤1ct*) among the firms not impacted by the negative price shocks (*Above-median Ownership Y/N* =0)), and benchmark group 2 (firm-quarters that miss the forecast by one cent or less (*Miss≤1ct*) among the firms impacted by the negative price shocks (*Above-median Ownership Y/N* =1)). Focal and benchmark groups are matched based on size, return-on-assets ratio, leverage, market-to-book ratio, stock return in quarter *q*, as well as industry and quarter fixed effects. The difference in the mean *BHAR* across subsamples is reported in the third row of each panel. Column (1) ((2)) reports results using benchmark group 1 (2). Variable definitions are in Appendix A. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels using two-tailed tests, respectively.

Panel	**Variable**	Sub-sample	*Treat: Above-Median Ownership Y/N =1 & Meet or Beat ⩽ 1ct* *Control 1: Above-Median Ownership Y/N =0 & Miss ⩽ 1ct* (1)	*Treat: Above-Median Ownership Y/N =1 & Meet or Beat ⩽ 1ct* *Control 2: Above-Median Ownership Y/N =1 & Miss ⩽ 1ct* (2)
A	$BHAR_q$	*Treat*	-0.031	-0.031
		Control	-0.025	-0.029
		Diff	**-0.006**	**-0.002**
B	$BHAR_{q\ to\ q+1}$	*Treat*	0.014	0.014
		Control	-0.038	-0.035
		Diff	**0.052*****	**0.048*****
C	$BHAR_{q\ to\ q+2}$	*Treat*	0.020	0.020
		Control	-0.030	-0.022
		Diff	**0.051*****	**0.042*****
D	$BHAR_{q\ to\ q+3}$	*Treat*	0.032	0.032
		Control	-0.025	-0.015
		Diff	**0.056*****	**0.047*****
E	$BHAR_{q\ to\ q+4}$	*Treat*	0.034	0.034
		Control	-0.017	-0.016
		Diff	**0.051*****	**0.050*****
F	$BHAR_{q\ to\ q+5}$	*Treat*	0.036	0.036
		Control	-0.007	-0.016
		Diff	**0.043*****	**0.052*****
G	$BHAR_{q\ to\ q+6}$	*Treat*	0.032	0.032
		Control	-0.008	-0.017
		Diff	**0.040*****	**0.049*****
H	$BHAR_{q\ to\ q+7}$	*Treat*	0.031	0.031
		Control	-0.008	-0.014
		Diff	**0.038*****	**0.044*****
I	$BHAR_{q\ to\ q+8}$	*Treat*	0.039	0.039
		Control	0.004	-0.010
		Diff	**0.035*****	**0.049*****

Table 8

Cross-sectional results partitioned on information asymmetry

The table reports the summary regression results based on the subsamples of high or low information asymmetry, which is measured as the average daily price impact during quarter *q* in panel A or text readability for 10K or 10Q filings disclosed in quarter *q* in panel B. The sample spans from 2000Q3 to 2006Q3. For brevity, we only report the coefficient estimates of key regressors of interest. When *Meet or Beat≤1ct*$_q$, *ΔR&D*$_q$, and *ΔINV*$_q$ are the dependent variables, *Tainted Fund Ownership* is the key regressor. When *CAR*$_q$ and *ALYREV*$_q$ are the dependent variables, the subsample with *NoMiss* equaling 1 is used and the key regressor is *Tainted Fund Ownership*UEA.* The subsample with high (low) information asymmetry consists of observations with above-(below-) median values of price impact or below-(above-) median values of the Coleman-Liau readability index. Price impact is defined as the average daily price impact during quarter *q*. The Coleman-Liau readability index is measured based on the 10-K or 10-Q filings of quarter *q*, calculated as (5.89*#characterics/#words)-0.3*#sentences/(100*#words))-15.8 according to Coleman and Liau (1975). Column (1) ((2)) reports results using the subsample with high (low) information asymmetry. Variable definitions are in Appendix B. Corresponding controls and fixed effects are included in all regressions. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels using two-tailed tests, respectively.

