

**Corporate Responses under External Scrutiny:  
The Battle against Short-Seller Research**

*\*Working Draft\**

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**Abstract:**

Using the recent emergence of short-seller research as instances of external scrutiny, the study investigates how firms under intense external scrutiny manage to restore market confidence by analyzing their corporate responses. The results indicate that firms under attack by short-sellers generally find it difficult to convince the market only through voluntary disclosures, which may resemble a babbling equilibrium in some cases. To remedy this potential “cheap-talk” situation, actively engaging in two-way conversations with analysts and investors (e.g. by hosting conference calls and corporate visits) appears to help enhance corporate communication to outsiders. Strong endorsement by sell-side analysts may also help restore market confidence. Further, targeted firms may use payout policies such as dividends and continuous share repurchases to signal their values over time.

**Keywords:** corporate communication; disclosure credibility; short-seller research; cheap talk; payout policy; external scrutiny; restoring market confidence

## **1. Introduction**

Prior research suggests that corporations may face problems in fully conveying information to investors, e.g. due to the proprietary or non-verifiable nature of information. For example, Healy and Palepu (1995) presented a case study on a company named CUC which had difficulty communicating with investors leading to long periods of stock misvaluation until it took a series of costly actions to signal its value to investors. This case is just an example of a classic information problem: information asymmetry between managers and investors. However, such information problem is likely aggravated when corporations are subject to external scrutiny, e.g. over allegations of overvaluation, distress, or even fraud. It is not clear what courses of actions corporations can take to tackle this information problem. This study aims to investigate several potential remedies to this information problem and evaluate their effectiveness.

Under the usual circumstances, corporate disclosure is often viewed as a solution to alleviate the information asymmetry between corporate insiders and outsiders (e.g. Grossman 1981; Diamond and Verrecchia 1991). Due to potential litigation and reputation costs associated with dissembling, disclosure is often assumed to be truthful in the theoretical literature (e.g. Verrecchia 1983; Dye 1985; Verrecchia 2001). However, in some special circumstances (e.g. when firms are under intense external scrutiny by short-sellers), outsiders may become increasingly uncertain over the manager's disclosure objectives or even perceive a lower cost of lying to cover up previous lies. According to Fisher and Verrecchia (2010), the credibility of corporate disclosure may thus be severely compromised when firms are under intense external scrutiny. It remains to be examined whether voluntary disclosures by firms under external scrutiny are still deemed credible or largely resembling "cheap talk". If it is the latter case, one may wonder what other corporate actions can be useful in helping to enhance their communications with investors and restore market confidence.

To shed some light on this questions, the study utilizes the issuance of highly bearish research reports by short-sellers over the past decade as instances of intense external scrutiny and examines how targeted firms respond to these external allegations. In recent years, there has been an emergence of short-seller research reports circulating over the Internet targeting firms that are allegedly severely overvalued, distressed, or even fraudulent, often triggering substantial negative short-term market reactions. As information technology reduces the costs of information production and dissemination, firms are increasingly facing the risk of being scrutinized by external market participants. In the early periods, these short-seller reports appeared to be mostly “correct” and served to accelerate price discovery (e.g. Ljungqvist and Qian 2016). However, some of these reports may also occasionally “misfire” due to either misunderstanding or deliberate “short and distort” scheme. Some critics have argued that these reports are presenting distorted negative information for self-serving purposes due to their initiated short positions.

As large heterogeneities in incentives and methodologies potentially exist among short-seller research reports, some “innocent” firms may become the unfortunate targets by these short-sellers. Since these reports often trigger strong negative market reactions, it remains to be explored how “innocent” firms can potentially manage to separate themselves from other firms in overcoming this negative information shock. More broadly, this is related to the question as to whether and how firms can effectively communicate with investors when they are under external scrutiny. As investors may no longer hold the truthful reporting belief when firms are under intense external scrutiny, corporate communications likely entail substantial information loss, resembling a babbling equilibrium in “cheap talk” during which investors find no information content when targeted firms deny the allegations (Crawford and Sobel 1982). In this scenario, attempts to convince investors through voluntary disclosure alone may be futile.

If voluntary disclosures are no longer perceived to be highly credible when firms are facing heavy external scrutiny, firms may need to seek alternative channels to facilitate their communications with outsiders. As potential remedies to the problem, the “cheap-talk” theory literature suggests that having multi-stage interactive communication (Krishna and Morgan 2004) and independent experts endorsing the targeted firms (Krishna and Morgan 2001) may help to enhance information transmission to investors. In the context of financial market, conference calls and investor days may encompass substantial multi-stage interactive communication between corporate managers and outsiders. Sell-side analysts (which often have different incentives from the targeted firms due to reputational concerns) may also play the role of third-party experts in facilitating full information revelation to investors. Therefore, I expect that engaging in two-way communications through holding conference calls and investor days and soliciting endorsement by sell-side analysts may help mitigate the “cheap-talk” problems when firms are under attack by short-sellers.

However, as corporate communication strategies may be easily mimicked by other firms, these remedy mechanisms alone may still not be sufficient in restoring market confidence. To credibly signal their types, firms may need to communicate their private information indirectly through other more costly non-disclosure responses (e.g. Spence 1973, Riley 1979). As long as different responses are differentially costly for different types of firms, signaling will be more credible if “bad” firms find it costly to mimic “good” ones. Prior literature suggests that managers can use dividends or share repurchases to signal information to the market when there is high information asymmetry (Bhattacharya, 1979; Miller and Rock, 1985). Although share repurchases represent a more flexible form of payout, continuous share repurchases may strengthen the signal

over time. Therefore, I expect that firms can also use payout policies to facilitate the signaling of their values after facing intense scrutiny.

In the study, I track the prominent short-seller research firm and download short-seller research reports from 2005 to 2016Q3 as cleanly identified and powerful instances of external scrutiny on targeted firms. For each 505 initiating short-seller research reports issued, I search for corporate actions by targeted firms after the issuance of short-seller research using a variety of sources, mainly including corporate websites, media articles (e.g. *Factiva*) and financial database (e.g. *Capital IQ Key Development*). The study uses stock returns, particularly over longer horizons, as proxies for whether targeted firms manage to regain market confidence after intense external scrutiny by short-sellers. Return reversals from initial stock price crashes over time represent gradual successful restoration of investor confidence. Two sets of tests are conducted to evaluate the impact of corporate responses in restoring market confidence, including examining the association between each type of corporate responses and stock returns over different time horizons (“long-window association studies”) and conducting event studies around each type of corporate responses to study their immediate market impact (“short-window event studies”).

The study first assesses the extent to which firms may use voluntary disclosures to regain market confidence. I find that the two-day market reactions to the corporate denial of allegations by targeted firms are rather mixed, with a mean return of -2.4% and a median return of 0.4%. Further, no significant positive association is found between corporate denial of allegations and returns over longer horizons. The strength of response, proxied by the length of the response statement over the length of short-seller research reports, is generally positively associated with return reversals over a horizon of fewer than three months. These results suggest that targeted firms often find it difficult to fully communicate to the market simply by issuing a public statement to

deny the allegations, consistent with a babbling equilibrium in “cheap talk” models in which investors find no information content when targeted firms simply deny the allegations. While supplementing the statements of denial with details and evidence may help somewhat, using voluntary disclosures alone is unlikely to fully restore market confidence due to their compromised credibility.

Next, the study investigates whether the remedy mechanisms proposed in the “cheap-talk” literature can be applied in this context of corporate communication. Using the frequency of conference calls and investor days to represent corporate engagement in two-way communications with investors, I find that communications under interactive channels within 30 days of external scrutiny are associated with 5.6% two-day market-adjusted returns on average. The results in the short-window event studies are also corroborated with significant positive coefficients in the long-window association studies across all time horizons. Similarly, I find that endorsements by sell-side analysts within 30 days of external scrutiny are associated with 15.5% two-day market-adjusted returns on average. However, analyst endorsements are quite rare in my sample. In the long-window association studies, the coefficients on sell-side analyst endorsements are all positive but only statistically significant over a one-year return window. Overall, the evidence is consistent with two-way communications and analyst endorsements helping to enhance corporate communications when firms are under external scrutiny.

Further, the study evaluates the effectiveness of using payout policies as signaling mechanisms to supplement corporate communications. In the short-window event studies, I find that dividend affirmations/increases within 30 days of external scrutiny are associated with 4.8% two-day market-adjusted returns on average while share repurchases in the same 30-day window are associated with 2.5% market-adjusted returns on average. In the long-window association

studies, the coefficients on dividend policies are generally significantly positive across all measurement windows. However, the coefficients on share repurchases are insignificantly negative in the one-week return window but become significantly positive as the measurement window becomes longer. These suggest that firms under external scrutiny may use payout policies (e.g. dividend) in helping to signal their values. While one-time buyback may not send a sufficiently strong signal to the market, continuous share repurchases appear to strengthen the signal over time.

The study contributes to the corporate communication literature by examining a special situation in which voluntary disclosure may no longer be perceived as credible, violating the common assumption in a number of theoretical voluntary disclosure models (e.g. Verrecchia 1983; Dye 1985). The “cheap-talk” theoretical framework is applied in this study to circumstances in which firms are subject to heavy scrutiny by external parties. Consistent with the “cheap-talk” framework, the study shows that simply denying the allegations is not informative to investors. As mimicking cost is likely not high, simply dismissing the allegations appears to be insufficient in separating different types of firms in equilibrium.

To tackle this communication problem, the study examines two potential remedy mechanisms in the “cheap-talk” literature to facilitate corporate communication to outsiders. First, I document the role of two-way communication channels, in the form of conference calls and investor days in the financial market, in helping to resolve communication problems when firms are under external scrutiny. Second, receiving strong endorsement by sell-side analysts over time appears to help restore market confidence in these targeted firms gradually. These provide empirical support to the remedy mechanisms proposed in “cheap-talk” literature in enhancing



corporate communications when firms are under external scrutiny (e.g. Krishna and Morgan 2001; Krishna and Morgan 2004).

The study may also add to the signaling literature from payout policies. My results show that dividend announcements may serve as a stronger signaling device in the short term relative to one-time share repurchase announcements when firms are under external scrutiny. This is consistent with Jagannathan, Stephens, and Weisbach (2000) which suggest that repurchases represent a more flexible form of payout because ongoing repurchase year after year may not be expected. However, my results also suggest that repeated share repurchases over a long period of time can gradually help firms to restore market confidence from external scrutiny.

Further, the study has the potential to contribute to the analyst literature by suggesting an additional role of sell-side analysts in facilitating corporate communication with investors when firms are under external scrutiny. According to the “cheap talk” theory (e.g. Krishna and Morgan 2001), experts with incentive different from the targeted firms may help to enhance information transmission to investors when they endorse the targeted firms. My results suggest that sell-side analysts can potentially play the role of such experts and help firms to mitigate their communication problems when their disclosure credibility is in doubt.

As information technology reduces the costs of information production and dissemination, firms may be increasingly facing the risk of being scrutinized by external market participants. Thus, the above information problem may be growing in importance over time. The results are also of particular interest to corporate managers regarding how corporations can enhance their communication with investors when they are subject to intense scrutiny, e.g. under allegations by short-sellers. The findings may also be useful for investors in judging the veracity of allegations based on various corporate responses.

The remainder of the paper is organized as follows. Section 2 elaborates on the background and motivation for the research question. Section 3 develops my hypotheses. Section 4 describes my sample and empirical specifications. Section 5 presents my results. Section 6 provides a summary of the findings.

