Non-fundamental Price Noises and Non-GAAP Reporting:

Evidence from Fragile Stocks

Ruichao ZHU

Hong Kong University of Science and Technology

Abstract

This study examines how managers preemptively use non-GAAP reporting to protect them against the costly adverse impacts related to non-fundamental price shocks. I argue and find that when managers perceive a greater threat of non-fundamental price shocks, in which market participants' abilities to understand firm fundamentals are hindered by noise in stock prices, managers take ex-ante preemptive actions by filtering out noise in GAAP earnings with non-GAAP adjustments to convey a cleaner picture about firm fundamentals to the market participants (i.e., the *ex-ante informing* hypothesis), and that with its potential informational benefits, non-GAAP reporting could ex-post mitigate the costly adverse impacts related to the threat and the realization of non-fundamental price shocks (i.e., the *ex-post mitigating* hypothesis). This study offers a novel perspective on how non-GAAP reporting serves as a preemptive tool to protect firms against the costly adverse impacts of non-fundamental price movements originating from financial markets.

Keywords: non-fundamental price shocks, non-GAAP reporting, stock fragility, mutual fund fire sales, feedback effects

1. Introduction

Stock prices play an important role in informing market participants about firm fundamentals (Hayek 1945; Bond, Edmans, and Goldstein 2012). However, they often change for reasons unrelated to firm fundamentals, which inject noise into prices and diminish the informational role of prices (Shiller 1984; Lee and So 2014; Goldstein 2023). Market participants also rely on earnings information to understand firm fundamentals (Monahan 2018). However, earnings metrics based on Generally Accepted Accounting Principles (GAAP) contain items stemming from transitory or ancillary shocks in firm operations, which have little implication for future earnings and cash flows and thus are noise in earnings and non-fundamental in nature (e.g., Bradshaw and Sloan 2002; McClure and Zakolyukina 2022). Prior studies suggest that managers could use non-GAAP adjustments to filter out noise in GAAP earnings and convey a cleaner picture of firm fundamentals to market participants (e.g., Bhattacharya, Black, Christensen, and Larson 2003; Black, Christensen, Ciesielski, Whipple 2018). This study examines how noise in stock prices due to non-fundamental movements affects managers' decisions to filter out noise in GAAP earnings with non-GAAP adjustments.

Price changes due to non-fundamental reasons (i.e., noise in prices) hinder market participants' abilities to understand firm fundamentals from stock prices because it is difficult for them to separate non-fundamental from fundamental price changes (e.g., Edmans, Goldstein, and Jiang 2012; Lee and So 2014; Dessaint, Foucault, Frésard, and Matray 2019). Both fundamental productivity shocks and non-fundamental shocks (i.e., transitory or ancillary shocks) happen in firm operations, and the latter results in performance items that are unimportant or irrelevant to understanding firm fundamentals and are noise in earnings. However, GAAP earnings muddles the performance impacts of both shocks (Leung and Veenman 2018; McClure and Zakolyukina

2022), and outsiders, who do not observe these two shocks, have difficulties differentiating and ascertaining how much of GAAP earnings stem from fundamental versus non-fundamental shocks. Since managers observe these two shocks, they could use non-GAAP adjustments to better inform outsiders about firm fundamentals by filtering out the performance impacts of non-fundamental shocks (i.e., noise in earnings) (Bhattacharya et al. 2003; Black et al. 2018; McClure and Zakolyukina 2022). Moreover, since non-fundamental price shocks are costly (e.g., Coval and Stafford 2007; Lou and Wang 2018; Dessaint et al. 2019), managers will not wait passively until such shocks realize, but will instead monitor their potential exposure to non-fundamental price shocks and take ex-ante actions to preempt and hedge the risk (Massa, Schumacher, and Wang 2021; Friberg, Goldstein, and Hankins 2023). Thus, I argue that when managers perceive a greater threat of non-fundamental price shocks, they will take ex-ante preemptive actions to better inform market participants about firm fundamentals by filtering out noise in GAAP earnings with non-GAAP adjustments. The *ex-ante informing hypothesis* predicts a positive relation between the threat of non-fundamental price shocks and the likelihood and quality of non-GAAP reporting.

Prior studies suggest that non-fundamental price shocks impose adverse feedback effects on the firms and manifest as a saliant firm risk. Specifically, the threat of non-fundamental price shocks induces feedback effects on managers' precautious real decisions, such as increased cash holding and decreased firm investments (Friberg et al. 2023). The realization of non-fundamental price shocks causes severe pressure on stock prices (e.g., Coval and Stafford 2007; Edmans et al. 2012) and costly feedback effects on firm investment (e.g., Lou and Wang 2018; Dessaint et al. 2019). To the extent that non-GAAP reporting helps market participants better understand firm fundamentals, the adverse price and real effects related to the threat and the realization of non-fundamental price shocks should be mitigated accordingly. Thus, the *ex-post mitigating hypothesis*

predicts that for firms with non-GAAP reporting, the adverse impacts related to the threat and the realization of non-fundamental price shocks should be smaller.

However, the above hypotheses are not without tensions. Prior literature suggests that non-GAAP reporting could be opportunistic, in which managers tend to exclude items that have implications for future earnings and cash flows and are fundamental in nature (e.g., Doyle, Lundholm, and Soliman 2003; Kolev, Marquardt, and McVay 2008; Doyle, Jennings, and Soliman 2013). If this is the case, managers would be less likely to provide it when they perceive a greater threat of non-fundamental price shocks, in which market participants' abilities to understand firm fundaments are hindered by the noise in stock prices. This is because low-quality non-GAAP reporting makes market participants even more difficult to glean relevant information about firm fundamentals, in which non-GAAP reporting would exacerbate rather than mitigate the adverse impacts related to the non-fundament price movements.

To examine the research question empirically, I follow Friberg et al. (2023) and capture the firm's potential exposure to non-fundamental price shocks with the stock fragility measure developed by Greenwood and Thesmar (2011). A stock is more fragile when it is more sensitive to non-fundamental liquidity shocks from its investors. This measure is constructed based on the readily available mutual fund data. The majority of mutual fund investors are households and retails with limited financial knowledge and limited information for their trading decisions (Lee and So 2014; Huang, Song, and Xiang 2022).[1] Previous studies show that liquidity-driven trades of these investors are uninformative and non-fundamental in nature (e.g., Greenwood and Thesmar 2011; Huang et al. 2022; Friberg et al. 2023), and that mutual funds channel non-fundamental

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[1] For example, according to the 2018 investment company institute (ICI) fact book, about 90% of mutual fund assets are held by households and retails.

liquidity-motivated demand from their investors into stock prices and inject noise into the prices (e.g., Coval and Stafford 2007; Lou 2012) because they, to a large extent, adjust their holdings mechanically in response to the fund flows from their investors. More importantly, with mutual fund data, I could operationalize the realization of extreme non-fundamental price shocks as mutual fund fire sales (i.e., the extreme mutual fund outflows) (e.g., Coval and Stafford 2007; Lou and Wang 2018; Dessaint et al. 2019). This allows me to examine the *ex-ante informing* hypothesis and *ex-post mitigating* hypothesis with a unified empirical setting.

To investigate the *ex-ante informing* hypothesis, I conduct two sets of tests. Firstly, I examine whether stock fragility affects non-GAAP reporting likelihood. I find that stock fragility significantly increases non-GAAP reporting likelihood after controlling for important time-variant determinants and firm and year-quarter fixed effects. The results still hold after I address the endogeneity concerns in different ways, including an alternative model specification based on industry-year-quarter fixed effects, the matched sample analysis based on the entropy balancing method, and difference-in-differences analyses based on BlackRock-BGI merger following Massa et al. (2021) and Friberg et al. (2023). Furthermore, I find that the effect of stock fragility on non-GAAP reporting likelihood becomes more pronounced when managers are more concerned about stock fragility and when outsiders are more uncertain about firm fundamentals, consistent with the arguments underlying the ex-ante informing hypothesis.

Secondly, I examine how stock fragility shapes non-GAAP reporting quality. Following prior non-GAAP literature (e.g., Doyle et al. 2003; Kolev et al. 2008; Doyle et al. 2013; Chen, Gee, and Neilson 2021a; Black, Black, Christensen, Gee 2022), I measure non-GAAP reporting quality from multiple dimensions: indicators of non-GAAP reporting quality, the implications of non-GAAP exclusions for future firm fundamentals, and market response to non-GAAP earnings news.

These tests provide consistent evidence from various angles that stock fragility improves non-GAAP reporting quality. These results support the notion that when facing a greater threat of non-fundamental price shocks, managers use non-GAAP adjustments to filter out noise in GAAP earnings to better inform outside market participants about firm fundamentals, consistent with the ex-ante informing hypothesis.

I next examine the *ex-post mitigating* hypothesis with three sets of tests. In the first set of tests, I examine whether non-GAAP reporting could mitigate managers' precautious real decisions arising from the threat of non-fundamental price shocks (i.e., stock fragility) (Friberg et al. 2023). I find that for firms with non-GAAP reporting, managers' precautious incentives to hold more cash and cut firm investment are significantly mitigated, consistent with the notion that non-GAAP reporting mitigates the adverse feedback effects stemming from the threat of non-fundamental price shocks.

In the second set of tests, I examine whether non-GAAP reporting could alleviate the adverse impacts resulting from the realization of non-fundamental price shocks (i.e., mutual fund fire sales) (e.g., Coval and Stafford 2007; Lou and Wang 2018; Dessaint et al. 2019). I find that for firms with non-GAAP reporting, mutual fund fire sales' negative impacts on stock prices and firm investment are significantly smaller, consistent with the notion that non-GAAP reporting mitigates the adverse impacts arising from the realization of non-fundamental price shocks. These results support the ex-post mitigating hypothesis.

In the third set of tests, I explore the potential informational benefits though which non-GAAP reporting could play an ex-post mitigating role. Prior literature suggests that financial constraints, liquidity disruptions, and hindered managerial learning are three important reasons behind the adverse feedback effects related to the threat and the realization of non-fundamental

price shocks (e.g., Coval and Stafford 2007; Lou and Wang 2018; Dessaint et al. 2019; Friberg et al. 2023). I show that non-GAAP reporting brings in informational benefits that directly mitigate these three mechanisms. Specifically, I find that non-GAAP reporting facilitates external debt and equity financing, promotes liquidity provisions, and enhances managerial learning. These results further support the ex-post mitigating hypothesis.

This study has several important contributions. First, this study sheds light on the interplays of two general and important trends in the financial markets: non-fundamental price movements (e.g., Lee and So 2014; Friberg et al. 2023; Goldstein 2023) and non-GAAP reporting practices (e.g., Bentley, Christensen, Gee, and Whipple 2018; Black et al. 2018; Barth, Li, and McClure 2022). Specifically, this study shows that facing a greater threat of non-fundamental price shocks, managers take preemptive actions to filter out noise in earnings with non-GAAP adjustments so as to better inform market participants about firm fundamentals, in which non-GAAP reporting plays an ex-ante informing role. Moreover, non-GAAP reporting, in turn, brings in relevant information benefits and helps mitigate the adverse impacts related to the threat and the realization of non-fundamental price shocks, in which non-GAAP reporting plays an ex-post mitigating role.

Second, this study contributes to the literature on non-GAAP reporting. Prior studies mainly focus on the impacts of *fundamental-related* factors (e.g., boards, CEOs, analysts, and short sellers) on non-GAAP reporting.[2] This study investigates how *non-fundamental-related* factors (i.e., non-fundamental price movements) shape non-GAAP reporting. Furthermore, this study extends the literature on the outcomes of non-GAAP reporting, especially the recent studies on its real effects (e.g., Laurion 2020; McClure and Zakolyukina 2022). This study shows that non-

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[2] See e.g., Frankel, McVay, and Soliman 2011; Doyle et al. 2013; Abdel-Meguid, Jennings, Olsen, and Soliman 2021; Bhattacharya, Christensen, Liao, and Ouyang 2021; Christensen, Gomez, Ma, Pan 2021.

GAAP reporting mitigates the adverse price and real effects related to the threat of and the realization of non-fundamental price shocks, and brings in informational benefits regarding external financing, liquidity provisions, and managerial learning. More importantly, this study offers a novel perspective on how non-GAAP reporting could serve as a preemptive tool to protect firms against the adverse effects of non-fundamental price movements that originate from financial markets.

Third, this study contributes to the literature on non-fundamental price shocks in two aspects. The first aspect is the literature on stock fragility (i.e., the threat of non-fundamental price shocks). Prior literature mainly focuses on its asset pricing implications and firm real effects (e.g., Greenwood and Thesmar 2011; Huang et al. 2022; Friberg et al. 2023). This study is the first one investigating its firm disclosure and reporting implication with a focus on non-GAAP reporting. The findings indicate that the threat of non-fundamental price shocks motivates managers to filter out noise in GAAP earnings with non-GAAP adjustments, and such adjustments are of high quality and valued by the market. Moreover, non-GAAP reporting could ex-post alleviate managers' precautious real decisions caused by the stock fragility concerns. The second aspect is the literature on mutual fund fire sales (i.e., the realization of non-fundamental price shocks) (e.g., Coval and Stafford 2007; Lou and Wang 2018; Dessaint et al. 2019) by showing that non-GAAP reporting could serve as a mitigating force and alleviate the adverse price and real impacts arising from these severe liquidity disruption events.