Panel A: Using price impact as the proxy for information asymmetry

Dependent Variable	Key Variable	*High* (1)	*Low* (2)
Meet or Beat≤1ct$_q$	*Tainted Fund Ownership*	0.090***	0.051
		(0.034)	(0.049)
ΔR&D$_q$	*Tainted Fund Ownership*	0.002***	0.001
		(0.001)	(0.001)
ΔINV$_q$	*Tainted Fund Ownership*	0.002***	0.001
		(0.001)	(0.001)
CAR$_q$	*Tainted Fund Ownership*	3.311***	-0.077
	**UEA*$_q$	(0.703)	(0.551)
ALYREV$_q$	*Tainted Fund Ownership*	1.505***	0.164
	**UEA*$_q$	(0.419)	(0.118)

Panel B: Using the inverse of text readability as the proxy for information asymmetry

Dependent Variable	Key Variable	*High* (1)	*Low* (2)
Meet or Beat≤1ct$_q$	*Tainted Fund Ownership*	0.107***	0.051
		(0.037)	(0.041)
ΔR&D$_q$	*Tainted Fund Ownership*	0.003***	0.000
		(0.001)	(0.001)
ΔINV$_q$	*Tainted Fund Ownership*	0.006***	0.000
		(0.001)	(0.001)
CAR$_q$	*Tainted Fund Ownership*	1.624***	2.295
	**UEA*$_q$	(0.537)	(1.435)
ALYREV$_q$	*Tainted Fund Ownership*	0.995**	0.018
	**UEA*$_q$	(0.402)	(0.428)

Online Appendix to "The Signaling Role of Seemingly Myopic Investment Behavior"

Definition of variables used in the Online Appendix

This table describes the calculation of variables used only in this online appendix. The variables used also in the main analyses are described in Appendix A of the paper. Underlined variables refer to variable names within Compustat. Subscript *q* indicates a given fiscal quarter of firm *i*, while firm subscript *i* is omitted for brevity.

Variable	Definition
Meet or Beat≤2ct$_q$	An indicator variable that equals one if the reported EPS falls between the latest mean analyst consensus forecast prior to the earnings announcement of quarter *q* and that plus two cents, and zero otherwise.
Meet or Beat≤3ct$_q$	An indicator variable that equals one if the reported EPS falls between the latest mean analyst consensus forecast prior to the earnings announcement of quarter *q* and that plus three cents, and zero otherwise.
Meet or Beat>3ct$_q$	An indicator variable that equals one if the reported EPS exceeds the latest mean analyst consensus forecast prior to the earnings announcement of quarter *q* by more than three cents, and zero otherwise.
$\Delta CAPEXP_q$	The negative of the change in the capital expenditures (inferred from CAPXY) from quarter *q-4* to quarter *q*, scaled by total assets (ATQ) at the end of quarter *q-1*, in percentage points. Missing capital expenditures are set to zero.
$SMF\%_q$	The scandal mutual fund flow in quarter *q*. We follow Edmans et al. (2012) and compute this variable in four steps. First, we infer each fund's quarterly flow based on its monthly fund returns and total net assets. Second, we calculate each fund's expected percentage of trading volume in the firm based on the fund's existing position at the beginning of the quarter had the fund perfectly scaled up (down) in response to its capital inflows (outflows), multiplied by -1. Third, we only keep the expected percentage of trading volume when they are greater or equal to 5%. Fourth, we aggregate these expected percentages of trading volume across funds to derive a firm level measure of flow-induced underpricing.
$SMFDUM_q$	An indicator variable that equals one if the scandal mutual fund flow in quarter is greater than zero, and zero otherwise.
DA_q	Discretionary accruals in quarter *q*, defined as the difference between a firm's total accruals and the fitted normal accruals derived from the modified Jones model of Dechow, Sloan, and Sweeney (1995), multiplied by ten for illustration purpose.