## **2. Background and Motivation**

The emergence of new information technology (e.g. social networks and investor community platforms) has allowed the dissemination of information to be conducted at a much lower cost and faster speed. Now almost anyone can potentially produce and disseminate information through these new communication channels with ease. In recent years, there has been a surge in research reports written and disseminated by short sellers or even anonymous online users, putting many public companies under heavy scrutiny. Some notable ones include Muddy Water and Citron which became well-known for accusing US-listed Chinese companies in 2011<sup>1</sup>.

A recent paper by Ljungqvist and Qian (2016) investigates this new phenomenon. Using 124 short-sale campaigns in the US between 2006 and 2011, they find that investors respond strongly to the reports by short-sellers, with the share price of targeted firms falling by 7.5% on average when a report is released, and continuing to drift lower. Subsequently, they find that 50% of target firms are delisted and 36% are formally investigated by the SEC or Department of Justice. Their findings are consistent with these small information arbitrageurs mostly playing the role of accelerating price discovery in the collected sample from 2006 to 2011. Chen (2016) find similar significant market impact from these short-sellers on US-listed Chinese firms.

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<sup>1</sup> In addition to targeting mainly Chinese and US companies in their early years, some of these short-sellers have expanded their footprint globally, including Hong Kong, Singapore, Taiwan, Japan, France, Germany and Sweden.

While the reports in Ljungqvist and Qian (2016) and Chen (2016) are shown to be correcting market mispricing on average, not all reports appear to be “correct” and some may have “misfired” judging from the long-term price reactions of target firms. While many reports targeted Chinese reverse-merger companies in the early years, Lee, et al. (2015) find little evidence that Chinese reverse merger firms are inherently toxic investments. Some critics have also argued that these reports are presenting distorted negative information for self-serving purposes due to their initiated short positions. For some reports, short-sellers may have misunderstood the business models of targeted firms due to their unfamiliarity with the new economy or foreign countries.

Targeted firms, especially those that are “misfired”, are obviously unhappy with these reports. Due to the existence of numerous potentially “erroneous” reports on Chinese tech companies, the editorial by the official Xinhua news services even went as far as to claim that “foreign short-sellers targeting Chinese companies listed in the U.S. are engaging in a malicious act” in September 2012<sup>2</sup>. Evergrande, a real estate developer listed in Hong Kong, filed a police report after being accused by Citron of insolvency in 2012. In August 2016, the Market Misconduct Tribunal of SFC in HK found Citron “reckless” or “negligent” for spreading false and misleading information about Evergrande and profiting HK\$1.7 million from shorting activities.

Qihoo 360 is another case in which three of the short-seller research issuers *Citron*, *Little Bear* and *Muddy Waters* seemed to have “misfired”. It debuted in Nasdaq on March 31, 2011 with an IPO price of \$14.5 and was trading above \$20 before Citron initiated a report putting the company as “the most overvalued and misunderstood Chinese Internet Stock” with a target price of \$5. Qihoo share price was hit by as much as -14% within two day after the initiating report. Later, *Little Bear* initiated another report on Qihoo on January 31, 2012. *Muddy Waters* also

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<sup>2</sup> This was preceded by a prominent technology leader in China Kai-Fu Lee mounting an offensive against Citron for “unfair and inaccurate attacks” on US-listed Chinese companies.

subsequently put a negative post regarding Qihoo 360 on its official Tweeter account on January 24, 2013. But these became the history. In 2015, the management team offered a buyout price of \$77. The privatization deal eventually went through, at a price that is 15 times the target price by Citron's initiating report.

From the Evergrande and Qihoo cases, the distinction between “short and disclose” and “short and distort” may be quite delicate. The latter may be illegal if unethical speculators short-sell a stock and then spread unsubstantiated rumors and unverified bad news to drive down the share price for profit. Since investors tend to react to the track record of report issuers, some short-sellers may adopt a mixed strategy by developing a track record through “disclosing” problematic firms with severe short sale constraints first and profiting from “distorting” information about more liquid firms. With the publicity of success of the early short-sale campaigns in 2011 and 2012, opportunistic new entrants may also be attracted to the market by imitating the strategy or disguising their strategy of “short and distort” as “short and disclose”.

The question is how often these reports have “misfired”. Earlier research from Ljungqvist and Qian (2016) show that only roughly 13% of the targeted firms between 2006 and 2011 registered positive returns in one year. If long-term share price movements can be regarded as reflecting the “truth”, one may infer that roughly 13% of the reports seemed to have “misfired” in their sample. Over the past few years, some of these short-seller research issuers have begun targeting more high-profile companies (e.g. Tesla, 3D Systems) instead of microcap or small Chinese reverse-merger companies in the early years. One may wonder whether the “misfired” percentage has changed over time due to changes in business strategy, new entrants and increased competition.

To help shed some light on this, I followed these short-seller research issuers and collected over 600 samples of their initiating research reports up to the third quarter of 2016. Descriptive statistics reveal that a higher percentage of 31% (29%) of the targeted firms registered positive market-adjusted (raw) returns in one year. As seen from Figure 1, the number and the percentage of firms reverting to positive returns in one year seem to have been increasing over time since 2011. In the first three quarters of 2016, over 47% of the targeted firms registered a positive return in one year. If one year is a long enough horizon for the stock market to impound all relevant information to reach a conclusion on the battle between short-sellers and targeted firms, this may suggest that either these reports are making more mistakes over time or the “short and distort” strategy is gaining popularity. In other words, more firms are being “misfired” by either mistakes in “short and disclose” campaigns or manipulative “short and distort” campaigns over time.

In light of this, my study hopes to examine how targeted firms respond to the release of short-seller research reports. Given the strong initial negative market reactions triggered by these reports, “misfired” firms should have strong incentives to do whatever they can to avoid being pooled with other targeted firms. The study is interested in understanding what corporate actions are associated with helping “misfired” firms separate from other targeted firms. For example, is the defense issued by targeted firms in response to allegations credible or mostly regarded as “cheap talk” by investors? If so, are there any remedy mechanisms that can enhance the credibility of information that firms want to communicate to investors? When firms are targeted by either “short and disclose” campaign in error or “short and distort” campaign intentionally, how can they defend themselves? In addition to disclosure, are there any effective signaling mechanisms that firms can take to regain market confidence?

This study is related to an early case study by Healy and Palepu (1995) on the challenges of investor communication faced by CUC international, which seemed to fail in credibly conveying information to investors about the value of their new product investments. Undervaluation caused by the communication problem sustained for a long period of time until the firm took a series of corporate actions to signal its value, including leveraged recapitalization, accelerated repayment of recapitalization debt and stock repurchase. I hope to expand this early case study by systematically examining a large sample of firms facing similar communication problems. In particular, my study is concerned with a potentially more severe information problem faced by firms under external scrutiny (e.g. fraud allegation).

The study is also somewhat related to a study by Chakravarthy, et al. (2014) which examine how firms repair their reputations after a serious accounting restatement. My study differs from Chakravarthy, et al. (2014) in the following ways. Chakravarthy, et al. (2014) examine corporate responses after firms are convicted of wrongdoing while my study examines corporate responses after firms are only questioned by external market participants but not yet convicted. My study is particularly interested in how firms defend themselves when they are “misfired” by external scrutiny. In addition, Chakravarthy, et al. (2014) focus on reputation repair with respect to different stakeholders while my study focuses on information transmission and signaling from corporations to investors.

### **3. Hypotheses Development**

#### **3.1. Credibility of Disclosure**

Prior research suggests that corporations may incur costs in fully disclosing information when communicating with investors, e.g. due to the proprietary nature of certain information (Verrecchia 1983; Dye 1986). While truthful reporting is usually assumed in many theoretical

models on voluntary disclosure, the credibility of voluntary disclosure is worth closer examination empirically. For readily verifiable information, the credibility of corporate disclosure can be backed by the legal liability of misrepresentation. For unverifiable information, the credibility of voluntary disclosure may be backed by reputation concerns of managers in a repeated “cheap talk” game (e.g. Sobel 1985, Stocken 2000). However, when a firm is under intense scrutiny, investors may not believe whatever the firm says, especially when the firm is allegedly engaging in fraudulent behaviors.

Consider a general cheap talk model as in Crawford and Sobel (1982), communication by firms under fraud allegations likely entails substantial information loss as managers tend to have incentives which are quite different from those of investors. In the Sobel (1985) model, once the sender is revealed to be dishonest, his reputation is lost for the remainder of the game and no further communication will occur. In the Stocken (2000) model, communication can occur in a repeated game provided that, along with two other conditions, the accounting report is sufficiently useful for assessing the truthfulness of disclosure. However, when investors believe that the accused firm is likely fraudulent, information transmission from the accused firm to investors may be severely compromised.

As short-seller often accuse targeted firms of fraudulent behaviors, investors may regard the denial of allegations by targeted firms as “cheap talk”. Denying the allegations by fraudulent firms also likely incurs little marginal cost as lying to covering up previous lies may not add much additional penalty to the fraudsters but instead may buy them extra time to destroy evidence of fraudulent behaviors. Since other firms may choose to mimic “misfired” firms and deny the allegations regardless of whether they are “misfired” or not, it may result in a babbling equilibrium

in which investors find no or little information content when targeted firms simply deny the allegations. This leads to my first hypothesis below.

*H1: The credibility of disclosures denying the allegations by firms under external scrutiny is severely compromised.*

### **3.2. Remedy Mechanisms under “Cheap-Talk” Framework**

While simply dismissing the allegations may resemble a babbling equilibrium under the “cheap-talk” framework, the “cheap-talk” theory literature has also suggested some remedy mechanisms. For example, Kim (1996) and Krishna and Morgan (2004) show that multiple stages of communication together with active participation by the decision maker can always improve information transmission. In other words, engaging in two-way interactive conversations may enhance corporate communication with investors. In the context of firms under external scrutiny, I expect that hosting conference calls and arranging analysts and investors for site visits during analyst/investor days may serve this purpose and help to enhance the communication from targeted firms to investors.

Similarly, prior research on “cheap-talk” models (e.g. Krishna and Morgan 2001) suggests that decision makers may benefit from consulting additional experts in revealing more information, especially when the experts do not have the same incentives. For my setting, the presence of sell-side research analysts may play the role of such additional experts. Since these sell-side analysts likely have different incentives as the targeted firms as they are subject to different reputation risks, confirmatory advice by sell-side analysts in favor of the targeted companies should also help enhance the information transmission from targeted firms to investors. The above discussions lead to my hypothesis *H2a* and *H2b* below.



*H2a: More extensive two-way communication through hosting conference calls and investor days help to enhance the communication by the targeted firms to investors.*

*H2b: Endorsement from reputable sell-side analysts helps to enhance the communication by the targeted firms to investors.*

### **3.3. Payout Policies as Signaling Device**

If communication strategies can be easily mimicked by different types of firms, firms may need to communicate their private information indirectly through other costly non-disclosure responses as in standard signaling models (e.g. Spence 1973, Riley 1979). As long as different responses are differentially costly, signaling will be credible. For example, certain corporate actions may not be costly for non-fraudulent firms but highly costly for fraudulent firms. If it is highly costly for fraudulent firms to mimic these actions, then separating equilibrium can be observed. Firms taking these highly costly actions will likely be able to signal that they are non-fraudulent.

For example, managers can use dividend payout to signal information to the market when there is high information asymmetry between insiders and outsiders (Bhattacharya, 1979; Miller and Rock, 1985; and John and Williams, 1985). When firms are under attack by short-seller reports, the information asymmetry problem between insiders and outsiders can be exacerbated. Prior research (e.g. Lee and Rui, 2007) find that dividends are generally not correlated with temporary components of earnings. As dividend-paying firms appear to be reluctant to cut dividends (e.g. Lintner, 1956; Brav, Graham, Harvey, and Michaely, 2005), dividends may represent strong tacit firm commitment to continuous payout to shareholders. Thus, dividend payout may be an effective signaling device by targeted firms of short-seller reports and my fourth hypothesis is stated as follows.