Fourth, this study contributes to the literature on the feedback effects from financial markets to firm real decisions (e.g., Bond et al. 2012; Goldstein 2023). This study shows that managers could use non-GAAP reporting as a preemptive tool to mitigate the adverse feedback effects of non-fundamental price shocks originating from financial markets (e.g., Lou and Wang

2018; Dessaint et al. 2019; Friberg et al. 2023). Moreover, I explore several important mechanisms behind the feedback effects (i.e., financial constraints, liquidity disruptions, and impaired managerial learning) and find that non-GAAP reporting facilitates external financing, liquidity provisions, and managerial learning, which helps shed light on why non-GAAP reporting could mitigate the adverse feedback effects from financial markets to firm real decisions.

The rest of the paper proceeds as follows. Section 2 discusses related literature and develops hypotheses. Section 3 details the data sources and sample selections. Section 4 presents the results supporting the ex-ante informing hypothesis. Section 5 shows the results supporting the ex-post mitigating hypothesis. Section 6 concludes.

2. Related Literature and Hypothesis Development

2.1 Non-fundamental Price Shocks

Stock prices play an essential role in the financial markets by conveying information about firm fundamentals to market participants and guiding their decision makings (Hayek 1945; Bond et al. 2012). However, stock prices could change for reasons unrelated to firm fundamentals, which inject noise into the prices and diminish the informational role of stock prices (Shiller 1984; Lee and So 2014; Goldstein 2023). Prior studies suggest that non-fundamental price movements pose a salient risk to firms and market participants.[3]

Recent literature examines decision makers' *ex-ante* actions when they perceive a higher threat of non-fundamental price shocks. Specifically, Friberg et al. (2023) examine managers' ex-ante precautionary real decisions when facing greater potential exposure to non-fundamental price

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[3] See, e.g., Coval and Stafford 2007; Edmans et al. 2012; Lou and Wang 2018; Dessaint et al. 2019; Massa et al. 2021; Friberg et al. 2022; Huang et al. 2022.

shocks. They find that managers hold more cash and cut investments when their firms are more susceptible to non-fundamental price movements. Massa et al. (2021) examine the asset managers' ex-ante portfolio adjustment behaviors when some of their portfolio stocks have greater potential exposure to non-fundamental price shocks. They find that asset managers rebalance their portfolios away from these affected stocks. Both studies use the stock fragility developed by Greenwood and Thesmar (2011) to capture a stock's potential exposure to non-fundamental price shocks. Similar to Friberg et al. (2023), I also focus on the corporate context. My study is related to this strand of literature in two ways: (*i*) showing how the potential exposure to non-fundamental price shocks affects managers' ex-ante decisions about non-fundamental adjustments in earnings, i.e., non-GAAP reporting, and (*ii*) examining how non-GAAP reporting could further help alleviate managers' precautionary real decisions as documented in Friberg et al. (2023).

Numerous studies examine the price and real impacts when the extreme non-fundamental price shocks realize, with a particular focus on mutual fund fire sales. Specifically, previous studies find that mutual fund fire sales induce negative price impacts on stocks due to severe liquidity disruptions (e.g., Coval and Stafford 2007; Edmans et al. 2012) and negative real impacts in firm investment due to reasons like elevated financial constraints and hindered managerial learning (e.g., Lou and Wang 2018; Dessaint et al. 2019). My study is related to this line of literature in two ways: (*i*) examining whether non-GAAP reporting could help mitigate the negative price and real impacts when the extreme non-fundamental price shocks realize, and (*ii*) exploring whether non-GAAP reporting could bring in informational benefits that are directly relevant to the important reasons underlying these negative impacts.

2.2 Non-GAAP Reporting

Recent decades have witnessed the increasing popularity of non-GAAP reporting in the capital market (Bradshaw and Sloan 2002; Bentley et al. 2018; Black, Christensen, Ciesielski, and Whipple 2021). Non-GAAP earnings are the alternative adjusted performance metrics that are different from the GAAP earnings. Since different earnings components of different firms have different implications for understanding the firms' fundamentals (Lipe 1986; Leung and Veenman 2018), non-GAAP adjustments tend to be context-specific and require managers' judgment about the relative importance of different earnings components for valuation and forecasting purposes (Bhattacharya et al. 2003; Hsu and Kross 2011; Black et al. 2021). Non-GAAP reporting becomes an increasingly important way for market participants to understand firm fundamentals (Bhattacharya et al. 2003; Black et al. 2018; Barth et al. 2022).

Previous studies suggest that managers provide non-GAAP reporting could out of informative or opportunistic motives. With informative motives, managers make non-GAAP adjustments in earnings by removing the earnings components that are mandated by GAAP but have little implications for future earnings and cash flows, i.e., filtering out the noise in earnings with non-fundamental adjustments. Such adjustments allow managers to use non-GAAP reporting to convey a cleaner picture of the firm underlying economics. For example, managers commonly exclude earnings items that they consider non-recurring, non-cash, or otherwise unimportant for understanding the future performance and value of the firms (Bhattacharya et al. 2003; Curtis, McVay, and Whipple 2014; Black et al. 2021). Also, managers vary their non-GAAP calculations over time and across firms for informative reasons (Black et al. 2021). Non-GAAP metrics are more informative than the GAAP earnings (Bhattacharya et al. 2003; Brown and Sivakumar 2003), and more useful when the GAAP earnings are of low informativeness (Lougee and Marquardt

2004; Leung and Veenman 2018), and are preferred and valued by the market participants (Bhattacharya et al. 2003; Lougee and Marquardt 2004).

Managers may also make non-GAAP adjustments for opportunistic considerations, such as meeting-or-beating performance benchmarks, misleading market perceptions of firm performance, and disguising firm fundamentals (e.g., Doyle et al. 2013; Black, Christensen, Joo, and Schmardebeck 2017; Hsu, Wang, and Whipple 2022). Under such scenarios, the non-GAAP adjustments made by managers are often associated with future firm performance, which suggests such adjustments are fundamental in nature and hinder market participants from understanding firm fundamentals (Doyle et al. 2003; Kolev et al. 2008). Although opportunistic motives could affect non-GAAP reporting, the recent non-GAAP literature suggests that informative motives play a primary role, especially after the implementation of Regulation G (e.g., Black and Christensen 2018; Black et al. 2018).

My study is relevant to the strands of the literature on determinants and outcomes of non-GAAP reporting. Specially, for the determinants of non-GAAP reporting, my study extends this line of literature by focusing on the *non-fundamental-related* factor (i.e., non-fundamental price movements), whereas previous research mainly examines *fundamental-related* factors (e.g., boards, CEOs, analysts, and short sellers) (Frankel et al. 2011; Doyle et al. 2013; Abdel-Meguid et al. 2021; Bhattacharya et al. 2021; Christensen et al. 2021). For the outcomes of non-GAAP reporting, my study extends this line of literature by examining the role of non-GAAP in mitigating the adverse price and real impacts arising from non-fundamental price movements, and in facilitating external financing, liquidity provision, and managerial learning.

2.3 Hypothesis Development

Prior literature suggests that stock prices could change for reasons unrelated to firm fundamentals, which inject noise into prices and diminish the informational role of stock prices (Shiller 1984; Lee and So 2014; Goldstein 2023). Since market participants have difficulties disentangling the non-fundamental from the fundamental price changes (e.g., Edmans et al. 2012; Dessaint et al. 2019), the non-fundamental price movements (i.e., noise in stock prices) make it harder for them to learn about firm fundamentals and distort their decision makings (e.g., Bond et al. 2012; Goldstein 2023).

Both fundamental productivity shocks and non-fundamental shocks (i.e., transitory or ancillary shocks) happen in firm operations. The latter gives rise to performance items that are unimportant or irrelevant to understanding firm fundamentals and are the noise in earnings (Bradshaw and Sloan 2002; McClure and Zakolyukina 2022). GAAP earnings muddles performance items arising from these two shocks and represents a noisy version of fundamental cash flows (Leung and Veenman 2018; McClure and Zakolyukina 2022). Since different earnings components of different firms have different implications for evaluating and forecasting firm fundamentals (Lipe 1986; Leung and Veenman 2018), classifying different earnings items into fundamental versus non-fundamental ones is context-specific and requires judgment (Black et al. 2021). Since outsiders do not observe these two shocks, they have difficulties disentangling the performance impacts of these shocks and ascertaining how much of GAAP earnings as a result of fundamental versus non-fundamental shocks.

Unlike outsiders, managers observe these two shocks in firm operations and have the information and expertise to assess the relevance and importance of different earnings components to understanding firm fundamentals (Bradshaw and Sloan 2002; Black et al. 2021). Thus, managers

could use non-GAAP adjustments to provide cleaner performance metrics about firm fundamentals by removing the performance impacts of non-fundamental shocks (i.e., noise in earnings) (Bhattacharya et al. 2003; Black et al. 2018; McClure and Zakolyukina 2022). Since the realization of extreme non-fundamental price shocks is costly to the firms, imposing severe price and real impacts on the firms (e.g., Coval and Stafford 2007; Edmans et al. 2012; Lou and Wang 2018; Dessaint et al. 2019), managers will not wait passively until such shocks realize, but instead actively monitor their potential exposure to the non-fundamental price shocks (i.e., stock fragility), and take ex-ante actions to hedge the risk (Massa et al. 2021; Friberg et al. 2023). Thus, when managers perceive a greater threat of non-fundamental price shocks, they will take *ex-ante* preemptive actions to better inform market participants about firm fundamentals by filtering out noise in earnings with non-GAAP adjustments. The *ex-ante informing* hypothesis translates into two testable predictions.

> *H1a*: Stock fragility is positively associated with the likelihood of non-GAAP reporting.

> *H1b*: Stock fragility is positively associated with the quality of non-GAAP adjustments.

Previous studies find that the threat and the realization of non-fundamental price shocks are costly to the firms and represent a saliant corporate risk (e.g., Coval and Stafford 2007; Lou and Wang 2018; Dessaint et al. 2019; Friberg et al. 2023). Specifically, the threat of non-fundamental price shocks induces managers to make precautious real decisions by holding more cash and cutting firm investment, which is mainly due to financial constraint concerns (Friberg et al. 2023). The realization of extreme non-fundamental price shocks causes severe adverse price pressure, which is mainly due to severe liquidity disruptions (e.g., Coval and Stafford 2007; Edmans et al. 2012), and adverse real impacts on firm investment, which is mainly due to increased

financial constraints and hindered managerial learning (e.g., Lou and Wang 2018; Dessaint et al. 2019).

If non-GAAP reporting better informs outsiders about firm fundamentals with cleaner performance metrics, firms with non-GAAP reporting should *ex-post* be less affected by the associated adverse impacts related to the threat and the realization of non-fundamental price shocks. Moreover, given that non-GAAP reporting could better inform outsiders about firm fundamentals by filtering out the noise in earnings, it could bring in informational benefits that are directly relevant to the important mechanisms (i.e., financial constraints, liquidity disruptions, and hindered managerial learning) underlying the adverse impacts. Thus, the *ex-post mitigating* hypothesis translates into three testable predictions.

H2a: With non-GAAP reporting, managers' precautious decisions in cash holding and firm investment due to the threat of non-fundamental price shocks will be mitigated.

H2b: With non-GAAP reporting, the adverse price and real impacts due to the realization of non-fundamental price shocks will be mitigated.

H2c: Non-GAAP reporting facilitates external financing, liquidity provision, and managerial learning.

However, the above hypotheses are not without tensions. The literature suggests that non-GAAP reporting could be opportunistic in which managers tend to exclude items that have implications for future earnings and cash flows (e.g., Doyle et al. 2003; Kolev et al. 2008; Doyle et al. 2013). Thus, such adjustments are fundamental in nature and disguise firm fundamentals. If this is the case, managers would have fewer incentives to provide such non-GAAP reporting when market participants' abilities to understand firm fundaments are hindered by the non-fundament

price movements (i.e., noise in stock prices). This is because opportunistic non-GAAP reporting makes market participants even more difficult to glean information about firm fundamentals, in which non-GAAP reporting would further exacerbate rather than mitigate the adverse impacts related to the non-fundament price movements.