Table A1

Negative stock price pressure and the probability of meeting/beating earnings consensus based on alternative definitions

This table reports the regression results on the relation between negative stock price pressure and the probability of meeting/beating earnings consensus. Negative stock price pressure is measured using *Tainted Fund Ownership* in columns (1), (3), and (5), and *Above-Median Ownership Y/N* in columns (2), (4), and (6). Meeting/beating earnings consensus is measured using *Meet or Beat≤2ct* in Columns (1)-(2), *Meet or Beat≤3ct* in Columns (3)-(4), and *Meet or Beat>3ct* in Columns (5)-(6). The sample spans from 2000Q3 to 2006Q3. Variable definitions are in Appendix B and the definition table at the start of this Internet Appendix. All six columns estimate a probit model. The inclusion of fixed effects is as indicated in the table. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. For measures of price pressure, the marginal effects are displayed below the standard error. ***, **, and, * indicate significance at the 1%, 5%, and, 10% two-tailed levels, respectively.

	Probit					
Dependent Variable	*Meet or Beat<=2ct$_q$*		*Meet or Beat<=3ct$_q$*		*Meet or Beat>3ct$_q$*	
	(1)	(2)	(3)	(4)	(5)	(6)
Tainted Fund Ownership	**0.095*****		**0.131*****		**-0.028**	
	(0.026)		(0.026)		(0.039)	
	[0.022***]		[0.032***]		[-0.003]	
Above-Median Ownership Y/N		**0.059*****		**0.093*****		**0.007**
		(0.017)		(0.016)		(0.022)
		[0.013***]		[0.022***]		[0.001]
SIZE$_{q-1}$	-0.033***	-0.035***	-0.027***	-0.029***	0.054***	0.054***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)
ROA$_{q-1}$	3.424***	3.417***	3.454***	3.438***	-1.149***	-1.156***
	(0.134)	(0.134)	(0.129)	(0.129)	(0.137)	(0.137)
LEV$_{q-1}$	-0.320***	-0.319***	-0.308***	-0.306***	0.099**	0.098**
	(0.036)	(0.036)	(0.035)	(0.035)	(0.044)	(0.044)
MB$_{q-1}$	0.017***	0.017***	0.017***	0.017***	0.002	0.002
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
ALY_N$_q$	0.191***	0.190***	0.199***	0.197***	-0.223***	-0.225***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.015)	(0.015)
ALY_HRZN$_q$	0.380***	0.379***	0.395***	0.395***	-0.784***	-0.784***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
ALY_DISP$_q$	-0.285***	-0.284***	-0.281***	-0.279***	-0.275***	-0.275***
	(0.017)	(0.017)	(0.016)	(0.016)	(0.029)	(0.029)
Fixed effects			Industry, Year-Quarter			
Observations	82,237	82,237	82,237	82,237	82,237	82,237
Pseudo R^2	0.199	0.199	0.215	0.215	0.678	0.678

Table A2

Negative stock price pressure, meeting/beating earnings consensus, and investment reduction, with additional controls

This table reports the regression results on the relation between negative stock price pressure, meeting/beating earnings consensus, and investment reduction, including the full set of controls. Negative stock price pressure is measured using *Tainted Fund Ownership* in columns (1), (3), and (5), and *Above-Median Ownership Y/N* in columns (2), (4), and (6). Meeting/beating earnings consensus is measured using *Meet or Beat≤1ct* in columns (1)-(2). Investment reduction is measured using ΔRD in columns (3)-(4), and ΔINV in columns (5)-(6). The sample spans from 2000Q3 to 2006Q3. Variable definitions are in Appendix B and the definition table at the start of this Internet Appendix. Columns (1)-(2) estimate a probit model, and columns (3)-(6) estimate an OLS model. The inclusion of fixed effects is as indicated in the table. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. For *Tainted Fund Ownership* (*Above-Median Ownership Y/N*) in column (1) (column (2)), the marginal effect is displayed below the standard error. ***, **, and, * indicate significance at the 1%, 5%, and, 10% two-tailed levels, respectively.