In addition to dividends, share repurchases may be another form of payout that can be used to signal information to the market. Share repurchases have become more popular over time. One potential benefit is to signal managerial belief that the stock is undervalued. While Bhattacharya (1979) and Miller and Rock (1985) treat dividends and repurchases as perfect substitutes in their models, John and William (1985) argue that dividends are a stronger signal since they are more costly due to tax reasons. Jagannathan, Stephens, and Weisbach (2000) also suggest that repurchases represent a more flexible form of payout because ongoing repurchase year after year may not be expected. While an announcement of potential share repurchase may not be a strong signal to the market, continuous actual share repurchases may help strengthen the signal over time. These discussion lead to my third hypothesis below.

*H3a: Dividend payout policies help to restore market confidence in the targeted firms.*

*H3b: Share repurchases help to restore market confidence in the targeted firms.*

## **4. Research Design**

### **4.1 Sample Selection**

This study first entails constructing a sample of firms under external scrutiny. To identify instances in which firms are under external scrutiny, I searched for research reports released by short-sellers and anonymous online users similar to Ljungqvist and Qian (2016). I focus on tracking the initiating coverage research reports from a total of 19 short-sellers over time as my sample of analysis<sup>3</sup>. Using short-seller research reports has the advantage of being able to clearly

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<sup>3</sup> These 19 short-sellers include Absaroka, Alfred Little, Anonymous Analytics, Arsensio, CER, Citron Research, Financial Investigator, Geoinvesting, Glaucus Research, Jadeorstone, J Capital, Jonestown, Kerrisdale Capital, Little Bear, Muddy Water Research, PrescienceFunds, PresiencePoints, Sharesleuth and StreetSweeper.

identify the original information sources and the nature of allegations (e.g. fraud or distress). In addition, these reports are usually not preceded by firm-initiated disclosures.

I manually downloaded and analyzed 661 initiating research reports from these major short-seller report issuers from their inception of business up to the 3rd quarter of 2016. Table 1 outlines my sample selection procedures. As it is difficult to conduct comprehensive search for corporate responses in the distant past when electronic archives are not widely available, I remove all short-seller research reports released before 2004 from my study. After further removing initiating reports with “neutral” or “buy” recommendation as well as missing share price information from key databases, I am able to utilize a total of 524 initiating short-seller reports as the initial sample for my study. Approximately 94% of the targeted firms are listed in the United States, with the rest scattered across different exchanges<sup>4</sup>.

After identifying samples of firms under external scrutiny, my next step involves searching for corporate responses to these short-seller reports from various news sources, including *Capital IQ News and Key Development* database, corporate websites, *Factiva*, and *Google Search*. The machine readable data in *Capital IQ News and Key Development* database are supplemented by manual search through corporate websites, *Factiva*, and *Google Search* to confirm that all relevant corporate responses are captured. These data on corporate responses will then be merged with analyst coverage data from *IBES*, stock return data from *CRSP* and *Thomson Reuters*, and financial performance data from *Compustat* and *Thomson Reuters*. Imposing data requirements on these controls yield about 500 to 505 observations for return association studies across various measurement windows.

## **4.2 Empirical Strategy**

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<sup>4</sup> These include Hong Kong, Canada, United Kingdom, Japan, Singapore, France and Germany.

For each hypothesis, I conduct two sets of tests to explore how different types of corporate responses help firms under heavy scrutiny by short-sellers in regaining market confidence. The first set of test involve event studies to examine the short-term market reactions to different types of corporate responses. The two-day market-adjusted returns for each type of corporate responses made within one-month as well as within one-year after being targeted by the short-seller reports are examined. As benchmarking group, the two-day market-adjusted returns for each type of corporate responses made during the ordinary courses for business for all U.S. listed firms during the same sample period are also examined. If these corporate responses provide incremental benefits in fighting against the external scrutiny, I expect that the market-adjusted returns for each type of corporate response under external scrutiny should be more positive relative to those made when firms are not under external scrutiny. In addition, the market-adjusted returns for each type of corporate response made within one-month of external scrutiny should be more positive relative to those made within one-year of external scrutiny.

The second set of test examines the association between different types of corporate responses and cumulative raw returns measured over longer time horizons. This test can play an important role in supplementing short-window event studies, especially if the market may not immediately incorporate all relevant information efficiently in the stock prices in these special situations. I run the regressions in the specification indicated by (1) below, with cumulative raw returns over different time horizons  $Return [0, +X]$  as the dependent variable and various corporate responses as the independent variables, where X can be one-week, one-month, three-months, six-months and one-year after the release of short-seller research reports. To examine how corporate responses are associated with return reversal from negative to positive, I control for the lowest return within two days after the report release  $Min Return [0, +2D]$  and the cumulative market

return measured using the same time horizon *Market Return*  $[0, +X]$ <sup>5</sup>. To control for the heterogeneity among short-seller research and listed locations, I also include source fixed-effect and location fixed-effect in the regression.

$$\text{Return } [0, +X] = \alpha + \beta_1 \text{Ind\_Deny} + \beta_2 \text{Response Strength} + \beta_3 \text{Remedy Mechanisms} + \beta_4 \text{Signaling Device} + \beta_5 \text{Min Return } [0, +2D] + \beta_6 \text{Market Return } [0, +X] + \beta_6 \text{Controls} + \varepsilon \quad \text{--- (1)}$$

To test *H1*, I examine the coefficient on  $\beta_1$  and  $\beta_2$  in equation (1). If the denial of allegations by targeted firms is generally regarded as “cheap talk” by investors on average, I would expect  $\beta_1$  to be insignificantly different from zero. Conversely, if the denial of allegation can convey some messages to investors on average, I would expect that the coefficient of  $\beta_1$  is positive. Further, if additional voluntary disclosures in the denial of allegation is deemed credible, I would expect that the strength of the market reaction should be related to the strength of response, i.e. the coefficient of  $\beta_2$  should be positive. To proxy for *response strength* in equation (1), I use the relative length of the corporate response documents relative to the length short-seller research reports. In addition, I examine the short-term market reactions to the denial of allegation announcements. If the denial of allegations is generally regarded as “cheap talk” by investors on average, I would expect that the two-day market-adjusted returns should not be significantly different from zero. Conversely, if the denial of allegations is deemed credible by investors on average, I would expect the two-day market-adjusted returns to be positive.

To test *H2 and H3*, I examine the coefficients on  $\beta_3$  and  $\beta_4$  in equation (1), which correspond to a vector of different types of corporate responses. For the corporate response under *H2a*, I use the frequency of conference calls and investor days to represent the incorporation of two-way

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<sup>5</sup> In some specifications, I also control for other concurrent firm events in the same time horizon, including delayed filings, delistings, regulatory agency inquiries, lawsuits and legal issues, restatements of operating results, auditor going concern doubts, delayed earnings announcements, bankruptcy filings, CEO changes and CFO changes.

communication channels with investors. For the corporate response under *H2b*, the frequency of the issuance of sell-side analyst reports with “strong buy” rating is used to represent the endorsement by external experts. I also use the frequency of dividend affirmations and increases to represent the corporate response under *H3a* and the frequency of buyback related announcements to represent the corporate response under *H3b* respectively. To be consistent with each hypothesis, the coefficients on  $\beta_3$  and  $\beta_4$  should be significantly positive. Event studies are also conducted on each type of corporate response. For consistency with each hypothesis, the two-day market-adjusted returns on each type of corporate response should be positive respectively in the sample. I would also expect that the two-day market-adjusted returns on each type of corporate response should be more positive when firms are more directly under external scrutiny.

## **5. Results**

### **5.1. Summary Statistics**

Table 2 provide the summary descriptive statistics for the main samples used in the association test between corporate responses and cumulative returns in Table 4. Panel A to C provide the descriptive statistics for variable used in the association tests for the one-week, one-month and one-year time horizon respectively. As shown by these tables, the short-seller research reports in my sample triggered an average of -7.6% in a one-week span, -11.1% in a one-month span, and -24.3% in a one-year span. Consistent with Ljungqvist and Qian (2016), these short-seller report appear to contain rich information content and can trigger sharp declines in stock prices.

Despite their significant impact on the market, these short-seller reports also exhibit large heterogeneity in their “power” or “accuracy”. In each of the three panels, the returns are positive at their 75<sup>th</sup> percentile of distribution. This corresponds to Figure 1 which shows that on average

29% of the firms have positive market-adjusted returns in one-year after the report is released. Conditional on having 5% or more in magnitude with their initial negative returns, 21% of the firms manage to command a positive market-adjusted return in one-year. Conditional on having 10% or more in magnitude with their initial negative returns, 17% of the firms manage to command a positive market-adjusted return in one-year. If long-term share price movements can be regarded as reflecting the “truth”, this shows that roughly a quarter of the targeted firms manage to recover from the potentially “misfired” short-seller research reports.

Firms targeted by short-seller research reports respond in a number of ways to counteract the effect of the reports. Table 2 shows that approximately 17% of the targeted firms issue a public statement to deny the allegations made by the short-sellers. On average, their public statement is 8.5% in length relative to the short-seller reports. Within the first week of allegations, 4.2% of firms engage in two-way interactions with investors while 2.6% of the firms receive endorsement by sell-analysts. Further, 1.6% announce dividends while 3.8% announce (potential) share repurchases. Over the course of one-year (one-month), on average firms engage in two-way interactions 2.19 (0.26) times, receive endorsement by sell-side analysts 0.64 (0.08) times, release dividends announcement 0.24 (0.03) times, release buyback announcements 0.74 (0.10) times.

Panel C also reveals that, within one year, targeted firms on average have 0.40 instances of delayed filings, 0.45 instances of delisting-related announcements, 0.04 instances of regulatory agency inquiries, 0.97 instances of lawsuits, 0.01 instances of restatements of operating results, 0.05 instances of auditor going concerns, 0.03 instances of delayed earnings announcements, 0.004 instances of bankruptcy filings, 0.15 instances of CEO changes, 0.27 instances of CFO changes. Except for lawsuits, these negative events are only concentrated in a small subset of targeted firms as shown by the zeros in 75<sup>th</sup> percentile of distribution.

## 5.2. Market Reactions to the Denial of Allegations

While Table 2 shows that only 17% of firms actively release a public statement to deny the allegations by the short-seller reports, one may wonder whether these 17% of firms are among the subset of firms that experience a return reversal from negative to positive in one year. Partitioning by whether firms deny the allegations, I find that only 9% of firms actively denying the allegations manage to command a positive market-adjusted return in one year, conditional on having an initial negative return over 5%. In contrast, for those firms that do not actively issue a statement to deny the allegations, 19% of them command a positive market-adjusted return in one year. The findings are similar if conditioning on an initial return of over 10%. This seems to suggest that simply denying the allegations is insufficient to separate a “misfired” firm from other firms.

To test *H1*, I examine the stock returns within two days after the denial of allegations. To remove confounding events, I remove all responses that are issued on the same date as the short-seller report. Figure 2 provides the histogram on the distribution of returns within two days of denying the allegations. It shows that the denial of allegations appears to trigger both positive and negative returns centered at roughly 0. Further examination shows that the mean (median) of the distribution is -2.46% (0.40%) and is not statistically greater than 0 in the sample. These provide some preliminary evidence suggesting that the denial of allegations by firms under external scrutiny by short-sellers is largely regarded as “cheap talk” by investors.