3. Data Sources and Sample Selections

To examine the above hypotheses, I start the sample with the U.S. firms from the Compustat and CRSP universe. The sample period is from 2003 to 2019 because it is the period in which large scale managerial non-GAAP reporting data from Bentley et al. (2018) is available. I collect data from various sources. Specifically, I obtain managerial non-GAAP reporting data from the publicly available Bentley et al. (2018) dataset, mutual fund data from Thomson Reuters s12 database and CRSP mutual fund files, accounting data from Compustat Quarterly files, stock price and return data from CRSP database, institutional investor data from Thomson Reuters 13f database, and analyst forecasts data from the I/B/E/S database. I require firms to (*i*) have positive total assets and book value of equity, (*ii*) not reside in the financial or utility industries, and (*iii*) not have missing data items for the construction of regression variables.

4. Testing Ex-ante Informing Hypothesis

4.1 Variable Measurement: Stock Fragility

I follow Friberg et al. (2023) and use the stock fragility developed by Greenwood and Thesmar (2011) to capture the potential exposure to non-fundamental price shocks. A stock is more fragile when it is more sensitive to non-fundamental liquidity shocks by its investors. Following prior literature, I construct this measure based on the readily available mutual fund data. It captures

the expected volatility of the non-fundamental liquidity-driven trades by a firm's investors, with higher values indicating a greater threat of non-fundamental price shocks.

To construct this measure, I follow Friberg et al. (2023) and exclude funds with less than 5 million dollars in total net assets or with missing data. At the stock level, *Stock Fragility* is calculated as follows:

$$Stock\ Fragility = \sqrt{(\frac{1}{\theta_{it}})^2 W'_{it}\Omega_t W_{it}}$$

where θ_{it} is the market capitalization of stock *i*, W_{it} is a vector of the portfolio allocation weight of each mutual fund investor to stock *i*, with each element equal to the market value of shares of stock *i* held by fund *j* divided by the total net assets of fund *j*, and Ω_t is the covariance matrix of monthly dollar flows for the stock *i*'s mutual fund investors. As discussed in Greenwood and Thesmar (2011), Ω_t is not estimated directly due to heteroskedasticity, and is transformed by the following equation instead:

$$\widehat{\Omega}_t = diag(TNA_t)\Omega_t^{\%} diag(TNA_t)$$

where $diag(TNA_t)$ is a matrix with values equal to each fund's total net assets on the diagonal elements and zero elsewhere. $\Omega_t^{\%}$ is a covariance matrix of percentage flows at quarter *t* and is calculated using all available months since January 1990, where monthly percentage flows for each fund *j* is calculated as:

$$f_{jt}^{\%} = \frac{TNA_{jt} - TNA_{jt-1}(1 + R_{jt})}{TNA_{jt-1}}$$

where TNA_{jt} is the total net assets and R_{jt} is the return to fund *j* at time *t*.

4.2 Testing *H1a*: Stock Fragility and Non-GAAP Reporting Likelihood

To test *H1a* about whether managers are more likely to provide non-GAAP reporting when they perceive a greater threat of non-fundamental price shocks, I estimate the following model[4]:

$Non\text{-}GAAP\ Reporting_{i,q} = \alpha_0 + \alpha_1 Stock\ Fragility_{i,q-1} + \alpha_2 Firm\ Size_{i,q-1} + \alpha_3 Firm\ Leverage_{i,q-1} +$

$\qquad \alpha_4 Market\text{-}to\text{-}Book_{i,q-1} + \alpha_5 Firm\ ROA_{i,q-1} + \alpha_6 Earnigns\ Volatiltiy_{i,q-1} + \alpha_7 Stock\ Returns_{i,q-1} +$

$\qquad \alpha_8 Returns\ Volatility_{i,q-1} + \alpha_9 InstOwn\ Ratio_{i,q-1} + \alpha_{10} InstOwn\ HHI_{i,q-1} + \alpha_{11} Analyst\ Following_{i,q-1} +$

$\qquad \alpha_{12} Operating\ Cash\ Flows + \alpha_{13} M\&A\ Indicator + \alpha_{14} Special\ Items_{i,q-1} + \alpha_{15} MissNGData_{i,q} +$

$\qquad \sum \gamma_i Firm_i + \sum \omega_q Year\text{-}Quarter_q + \epsilon_{i,q}$ (1)

where *i* and *q* index firm and year-quarter, respectively. *Non-GAAP* is an indicator for whether managers disclose non-GAAP earnings in the earnings announcements, which is equal to one if managers' non-GAAP EPS (Bentley et al. 2018) is different from GAAP EPS, and zero otherwise.[5] *Stock Fragility* represents a firm's potential exposure to non-fundamental price shocks. A significant positive coefficient on *Stock Fragility* (α_1) suggests that managers are more likely to disclose non-GAAP earnings when they perceive a greater threat of non-fundamental price shocks.

I follow prior literature (e.g., Kyung, Lee, Marquardt 2019; Christensen et al. 2021; Hsu et al. 2022; Friberg et al. 2023) and include a set of firm characteristics that might be related to stock fragility and non-GAAP reporting. In particular, I control for firm size (*Firm Size*), firm leverage (*Firm Leverage*), firm market-to-book ratio (*Market-to-Book*), firm profitability (*Firm ROA*), earnings volatility (*Earnings Volatility*), stock returns (*Stock Returns*), stock return volatility (*Returns Volatility*), institutional ownership ratio (*InstOwn Ratio*), institutional ownership

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[4] In the untabulated tests, the results are similar if I use the contemporaneous version of regression variables.
[5] Managers' non-GAAP data from Bentley et al. (2018) has missing data concern for some firm quarters. I follow Hsu et al. (2022) and set *Non-GAAP Reporting* equal to zero if managerial on-GAAP EPS data is missing in Bentley et al. (2018) data but the actual EPS data is available in I/B/E/S. I further include an indicator (*MissNGData*) to help control for any impact of this design choice might on the inferences (e.g., Hanlon and Slemrod 2009; Choi, Myers, Zang and Ziebart 2011; Hsu et al. 2022). In the untabulated tests, the results are similar if I use a subsample of non-missing non-GAAP data in the Bentley et al. (2018) dataset.

concentration (*InstOwn HHI*), analyst following (*Analyst Following*), operating cash flows (*Operating Cash Flows*), an indicator for the merger or acquisition activities (*M&A Indicator*), an indicator for special items (*Special Items*), and an indicator for the observations that the on-GAAP information is missing in Bentley et al. (2018) dataset but the actual EPS data is available in I/B/E/S (*MissNGData*). I include firm and year-quarter fixed effects to control for the firm- and time-invariant unobservable factors. I cluster the standard errors at the firm levels.[6] I winsorize all continuous variables at the 1st and 99th percentiles to mitigate the influence of outliers. See the detailed definitions of variables in Appendix A.

After the sample selection procedure mentioned in Data and Sample section, I get a final sample of 176,514 firm-quarters between 2003 and 2019 for the baseline regressions. Table 1 presents the summary statistics of regression variables. In the sample, managers disclose non-GAAP earnings in 26.6% of firm quarters, similar to prior studies (e.g., Hsu et al. 2022). The mean value and standard deviation of stock fragility are 0.006 and 0.004, respectively, comparable with previous literature (e.g., Friberg et al. 2023). The summary statistics of the control variables are also largely consistent with the extant research.

4.2.1 Main Results

Table 2 reports the results of the relation between stock fragility and non-GAAP reporting likelihood, where Panel A shows the baseline regression results and Panel B shows the endogeneity test results. Column (1) of Panel A reports the results for a specification that only includes firm and industry-quarter fixed effects. Colum (2) of Panel A shows the results for the full sample

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[6] In the untabulated tests, I find that the results are robust if I cluster the standard errors at both the firm and the year-quarter levels.

regression with controls. Column (3) of Panel A reports the results for an alternative sample where I follow prior literature (Friberg et al. 2023) and exclude the financial crisis period (2008-2009).

To further mitigate the concerns that other potentially correlated omitted variables may affect the results, I conduct several endogeneity tests and report the results in Panel B. Column (1) of Panel B shows the results for a specification that I replace year-quarter fixed effects with industry-year-quarter fixed effects to account for any time-variant and time-invariant industry-level factors. Column (2) of Panel B shows the results for the matched sample based on the entropy balancing method (Hainmueller 2012) to account for the differences between firms with high and low stock fragility.[7] Column (3) of Panel B shows results for the difference-in-differences tests where I follow from prior research (Massa et al. 2021; Friberg et al. 2023) and use the BlackRock-BGI merger as an exogenous shock to the expected stock fragility.[8]

Across the six columns in Table 1, the results consistently show that stock fragility is significantly positively related to the likelihood of non-GAAP reporting. The effects are also economically meaningful. For example, a one standard variation increase in stock fragility is related to a 2.3% increase and a 2.6% increase in the non-GAAP reporting likelihood from the

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[7] Specifically, I first follow prior literature (e.g., Fang, Tian, and Tice 2014) and sort the firms into terciles based on their stock fragility values, with firms in the top tercile labeled as the treatment group and firms in the bottom tercile as the control group, and then use the entropy balancing method to create a balanced matched sample. Appendix 1 shows the results for the effectiveness of the entropy balancing procedure. In the untabulated tests, I find that the results are robust if I conduct the matched sample test based on propensity score method.

[8] Specifically, I construct the indicator variable *Treat*, which is equal to one if the firm was jointly held by Blackrock and BGI at the end of 2008 and zero if the stock was held by only one of Blackrock and BGI at the end of 2008, and the indicator variable *Post*, which is equal to one for firms treated for periods from the second quarter of 2009 (i.e., 2009 Q2) onward and zero otherwise. I choose the [q-6, q+6] as the event window (i.e., 2017 Q3-2010 Q4), where event date is the announcement date (June 2009). In the untabulated tests, I also find the results are robust (1) if I further include institutional cross-ownership as one additional control in the difference-in-differences test, which is defined as the institutional investors simultaneously blockholding multiple same-industry firms, given the consideration that some previous papers use the asset management mergers as shocks to institutional cross-ownership (e.g., He and Huang 2017; Park, Sani, Shroff, and White 2019); (2) if I further include the institutional cross-ownership as an additional control in the baseline regressions; (3) if I use follow prior studies (Massa et al. 2021; Friberg et al. 2022) and use other asset management mergers excluding the BlackRock-BGI merger the as a further robustness check of the difference-in-differences tests.

sample mean based on Columns (2) and (3) of Panel A, respectively.[9] The exogenous shock to the expected stock fragility as a result of asset manager mergers is related to an 11.7% increase in the non-GAAP reporting likelihood from the sample mean based on Columns (3) of Panel B. Collectively, the results in Table 1 provide consistent and robust support for the arguments that managers have a stronger incentive to provide non-GAAP reporting to better inform the market participants about the firm fundamentals when they perceive higher stock fragility concerns, i.e., greater threat of non-fundamental price shocks, in which greater noise in prices diminishes the informational role of stock prices in conveying the information about firm fundamentals.

4.2.2 Cross-Sectional Results

As the hypothesis argues, managers have stronger incentives to filter out noise in earnings with non-GAAP adjustments to convey a cleaner picture about firm fundamentals to the market participants when managers perceive a greater threat of non-fundamental price shocks (i.e., stock fragility), in which market participants' abilities to understand firm fundamentals are hindered by noise in stock prices. Thus, I predict that managers' incentives to provide non-GAAP reporting should be conditional on (1) managers' concerns about stock fragility and (2) outsiders' uncertainty about firm fundamentals. Accordingly, I conduct two sets of cross-sectional tests.

Prior literature suggests that stock fragility adversely impacts firms' access to external capital and induces managers' precautious real decisions (Friberg et al. 2023). Since firms with worse performance and higher financial constraints should have a lower capability to meet their

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[9] Such economic effects are comparable to the studies applying stock fragility in other settings. For example, Friberg et al. (2022) show that a one standard deviation increase in stock fragility is related a 2.1% increase in cash holding from the sample mean. Moreover, since mutual fund investors consist of a fraction of a firm's investor universe (about 15% on average), the stock fragility estimated using mutual fund data is likely to capture part of total stock fragility (e.g., Greenwood and Thesmar 2011). Thus, the economic effects here should be regarded as the lower bond of estimations about the effects of stock fragility on non-GAAP reporting likelihood.

financing needs, they are more subject to the potential costs of stock fragility. Accordingly, I predict that managers' incentives to provide non-GAAP reporting are stronger for firms with worse performance and higher financial constraints.

To test these cross-sectional predictions, I capture firm performance with both operating performance (*Firm ROA*) and stock market performance (*Stock Returns*) and capture financial constraint (*Financial Constraints*) with Altman Z-Score.[10] I then create an indicator variable of low firm performance for each of the two variables (*Low Firm ROA* and *Low Stock Returns*), which is equal to one if the corresponding variable is below the sample median, and zero otherwise, and an indicator variable of high financial constraints (*High Financial Constraints*), which is equal to one if Altman Z-Score is below the sample median, and zero otherwise. I next augment Eq (1) with each of these indicator variables and its interaction terms with *Stock Fragility*. I report the results in the Panel A of Table 3. Across the three columns, the results support that the effect of stock fragility on non-GAAP reporting likelihood is stronger when the managers are more concerned about the potential costs of stock fragility.