	Probit		**OLS**			
Dependent Variable	*Meet or Beat≤1ct*$_q$		ΔRD_q		ΔINV_q	
	(1)	(2)	(3)	(4)	(5)	(6)
Tainted Fund Ownership	**0.070****		**0.131*****		**0.005*****	
	(0.027)		(0.026)		(0.001)	
	[0.022***]					
Above-Median Ownership Y/N		**0.040****		**0.001*****		**0.004*****
		(0.018)		(0.000)		(0.000)
		[0.014***]				
SIZE$_{q-1}$	-0.029***	-0.030***	0.001	0.001	0.001	0.001
	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)
ROA$_{q-1}$	2.842***	2.840***	0.001	0.001	-0.003	-0.003
	(0.157)	(0.157)	(0.004)	(0.004)	(0.005)	(0.005)
LEV$_{q-1}$	-0.320***	-0.319***	-0.001	-0.001	0.008***	0.009***
	(0.041)	(0.041)	(0.002)	(0.002)	(0.002)	(0.002)
MB$_{q-1}$	0.003	0.003	0.000*	0.000*	0.000	0.000
	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
ALY_N$_q$	0.168***	0.168***	0.000	0.000	-0.000	-0.000
	(0.012)	(0.012)	(0.000)	(0.000)	(0.000)	(0.000)
ALY_HRZN$_q$	0.354***	0.354***	-0.000	-0.000	-0.000	0.000
	(0.005)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)
ALY_DISP$_q$	-0.261***	-0.261***	-0.001**	-0.001**	-0.000	-0.000
	(0.018)	(0.018)	(0.000)	(0.000)	(0.000)	(0.000)
Q_q	0.069***	0.069***	-0.002***	-0.002***	-0.003***	-0.003***
	(0.007)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)
Q_{q-1}	-0.020***	-0.020***	-0.000	-0.000	-0.000	-0.000
	(0.007)	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)
AGE$_{q-1}$	-0.001**	-0.001***	0.000	0.000	0.001*	0.001*
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
CASH$_{q-1}$	-0.232***	-0.234***	-0.005**	-0.005***	-0.013***	-0.013***
	(0.036)	(0.036)	(0.002)	(0.002)	(0.002)	(0.002)
RETEARN$_{q-1}$	-0.004	-0.004	-0.004***	-0.004***	-0.004***	-0.004***
	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)
BHAR$_{q-1}$	0.127***	0.127***	0.001***	0.001***	0.000	0.000

	(0.022)	(0.022)	(0.000)	(0.000)	(0.001)	(0.001)
Fixed effects	Industry, Year-Quarter			Firm, Year-Quarter		
No. of observations	82,237	82,237	82,237	82,237	82,237	82,237
Pseudo R^2 (R^2)	0.180	0.180	0.059	0.059	0.049	0.049

Table A3

Negative stock price pressure and the reduction of capital expenditure

This table reports the OLS regression results on the relation between negative stock price pressure and the reduction of capital expenditure. Negative stock price pressure is measured using *Tainted Fund Ownership* in columns (1) and (3) and *Above-Median Ownership Y/N* in columns (2) and (4). The reduction of capital expenditure is measured using $\Delta CAPEXP$, which is the negative of the change in the capital expenditures from quarter *q-4* to quarter *q*, scaled by total assets at the end of quarter *q-1*, in percentage points. The sample spans from 2000Q3 to 2006Q3. Variable definitions are in Appendix B and the definition table at the start of this Internet Appendix. The inclusion of fixed effects is as indicated in the table. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. ***,**, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

Dependent Variable	$\Delta CAPEXP_q$	$\Delta CAPEXP_q$
	(1)	(2)
Tainted Fund Ownership	**0.003*****	
	(0.000)	
Above-Median Ownership Y/N		**0.002*****
		(0.000)
$SIZE_{q-1}$	0.000	0.000
	(0.001)	(0.001)
ROA_{q-1}	-0.004	-0.004
	(0.003)	(0.003)
LEV_{q-1}	0.008***	0.009***
	(0.002)	(0.002)
Q_q	-0.001***	-0.001***
	(0.000)	(0.000)
Q_{q-1}	-0.000	-0.000
	(0.000)	(0.000)
AGE_{q-1}	0.001*	0.001*
	(0.000)	(0.000)
$CASH_{q-1}$	-0.008***	-0.008***
	(0.001)	(0.001)
$RETEARN_{q-1}$	-0.000	-0.000
	(0.000)	(0.000)
$BHAR_{q-1}$	-0.001***	-0.001***
	(0.000)	(0.000)
Fixed effects	Firm, Year-Quarter	
Observations	82,237	82,237
Pseudo R^2	0.011	0.011