## 5.3. Event Studies on Corporate Responses

Table 3 displays the comparison of the event studies on different types of corporate responses among different samples consisting of column (1) within 30 days of external scrutiny, column (2) within one year of external scrutiny, and (3) U.S. firms not within 365 days of scrutiny. Panel A shows the event studies on the hosting of two-way communications with investors. It



shows that the two-day market-adjusted returns upon the hosting of two-way communications under 30 days of external scrutiny amount to 5.63%, which is significantly higher than 0.85% under one year of external scrutiny. Panel B shows that two-day market-adjusted returns upon a “strong buy” recommendation by sell-side analyst two-day market-adjusted returns upon amount to 15.54%, which is significantly higher than 4.66% under one year of external scrutiny. These results are consistent with *H2a* and *H2b* and demonstrate the incremental benefits from engaging in two-way communications with investors and receiving endorsement from sell-side analysts when firms are under external scrutiny.

Panel C and D examine dividends and share repurchases as potential signaling mechanisms. In Panel C, the results show that the two-day market-adjusted returns upon the dividend affirmations and increases under 30 days of external scrutiny amount to 4.76%, which is marginally significantly higher than 2.15% under one year of external scrutiny. In Panel D, the results show that the two-day market-adjusted returns upon amount to 2.53%, which is numerically higher than 1.42% under one year of external scrutiny but the difference is not statistically significant. The results provide some support on *H3a* on the incremental benefits from dividend signaling when firms are under scrutiny. The relatively weak results on share repurchases suggest that one-time buyback may not be a strong signaling device when firms are under external scrutiny. Firms may need to conduct continuous share repurchases to establish a strong signal for investors.

#### **5.4. The Association between Corporate Responses and Cumulative Returns**

Table 4 displays the results of the association test between various corporate responses under each hypothesis and cumulative stock returns. Different panels show the results for different time horizons, ranging from one week in Panel A, one month in Panel B, three months in Panel C, six months in Panel D, and one year in Panel E. In a short horizon of one week, the results in Panel

A show that only two-way interactions with investors and the dividends announcements are significantly positively associated with return reversals within one week. As the horizon is extended to one month to 6 months, share repurchases start to become significantly positively associated with return reversals in column (4) of Panel B to D.

In a one-year time horizon in Panel E, all four types of corporate responses are significantly positively associated with return reversals when each of them is independently put into the regression from columns (1) to (4). In column (5), when these four types of corporate responses are jointly put as independent variables in the regression without controlling for negative events during the period, all four types of corporate responses are still significantly positively associated with return reversals in a one-year time horizon. However, after controlling for concurrent negative events in column (6), two-way communications and dividends become no longer statistically significant while other three types of corporate response remain statistically significant at the  $p$ -value $<0.1$  level.

The results in Table 4 are broadly consistent with *H2* and *H3*. The incidence of any of the four types of corporate responses is associated with 2-6% increase in cumulative returns in the more conservative specification in columns (5) and (6) over a one-year window. In the short window after being targeted by short-seller reports, engaging in two-way interactions with investors and issuing dividends appear to be most effective in restoring market confidence. For example, in a one-week window, conducting two-way interactions with investors is associated with almost 8% increase in cumulative returns on average. When the horizon is extended to longer periods, continuous endorsement by sell-side analysts and share repurchases also become positively associated with cumulative returns.

Table 4 also helps to shed some light on H1. The coefficients for *Ind\_Deny* are insignificant in most specifications except for Panel C and D in which they become significantly negative. These are inconsistent with investors viewing the denial of allegations credible. The coefficients for *Response Strength* are positively significant in most specifications, especially over a one-month time horizon. While simply denying the allegations may not be informative, this suggests that providing more details and evidence in the response documents may help enhance their credibility in many circumstances.

## **5.5. Additional Tests**

### *5.5.1 Analyst Coverage*

While the endorsement by sell-side analyst appears to help enhance the information transmission from corporations to investors, this is not a choice made by corporations. However, firms do have the choice to engage in more analysts covering the firm before any crises triggered by short-sellers. The extent of the endorsement by sell-side analysts is a function of the extent of existing analyst coverage as well as each analyst's view on the company. With zero analyst coverage, firms lose the opportunity to receive any endorsement from sell-side analysts and may find it difficult to communicate their values to investors.

Instead of looking at the number of "strong buy" recommendations from sell-side analysts, I examine how the extent of analyst coverage are associated with cumulative returns in Table 5. I find that having zero analyst coverage prior to the short-seller report is highly negatively associated with cumulative returns within both a one-month and a one-year window. In Panel A, having zero analyst coverage prior to the short-seller report is associated with a -8% to -9% return over a one-month window. In Panel B, having zero analyst coverage prior to the short-seller report is

associated with a -35% to -38% return over a one-year window. The change in analyst coverage also appears to be positively associated with cumulative returns.

### *5.5.2 Market Pricing*

The results so far are broadly consistent with *H2* and *H3*, although one-off share repurchases may not serve as strong signals for investors. I also examine whether the market correctly interprets these corporate responses by examining whether one can utilize these corporate responses to predict future returns. Table 6 displays the results of using corporate responses within one year after external scrutiny to predict future returns in the subsequent two years. The coefficients on two-way communications and dividends are insignificant but the coefficients on analyst endorsement and share repurchases are significantly positive. These suggest that while the signaling value of two-way communications and dividends appears to be priced efficiently, the market seems to underreact to the signaling value of analyst endorsements and share repurchases.

### *5.5.3 US Sample Only*

While the previous regression specifications control for time-invariant differences in institutional features across different exchange locations using location fixed-effect, Table 7 further restricts the sample to US-listed firms only as additional analyses for robustness checks. Further, the specification also controls for the standard four-factor risk premiums from Fama-French (1993) and Carhart (1997) to get at the interpretation of abnormal returns. The results in Table 7 are largely the same as prior tables, except that analyst endorsement become no longer statistically significant in the one-year horizon specification, with a p-value just above the 0.1 threshold at 0.101.

### *5.5.4 Partitioning by Initial Market Reactions*

In untabulated tests, I rerun the association studies in Table 4 by partitioning the sample based on the extent of initial market reactions to the short-seller report using a -10% return threshold (corresponding to its median). Initial market reactions may reflect the severity and credibility of the allegations in the short-seller reports before any response by the targeted firm. Comparing the results between the two subsamples, I find the strength of response, as proxied by the relative length of clarification statement over short-seller report, is only significant in the subsample with weak initial market reaction within short windows from a week to 6 months. The strength of response is never statistically significant in the subsample with strong negative initial market reaction. This suggests that disclosures by targeted firms with more severe initial market reactions are more likely regarded as “cheap-talk” by market participants.

Engaging in two-way communications with analysts and investors appears to work better for the subsample with weak initial market reaction within one month after the allegations. While there is no statistical significance on the coefficients regarding two-way communications within the first month, the coefficients become statistically significant in the 3-month, 6-month and 1-year windows. This suggests that continuously engaging in two-way communications over a longer time window can still be useful for firms that suffer strong initial market reactions in restoring confidence. For the other corporate response, they are generally less effective in restoring market confidence in subsamples with strong negative initial market reaction. For example, the coefficients on analyst endorsement, dividend and share repurchases are only significant in the subsample with weak initial market reaction in the one-year window.

## **6. Summary**

My study utilizes the emergence of short-seller research reports over the past decade as powerful and cleanly identified instances of external scrutiny and investigates how various types

of corporate responses can facilitate targeted firms to effectively communicate and signal their values to investors. For each type of corporate responses, I examine their association with long-term market returns as well as their short-term market reactions. The results indicate that firms under attack by short-sellers often find it difficult to communicate to the market effectively just by issuing a public statement to deny the allegations. But providing more details and evidence will help strengthen the message to investors.

Although the credibility of disclosures seems to be comprised when firms are subject to heavy external scrutiny, my results also suggest that firms can enhance their communication to outsiders by actively engaging in two-way conversations with analysts and investors through hosting conference calls and investor days. Further, receiving strong endorsement by sell-side analysts can also help restore market confidence in these targeted firms. Firms that do not have any analyst coverage prior to the attack by short-sellers tend to have much lower cumulative returns over time. In addition, payout policies, such as dividends and continuous share repurchases, may be used as effective signaling device for these targeted firms.

While some short-seller research reports may “misfire”, short-seller research reports on average may also serve to accelerate price discovery. Some targeted firms are disgruntled with the allegations and accuse these short-sellers for being malicious and spreading false and misleading information. The study shows that being targeted by short-sellers is not the end of the world for these firms. They still have a battery of tools they can use to enhance their communication with investors and regain market confidence, albeit some of them can be rather costly.

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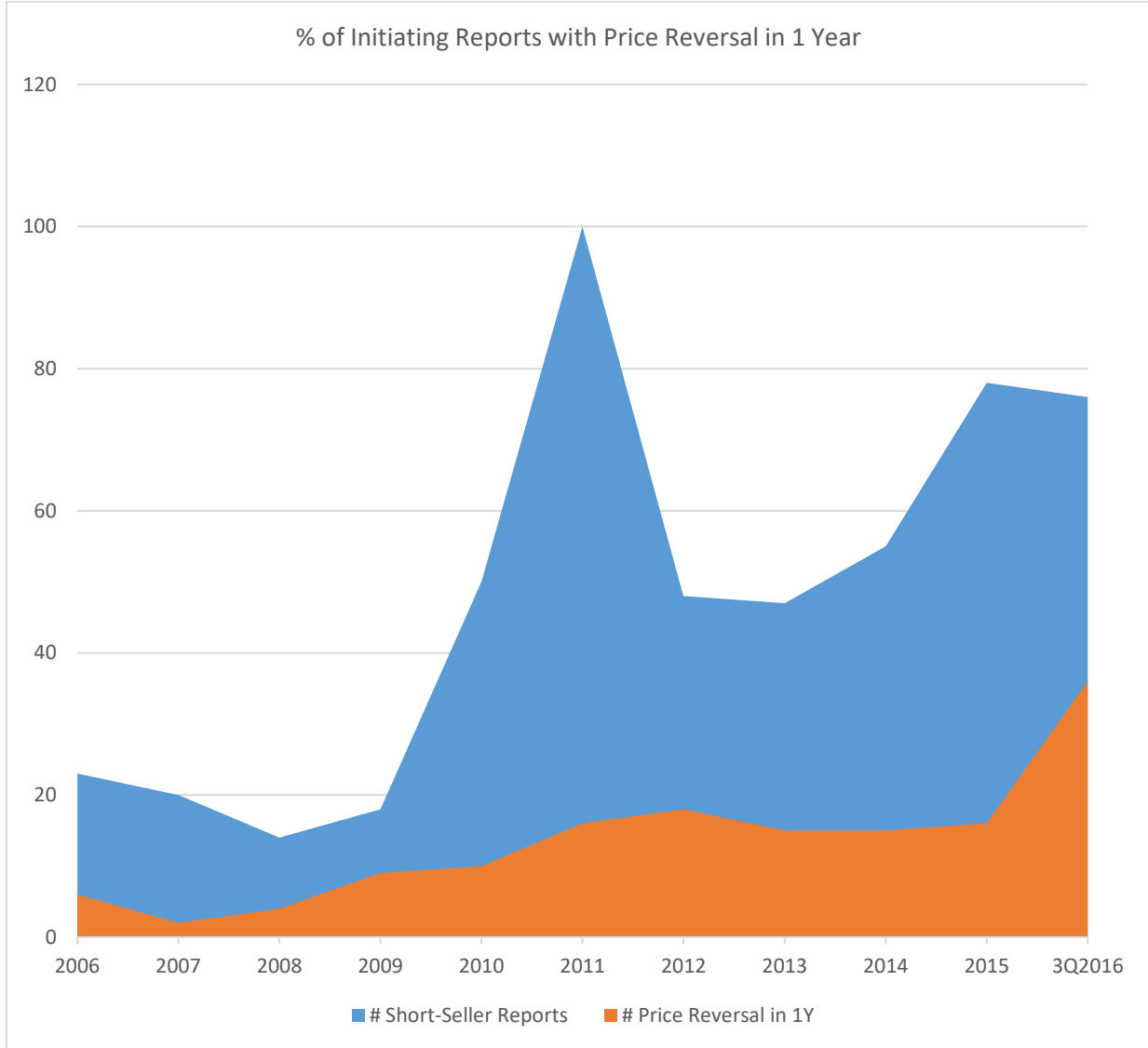
## Appendix: Variable Definitions