As argued in the hypothesis above, the main motive behind managers' non-GAAP reporting is to convey to the market a cleaner picture of firm fundamentals when market participants' ability to understand firm fundamentals from stock prices is hindered by noise in prices. Thus, I predict that managers' incentives to provide non-GAAP reporting are stronger when outsiders have greater uncertainty about firm fundamentals.

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[10] In the untabulated tests, I also find the results are similar if I measure firm financial constraints with (1) firm leverage, measured as the current liabilities plus long-term debt scaled by total assets; (2) firm cash holding, measured as cash and short-term investments scaled by total assets.

To test these cross-sectional predictions, I capture outsiders' uncertainty about firm fundamentals with three alternative proxies: analyst forecast dispersion (*Forecast Dispersion*), earnings fidelity (*Earnings Fidelity*) based on the measure from Du, Huddart, Xue, Zhang (2020), and accrual quality (*Accrual Quality*) based on the modified Jones model (Dechow, Sloan, Sweeney 1995). Prior studies suggest that greater analyst dispersion is related to greater uncertainty about the firm fundamentals (Diether, Malloy, Scherbina 2002; Zhang 2006). Earnings fidelity, a new measure of earnings quality based on a hidden Markov model, captures the faithfulness of earnings signals in revealing the true economics state of firms (Du et al. 2020). Thus, lower earnings fidelity is related to higher uncertainty about firm fundamentals. Previous research suggests that lower accrual quality (i.e., greater earnings management) implies more opaque financial reports and obscures information about firm fundamentals (e.g., Sloan 1996; Dechow, Ge, Schrand 2010).

I then create an indicator variable for higher analyst forecast dispersion (*High Forecast Dispersion*), equal to one if analyst forecast dispersion is above the sample median and zero otherwise; an indicator variable for lower earnings fidelity (*Low Earnings Fidelity*), equal to one if earnings fidelity is below the sample median and zero otherwise; an indicator variable for lower accrual quality (*Low Accrual Quality*) equal to one if the absolute value of abnormal accruals accrual is above the sample median and zero otherwise. I next augment Eq (1) with each of these indicator variables and its interaction terms with *Stock Fragility*. I report the results in the Panel B of Table 3. Across the three columns, the results support that the effect of stock fragility on non-

GAAP reporting likelihood is stronger when the outsiders have greater uncertainty about firm fundamentals.[11]

Overall, the evidence from the cross-sectional tests further supports the main arguments underlying the ex-ante informing hypothesis that when managers perceive a greater threat of non-fundamental price shocks (i.e., stock fragility), in which market participants' abilities to understand firm fundamentals are hindered by noise in stock prices, managers have greater incentives to provide non-GAAP reporting to better inform market participants about firm fundamentals.

4.3 Testing *H1b*: Stock Fragility and Non-GAAP Adjustment Quality

After documenting the relation between stock fragility and non-GAAP reporting likelihood (i.e., *H1a*), I next examine *H1b* about whether the non-GAAP adjustments made by made managers are of high quality, namely, whether such adjustments filter out noise in GAAP earnings and provide market participants with a cleaner picture of firm fundamentals. To investigate this question, I use three primary approaches: (*i*) the relations with indicators of non-GAAP reporting quality, (*ii*) the implications of non-GAAP adjustments for future firm fundamentals, and (*iii*) market responses to non-GAAP earnings news.

4.3.1 Stock Fragility and Indicators of non-GAAP Reporting Quality

In the first approach, I examine the relations between stock fragility and indicators of non-GAAP reporting quality from previous studies (e.g., Doyle et al. 2003; Kolev et al. 2008; Doyle et al. 2013; Leung and Veenman 2018; Black et al. 2021; Chen et al. 2021a) with the following model:

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[11] Since *Earnings Fidelity* and *Accrual Quality* capture GAAP earnings quality, the cross-sectional results on these measures also suggest that non-GAAP reporting become more useful and important for outsiders to understand firm fundamentals when outsiders cannot effectively resolve their uncertainty about firm fundamentals via GAAP reporting due to its low quality and informativeness, consistent with prior non-GAAP literature (e.g., Lougee and Marquardt 2004; Leung and Veenman 2018).

$$Indicators\ of\ Non\text{-}GAAP\ Quality_{i,q} = \alpha_0 + \alpha_1 Stock\ Fragility_{i,q\text{-}1} + Controls\ + Fixed\ Effects + \epsilon_{i,q} \qquad (2)$$

where *Indicators of Non-GAAP Quality* is one of the indicators of non-GAAP reporting quality: *Transitory Exclusions* is an indicator for managers making non-recurring exclusions in the non-GAAP adjustments; *Recurring Exclusions* is an indicator for managers making recurring exclusions in the non-GAAP adjustments; *MBE with Non-GAAP* is an indicator for managers making non-GAAP adjustments to meet or beat analyst consensus forecasts that their GAAP earnings fall short; *MBE with Recurring Exclusions* is an indicator for managers making non-GAAP adjustments to meet or beat analyst consensus forecasts that their operating GAAP earnings fall short, in which managers need to exclude the recurring items for the meet-or-beat purpose; *Loss Convert with Non-GAAP* is an indicator for firms having a GAAP loss but a non-GAAP profit. *Loss Convert with Recurring Exclusions* is an indicator for firms with an operating GAAP loss but a non-GAAP profit, in which managers need to exclude the recurring items for the loss convert purpose. *Controls* and *Fixed Effects* are the same as those in Eq. (1). See the detailed definitions of variables in Appendix A.

Since managers commonly exclude non-recurring items for informative purposes (e.g., Doyle et al. 2003), a significant positive coefficient on *Stock Fragility* (α_1) for the dependent variable *Transitory Exclusion* suggests a more informative non-GAAP adjustment. However, since prior literature suggests that the incentives behind managers' recurring exclusions could be informative (e.g., Whipple 2015; Black et al. 2021) or opportunistic (e.g., Doyle et al. 2003; Kolev et al. 2008), ex ante it is unclear about the coefficient on *Stock Fragility* (α_1) for the dependent variable *Recurring Exclusion*. I report the results in Panel A of Table 4. Column (1) shows that when facing heightened stock fragility concerns, managers are likely to make non-recurring exclusions in their non-GAAP adjustments, which help filter out noise in earnings. Column (2)

shows that stock fragility has a positive relation with recurring exclusions, though the statistical significance level is much lower than that of non-recurring exclusions. To further shed light on the recurring exclusions more relevant to the opportunistic incentives, I explore the scenarios where managers use recurring exclusions to meet the performance benchmarks (i.e., analyst forecast consensus and zero profit) in the following tests.

Prior literature suggests that managers use both transitory exclusions and recurring exclusions to meet or beat analyst forecasts (Bradshaw, Christensen, Gee, and Whipple 2018), and that managers are more likely to use recurring exclusions, which analysts are less able to unwind, for the opportunistic meet-or-beat purpose (Doyle et al. 2013). Thus, ex ante it is unclear about the coefficient on *Stock Fragility* (α_1) for the dependent variable *MBE with Non-GAAP*, in which managers could use both transitory exclusions and recurring exclusions for the meet-or-beat purpose, but I expect a significant negative coefficient on *Stock Fragility* (α_1) for the dependent variable *MBE with Recurring Exclusions*, in which the recurring exclusions made by managers are likely to be opportunistic. I report the results in Panel B of Table 4. Column (1) shows that the coefficient on stock fragility is negative, though it is not significant at the conventional level. Column (2) shows that stock fragility has a significantly negative relation with managers' use of recurring exclusions to opportunistically meet or beat analyst forecasts, suggesting managers are less likely to make opportunistic non-GAAP adjustments when they perceive greater stock fragility concerns.[12]

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[12] In the untabulated tests, I follow the design in Doyle et al. (2013) and directly examine how the positive (i.e., income-increasing) non-GAAP exclusions are related to the likelihood of meeting or beating analyst consensus forecasts. I mainly focus on *MBE with Recurring Exclusions*, in which the exclusions are likely to be opportunistic. Specifically, I augment the regression models in Doyle et al. (2013) with stock fragility variables and its interaction terms with positive total exclusions, positive transitory exclusions, and positive recurring exclusions, respectively. I find that (*i*) when facing greater stock fragility concerns, managers less likely to use positive exclusions to meet or beat analyst forecasts, and (*ii*) such effects are concentrated in the positive recurring exclusion when I further decompose the total exclusions into the positive transitory exclusions and positive recurring exclusions. These resutls

Previous studies suggest that non-GAAP reporting is more informative when firms make a non-GAAP profit but a GAAP loss (Leung and Veenman 2018; Chen et al. 2021a), a significant negative coefficient on *Stock Fragility* (α_1) for the dependent variable *Loss Convert with Non-GAAP* suggests more informative non-GAAP adjustments. Since managers could make recurring exclusions out of informative or opportunistic motives, ex ante it is unclear about the coefficient on *Stock Fragility* (α_1) for the dependent variable *Loss Covert with Recurring Exclusion*. I report the results in Panel C of Table 4. Column (1) shows that stock fragility has a significantly positive relation with the tendency of providing non-GAAP earnings when the firm makes a GAAP loss, consistent with the notion that non-GAAP earnings are more useful and informative when the firm makes a GAAP loss (Leung and Veenman 2018; Chen et al. 2021a). Column (2) shows that the coefficient on stock fragility is positive, but it is not significant at the conventional level, consistent with the expectation that managers' use of recurring exclusions is out of both opportunistic and informative incentives when the firm makes a GAAP loss.

Collectively, across the three panels, the results of Table 4 consistently support that when managers face greater stock fragility concerns, the non-GAAP reporting provided by managers is of high quality and is mainly out of informative incentives, consistent with the ex-ante informing hypothesis.

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suggest that when perceiving greater stock fragility concerns, managers are less likely to make opportunistic income-increasing non-GAAP exclusions for the meet-or-beat purpose, consistent with the informative motivate in non-GAAP adjustments.

4.3.2 Stock Fragility and Quality of Non-GAAP Exclusions

In the second approach, I follow prior studies (e.g., Kolev et al. 2008; Doyle et al. 2013; Chen et al. 2021a) and directly examine how non-GAAP exclusions are related to the future firm performance by estimating the following model:

$Future\ Performance_{i,q+1,\ q+4} = \delta_0 + \delta_1 Non\text{-}GAAP\ Earnings_{i,q} + \delta_2 Non\text{-}GAAP\ Exclusions_{i,q} +$

$\delta_3 Stock\ Fragility_{i,q-1}*Non\text{-}GAAP\ Earnings_{i,q} + \delta_4 Stock\ Fragility_{i,q-1}*Non\text{-}GAAP\ Exclusion_{i,q} +$

$\delta_5 Stock\ Fragility_{i,q-1} + \delta_6 Firm\ Size_{i,q-1} + \delta_7 Earnings\ Volatility_{i,q-1} + \delta_8 Loss_{i,q-1} +$

$\delta_9 Book\text{-}to\text{-}Market_{i,q-1} + \delta_{10} Sales\ Growth_{i,q-1} + \delta_{11} Firm\ Age_{i,q-1} + Fixed\ Effects + \epsilon_{i,q}$ (3)

where *Future Performance* is one of the three measures used by previous studies: future operating earnings (*OP_EARN*), future operating cash flows (*OP_OCF*), and future operating free cash flow (*OP_FREE*). *Non-GAAP Earnings* is the level of non-GAAP earnings. *Non-GAAP Exclusions* is the level of total non-GAAP exclusions made by managers. The other controls are motived based on previous studies (e.g., Kolev et al. 2008; Doyle et al. 2013; Chen et al. 2021a) and are defined in a similar way. *Fixed Effects* represent firm and year-quarter fixed effects. See the detailed definitions of variables in Appendix A. Based on the interpretations from these previous studies, a significantly positive coefficient on the interaction term *Stock Fragility*Non-GAAP Exclusion* (δ_4) suggests that exclusions made by managers are of high quality and help investors have a better understanding of future firm fundamentals (i.e., future earnings and cash flows).

I report the results in Table 5. The positive coefficient on *Non-GAAP Earnings* suggests that non-GAAP earnings are permanent and core earnings that help predict further firm fundamentals (i.e., operating earnings, operating cash flows, and free cash flows), and such effects are stronger for firms with greater stock fragility concerns (as indicated by the significantly positive coefficient on the interactions term *Non-GAAP Earnings*Stock Fragility*). More

importantly, the negative coefficient on the *Non-GAAP Exclusions* suggests that the exclusions made by managers could be opportunistic and can predict future firm performance, and the positive coefficient on the *Stock Fragility*Non-GAAP Exclusion* suggests that the non-GAAP exclusions are less opportunistic for firms with heightened stock fragility. Collectively, the results of Table 5 show that when managers perceive greater stock fragility concerns, their non-GAAP adjustments are more informative and help outsiders better predict future firm fundamentals (i.e., future earnings and cash flows), consistent with the ex-informing hypothesis.