Table A4

Scandal mutual fund flow as the proxy of negative stock price pressure

The table reports the summary regression results when negative stock price pressure is measured as the scandal mutual fund flow estimated according to Edmans et al. (2012). The sample spans from 2000Q3 to 2006Q3. For the sake of brevity, we only report the coefficients of key variables. When *MBE*, *ΔR&D*, and *ΔINV* are the dependent variables, *SMF%* and *SMFDUM* are the key variables. When CAR_q and $ALYREV_q$ are the dependent variables, the subsample with *NoMiss* equals to 1 is used and the key variables are *SMF%*UEA* or *SMFDUM*UEA*. Column (1) ((2)) presents the results when negative stock price pressure is measured as a continuous variable (an indicator). Variable definitions are in Appendix B and the definition table at the start of this Internet Appendix. Corresponding controls and fixed effects are included in all regressions. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels using two-tailed tests, respectively.

Dependent Variable	Key Variable	*Coefficient* (1)	Key Variable	*Coefficient (2)*
MBE_q	*SMF%*	0.043***	*SMFDUM*	0.034*
		(0.013)		(0.020)
$\Delta R\&D_q$	*SMF%*	0.001***	*SMFDUM*	0.002***
		(0.000)		(0.000)
ΔINV_q	*SMF%*	0.001***	*SMFDUM*	0.003***
		(0.000)		(0.000)
CAR_q	$SMF\%*UEA_q$	1.127***	$SMFDUM*UEA_q$	1.551***
		(0.288)		(0.387)
$ALYREV_q$	$SMF\%*UEA_q$	0.853***	$SMFDUM*UEA_q$	1.441***
		(0.184)		(0.231)

Table A5

Accrual management and the probability of meeting/beating earnings consensus

This table reports the probit regression results on the relation between accrual management and the probability of meeting/beating earnings consensus. Accrual management is measured as the discretionary accruals based on the modified Jones model of Dechow, Sloan, and Sweeney (1995) model. Meeting/beating earnings consensus is measured by *Meet or Beat≤1ct*$_q$. The sample spans from 2000Q3 to 2006Q3. Variable definitions are in Appendix B and the definition table at the start of this Internet Appendix. The inclusion of fixed effects is as indicated in the table. Standard errors, displayed in parentheses, are clustered at the firm and quarter level. ***,**, and * indicate significance at the 1%, 5%, and 10% two-tailed levels, respectively.

Dependent Variable	*Meet or Beat≤1ct*$_q$
	(1)
DA$_q$	0.006
	(0.004)
SIZE$_{q-1}$	-0.041***
	-0.005
ROA$_{q-1}$	3.217***
	-0.141
LEV$_{q-1}$	-0.320***
	-0.038
MB$_{q-1}$	0.016***
	(0.002)
ALY_N$_q$	0.186***
	-0.011
ALY_HRZN$_q$	0.355***
	-0.005
ALY_DISP$_q$	-0.280***
	-0.019
Fixed effects	Industry, Year-Quarter
Observations	82,237
Pseudo R^2	0.177

about ECGI

The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities.*

The ECGI will produce and disseminate high quality research while remaining close to the concerns and interests of corporate, financial and public policy makers. It will draw on the expertise of scholars from numerous countries and bring together a critical mass of expertise and interest to bear on this important subject.

The views expressed in this working paper are those of the authors, not those of the ECGI or its members.

ECGI Working Paper Series in Finance

www.ecgi.global/content/working-papers

Electronic Access to the Working Paper Series

The full set of ECGI working papers can be accessed through the Institute's Web-site (www.ecgi.global/content/working-papers) or SSRN:

Finance Paper Series	http://www.ssrn.com/link/ECGI-Fin.html
Law Paper Series	http://www.ssrn.com/link/ECGI-Law.html