Variable	Definition
<i>Return [0,+1W]</i>	Cumulative one-week raw return from the date of issuance of short-seller report
<i>Return [0,+1M]</i>	Cumulative one-month raw return from the date of issuance of short-seller report
<i>Return [0,+3M]</i>	Cumulative three-month raw return from the date of issuance of short-seller report
<i>Return [0,+6M]</i>	Cumulative six-month raw return from the date of issuance of short-seller report
<i>Return [0,+1Y]</i>	Cumulative one-year raw return from the date of issuance of short-seller report
<i>Return [+1Y,+3Y]</i>	Cumulative raw return from one year after the date of issuance of short-seller report to three years after the date of issuance of short-seller report
<i>Ind_Deny</i>	Indicator for firms issuing a public statement to deny the allegations by short-seller reports
<i>Response Strength</i>	The ratio of the number of words in the public statement of clarification over the number of words in the short-seller research reports
<i>Ind_TwoWayComm</i>	Indicator for firms engaging in two-way communications with investors (e.g. hosing conference calls, investor days) within one week after the short-seller research report, represented by <i>Capital IQ Key Development</i> Event Type = {48, 192, 194} supplemented by Factiva news search)
<i>Ind_AnalystEndorse</i>	Indicator for firms receiving a “strong buy” recommendation from sell-side research analyst within one week after the short-seller research report according to <i>IBES</i> database
<i>Ind_Dividend</i>	Indicator for firms announcing dividend affirmation or increases within one week after the short-seller research report, represented by <i>Capital IQ Key Development</i> Event Type = {45, 46}
<i>Ind_Buyback</i>	Indicator for firms announcing buyback actions or potential buyback plans within one week after the short-seller research report, represented by <i>Capital IQ Key Development</i> Event Type = {230, 231, 232, 152}
<i>Min Return [0,+2D]</i>	The lowest return within two days after the date of issuance of short-seller research report
<i>Market Return</i>	The cumulative market return over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], [+1Y, +3Y], where the market is represented by the major index of the primary listing country of exchange
<i>#Delayed Filings</i>	The frequency of delayed SEC filings over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =11
<i>#Delistings</i>	The frequency of delisting related announcements over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =12
<i>#Regulatory Inquiries</i>	The frequency of regulatory agency inquiries over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =12
<i>#Lawsuits</i>	The frequency of regulatory agency inquiries over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =25
<i>#Restatements</i>	The frequency of restatements of operating results over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =43

<i>#Going Concern Doubts</i>	The frequency of auditor going concern doubts over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =59
<i>#Delayed Earnings</i>	The frequency of delayed earnings announcements over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =61
<i>#Bankruptcy Filings</i>	The frequency of bankruptcy filings over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =89
<i>#CEO Change</i>	The frequency of CEO changes over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =101
<i>#CFO Change</i>	The frequency of CFO changes over the respective period: [0, +1W], [0, +1M], [0, +3M], [0, +6M], [0, +1Y], as represented by <i>Capital IQ Key Development</i> Event Type =102
<i>Zero Prior Coverage</i>	Indicator for firms that have no sell-side analyst coverage prior to being targeted by short-seller research reports.
<i>Change in Coverage</i>	The change in the extent of sell-side analyst coverage from being targeted by short-seller research reports to the end of a period, where period can be one-month or one month in Table 5 depending on the panel
<i>MKT*</i>	Premium on the market factor from Fama-French (1993) over the respective period
<i>SMB*</i>	Premium on the size factor from Fama-French (1993) over the respective period
<i>HML*</i>	Premium on the book-to-market factor from Fama-French (1993) over the respective period
<i>UMD*</i>	Premium on winners minus losers (UMD) from Fama-French (1993) and Carhart (1997) over the respective period

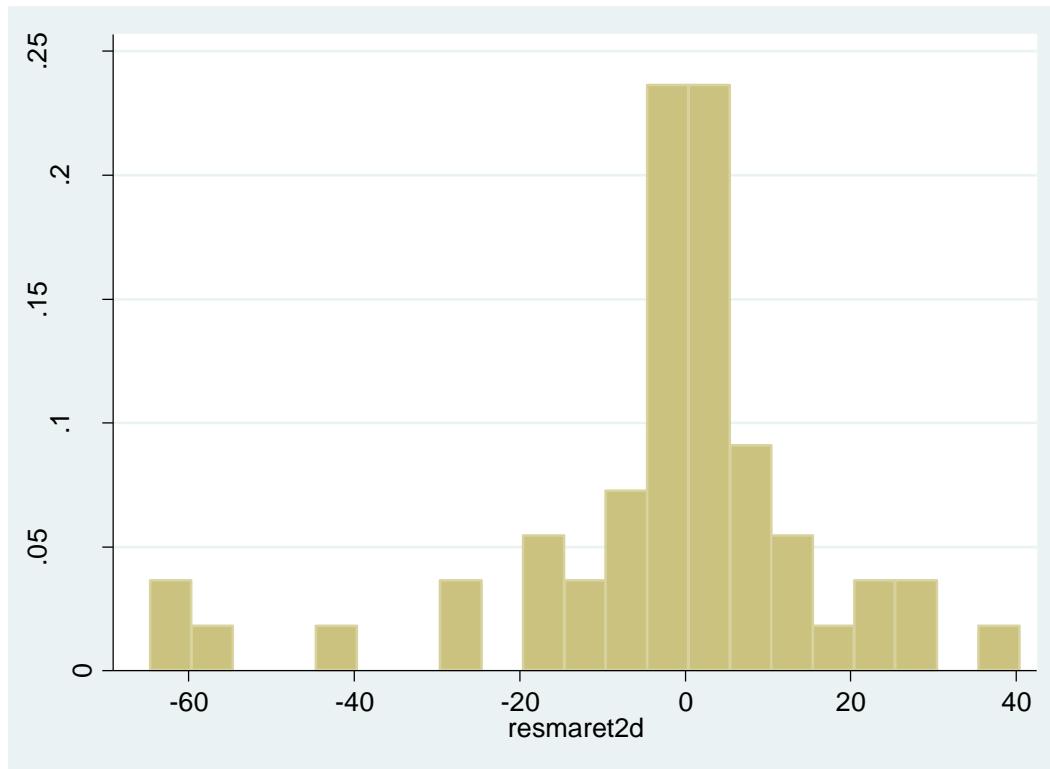
### Figure 1: Trend for the Percentage of “Misfired” Reports over Time

The chart presents the trend of the percentage of “misfired” reports from 2006 to the 3<sup>rd</sup> quarter of 2016. “Misfired” reports are determined by whether the targeted firms experience a return reversal to positive stock returns in a one-year period.



## Figure 2: Histogram of Stock Return on the Day of Denial of Allegation

The histogram presents the distribution of two-day stock returns on the announcement day when targeted firms deny the allegations through issuing a response statement (*Return [Denial]*) in my sample. The sample is constructed by removing response statements which are issued on the same day as the short-seller research reports.



Median of *Return [Denial]* = 0.40%  
Mean of *Return [Denial]* = -2.46%  
S.D. of *Return [Denial]* = 19.60%

T-Test (*Return [Denial]*>0):  
P-Value= 0.82

## Table 1 Sample Selection

In the study, I manually downloaded and collected the initiating reports from the major short-seller report issuers, including *Absaroka*, *Alfred Little*, *Anonymous Analytics*, *Arsensio*, *CER*, *Citron Research*, *Financial Investigator*, *Geoinvesting*, *Glaucus Research*, *Jadeorstone*, *J Capital*, *Jonestown*, *Kerrisdale Capital*, *Little Bear*, *Muddy Water Research*, *PrescienceFunds*, *PresiencePoints*, *Sharesleuth*, *StreetSweeper* up to the 3<sup>rd</sup> quarter of 2016. From these short-seller reports, I manually collected data on the response actions taken by the targeted firms through searching their corporate websites, Factiva and Google as well as from *Capital IQ Key Development* and *IBES* database.

	<i>Number of Observations</i>
<i>Initiating reports from short-sellers collected through the 3<sup>rd</sup> quarter of 2016</i>	661
<i>Retaining reports with a “strong sell” rating or equivalent</i>	614
<i>Retaining reports from 2005 onwards</i>	544
<i>Retaining reports with available share price data prior to the report release</i>	524
<i>Imposing data requirements on the availability of share price data after one year of report release as well as other controls in Table 3 Panel E</i>	505

## Table 2 Summary Statistics

The tables below display the summary descriptive statistics for the variables used in the association test between different types of corporate responses and cumulative returns. Panel A shows the major variables measured in a one-week horizon used in Table 3 Panel A. Panel B shows the major variables measured in a one-month horizon used in Table 3 Panel B. Panel C shows the major variables measured in a one-year horizon used in Table 3 Panel E. See Appendix A for variable definitions.

### Panel A: One-Week Horizon

VARIABLES	(1) N	(2) mean	(3) sd	(4) p25	(5) p50	(6) p75
<i>Return [0,+1W]</i>	500	-7.618	28.08	-17.08	-6.293	0.845
<i>Ind_Deny</i>	500	0.170	0.376	0	0	0
<i>Response Strength</i>	500	0.0856	0.478	0	0	0
<i>Ind_TwoWayComm</i>	500	0.0420	0.201	0	0	0
<i>Ind_AnalystEndorse</i>	500	0.0260	0.159	0	0	0
<i>Ind_Dividend</i>	500	0.0160	0.126	0	0	0
<i>Ind_Buyback</i>	500	0.0380	0.191	0	0	0
<i>Min Return [0,+2D]</i>	500	-14.68	14.79	-20.31	-10.20	-4.801
<i>Market Return [0, +1W]</i>	500	0.166	1.313	-0.500	0.209	0.834
<i>#Delayed Filings [0, +1W]</i>	500	0.0120	0.109	0	0	0
<i>#Delistings [0, +1W]</i>	500	0.00800	0.0892	0	0	0
<i>#Regulatory Inquiries [0, +1W]</i>	500	0.00200	0.0447	0	0	0
<i>#Lawsuits [0, +1W]</i>	500	0.0860	0.409	0	0	0
<i>#Restatements [0, +1W]</i>	500	0	0	0	0	0
<i>#Going Concern Doubts [0, +1W]</i>	500	0	0	0	0	0
<i>#Delayed Earnings [0, +1W]</i>	500	0.00400	0.0632	0	0	0
<i>#Bankruptcy Filings [0, +1W]</i>	500	0	0	0	0	0
<i>#CEO Change [0, +1W]</i>	500	0.00400	0.0632	0	0	0
<i>#CFO Change [0, +1W]</i>	500	0.0100	0.0996	0	0	0