4.3.3 Stock Fragility and Market Responses to Non-GAAP Earnings News

In the third approach, I follow prior studies (e.g., Doyle et al. 2013; Chen et al. 2021a; Black et al. 2022) and examine market responses to non-GAAP earnings news using the following model:

$$EA\ Returns_{i,q} = \delta_0 + \delta_1 Non\text{-}GAAP\ Earnings\ News_{i,q} + \delta_2 Non\text{-}GAAP\ Earnings\ News_{i,q}*Stock\ Fragility_{i,q-1} +$$
$$\delta_3 Exclusion\ Forecast\ Errors_{i,q} + \delta_4 Exclusion\ Forecast\ Errors_{i,q}* Stock\ Fragility_{i,q-1} +$$
$$\delta_5 Stock\ Fragility_{i,q-1} + \delta_6 Firm\ Size_{i,q-1} + \delta_7 Book\text{-}to\text{-}Market_{i,q-1} + \delta_8 Reporting\ Lags_{i,q-1} +$$
$$\delta_9 Analyst\ Following_{i,q-1} + \delta_{10} InstOwn\ Ratio_{i,q-1} + \sum Controls_{i,q-1}* Non\text{-}GAAP\ Earnings\ News_{i,q} +$$
$$\sum Controls_{i,q-1}* Exclusion\ Forecast\ Errors_{i,q} + Fixed\ Effects + \epsilon_{i,q} \tag{4}$$

where *EA Returns* represents one of the two proxies: *EA Returns [-1,1]* is the three-day cumulative market-adjusted buy-and-hold return over a [-1,1] window with the earnings announcement date as day 0. Similarly, *EA Returns [0,1]* is the two-day cumulative market-adjusted abnormal return over a [0, 1] window. Non-GAAP earnings news (*Non-GAAP Earnings News*) is measured as firms' non-GAAP EPS less the consensus street EPS forecast from I/B/E/S, scaled by the stock price at quarter end. The exclusion forecast errors (*Exclusion Forecast Errors*) is measured as actual exclusions made by managers less the consensus exclusions forecasts made by analysts from I/B/E/S following Bradshaw et al. (2018). I also include the controls from previous studies (*Firm*

Size, *Book-to-Market*, *Reporting Lags*, and *Analyst Following*), and further interact these controls with non-GAAP earnings news (*Controls*Non-GAAP Earnings News*) and exclusion forecast errors (*Controls*Exclusion Forecast Errors*), respectively. Following previous studies, I rank the regression variables into deciles across the sample and scale the range to -0.5 and 0.5. I also include firm and year-quarter fixed effects. I cluster the standard error by the earnings announcement date. Consistent with the interruptions from previous studies, a significantly positive coefficient on the interaction term *Stock Fragility* Non-GAAP Earnings News* (δ_2) suggests that investors respond more strongly to the non-GAAP earnings news for firms with heightened stock fragility.

I report the results in Table 6. In both columns, the significantly positive coefficients on the interaction term *Stock Fragility* Non-GAAP Earnings News* imply that investors respond more strongly to the non-GAAP information of firms with greater stock fragility concerns. Thus, these results suggest that investors have a greater reliance on non-GAAP reporting information when they have greater difficulties understanding firm fundamentals from stock prices due to noise in stock prices, consistent with the ex-ante informing hypothesis.

Overall, the comprehensive results from the above three primary approaches (Table 4, 5, and 6) provide consistent support from various angles for the ex-ante informing hypothesis that managers use non-GAAP adjustments to help remove noise in GAAP earnings to better inform outside market participants about firm fundamentals when they perceive a greater threat of non-fundamental price shocks, in which market participants' abilities to understanding firm fundamentals are hindered by noise in stock prices.

5. Testing Ex-Post Mitigating Hypothesis

In this section, I move to the tests related to the ex-post mitigating hypothesis. Specifically, I first examine whether the non-GAAP reporting could help mitigate managers' precautious real decisions in cash holding and firm investment due to the heightened threat of non-fundamental shocks (i.e., stock fragility). Next, I examine whether the non-GAAP reporting could help mitigate the adverse price and real impacts on the firms due to the realization of extreme non-fundamental price shocks (i.e., mutual fund fire sales). Lastly, I explore whether non-GAAP reporting could help bring in information benefits that are directly relevant to several important mechanisms underlying the adverse impacts due to the threat of and the realization of non-fundamental price shocks.

5.1 Testing *H2a*: Mitigating Effects of Non-GAAP Reporting on the Adverse Impacts due to the Threat of Non-fundamental Price Shocks

H2a predicts that for firms with non-GAAP reporting, managers' precautious real decisions in holding more cash and cutting firm investment due to the heightened stock fragility concerns will be mitigated accordingly. I examine this hypothesis using the following model:

$$Precautious\ Real\ Decisions_{i,\ q+1} = \alpha_0 + \alpha_1 Stock\ Fragility_{i,q} + \alpha_2 Stock\ Fragility_{i,q}*Non\text{-}GAAP\ Reporting_{i,q} +$$
$$\alpha_3 Non\text{-}GAAP\ Reporting_{i,q} + Controls_{i,q} + Fixed\ Effects + \epsilon_{i,q} \tag{5}$$

where *Precautious Real Decisions* is *Cash Holding* or *Firm Investment* from previous research (Friberg et al. 2023). *Controls* and *Fixed Effects* are the same as those in Eq. (1). See the detailed definitions of variables in Appendix A. Since stock fragility increases cash holding and decreases firm investment, a significantly negative (positive) coefficient on the interaction term *Stock*

Fragility*Non-GAAP (α_2) for the dependent variable *Cash Holding* (*Firm Investment*) would suggest that non-GAAP reporting plays a mitigating role.

I report the results in Table 7. The coefficients on *Stock Fragility* are significantly positive (negative) for *Cash Holding* (*Firm Investment*), consistent with the effects of stock fragility on managers' precautious real decisions in Friberg et al. (2023). Importantly, the coefficient on the interaction term *Stock Fragility*Non-GAAP* is significantly negative (positive) for the dependent variable *Cash Holding* (*Firm Investment*), suggesting that managers' precautious real decisions are largely mitigated by non-GAAP reporting. Economically, since the coefficient magnitude on *Stock Fragility*Non-GAAP* is quite close to and even slightly larger than that on the Stock Fragility (-0.761 vs. 0.728 for dependent variable *Cash Holding* and -11.064 vs. 11.796 for dependent variable *Firm Investment*), the effects of stock fragility on managers' precautious real decisions are largely mitigated and become negligible for the firms with non-GAAP reporting. These results support the effects of non-GAAP reporting on mitigating managers' precautious real decisions due to the threat of extreme non-fundamental price shocks (i.e., stock fragility), consistent with the ex-post mitigating hypothesis.

5.2 Testing *H2b*: Mitigating Effects of Non-GAAP Reporting on the Adverse Impacts due to the Realization of Non-fundamental Price Shocks

Before proceeding to the empirical models for testing *H2b*, I introduce the measures related to mutual fund fire sales (i.e., the realization of non-fundamental price shocks) following the prior research (e.g., Lou and Wang 2018; Dessaint et al. 2019). Specifically, I first define mutual fund flow-driven trading pressure in a firm-quarter as

$$Pressure_{i,q} = \frac{\sum_j Flow_{j,q} \times Shares_{i,j,q-1}}{Volume_{i,j,q-1}}$$

where $Share_{i,j,q-1}$ is fund j's shareholding of stock i at the beginning of quarter q, $Volume_{i,j,q-1}$ is fund j's trading volume of stock i in quarter q-1, and $Flow_{j,q}$ is fund j's capital flow in quarter q, which is the sum of monthly fund flow over the quarter q. Fund j' capital flow in month m is calculated as:

$$Flow_{j,m} = \frac{TNA_{j,m} - TNA_{j,m-1}(1 + R_{j,m})}{TNA_{j,m-1}}$$

where $TNA_{j,m}$ is fund j's total net asset value at the end of month m, and $R_{j,m}$ is fund j's monthly return over month m.

I then construct an indicator variable (*Fire Sale Indicator*) for a firm-quarter experiencing extreme mutual fund outflows (i.e., mutual fund fire sales) if it is at the bottom tercile based on the entire sample of firm-quarter flow-driven trading pressure (*Pressure*), and a continuous variable (*Fire Sale Intensity*), which equal to the negative value of *Pressure* for the fire-sale firm-quarter, captures the severity of extreme fund outflows.

After constructing measures related to mutual fund fire sales, I move to test *H2b*, which predicts that for firms with non-GAAP reporting, the adverse price and real impacts due to the realization of extreme non-fundamental price shocks (i.e., mutual fund fire sales) will be mitigated accordingly. I examine this hypothesis using the following model:

Price Impact (Real Impact)$_{i, q+1}$ = α_0 + α_1*Fire Sales$_{i,q}$* + α_2*Fire Sales$_{i,q}$*Non-GAAP Reporting$_{i,q}$* +

α_3*Non-GAAP Reporting$_{i,q}$* + *Controls$_{i,q}$* + *Fixed Effects* + $\epsilon_{i,q}$ (8)

where *Price Impact* is the quarterly cumulative average abnormal returns (*QCAARs*) in a given quarter, where the benchmark return is the industry equal-weighted returns. *Real Impact* is the firm capital investment (*Capex Investment*) in a given quarter. *Fire Sales* is one of the two measures related to mutual fund fire sales: *Fire Sales Indicator* is a variable indicator for whether a firm

experiences mutual fire sales events in a given quarter; *Fire Sales Intensity* is the severity of mutual fund fire sales experienced by a firm in a given quarter. *Controls* and *Fixed Effects* are the same as those in Eq. (1). See the detailed definitions of variables in Appendix A. Since mutual fund fire sales impose negative price and real impacts on the firms, significantly positive coefficients on the interaction term (*Fire Sale*Non-GAAP Reporting)* would suggest that non-GAAP reporting plays a mitigating role.

I report the results in Table 8. The coefficients on *Fire Sale Indicator* and *Fire Sale Intensity* are significantly negative for the dependent variables *QCAARs* and *Capex Investment*, consistent with the findings in prior literature (Coval and Stafford 2007; Edmans et al. 2012; Lou and Wang 2018; Dessaint et al. 2019) that mutual fund fire sales impose negative price and real impacts on the firms. Importantly, the coefficients on the interaction term *Stock Fragility*Non-GAAP Reporting* are significantly positive for the dependent variables *QCAARs* and *Capex Investment*, suggesting that adverse price and real impacts are significantly mitigated by non-GAAP reporting. Economically, for firms with non-GAAP reporting, the negative price impacts due to mutual fund fire sales are reduced by 42.85% (29.36%) for the mutual fund fire sales variable *Fire Sales Indicator* (*Fire Sales Intensity*). Since the coefficient magnitude on *Fire Sales*Non-GAAP Reporting* is quite close to and even slightly larger than that on *Fire Sales* (-0.061 vs. 0.067 for the independent variable *Fire Sales Indicator* and 1.368 vs. -1.393 for the independent variable *Fire Sales Intensity*), the negative real effects due to mutual fund fire sales are largely mitigated and become negligible for the firms with non-GAAP reporting. These results support the mitigating effects of non-GAAP reporting on the adverse price and real impacts due to

the realization of extreme non-fundamental price shocks (i.e., mutual fund fire sales), consistent with the ex-post mitigating hypothesis.[13]

5.3 Testing *H2c*: Mitigating Effects of Non-GAAP Reporting: Potential Mechanisms

After documenting that non-GAAP reporting mitigates the adverse impacts related to the threat and the realization of non-fundamental price shocks, I next explore whether non-GAAP reporting could bring in the potential informational benefits that are directly relevant to several important mechanisms (financial constraints, liquidity distributions, and hindered managerial learning) underlying the adverse impacts related to the threat and the realization of non-fundamental price shocks. These tests help explain why non-GAAP reporting could play an ex-post mitigating role.