**Panel B: One-Month Horizon**

VARIABLES	(1) N	(2) mean	(3) sd	(4) p25	(5) p50	(6) p75
<i>Return [0,+1M]</i>	503	-11.14	31.20	-25.88	-8.724	3.714
<i>Ind_Deny</i>	503	0.169	0.375	0	0	0
<i>Response Strength</i>	503	0.0850	0.477	0	0	0
<i>#Two Way Comm. [0, +1M]</i>	503	0.260	0.495	0	0	0
<i>#Analyst Endorse [0, +1M]</i>	503	0.0795	0.312	0	0	0
<i>#Dividend [0, +1M]</i>	503	0.0318	0.176	0	0	0
<i>#Buyback [0, +1M]</i>	503	0.0994	0.402	0	0	0
<i>Min Return [0,+2D]</i>	503	-14.57	14.82	-20.31	-10.11	-4.727
<i>Market Return [0, +1M]</i>	503	0.299	2.324	-0.872	0.463	1.759
<i>#Delayed Filings [0, +1M]</i>	503	0.0437	0.214	0	0	0
<i>#Delistings [0, +1M]</i>	503	0.0278	0.165	0	0	0
<i>#Regulatory Inquiries [0, +1M]</i>	503	0.00994	0.0993	0	0	0
<i>#Lawsuits [0, +1M]</i>	503	0.260	1.026	0	0	0
<i>#Restatements [0, +1M]</i>	503	0	0	0	0	0
<i>#Going Concern Doubts [0, +1M]</i>	503	0.00398	0.0630	0	0	0
<i>#Delayed Earnings [0, +1M]</i>	503	0.00795	0.0889	0	0	0
<i>#Bankruptcy Filings [0, +1M]</i>	503	0.00199	0.0446	0	0	0
<i>#CEO Change [0, +1M]</i>	503	0.0119	0.109	0	0	0
<i>#CFO Change [0, +1M]</i>	503	0.0298	0.170	0	0	0

**Panel C: One-Year Horizon**

VARIABLES	(1) N	(2) mean	(3) sd	(4) p25	(5) p50	(6) p75
<i>Return [0,+1Y]</i>	505	-24.26	86.97	-74.21	-36.94	4.828
<i>Ind_Deny</i>	505	0.168	0.375	0	0	0
<i>Response Strength</i>	505	0.0847	0.476	0	0	0
<i>#Two Way Comm. [0, +1Y]</i>	505	2.188	2.034	0	2	4
<i>#Analyst Endorse [0, +1Y]</i>	505	0.636	2.124	0	0	0
<i>#Dividend [0, +1Y]</i>	505	0.242	1.004	0	0	0
<i>#Buyback [0, +1Y]</i>	505	0.735	1.585	0	0	0
<i>Min Return [0,+2D]</i>	505	-14.57	14.81	-20.31	-10.11	-4.727
<i>Market Return [0, +1Y]</i>	505	4.268	9.727	-1.121	5.223	9.836
<i>#Delayed Filings [0, +1Y]</i>	505	0.396	0.869	0	0	0
<i>#Delistings [0, +1Y]</i>	505	0.448	1.201	0	0	0
<i>#Regulatory Inquiries [0, +1Y]</i>	505	0.0436	0.240	0	0	0
<i>#Lawsuits [0, +1Y]</i>	505	0.970	2.138	0	0	1
<i>#Restatements [0, +1Y]</i>	505	0.0139	0.117	0	0	0
<i>#Going Concern Doubts [0, +1Y]</i>	505	0.0515	0.230	0	0	0
<i>#Delayed Earnings [0, +1Y]</i>	505	0.0257	0.159	0	0	0
<i>#Bankruptcy Filings [0, +1Y]</i>	505	0.00396	0.0629	0	0	0
<i>#CEO Change [0, +1Y]</i>	505	0.150	0.451	0	0	0
<i>#CFO Change [0, +1Y]</i>	505	0.265	0.546	0	0	0



### Table 3 Event Studies on Corporate Responses

The table below examines the two-day market-adjusted returns after each type of corporate responses. Column (1) displays the results for a sample of firms who are within a thirty-day period after being targeted by short-seller reports. Column (2) displays the results for a sample of firms who are within a one-year period after being targeted by short-seller reports. Column (3) displays the results for a sample of US firms who are not within a one-year period after being targeted by short-seller reports. Panel A shows the results for using two-way communication to enhance information transmission. Panel B shows the results for endorsement by sell-side analysts.

#### Panel A: Two-Way Communication

SAMPLE	% Market-Adjusted Return [0,+1D]		
	(1) Within 30 Days of Scrutiny	(2) Within 365 Days of Scrutiny	(3) US Firms Not Within 365 Days of Scrutiny
# Observations	132	1,207	192,698
Mean	5.63	0.85	0.08
Standard Deviation	43.43	16.81	6.86
25 <sup>th</sup> Percentile	-1.19	-2.39	-1.69
50 <sup>th</sup> Percentile	0.86	-0.03	-0.03
75 <sup>th</sup> Percentile	5.40	2.96	1.68

Incremental Effect (within 30 days vs. within 365 days) = 5.37% (T-stat=3.48)

#### Panel B: Analyst Endorsement

SAMPLE	% Market-Adjusted Return [0,+1D]		
	(1) Within 30 Days of Scrutiny	(2) Within 365 Days of Scrutiny	(3) US Firms Not Within 365 Days of Scrutiny
# Observations	39	287	60,191
Mean	15.54	4.66	2.25
Standard Deviation	72.93	27.65	6.88
25 <sup>th</sup> Percentile	0.49	-0.08	-0.47
50 <sup>th</sup> Percentile	3.09	2.10	1.40
75 <sup>th</sup> Percentile	8.00	5.68	3.97

Incremental Effect (within 30 days vs. within 365 days) = 12.59% (T-stat=2.67)

### Table 3 Event Studies on Corporate Responses (Cont'd)

The table below examines the two-day market-adjusted returns after each type of corporate responses. Column (1) displays the results for a sample of firms who are within a thirty-day period after being targeted by short-seller reports. Column (2) displays the results for a sample of firms who are within a one-year period after being targeted by short-seller reports. Column (3) displays the results for a sample of US firms who are not within a one-year period after being targeted by short-seller reports. Panel C shows the results for using dividends as a signaling device. Panel D shows the results for using share repurchases as a signaling device.

#### Panel C: Dividends

SAMPLE	% Market-Adjusted Return [0,+1D]		
	(1) Within 30 Days of Scrutiny	(2) Within 365 Days of Scrutiny	(3) US Firms Not Within 365 Days of Scrutiny
# Observations	14	135	150,849
Mean	4.76	2.15	0.22
Standard Deviation	8.45	6.01	3.76
25 <sup>th</sup> Percentile	0.43	-0.77	-1.16
50 <sup>th</sup> Percentile	1.54	0.80	0.07
75 <sup>th</sup> Percentile	7.69	3.48	1.46

Incremental Effect (within 30 days vs. within 365 days) = 2.91% (T-stat=1.73)

#### Panel D: Share Repurchases

SAMPLE	% Market-Adjusted Return [0,+1D]		
	(1) Within 30 Days of Scrutiny	(2) Within 365 Days of Scrutiny	(3) US Firms Not Within 365 Days of Scrutiny
# Observations	51	401	97,409
Mean	2.53	1.42	0.33
Standard Deviation	12.61	9.81	6.07
25 <sup>th</sup> Percentile	-2.16	-2.38	-1.66
50 <sup>th</sup> Percentile	-0.36	0.44	0.16
75 <sup>th</sup> Percentile	10.43	4.12	2.19

Incremental Effect (within 30 days vs. within 365 days) = 1.27% (T-stat=0.86)

**Table 4 Association between Corporate Responses and Returns**

The table below examines the association between various corporate responses and one-week cumulative returns of targeted firms after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Panel A: One-Week Horizon**

VARIABLES	(1) <i>Return</i> <i>[0,+1W]</i>	(2) <i>Return</i> <i>[0,+1W]</i>	(3) <i>Return</i> <i>[0,+1W]</i>	(4) <i>Return</i> <i>[0,+1W]</i>	(5) <i>Return</i> <i>[0,+1W]</i>	(6) <i>Return</i> <i>[0,+1W]</i>
<i>Ind_Deny</i>	0.587 (0.20)	2.393 (0.86)	1.940 (0.74)	2.445 (0.84)	0.401 (0.15)	-0.019 (-0.01)
<i>Response Strength</i>	1.072 (1.20)	0.752 (0.76)	<b>1.682**</b> <b>(2.68)</b>	0.742 (0.72)	<b>2.304***</b> <b>(3.00)</b>	<b>1.536**</b> <b>(2.17)</b>
<i>Ind_TwoWayComm</i>	<b>8.496**</b> <b>(2.70)</b>				<b>7.220***</b> <b>(4.33)</b>	<b>7.802***</b> <b>(4.40)</b>
<i>Ind_AnalystEndorse</i>		5.018 (0.77)			2.054 (0.61)	4.361 (1.38)
<i>Ind_Dividend</i>			<b>26.169**</b> <b>(2.65)</b>		<b>27.869***</b> <b>(3.59)</b>	<b>25.795***</b> <b>(3.49)</b>
<i>Ind_Buyback</i>				0.090 (0.03)	-4.957 (-1.46)	-4.596 (-1.36)
<i>Min Return</i> <i>[0,+2D]</i>	<b>0.899***</b> <b>(12.73)</b>	<b>0.893***</b> <b>(12.65)</b>	<b>0.887***</b> <b>(12.88)</b>	<b>0.891***</b> <b>(12.41)</b>	<b>0.895***</b> <b>(12.57)</b>	<b>0.867***</b> <b>(10.28)</b>
<i>Market Return</i> <i>[0,+1W]</i>	<b>1.629**</b> <b>(2.83)</b>	<b>1.678**</b> <b>(2.60)</b>	<b>1.625**</b> <b>(2.43)</b>	<b>1.686**</b> <b>(2.57)</b>	<b>1.528**</b> <b>(2.61)</b>	<b>1.531**</b> <b>(2.65)</b>
<i>#Delayed Filings</i> <i>[0,+1W]</i>						4.392 (0.58)
<i>#Delistings</i> <i>[0,+1W]</i>						<b>-27.142***</b> <b>(-6.82)</b>
<i>#Regulatory Inquiries</i> <i>[0,+1W]</i>						-1.756 (-0.32)
<i>#Lawsuits</i> <i>[0,+1W]</i>						-3.941 (-1.72)
<i>#Delayed Earnings</i> <i>[0,+1W]</i>						-1.218 (-0.31)
<i>#CEO Change</i> <i>[0,+1W]</i>						<b>20.720*</b> <b>(1.75)</b>
<i>#CFO Change</i> <i>[0,+1W]</i>						-1.791 (-0.25)
Source FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Observations	500	500	500	500	500	500
R-squared	0.243	0.242	0.249	0.241	0.252	0.261

**Table 4 Association between Corporate Responses and Returns (Cont'd)**

The table below examines the association between various corporate responses and one-month cumulative returns of targeted firms after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Panel B: One-Month Horizon**