Firstly, I examine whether non-GAAP reporting facilitates external financing using the following model:

$$\textit{External Financing}_{i,\,q+1} = \alpha_0 + \alpha_1 \textit{Non-GAAP Reporting}_{i,q} + \textit{Controls}_{i,q} + \textit{Fixed Effects} + \epsilon_{i,q} \quad (10)$$

where *External Financing* represents external equity and debt financing measures: *External Equity Financing* is the net equity issues, calculated as the net amount of funds from issuing and repurchasing equities scaled by lagged total assets (Butler, Cornaggia, Grullon, and Weston 2011; Lewis and Tan 2016), and *External Debt Financing* is the net debt issues, calculated as the change in assets minus the change in book equity scaled by lagged total assets (Baker et al. 2003; McLean

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[13] In the untabulated tests, the results are similar (*i*) if I use the CRSP equal-weighted returns or the size-value-momentum portfolio returns following Daniel, Grinblatt, Titman, and Wermers (1997) as the benchmark returns when calculating the abnormal returns; (*ii*) I measure *Real Impact* with firm investment, calculated as capital expenditures less sales of property, plant, and equipment, scaled by lagged total assets, and (*iii*) if I scale the capital investment using current total assets.

et al. 2012).[14] I follow prior literature on external financing and include the following control variables: *Firm Size*, *Firm Leverage*, *Market-to-Book*, *Firm ROA*, *Earnings Volatility*, *InstOwn Ratio*, *PPE*, *Sales Growth*, *Firm Inventory*, *Special Items*, and *MissNGData*. *Fixed Effects* represents firm and year-quarter fixed effects. See the detailed definitions of variables in Appendix A. By better informing external capital providers with a cleaner picture of the firm's underlying economics, non-GAAP reporting could facilitate external financing. Thus, I expect the coefficients on the *Non-GAAP Reporting* to be significantly positive for the external financing measures.

Secondly, I examine whether non-GAAP reporting facilitates liquidity provisions using the following model:

$$Liquidity\ Provision_{i,\ q+1} = \beta_0 + \beta_1 Non\text{-}GAAP\ Reporting_{i,q} + Controls_{i,q} + Fixed\ Effects + \epsilon_{i,q} \quad (11)$$

where *Liquidity Provision* represents one of the two stock liquidity measures commonly used in prior literature (e.g., Guay, Samuels, and Taylor 2016; Chan, Cheng, and Hameed 2022; Hribar, Mergenthaler, Roeschley, Young, and Zhao 2022): *Amihud Illiquidity* is the quarterly mean of the Amihud (2002) illiquidity measure, with lower values indicating greater stock liquidity; *Bid-Ask Spread* is the quarterly mean of the daily bid-ask spread, with lower values indicating greater stock liquidity. *Non-GAAP Reporting* is an indicator for whether managers provide non-GAAP reporting in a given quarter. I follow prior literature on stock liquidity and include the following control variables: *Firm Size*, *Firm Leverage*, *Market-to-Book*, *Firm ROA*, *Stock Returns*, *Return Volatility*, *InstOwn Ratio*, *InstOwn HHI*, *Analyst Following*, *Stock Turnover*, *Special Items*, and *MissNGData*. *Fixed Effects* represents firm and year-quarter fixed effects. See the detailed definitions of

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[14] In the untabulated tests, the results are similar (*i*) if I measure external equity financing as the net change in book equity minus the change in retained earnings scaled by lagged total assets (Baker, Stein, and Wurgler 2003; McLean, Zhang, and Zhao 2012); (*ii*) if I measure external debt financing with the net short-term debt issues or the net long-term debt issues (Bradshaw, Richardson, and Sloan 2006; Derrien and Kecskés 2013; Lewis and Tan 2016).

variables in Appendix A. By better conveying to the capital market a cleaner picture of the firm's underlying economics, non-GAAP reporting could reduce the information asymmetry and facilitate liquidity provisions. Thus, I expect the coefficients on the *Non-GAAP Reporting* to be significantly negative for both stock illiquidity measures.

Lastly, I examine whether non-GAAP reporting facilitates managerial learning using the following model from prior research (e.g., Foucault and Frésard 2012; Jayaraman and Wu 2019; Chen, Ng, and Yang 2021b):

$$Investment_{i,q+1} = \gamma_0 + \gamma_1 TobinQ_{i,q} + \gamma_2 TobinQ_{i,q}*Non\text{-}GAAP\ Reporting_{i,q} + \gamma_3 Non\text{-}GAAP\ Reporting_{i,q}$$
$$+\ Controls_{i,q} + Fixed\ Effects + \epsilon_{i,q} \tag{12}$$

where *Investment* is one of two investment proxies following prior literature (e.g., Chen, Goldstein, and Jiang 2007; Foucault and Frésard 2012; Ye, Zheng, and Zhu 2023): *Capex Investment*, measured as capital expenditure scaled by lagged total assets, and *Firm Investment*, measured as capital expenditure plus R&D expenditure plus acquisition expenditure and less the sales of property, plant, and equipment, scaled by lagged total assets. [15] Both variables are expressed in percentage points. I follow prior literature on managerial learning and include the following controls: *Firm Size*, *Cash Flow*, *Stock Returns*, and *MissNGData*. *Fixed Effects* represents firm and year-quarter fixed effects. See the detailed definitions of variables in Appendix A. By providing more informative information about firm fundamentals with non-GAAP reporting, managers may learn from the market and thereby facilitate their investment decisions. Thus, I expect the coefficient on the interaction term *TobinQ*Non-GAAP Reporting* (γ_2) to be significantly positive.

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[15] In the untabulated tests, the resutls are similar if I measure *Investment* as the changes in property, plant, and equipment, scaled by lagged property, plant, and equipment (Foucault and Frésard 2012).

I report the results of three sets of tests in Table 9. Panel A shows that non-GAAP reporting facilitates external equity and debt financing. Panel B suggests that non-GAAP reporting improves stock liquidity, consistent with the notion that non-GAAP reporting promotes liquidity provisions. Panel C indicates that non-GAAP reporting facilitates managerial learning. Collectively, the results in Table 9 support that managers could enjoy the informational benefits of non-GAAP reporting across three settings: external financing, liquidity provision, and managerial learning. Since these three settings are directly relevant to the important mechanisms underlying the adverse impacts due to the threat and the realization of non-fundament price shocks, the results in Table 9 are helpful to have a better understanding of why non-GAAP reporting could play an ex-post mitigating role, as shown in Section 5.1 and Section 5.2.

Taken together, the results from Tables 7, 8, and 9 provide consistent support for the ex-post stabilizing hypothesis that with the potential informational benefits, non-GAAP reporting could ex-post mitigate the costly adverse impacts related to the threat and the realization of non-fundamental price shocks.

6. Conclusions

This study examines how managers preemptively use non-GAAP reporting to protect them against the adverse impacts related to the threat and the realization of non-fundamental price shocks. I argue that when managers perceive a greater threat of non-fundamental price shocks, in which market participants' abilities to understand firm fundamentals are hindered by noise in stock prices, they have incentives to take ex-ante preemptive actions to filter out noise in GAAP earnings with non-GAAP adjustments so as to better inform the market participants about firm fundamentals (i.e., the *ex-ante informing* hypothesis), and that non-GAAP reporting helps bring in the relevant

informational benefits so that the adverse impacts related to the threat and the realization of non-fundamental price shocks are mitigated accordingly (i.e., the *ex-post stabilizing* hypothesis). I conduct comprehensive tests and provide consistent and robust support for both the ex-ante informing hypothesis and the ex-post mitigating hypothesis. Collectively, this study offers a novel perspective on how non-GAAP reporting serves as a preemptive tool to protect firms against the costly adverse impacts of non-fundamental price movements originating from financial markets.

This study is important and connects three broad questions in the financial markets. Firstly, recent decades have seen the increasing importance of non-fundamental price movements and managerial non-GAAP reporting. This study is informative about the interplays of these two general trends in the markets. Secondly, previous research suggests that the financial market is not a side show but could have feedback effects on real economic activities. This study is informative about the role of non-GAAP reporting in mitigating the adverse feedback effects originating from the financial markets. Thirdly, aligning with more recent research on the informational role of non-GAAP reporting, this study is informative about the value of non-GAAP reporting for capital market participants and managerial decisions.

Appendix and Tables

Appendix A Variable Definitions

Variables Related to Non-GAAP Reporting	
Non-GAAP Reporting	Indicator variable for non-GAAP reporting, equal to one if managers' non-GAAP EPS (Bentley et al., 2018) differs from GAAP EPS (i.e., total exclusions are not zero), and zero if these two earnings metrics are the same. I follow Hsu et al. (2021) and set total exclusions to zero if managers' non-GAAP EPS is missing in Bentley et al. (2018) dataset, but the actual EPS data is non-missing in I/B/E/S.
Transitory Exclusions	Indicator variable for transitory exclusions, equal to one if GAAP EPS differs from operating EPS, and zero if these two earnings metrics are the same.
Recurring Exclusions	Indicator variable for recurring exclusions, equal to one if managers' non-GAAP EPS (Bentley et al., 2018) differs from operating EPS, and zero if these two earnings metrics are the same.
MBE with Non-GAAP	Indicator variable for meeting-or-beating analyst forecasts with non-GAAP, equal to one if managers' non-GAAP EPS is greater than analyst consensus EPS forecasts, but GAAP EPS falls short, and zero otherwise .
MBE with Recurring Exclusions	Indicator variable for meeting-or-beating analyst forecasts with recurring exclusions, equal to one if managers' non-GAAP EPS is greater than analyst consensus EPS forecasts, but operating EPS falls short, and zero otherwise .
Loss Convert with Non-GAAP	Indicator variable for loss convert with non-GAAP, equal to one if the firms have a GAAP loss but a non-GAAP profit, and zero otherwise.
Loss Convert with Recurring Exclusions	Indicator variable for loss convert with recurring exclusions, equal to one if the firms have an operating earnings loss but a non-GAAP profit, and zero otherwise.
Non-GAAP Earnings	Non-GAAP earnings, calculated as non-GAAP EPS multiplies the number of diluted shares outstanding, scaled by total assets. This measure is expressed in a percentage point.
Non-GAAP Exclusions	Total non-GAAP exclusions, calculated as non-GAAP EPS minus GAAP EPS and then multiply the number of diluted shares outstanding, scaled by total assets. This measure is expressed in a percentage point.
Non-GAAP Earnings News	Non-GAAP earnings news, calculated as non-GAAP EPS less the consensus analyst EPS forecast from I/B/E/S, scaled by stock price at quarter end.
Exclusion Forecast Errors	Exclusion forecast errors, calculated as actual exclusions made by managers less the consensus exclusions forecast from I/B/E/S following Bradshaw et al. (2018).
Variables Related to the Threat and the Realization of Non-fundamental Shocks	
Stock Fragility	Firm-level stock fragility measure in a quarter following Greenwood and Thesmar (2011) and Friberg et al. (2023), which captures the expected volatility of non-fundamental liquidity-induced trades arising from mutual fund investors' uninformed demand shifts, with a higher value indicating a greater threat of non-fundamental price shocks.
Fire Sales Indicator	Indicator variable for whether the firm experiences extreme mutual fund liquidity-driven outflows (i.e., mutual fund fire sales) in a quarter, which captures the occurrence of realized non-fundamental price shocks.
Fire Sales Intensity	The level of extreme mutual fund liquidity-driven outflows (i.e., mutual fund fire sales) the firm experiences in a quarter, which captures the intensity of realized non-fundamental price shocks.
Other Variables	
Amihud Illiquidity	Amihud illiquidity, calculated as the quarterly mean of the Amihud (2002) illiquidity measure, with greater value indicating lower stock liquidity.
Analyst Following	Analyst following, calculated as the natural logarithm of one plus the number of analysts following the firm.
Bid-Ask Spread	Bid-ask spread, calculated as the quarterly mean of the daily bid-ask spread, with greater value indicating lower stock liquidity.
Book-to-Market	Firm book-to-market ratio, calculated as the book value of equity divided by the market value of equity.

Capex Investment	Firm capital expenditure, calculated as the sum of capital expenditure scaled by lagged total assets. This measure is expressed in a percentage point.
Cash Holding	Firm cash holding, calculated as cash and short-term investments, scaled by divided by total assets.
EA Returns [0,1]	The two-day cumulative market-adjusted buy-and-hold return over a [0,1] window with the earnings announcement date as day 0.
EA Returns [-1,1]	The three-day cumulative market-adjusted buy-and-hold return over a [-1,1] window with the earnings announcement date as day 0.
Earnings Volatility	Earnings volatility, calculated as the standard deviation of *Firm ROA* over the past twelve quarters with a minimum of four non-missing observations.
External Debt Financing	Firm net debt issues, calculated as the change in assets minus the change in book equity scaled by lagged total assets.
External Equity Financing	Firm net equity issues, calculated as the net amount of funds from issuing and repurchasing equities scaled by lagged total assets.
Firm Age	Firm age, calculated as the natural logarithm of number of the years since the firm first appeared in Compustat.
Firm Investment	Firm investment, calculated as the sum of capital expenditure, R&D expenditure, and acquisition expenditure, less sales of property, plant, and equipment, scaled by lagged total assets. This measure is expressed in a percentage point.
Firm Leverage	Firm leverage, calculated as the sum of debt in current liabilities and long-term debt, scaled by total assets.
Firm ROA	Firm return on assets (ROA) ratio, calculated as operating income before depreciation divided by total assets.
Firm Size	Firm size, calculated as the natural logarithm of book value of total assets.
High Financial Constraints	Indicator variable equal to one if *Altman Z-Score* is below the sample median, and zero otherwise, where *Altman Z-Score* is measured as 1.2 × (current assets minus current liabilities, divided by total assets) + 1.4 × (retained earnings divided by total assets) + 3.3 × (earnings before interest and taxes divided by total assets) + 0.6 × (market value of equity divided by total liabilities) + 0.999 × (sales divided by total assets).
High Forecast Dispersion	Indicator variable equal to one if *Analyst Forecast Dispersion* is below the sample median, and zero otherwise, where *Analyst Forecast Dispersion* is calculated as the standard deviation of the analyst earnings forecasts divided by the absolute value of the consensus mean of the forecasts.
InstOwn HHI	Institutional ownership concentration, calculated as the Herfindahl–Hirschman Index of institutional ownership in the firm.
InstOwn Ratio	Institutional ownership ratio, calculated as the percentage of shares outstanding owned by institutional investors.
Loss Indicator	Indicator variable equal to one if *Firm ROA* is negative, and zero otherwise.
Low Accrual Quality	Indicator variable equal to one if the absolute value of abnormal accruals is above the sample median and zero otherwise, where abnormal accruals are estimated following the modified Jones model (Dechow et al. 1995)
Low Earnings Fidelity	Indicator variable equal to one if *Earnings Fidelity* is below the sample median, and zero otherwise, where *Earnings Fidelity* is the earnings quality measure from Du et al. (2020), with a higher value indicating greater faithfulness of earnings signals in revealing the true economics state of firms.
Low Firm ROA	Indicator variable equal to one if *Firm ROA* is below the sample median, and zero otherwise.
Low Stock Returns	Indicator variable equal to one if *Stock Returns* is below the sample median, and zero otherwise.
M&A Indicator	Indicator variable equal to one if the firm involves the merger or acquisition activities, and zero otherwise.
Market-to-Book	Firm market-to-book ratio, calculated as the market value of equity divided by the book value of equity.

MissNGData	Indicator variable equal to one if managers' non-GAAP EPS is missing in Bentley et al. (2018) dataset, but the actual EPS data is non-missing in I/B/E/S, and zero otherwise.
OP_CASH	Operating cash flows over the subsequent four quarters divided by total assets.
OP_EARN	Operating earnings over the subsequent four quarters divided by total assets.
OP_FREE	Free cash flows over the subsequent four quarters divided by total assets.
Operating Cash Flows	Firm operating cash flows, calculated as the operating cash flows divided by total assets.
Post	Post indicator, equal to one for firms treated for periods from the second quarter of 2009 (i.e., 2009 Q2) onward and 0 otherwise. I choose the [q-6, q+6] as the event window (i.e., 2017 Q3-2010 Q4), where event date is the announcement date (June 2009).
QCAARs	Quarterly cumulative average abnormal returns, calculated as the average monthly abnormal returns in the quarter, where the benchmark return is the industry equal-weighted returns.
Reporting Lags	Reporting lags, calculated as the number of days between earnings announcement date and fiscal quarter-end.
Return Volatility	Stock return volatility, calculated as the standard deviation of the daily stock returns in a quarter.
Sales Growth	Firm sale growth ratio, calculated as the quarterly change in sales, scaled by lagged sales.
Special Items	Indicator variable equal to one if the special item is non-missing, and zero otherwise.
Stock Returns	Stock returns, calculated as the size-adjusted buy-and-hold returns.
TobinQ	Firm Tobin's Q, calculated as market value of equity plus book value of assets less the book value of equity, scaled by total assets.
Treat	Treat indicator, equal to one if the firm was jointly held by Blackrock and BGI at the end of 2008 and zero if the stock was held by only one of Blackrock and BGI at the end of 2008.

Appendix B Effectiveness of Entropy Balancing Matching

Panel A: Before Entropy Balancing

	Treat Group			Control Group		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Firm Size	6.557	1.692	-0.096	6.450	4.824	0.241
Firm Leverage	0.195	0.034	0.748	0.198	0.036	0.759
Market-to-Book	3.280	17.270	4.846	4.006	26.400	3.878
Firm ROA	0.025	0.002	-2.420	0.009	0.004	-2.013
Earnings Volatility	0.019	0.001	6.251	0.030	0.002	3.940
InstOwn Ratio	0.804	0.046	-1.490	0.540	0.090	-0.183
InstOwn HHI	0.071	0.004	4.675	0.125	0.017	2.277
Stock Returns	0.005	0.040	0.718	0.009	0.057	0.933
Returns Volatility	0.027	0.000	2.072	0.031	0.000	1.585
Analyst Following	1.835	0.587	-0.636	1.644	1.030	-0.191
Operating Cash Flows	0.019	0.002	-1.174	0.006	0.004	-1.476
M&A Indicator	0.160	0.134	1.860	0.115	0.102	2.414
Special Items	0.510	0.250	-0.040	0.456	0.248	0.178
MissingNGData	0.251	0.188	1.147	0.334	0.222	0.705

Panel B: After Entropy Balancing

	Treat Group			Control Group		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Firm Size	6.557	1.692	-0.096	6.557	1.692	-0.096
Firm Leverage	0.195	0.034	0.748	0.195	0.034	0.748
Market-to-Book	3.280	17.270	4.846	3.280	17.270	4.846
Firm ROA	0.025	0.002	-2.420	0.025	0.002	-2.420
Earnings Volatility	0.019	0.001	6.251	0.019	0.001	6.251
InstOwn Ratio	0.804	0.046	-1.490	0.804	0.046	-1.490
InstOwn HHI	0.071	0.004	4.675	0.071	0.004	4.675
Stock Returns	0.005	0.040	0.718	0.005	0.040	0.718
Returns Volatility	0.027	0.000	2.072	0.027	0.000	2.073
Analyst Following	1.835	0.587	-0.636	1.835	0.587	-0.636
Operating Cash Flows	0.019	0.002	-1.174	0.019	0.002	-1.174
M&A Indicator	0.160	0.134	1.860	0.160	0.134	1.860
Special Items	0.510	0.250	-0.040	0.510	0.250	-0.040
MissingNGData	0.251	0.188	1.147	0.251	0.188	1.147

This table shows the matching effectiveness for entropy balancing tests. See Appendix A for detailed variable definitions.

Table 1: Summary Statistics

	N	Mean	SD	P5	P25	Median	P75	P95
Non-GAAP Reporting	176,514	0.266	0.442	0.000	0.000	0.000	1.000	1.000
Stock Fragility	176,514	0.006	0.004	0.000	0.003	0.005	0.008	0.014
Firm Size	176,514	6.488	1.944	3.377	5.073	6.425	7.801	9.908
Firm Leverage	176,514	0.197	0.188	0.000	0.007	0.163	0.324	0.562
Market-to-Book	176,514	3.761	4.839	0.710	1.430	2.342	4.036	11.153
Firm ROA	176,514	0.014	0.058	-0.109	0.008	0.027	0.042	0.076
Earnings Volatility	176,514	0.026	0.044	0.003	0.007	0.013	0.026	0.091
InstOwn Ratio	176,514	0.629	0.301	0.069	0.386	0.705	0.888	1.000
InstOwn HHI	176,514	0.106	0.115	0.028	0.042	0.062	0.119	0.350
Stock Returns	176,514	0.008	0.226	-0.332	-0.123	-0.009	0.111	0.402
Returns Volatility	176,514	0.030	0.017	0.012	0.018	0.025	0.036	0.062
Analyst Following	176,514	1.708	0.943	0.000	1.099	1.792	2.398	3.091
Operating Cash Flows	176,514	0.010	0.057	-0.103	-0.004	0.019	0.039	0.081
M&A Indicator	176,514	0.130	0.336	0.000	0.000	0.000	0.000	1.000
Special Items	176,514	0.474	0.499	0.000	0.000	0.000	1.000	1.000
MissNGData	176,514	0.306	0.461	0.000	0.000	0.000	1.000	1.000

This table reports the descriptive statistics for variables used in the baseline tests for the relation between stock fragility and non-GAAP reporting likelihood. See Appendix A for detailed variable definitions.

Table 2: Stock Fragility and Non-GAAP Reporting Likelihood

Panel A: Baseline Tests

VARIABLES	Without Controls	Full Sample	Drop Financial Crisis Period
	(1)	(2)	(3)
		Non-GAAP Reporting	
Stock Fragility	2.251***	1.410***	1.608***
	(4.323)	(2.888)	(3.077)
Firm Size		0.040***	0.040***
		(6.890)	(6.707)
Firm Leverage		0.082***	0.084***
		(4.261)	(4.161)
Market-to-Book		-0.001**	-0.001**
		(-2.447)	(-2.097)
Firm ROA		-0.175***	-0.178***
		(-4.241)	(-3.990)
Earnings Volatility		0.177***	0.193***
		(3.351)	(3.533)
InstOwn Ratio		0.016	0.008
		(1.234)	(0.616)
InstOwn HHI		0.080***	0.077***
		(4.093)	(3.761)
Stock Returns		0.010***	0.010***
		(2.929)	(2.657)
Returns Volatility		-0.066	-0.087
		(-0.700)	(-0.796)
Analyst Following		0.010***	0.009**
		(2.609)	(2.264)
Operating Cash Flows		0.002	0.001
		(0.100)	(0.044)
M&A Indicator		0.072***	0.075***
		(12.561)	(12.756)
Special Items		0.053***	0.054***
		(18.135)	(17.146)
MissNGData		-0.403***	-0.409***
		(-64.518)	(-64.770)
Firm FE	YES	YES	YES
Year-Quarter FE	YES	YES	YES
Observations	176,514	176,514	153,117
Adj/Pseudo R2	0.403	0.518	0.522

Panel B: Endogeneity Tests

VARIABLES	Time-Industry FEs	Matched Sample Test	Difference-in-Differences Test
	(1)	(2)	(3)
	Non-GAAP Reporting		
Stock Fragility	1.223**	1.395**	
	(2.532)	(2.328)	
Treat*Post			0.031***
			(3.151)
Controls	YES	YES	YES
Firm FE	YES	YES	YES
Year-Quarter FE	NO	YES	YES
Year-Quarter-Industry FE	YES	NO	NO
Observations	176,248	176,514	37,429
Adj/Pseudo R2	0.524	0.519	0.588

This table shows the relation between stock fragility and non-GAAP reporting likelihood. Panel A shows the results of baseline tests, including the regression results without controls (Column 1), the regression results based on full sample (Column 2), and the regression results based on the sample excluding the financial crisis period (Column 3). Panel B shows the results of endogeneity tests, including the regression results based on industry-year-quarter fixed effects rather than the year-quarter fixed effects (Column 1), the regression results based on the matched sample (Column 2), and the regression results based on difference-in-difference tests where I follow from prior research (Massa et al. 2021; Friberg et al. 2022) and use the BlackRock-BGI merger as an exogenous shock to the expected stock fragility (Column 3). The control variables in the regressions of Panel B are included but not tabulated for brevity. Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3: Stock Fragility and Non-GAAP Reporting Likelihood: Cross-Sectional Tests

Panel A: Managers' Concerns About Stock Fragility

VARIABLES	(1)	(2)	(3)
	Non-GAAP Reporting		
Stock Fragility	0.454	0.894*	0.343
	(0.770)	(1.711)	(0.496)
Stock Fragility Low Firm ROA*	1.716***		
	(2.896)		
High Firm ROA	-0.003		
	(-0.644)		
Stock Fragility Low Stock Returns*		0.995***	
		(2.843)	
High Stock Returns		-0.002	
		(-0.802)	
Stock Fragility High Financial Constraints*			2.493***
			(3.098)
Low Financial Constraints			-0.012*
			(-1.726)
Controls	YES	YES	YES
Firm FE	YES	YES	YES
Year-Quarter FE	YES	YES	YES
Observations	176,514	176,514	139,672
Adj/Pseudo R2	0.518	0.518	0.524

Panel B: Outsiders' Uncertainty About Firm Fundamentals

VARIABLES	(1)	(2)	(3)
	Non-GAAP Reporting		
Stock Fragility	0.367	-0.323	0.718
	(0.671)	(-0.482)	(1.071)
Stock Fragility High Forecast Dispersion*	1.980***		
	(3.596)		
High Forecast Dispersion	-0.004		
	(-0.873)		
Stock Fragility Low Earnings Fidelity*		3.101***	
		(3.076)	
Low Earnings Fidelity		0.001	
		(0.142)	
Stock Fragility Low Accrual Quality*			1.400**
			(2.444)
Low Accrual Quality			-0.007*
			(-1.670)
Controls	YES	YES	YES
Firm FE	YES	YES	YES

Year-Quarter FE	YES	YES	YES
Observations	176,514	132,585	105,494
Adj/Pseudo R2	0.518	0.509	0.517

This table reports the relation between stock fragility and non-GAAP reporting likelihood conditional on managers' concerns about stock fragility (Panel A) and outsiders' uncertainty about firm fundamentals (Panel B). The control variables in the regressions are included but not tabulated for brevity. Detailed variable definitions are in Appendix A. t-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Stock Fragility and Indicators of Non-GAAP Reporting Quality