VARIABLES	(1) <i>Return</i> <i>[0, +1M]</i>	(2) <i>Return</i> <i>[0, +1M]</i>	(3) <i>Return</i> <i>[0, +1M]</i>	(4) <i>Return</i> <i>[0, +1M]</i>	(5) <i>Return</i> <i>[0, +1M]</i>	(6) <i>Return</i> <i>[0, +1M]</i>
<i>Ind_Deny</i>	-1.093 (-0.26)	-1.051 (-0.29)	-0.949 (-0.25)	-1.351 (-0.33)	-1.616 (-0.40)	-2.965 (-0.87)
<i>Response Strength</i>	<b>2.579**</b> (2.27)	<b>3.402**</b> (2.33)	<b>3.733**</b> (2.74)	<b>3.169**</b> (2.12)	<b>2.814**</b> (2.65)	<b>1.750**</b> (2.28)
<i>#Two Way Comm.</i> <i>[0, +1M]</i>	<b>7.394***</b> (3.24)				<b>6.853***</b> (3.34)	<b>6.932***</b> (2.89)
<i>#Analyst Endorse</i> <i>[0, +1M]</i>		8.916 (0.99)			7.669 (0.86)	7.721 (0.84)
<i>#Dividend30</i> <i>[0, +1M]</i>			<b>9.474**</b> (2.62)		<b>9.132***</b> (2.87)	<b>8.379**</b> (2.39)
<i>#Buyback30</i> <i>[0, +1M]</i>				<b>4.207**</b> (2.12)	2.178 (1.04)	2.147 (1.00)
<i>Min Return</i> <i>[0, +2D]</i>	<b>0.784***</b> (8.12)	<b>0.776***</b> (7.90)	<b>0.767***</b> (7.23)	<b>0.768***</b> (7.29)	<b>0.786***</b> (8.57)	<b>0.718***</b> (7.25)
<i>Market Return</i> <i>[0, +1M]</i>	<b>1.403***</b> (3.00)	<b>1.455***</b> (2.99)	<b>1.399**</b> (2.64)	<b>1.423**</b> (2.68)	<b>1.369**</b> (2.82)	<b>1.222**</b> (2.60)
<i>#Delayed Filings</i> <i>[0, +1M]</i>						7.748 (1.65)
<i>#Delistings</i> <i>[0, +1M]</i>						-2.246 (-0.17)
<i>#Regulatory Inquiries</i> <i>[0, +1M]</i>						<b>-27.708**</b> (-2.35)
<i>#Lawsuits</i> <i>[0, +1M]</i>						-1.612 (-1.12)
<i>#Going Concern Doubts</i> <i>[0, +1M]</i>						<b>-10.243***</b> (-8.12)
<i>#Delayed Earnings</i> <i>[0, +1M]</i>						2.133 (0.35)
<i>#Bankruptcy Filings</i> <i>[0, +1M]</i>						<b>-29.601***</b> (-31.48)
<i>#CEO Change</i> <i>[0, +1M]</i>						-2.173 (-0.47)
<i>#CFO Change</i> <i>[0, +1M]</i>						-5.571 (-1.36)
Source FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Observations	503	503	503	503	503	503
R-squared	0.180	0.175	0.170	0.171	0.189	0.208

**Table 4 Association between Corporate Responses and Returns (Cont'd)**

The table below examines the association between various corporate responses and three-month cumulative returns of targeted firms after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Panel C: Three-Month Horizon**

VARIABLES	(1) <i>Return</i> <i>[0,+3M]</i>	(2) <i>Return</i> <i>[0,+3M]</i>	(3) <i>Return</i> <i>[0,+3M]</i>	(4) <i>Return</i> <i>[0,+3M]</i>	(5) <i>Return</i> <i>[0,+3M]</i>	(6) <i>Return</i> <i>[0,+3M]</i>
<i>Ind_Deny</i>	-6.451 (-1.24)	<b>-8.073*</b> <b>(-1.83)</b>	-7.986 (-1.68)	-8.452 (-1.65)	<b>-8.948*</b> <b>(-1.93)</b>	<b>-8.834**</b> <b>(-2.17)</b>
<i>Response Strength</i>	1.105 (0.95)	<b>4.760***</b> <b>(3.45)</b>	<b>5.346***</b> <b>(4.10)</b>	<b>3.762**</b> <b>(2.63)</b>	<b>1.995**</b> <b>(2.29)</b>	<b>-0.904</b> <b>(-0.66)</b>
<i>#Two Way Comm.</i> <i>[0,+3M]</i>	<b>18.241***</b> <b>(3.88)</b>				<b>17.448***</b> <b>(3.96)</b>	<b>16.973***</b> <b>(3.36)</b>
<i>#Analyst Endorse</i> <i>[0,+3M]</i>		7.500 (0.91)			5.930 (0.85)	5.780 (0.84)
<i>#Dividend30</i> <i>[0,+3M]</i>			<b>12.992***</b> <b>(3.09)</b>		<b>11.718***</b> <b>(2.90)</b>	<b>8.958*</b> <b>(1.99)</b>
<i>#Buyback30</i> <i>[0,+3M]</i>				<b>7.605**</b> <b>(2.81)</b>	1.294 (0.58)	1.554 (0.67)
<i>Min Return</i> <i>[0,+2D]</i>	<b>0.795***</b> <b>(10.17)</b>	<b>0.848***</b> <b>(9.71)</b>	<b>0.830***</b> <b>(9.74)</b>	<b>0.825***</b> <b>(9.68)</b>	<b>0.775***</b> <b>(9.99)</b>	<b>0.597***</b> <b>(6.25)</b>
<i>Market Return</i> <i>[0,+3M]</i>	0.630 (1.38)	0.749 (1.67)	<b>0.852**</b> <b>(2.09)</b>	0.777 (1.68)	<b>0.681*</b> <b>(1.75)</b>	0.623 (1.62)
<i>#Delayed Filings</i> <i>[0,+3M]</i>						<b>-10.315***</b> <b>(-3.19)</b>
<i>#Delistings</i> <i>[0,+3M]</i>						-3.679 (-0.57)
<i>#Regulatory Inquiries</i> <i>[0,+3M]</i>						<b>-22.430**</b> <b>(-2.17)</b>
<i>#Lawsuits</i> <i>[0,+3M]</i>						-2.472 (-1.61)
<i>#Restatements</i> <i>[0,+3M]</i>						<b>23.350*</b> <b>(1.98)</b>
<i>#Going Concern Doubts</i> <i>[0,+3M]</i>						<b>-22.221*</b> <b>(-1.85)</b>
<i>#Delayed Earnings</i> <i>[0,+3M]</i>						<b>25.887***</b> <b>(3.15)</b>
<i>#Bankruptcy Filings</i> <i>[0,+3M]</i>						<b>-30.269***</b> <b>(-12.47)</b>
<i>#CEO Change</i> <i>[0,+3M]</i>						3.920 (0.44)
<i>#CFO Change</i> <i>[0,+3M]</i>						<b>-9.730*</b> <b>(-2.06)</b>
Source FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Observations	504	504	504	504	504	504
R-squared	0.147	0.103	0.099	0.100	0.158	0.182

**Table 4 Association between Corporate Responses and Returns (Cont'd)**

The table below examines the association between various corporate responses and six-month cumulative returns of targeted firms after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Panel D: Six-Month Horizon**

VARIABLES	(1) <i>Return</i> <i>[0,+6M]</i>	(2) <i>Return</i> <i>[0,+6M]</i>	(3) <i>Return</i> <i>[0,+6M]</i>	(4) <i>Return</i> <i>[0,+6M]</i>	(5) <i>Return</i> <i>[0,+6M]</i>	(6) <i>Return</i> <i>[0,+6M]</i>
<i>Ind_Deny</i>	-10.699 (-1.65)	-12.188 (-1.71)	<b>-13.052*</b> <b>(-1.76)</b>	-13.120 (-1.70)	<b>-14.660**</b> <b>(-2.18)</b>	-7.136 (-1.02)
<i>Response Strength</i>	3.620 (0.80)	5.674 (1.43)	6.544 (1.52)	5.299 (1.45)	4.240 (1.02)	0.828 (0.17)
<i>#Two Way Comm.</i> <i>[0,+6M]</i>	<b>11.214***</b> <b>(5.79)</b>				<b>10.056***</b> <b>(5.02)</b>	<b>10.927***</b> <b>(3.80)</b>
<i>#Analyst Endorse</i> <i>[0,+6M]</i>		5.295 (0.90)			4.245 (0.88)	3.746 (0.89)
<i>#Dividend30</i> <i>[0,+6M]</i>			<b>10.996***</b> <b>(3.16)</b>		<b>8.259***</b> <b>(2.89)</b>	<b>5.522*</b> <b>(1.93)</b>
<i>#Buyback30</i> <i>[0,+6M]</i>				<b>6.782*</b> <b>(2.03)</b>	2.466 (0.70)	3.271 (0.88)
<i>Min Return</i> <i>[0,+2D]</i>	<b>0.765***</b> <b>(5.08)</b>	<b>0.842***</b> <b>(4.79)</b>	<b>0.821***</b> <b>(5.06)</b>	<b>0.817***</b> <b>(5.46)</b>	<b>0.724***</b> <b>(4.99)</b>	<b>0.540***</b> <b>(2.95)</b>
<i>Market Return</i> <i>[0,+6M]</i>	<b>0.922**</b> <b>(2.18)</b>	<b>1.052**</b> <b>(2.52)</b>	<b>1.028**</b> <b>(2.56)</b>	<b>1.007**</b> <b>(2.35)</b>	<b>0.977**</b> <b>(2.33)</b>	<b>1.068***</b> <b>(3.01)</b>
<i>#Delayed Filings</i> <i>[0,+6M]</i>						<b>-12.984***</b> <b>(-3.00)</b>
<i>#Delistings</i> <i>[0,+6M]</i>						10.435 (0.97)
<i>#Regulatory Inquiries</i> <i>[0,+6M]</i>						3.173 (0.37)
<i>#Lawsuits</i> <i>[0,+6M]</i>						<b>-7.285**</b> <b>(-2.41)</b>
<i>#Restatements</i> <i>[0,+6M]</i>						-14.333 (-0.42)
<i>#Going Concern Doubts</i> <i>[0,+6M]</i>						2.072 (0.11)
<i>#Delayed Earnings</i> <i>[0,+6M]</i>						<b>-15.847*</b> <b>(-2.08)</b>
<i>#Bankruptcy Filings</i> <i>[0,+6M]</i>						<b>-67.180***</b> <b>(-4.71)</b>
<i>#CEO Change</i> <i>[0,+6M]</i>						<b>-12.984**</b> <b>(-2.51)</b>
<i>#CFO Change</i> <i>[0,+6M]</i>						<b>-9.660**</b> <b>(-2.47)</b>
Source FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Observations	504	504	504	504	504	504
R-squared	0.096	0.076	0.077	0.076	0.105	0.141

**Table 4 Association between Corporate Responses and Returns (Cont'd)**

The table below examines the association between various corporate responses and one-year cumulative returns of targeted firms after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Panel E: One-Year Horizon**