Panel A: Indicators for Exclusion Types

VARIABLES	(1) Transitory Exclusions	(2) Recurring Exclusions
Stock Fragility	1.000***	0.783*
	(2.711)	(1.793)
Controls	YES	YES
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	176,485	176,485
Adj/Pseudo R2	0.332	0.449

Panel B: Indicators for Meet-or-Beat with Non-GAAP

VARIABLES	(1) MBE with Non-GAAP	(2) MBE with Recurring Exclusions
Stock Fragility	-0.983	-1.841**
	(-0.942)	(-1.975)
Controls	YES	YES
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	45,726	45,726
Adj/Pseudo R2	0.116	0.262

Panel C: Indicators for Loss Convert with Non-GAAP

VARIABLES	(1) Loss Convert with Non-GAAP	(2) Loss Convert with Recurring Exclusions
Stock Fragility	0.547***	0.161
	(2.849)	(1.056)
Controls	YES	YES
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	176,485	176,485
Adj/Pseudo R2	0.138	0.166

This table reports the relation between stock fragility and indicators of non-GAAP reporting quality, including indicators for exclusion types (Panel A), indicators for meet-or-beat with non-GAAP (Panel B), and indicators for loss convert with non-GAAP (Panel C). The control variables in the regressions are included but not tabulated for brevity. Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Stock Fragility and Non-GAAP Exclusion Quality

VARIABLES	(1) OP_EARN	(2) OP_CASH	(3) OP_FREE
Non-GAAP Earnings	0.005*	0.005**	0.005**
	(1.891)	(2.326)	(2.216)
Non-GAAP Exclusions	-0.003***	-0.003***	-0.002***
	(-2.637)	(-3.137)	(-2.813)
Stock Fragility * Non-GAAP Earnings	0.785***	0.770***	0.743***
	(2.982)	(3.186)	(3.189)
Stock Fragility * Non-GAAP Exclusions	0.229**	0.268***	0.263***
	(2.226)	(3.022)	(3.063)
Stock Fragility	-1.820***	-1.263***	-1.287***
	(-4.101)	(-2.991)	(-3.027)
Firm Size	0.124***	0.127***	0.113***
	(7.792)	(7.296)	(6.537)
Earnings Volatility	-0.013***	-0.028***	-0.009***
	(-4.479)	(-9.547)	(-2.696)
Loss Indicator	0.045	-0.057	-0.048
	(1.127)	(-1.543)	(-1.151)
Book-to-Market	-0.029***	-0.018***	-0.014***
	(-6.578)	(-4.664)	(-3.423)
Sales Growth	-0.057***	-0.025***	0.011***
	(-15.933)	(-8.263)	(2.649)
Firm Age	0.013*	0.002	0.017**
	(1.769)	(0.271)	(1.971)
Firm FE	YES	YES	YES
Year-Quarter FE	YES	YES	YES
Observations	45,788	45,796	45,764
Adj/Pseudo R2	0.703	0.645	0.627

This table reports the relation between stock fragility and non-GAAP exclusion quality. Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Stock Fragility and Market Response to Non-GAAP Earnings News

VARIABLES	(1) EA Returns [-1,1]	(2) EA Returns [0,1]
NG Earnings Surprises	0.099***	0.099***
	(25.270)	(25.396)
Non-GAAP Earnings Surprises Stock Fragility*	1.022**	1.181***
	(2.200)	(2.578)
Exclusion Forecast Errors	0.018***	0.018***
	(4.666)	(4.654)
Exclusion Forecast Errors Stock Fragility*	0.672	0.692
	(1.361)	(1.450)
Stock Fragility	-1.123**	-1.206**
	(-2.284)	(-2.536)
Firm Size	-0.023**	-0.017*
	(-2.427)	(-1.820)
Book-to-Market	0.039***	0.044***
	(6.913)	(7.987)
Reporting Lags	-0.003	-0.001
	(-0.603)	(-0.107)
Analyst Followings	0.006	0.005
	(0.861)	(0.744)
InstOwn Ratio	-0.014**	-0.013**
	(-2.168)	(-2.051)
*Controls * Non-GAAP Earnings Surprises*	YES	YES
*Controls * Exclusion Forecast Errors*	YES	YES
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	40,795	40,777
Adj/Pseudo R2	0.139	0.138

This table reports the relation between stock fragility and market responses to non-GAAP earnings news. Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Mitigating Effects on Adverse Impacts of the Threat of Non-fundamental Price Shocks

VARIABLES	(1) Cash Holding	(2) Firm Investment
Stock Fragility	0.728***	-11.064***
	(3.441)	(-2.655)
Stock Fragility*Non-GAAP Reporting	-0.761***	11.796**
	(-2.721)	(2.134)
Non-GAAP Reporting	0.001	-0.022
	(0.517)	(-0.312)
Firm Size	-0.028***	-0.099**
	(-10.579)	(-2.146)
Firm Leverage	-0.143***	-3.963***
	(-15.112)	(-10.613)
Market-to-Book	0.001***	0.173***
	(6.038)	(4.834)
Firm ROA	-0.066***	-13.201***
	(-2.781)	(-9.775)
Earnings Volatility	0.347***	-0.277
	(12.037)	(-0.204)
InstOwn Ratio	0.022***	-0.417**
	(3.938)	(-2.354)
InstOwn HHI	-0.050***	-0.737
	(-5.181)	(-1.370)
Stock Returns	0.013***	0.178***
	(11.178)	(2.719)
Returns Volatility	-0.040	-8.163***
	(-1.000)	(-5.018)
Analyst Following	0.004***	-0.094
	(2.648)	(-1.111)
Operating Cash Flows	0.110***	-4.858***
	(10.263)	(-6.244)
M&A Indicator	-0.014***	1.213***
	(-7.193)	(2.669)
Special Items	-0.008***	-0.105*
	(-7.759)	(-1.728)
MissNGData	0.004**	0.069
	(2.545)	(0.645)
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	177,121	176,215
Adj/Pseudo R2	0.864	0.254

This table reports the mitigating effects of non-GAAP reporting on managers' precautious real decisions due to the threat of non-fundamental price shocks (i.e., stock fragility). Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Mitigating Effects on Adverse Impacts of the Realization of Non-fundamental Price Shocks

VARIABLES	Price Impacts		Real Impacts	
	(1)	(2)	(3)	(4)
	QCAARs		Capex Investment	
Fire Sales Indicator	-0.007***		-0.061***	
	(-17.908)		(-4.305)	
Fire Sales Indicator*Non-GAAP Reporting	0.003***		0.067***	
	(3.943)		(3.230)	
Fire Sales Intensity		-0.218***		-1.393**
		(-16.507)		(-2.535)
Fire Sales Intensity*Non-GAAP Reporting		0.064***		1.368*
		(2.855)		(1.707)
Non-GAAP Reporting	0.001*	0.000	0.004	0.027
	(1.810)	(1.306)	(0.253)	(1.151)
Firm Size	-0.006***	-0.006***	-0.217***	-0.377***
	(-17.317)	(-15.323)	(-9.470)	(-8.666)
Firm Leverage	0.007***	0.007***	-1.000***	-1.314***
	(5.193)	(4.545)	(-13.758)	(-11.780)
Market-to-Book	-0.000***	-0.001***	0.024***	0.029***
	(-11.706)	(-9.730)	(13.550)	(11.403)
Firm ROA	0.091***	0.103***	2.241***	2.925***
	(16.559)	(13.384)	(11.585)	(8.878)
Earnings Volatility	-0.006	-0.006	0.226	0.299
	(-1.092)	(-0.858)	(1.030)	(0.817)
InstOwn Ratio	-0.012***	-0.013***	0.229***	0.290***
	(-11.634)	(-10.421)	(4.696)	(4.160)
InstOwn HHI	0.016***	0.018***	-0.480***	-0.507***
	(8.463)	(7.420)	(-5.872)	(-4.307)
Stock Returns	0.138***	0.148***	0.032**	0.128***
	(247.121)	(168.195)	(2.441)	(4.718)
Returns Volatility	0.303***	0.437***	-4.722***	-5.886***
	(23.855)	(23.049)	(-12.463)	(-9.175)
Analyst Following	-0.004***	-0.005***	0.084***	0.072***
	(-13.765)	(-13.727)	(6.377)	(2.744)
Operating Cash Flows	0.055***	0.054***	0.047	0.132
	(15.723)	(12.939)	(0.489)	(0.829)
M&A Indicator	-0.000	-0.000	0.096***	0.134***
	(-0.645)	(-0.192)	(6.694)	(6.671)
Special Items	-0.000	-0.000	-0.059***	-0.044***
	(-0.569)	(-0.730)	(-6.682)	(-3.317)
MissNGData	0.001	0.000	-0.008	0.003
	(1.575)	(0.426)	(-0.677)	(0.197)
Firm FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Observations	178,865	178,865	177,987	177,987
Adj/Pseudo R2	0.450	0.425	0.592	0.357

This table reports the mitigating effects of non-GAAP reporting on the adverse price and real impacts due to the realization of non-fundamental price shocks (i.e., mutual fund fire sales). Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9: Mitigating Effects of Non-GAAP Reporting: Potential Mechanisms

Panel A: Mechanism = External Financing

VARIABLES	(1) External Equity Financing	(2) External Debt Financing
Non-GAAP Reporting	0.221***	0.200**
	(3.198)	(1.998)
Firm Size	-2.088***	-2.753***
	(-12.458)	(-18.267)
Firm Leverage	-0.497	-13.485***
	(-0.987)	(-24.280)
Firm Leverage	0.403***	0.123***
	(12.340)	(7.500)
Market-to-Book	-29.847***	-15.987***
	(-12.532)	(-6.278)
Firm ROA	5.268***	-7.009***
	(3.422)	(-4.907)
Earnings Volatility	-7.687***	-4.286***
	(-6.403)	(-2.777)
InstOwn Ratio	-0.410*	2.334***
	(-1.747)	(7.144)
PPE	4.524***	5.216***
	(6.228)	(5.388)
Sales Growth	7.541***	2.457***
	(10.783)	(2.966)
Firm Inventory	-0.262	-0.663
	(-0.200)	(-0.422)
Special Items	-0.014	0.192**
	(-0.223)	(2.362)
MissNGData	0.034	-0.285***
	(0.410)	(-2.856)
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	166,028	165,934
Adj R2	0.155	0.055

Panel B: Mechanism = Liquidity Provisions

VARIABLES	(1) Amihud Illiquidity	(2) Bid-Ask Spread
Non-GAAP Reporting	-0.013**	-0.018***
	(-2.224)	(-3.394)
Firm Size	-0.085***	-0.145***
	(-7.514)	(-16.850)
Firm Leverage	0.134***	0.328***
	(3.329)	(10.882)
Market-to-Book	-0.002**	-0.007***
	(-2.210)	(-10.522)
Firm ROA	-0.675***	-0.696***
	(-3.815)	(-6.456)
Stock Returns	-0.167***	-0.227***
	(-11.593)	(-28.974)
Return Volatility	11.450***	14.110***
	(14.878)	(27.248)
InstOwn Ratio	0.253***	0.136***
	(7.673)	(5.767)
InstOwn HHI	0.357***	0.707***
	(4.440)	(11.070)
Analyst Following	0.007	-0.038***
	(0.783)	(-5.028)
Stock Turnover	-0.247***	-0.375***
	(-18.389)	(-36.036)
Special Items	0.018***	0.024***
	(2.642)	(5.360)
MissNGData	0.012	0.005
	(1.380)	(0.756)
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	177,423	177,420
Adj R2	0.281	0.677

Panel C: Mechanism = Managerial Learning

VARIABLES	(1) Firm Investment	(2) Capex Investment
TobinQ	0.193***	0.115***
	(13.076)	(19.475)
TobinQ*Non-GAAP Reporting	0.054***	0.020**
	(2.794)	(2.055)
Non-GAAP Reporting	-0.119***	-0.044*
	(-2.926)	(-1.943)
Firm Size	-0.981***	-0.161***
	(-22.228)	(-8.690)
Operating Cash Flow	-4.930***	1.608***
	(-12.915)	(14.005)
Stock Returns	-0.048*	-0.062***
	(-1.708)	(-4.781)
MissNGData	-0.068***	-0.024**
	(-2.947)	(-2.136)
Firm FE	YES	YES
Year-Quarter FE	YES	YES
Observations	188,356	186,166
Adj R2	0.711	0.585

This table reports the potential mechanisms that give rise to the mitigating effects of non-GAAP reporting on the adverse impacts related to the threat and the realization of non-fundamental price shocks. Panel A shows the effects of non-GAAP reporting on external equity and debt financing; Panel B shows the effects of non-GAAP reporting on liquidity provisions; Panel C shows the effects of non-GAAP reporting on managerial learning. Detailed variable definitions are in Appendix A. *t*-statistics are displayed in parentheses, and standard errors are adjusted for clustering at the firm levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

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