VARIABLES	(1) <i>Return</i> <i>[0,+1Y]</i>	(2) <i>Return</i> <i>[0,+1Y]</i>	(3) <i>Return</i> <i>[0,+1Y]</i>	(4) <i>Return</i> <i>[0,+1Y]</i>	(5) <i>Return</i> <i>[0,+1Y]</i>	(6) <i>Return</i> <i>[0,+1Y]</i>
<i>Ind_Deny</i>	-4.775 (-0.56)	-4.852 (-0.56)	-7.258 (-0.82)	-7.724 (-0.82)	-10.004 (-1.09)	-3.233 (-0.37)
<i>Response Strength</i>	2.970 (1.44)	<b>4.588*</b> <b>(2.04)</b>	<b>5.558**</b> <b>(2.23)</b>	<b>3.576***</b> <b>(2.90)</b>	<b>3.158*</b> <b>(1.79)</b>	-1.769 (-0.75)
<i>#Two Way Comm.</i> <i>[0,+1Y]</i>	<b>4.657***</b> <b>(3.66)</b>				<b>3.038**</b> <b>(2.27)</b>	1.903 (1.33)
<i>#Analyst Endorse</i> <i>[0,+1Y]</i>		<b>4.169*</b> <b>(1.82)</b>			<b>3.488*</b> <b>(1.76)</b>	<b>3.290*</b> <b>(2.03)</b>
<i>#Dividend30</i> <i>[0,+1Y]</i>			<b>8.385**</b> <b>(2.46)</b>		<b>5.780*</b> <b>(1.84)</b>	3.633 (1.22)
<i>#Buyback30</i> <i>[0,+1Y]</i>				<b>5.636***</b> <b>(3.97)</b>	<b>3.444***</b> <b>(2.90)</b>	<b>3.356**</b> <b>(2.47)</b>
<i>Min Return</i> <i>[0,+2D]</i>	<b>0.926***</b> <b>(6.41)</b>	<b>0.991***</b> <b>(5.67)</b>	<b>0.973***</b> <b>(5.92)</b>	<b>0.938***</b> <b>(5.98)</b>	<b>0.873***</b> <b>(6.02)</b>	<b>0.622***</b> <b>(3.61)</b>
<i>Market Return</i> <i>[0,+1Y]</i>	<b>1.626***</b> <b>(6.16)</b>	<b>1.593***</b> <b>(6.57)</b>	<b>1.534***</b> <b>(6.55)</b>	<b>1.571***</b> <b>(5.83)</b>	<b>1.551***</b> <b>(5.66)</b>	<b>1.506***</b> <b>(4.73)</b>
<i>#Delayed Filings</i> <i>[0,+1Y]</i>						<b>-14.756**</b> <b>(-2.54)</b>
<i>#Delistings</i> <i>[0,+1Y]</i>						0.196 (0.03)
<i>#Regulatory Inquiries</i> <i>[0,+1Y]</i>						-6.637 (-0.92)
<i>#Lawsuits</i> <i>[0,+1Y]</i>						-4.212 (-1.56)
<i>#Restatements</i> <i>[0,+1Y]</i>						0.766 (0.07)
<i>#Going Concern Doubts</i> <i>[0,+1Y]</i>						<b>-17.522*</b> <b>(-1.85)</b>
<i>#Delayed Earnings</i> <i>[0,+1Y]</i>						5.360 (0.62)
<i>#Bankruptcy Filings</i> <i>[0,+1Y]</i>						-21.782 (-0.64)
<i>#CEO Change</i> <i>[0,+1Y]</i>						-8.746* (-1.99)
<i>#CFO Change</i> <i>[0,+1Y]</i>						-8.315 (-1.36)
Source FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Observations	505	505	505	505	505	505
R-squared	0.105	0.104	0.103	0.105	0.121	0.170

**Table 5 The Role of Analyst Coverage**

The table below examines the association between analyst coverage and one-month/one-year cumulative returns of targeted firms after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Panel A: One-Month Horizon**

VARIABLES	(1) <i>Return [0,+1M]</i>	(2) <i>Return [0,+1M]</i>	(3) <i>Return [0,+1M]</i>	(4) <i>Return [0,+1M]</i>
<i>Ind_Deny</i>	-1.106 (-0.28)	0.996 (0.27)	0.893 (0.24)	0.565 (0.16)
<i>Response Strength</i>	<b>3.622***</b> (2.97)	<b>3.113**</b> (2.35)	<b>3.315***</b> (3.16)	<b>3.335***</b> (3.10)
<i>Zero Prior Coverage</i>	<b>-7.820***</b> (-4.58)		<b>-8.694***</b> (-4.94)	<b>-8.425***</b> (-4.36)
<i>Change in Coverage [0,+1M]</i>		<b>4.197**</b> (2.17)	<b>4.626**</b> (2.21)	<b>4.153**</b> (2.50)
<i>#Analyst Endorse [0,+1M]</i>				5.587 (0.68)
<i>Min Return [0,+2D]</i>	<b>0.733***</b> (7.71)	<b>0.754***</b> (6.99)	<b>0.712***</b> (7.35)	<b>0.719***</b> (8.17)
<i>Market Return [0,+1M]</i>	<b>1.494***</b> (3.34)	<b>1.434***</b> (2.89)	<b>1.493***</b> (3.52)	<b>1.501***</b> (3.59)
Source FE	YES	YES	YES	YES
Location FE	YES	YES	YES	YES
Observations	503	503	503	503
R-squared	0.180	0.181	0.195	0.198

**Panel B: One-Year Horizon**

VARIABLES	(1) <i>Return [0,+1Y]</i>	(2) <i>Return [0,+1Y]</i>	(3) <i>Return [0,+1Y]</i>	(4) <i>Return [0,+1Y]</i>
<i>Ind_Deny</i>	-4.993 (-0.55)	-4.061 (-0.49)	-5.343 (-0.67)	-5.978 (-0.75)
<i>Response Strength</i>	<b>5.890***</b> (3.21)	<b>5.238**</b> (2.12)	<b>6.515***</b> (3.00)	<b>6.211**</b> (2.83)
<i>Zero Prior Coverage</i>	<b>-35.934***</b> (-5.36)		<b>-37.930***</b> (-6.79)	<b>-36.719***</b> (-6.81)
<i>Change in Coverage [0,+1Y]</i>		1.903 (1.30)	<b>2.613*</b> (2.06)	2.166 (1.55)
<i>#Analyst Endorse [0,+1Y]</i>				<b>3.013*</b> (1.98)
<i>Min Return [0,+2D]</i>	<b>0.838***</b> (4.86)	<b>0.980***</b> (5.76)	<b>0.791***</b> (4.70)	<b>0.791***</b> (4.63)
<i>Market Return [0,+1Y]</i>	<b>1.654***</b> (5.99)	<b>1.614***</b> (6.76)	<b>1.679***</b> (5.99)	<b>1.669***</b> (6.02)
Source FE	YES	YES	YES	YES
Location FE	YES	YES	YES	YES
Observations	505	505	505	505
R-squared	0.127	0.099	0.134	0.138



**Table 6 Predictability of Future Returns**

The table below examines the association between corporate responses within one-year after the release of short-seller research reports and cumulative returns from the beginning of the second year to the end of the third year after the release of short-seller research reports. See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

VARIABLES	(1) Return [+1Y,+3Y]	(2) Return [+1Y,+3Y]	(3) Return [+1Y,+3Y]	(4) Return [+1Y,+3Y]	(5) Return [+1Y,+3Y]	(6) Return [+1Y,+3Y]
<i>Ind_Deny</i>	1.659 (0.14)	1.359 (0.11)	1.702 (0.14)	-0.211 (-0.02)	-0.096 (-0.01)	1.037 (0.08)
<i>Response Strength</i>	0.435 (0.09)	0.851 (0.19)	0.997 (0.22)	0.174 (0.04)	-0.230 (-0.05)	-0.543 (-0.10)
<i>#Two Way Comm. [0, +1Y]</i>	1.289 (0.73)				0.212 (0.12)	-0.581 (-0.33)
<i>#Analyst Endorse [0, +1Y]</i>		<b>2.063**</b> <b>(2.15)</b>			<b>1.992*</b> <b>(1.89)</b>	<b>1.948*</b> <b>(2.02)</b>
<i>#Dividend30 [0, +1Y]</i>			0.197 (0.09)		-1.779 (-0.69)	-2.413 (-0.94)
<i>#Buyback30 [0, +1Y]</i>				<b>3.452**</b> <b>(2.25)</b>	<b>3.602*</b> <b>(2.09)</b>	<b>3.594*</b> <b>(2.02)</b>
Market Return [+1Y, +3Y]	0.073 (0.16)	0.046 (0.10)	0.051 (0.12)	0.055 (0.13)	0.066 (0.15)	-0.008 (-0.02)
<i>#Delayed Filings [0, +1Y]</i>						<b>-11.211***</b> <b>(-2.94)</b>
<i>#Delistings [0, +1Y]</i>						1.810 (0.62)
<i>#Regulatory Inquiries [0, +1Y]</i>						0.665 (0.09)
<i>#Lawsuits [0, +1Y]</i>						0.626 (0.41)
<i>#Restatements [0, +1Y]</i>						8.099 (0.47)
<i>#Going Concern Doubts [0, +1Y]</i>						3.066 (0.26)
<i>#Delayed Earnings [0, +1Y]</i>						-3.620 (-0.33)
<i>#Bankruptcy Filings [0, +1Y]</i>						-2.248 (-0.28)
<i>#CEO Change [0, +1Y]</i>						-1.859 (-0.39)
<i>#CFO Change [0, +1Y]</i>						<b>-8.744*</b> <b>(-1.86)</b>
Source FE	YES	YES	YES	YES	YES	YES
Location FE	YES	YES	YES	YES	YES	YES
Observations	508	508	508	508	508	508
R-squared	0.049	0.051	0.048	0.054	0.057	0.080

**Table 7 Additional Tests with US Sample Only**

The table below examines the association between various corporate responses and cumulative returns of targeted firms over different time horizons after the release of short-seller research reports among US-listed firms in my main sample. Independent variables that end in \* are measured in the same measurement window as the dependent variables in each column: column (1) corresponds to variables in Table 4(A); column (2) corresponds to variables in Table 4(B); column (3) corresponds to variables in Table 4(C); column (3) corresponds to variables in Table 4(D); column (5) corresponds to variables in Table 4(E). See Appendix A for variable definitions. Source clustered t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

VARIABLES	(1) <i>Return</i> <i>[0,+1W]</i>	(2) <i>Return</i> <i>[0,+1M]</i>	(3) <i>Return</i> <i>[0,+3M]</i>	(4) <i>Return</i> <i>[0,+6M]</i>	(5) <i>Return</i> <i>[0,+1Y]</i>
<i>Ind_Deny</i>	-0.099 (-0.04)	-2.269 (-0.50)	-6.111 (-1.22)	<b>-9.636*</b> <b>(-1.94)</b>	-10.708 (-1.39)
<i>Response Strength</i>	<b>1.976***</b> <b>(4.99)</b>	<b>3.655**</b> <b>(2.83)</b>	0.925 (0.86)	3.132 (1.12)	2.593 (0.75)
<i>#TwoWayComm*</i>	<b>5.746**</b> <b>(2.70)</b>	<b>6.546***</b> <b>(3.26)</b>	<b>17.580***</b> <b>(3.76)</b>	<b>11.220***</b> <b>(3.68)</b>	<b>4.023***</b> <b>(5.60)</b>
<i>#AnalystEndorse*</i>	2.438 (0.72)	7.601 (0.81)	6.900 (0.93)	4.358 (0.93)	3.321 (1.73)
<i>#Dividend*</i>	<b>23.565***</b> <b>(3.25)</b>	<b>8.649**</b> <b>(2.20)</b>	<b>8.454*</b> <b>(2.05)</b>	4.718 (1.05)	3.971 (1.25)
<i>#Buyback*</i>	-4.543 (-1.17)	2.118 (1.07)	1.997 (1.03)	2.206 (0.82)	<b>3.495***</b> <b>(4.30)</b>
<i>Min Return [0,+2D]</i>	<b>0.895***</b> <b>(10.58)</b>	<b>0.771***</b> <b>(7.07)</b>	<b>0.714***</b> <b>(7.80)</b>	<b>0.647***</b> <b>(3.21)</b>	<b>0.722***</b> <b>(3.41)</b>
<i>MKT*</i>	<b>1.671***</b> <b>(3.90)</b>	<b>0.478*</b> <b>(1.76)</b>	-0.298 (-1.07)	<b>0.415**</b> <b>(2.27)</b>	<b>0.868***</b> <b>(3.90)</b>
<i>SMB*</i>	-0.745 (-1.02)	0.933 (0.93)	<b>1.903***</b> <b>(3.67)</b>	<b>1.469***</b> <b>(5.09)</b>	<b>1.573*</b> <b>(2.04)</b>
<i>HML*</i>	<b>-0.761**</b> <b>(-2.11)</b>	0.196 (0.52)	0.347 (1.21)	<b>1.081**</b> <b>(2.19)</b>	<b>1.323***</b> <b>(3.92)</b>
<i>UMD*</i>	-0.133 (-0.44)	<b>-0.533**</b> <b>(-2.25)</b>	-0.431 (-1.26)	<b>-0.873***</b> <b>(-5.39)</b>	<b>-0.444***</b> <b>(-2.89)</b>
Source FE	YES	YES	YES	YES	YES
Observations	470	473	474	474	475
R-squared	0.236	0.181	0.166	0.155	0.179