

Behavioral Dynamics of Disclosure Timing^{*}

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September 28, 2026

Abstract

We examine a two-period disclosure model where a manager interacts with an investor who exhibits loss aversion under prospect theory. A key focus of our analysis is the strategic timing of disclosure decisions in response to biased capital markets. We find that, when facing such bias, the manager discloses moderately bad news more promptly than in a rational setting. Crucially, this preemption incentive is non-monotonic: it first strengthens and then weakens as loss aversion increases, and exhibits a similar non-monotonic pattern with respect to the correlation between private and public information. Our findings suggest that asymmetries in the timeliness of disclosing good versus bad news can arise endogenously as an optimal strategy. Empirically, we investigate how loss aversion influences disclosure timing using analyst forecasts and price target revisions. We find that firms facing markets with higher loss aversion release bad news more promptly, and that this relationship exhibits the non-monotonic pattern predicted by the model. Furthermore, we document that preemptive disclosure is associated with a mitigated negative market response to bad news in the presence of prospect-theoretic markets. We thus offer new insights into the capital market effects of reporting asymmetries and the strategic timing of disclosures, adding to the literature on the behavioral foundations of financial reporting.

Keywords: Voluntary Disclosure, Disclosure Timing, Capital Markets, Accounting

^{*}We thank an anonymous referee, Li Azinovic-Yang (Discussant), Tim Baldenius, Matthias Breuer (Discussant), Joachim Gassen, Jon Glover, Kalash Jain, Martin Klösch (Discussant), Sebastian Kronenberger, Irina Luneva, Shunsuke Matsuno, Thomas Simon, Dirk Simons and Amir Ziv for helpful feedback and suggestions. We further appreciate workshop participants' insightful comments at Columbia University, University of Mannheim, Paderborn University, the 2025 AES Junior Accounting Theory Conference at NYU Stern, the 14th ARW in Zurich, the 24th GEABA Symposium at WHU, the 47th EAA Annual Congress in Rome, the 2025 ARFA Workshop in Graz, the 2025 DART Workshop in Graz and the 2024 ARA Workshop in Würzburg. This work was supported by the Graduate School of Economic and Social Sciences of the University of Mannheim. Funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – Project-ID 403041268 – TRR 266 Accounting for Transparency.

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1 Introduction

Regulators have repeatedly called for timelier disclosure of adverse information (e.g. Securities and Exchange Commission (2023)). The underlying concern is that delayed revelation of bad news impairs price discovery, misleads investors, and undermines confidence in capital markets. This concern is particularly acute during periods of market stress, when delayed disclosure may compound investor uncertainty (e.g., Clayton (2020); Securities and Exchange Commission (2004)). The implicit framing of these calls is one of compliance, where firms are presumed to favor delay, and timeliness must be mandated. Standard theories of voluntary disclosure align with this framing. They predict silence or delay as the equilibrium response to bad news (Dye (1985), Jung and Kwon (1988), Acharya et al. (2011)), and empirical evidence confirms a pattern of delaying bad news on average. (Kothari et al. (2009)). These predictions, however, implicitly share a common premise: that market participants process information rationally and price assets without bias.

In this paper we explore the idea that asymmetries in the timeliness of disclosing good versus bad news arise as rational strategic responses to capital market biases, particularly when market participants exhibit loss aversion under prospect theory (Kahneman and Tversky, 1979).¹ Once this unbiased pricing premise is relaxed, voluntary preemption becomes a rational equilibrium choice. The underlying mechanism is a trade-off between the option value of waiting and the hedging value of preempting disclosure. Waiting preserves the option to benefit from favorable external news, but with a loss-averse audience, early disclosure hedges against amplified downside reactions even if that means foregoing a higher non-disclosure price.

While the regulatory framing presumes a monotonic preference for delay, our analysis points to a different picture. Firms have an incentive to disclose adverse information more promptly when investors are loss averse as compared to when they are rational. Crucially, this

¹The idea that behavioral tendencies might underpin asymmetric reporting practices dates back to Devine (1963), who suggested that reporting could be influenced by investor behavior consistent with later formalizations in prospect theory, even before the theory itself was established.

incentive is non-monotonic. Whether firms voluntarily preempt depends on where market conditions sit. Incentives for preemption first strengthen and then weaken as loss aversion and the correlation between private and pending public information grows, generating non-trivial predictions along both dimensions. Thus, how promptly firms preempt bad news depends on this non-monotonicity, which is sharpest in periods of elevated investor loss aversion, where regulatory concern about timely disclosure is acute. To provide further insights, we extend the model in two ways by allowing for incremental information of pending news and stochastic pending news arrival.

The prospect theory framework, first introduced in the field of psychology in Kahneman and Tversky (1979), posits that individuals experience losses more intensely than gains of the same magnitude. Building on this insight, behavioral economics and finance have used the theory to explain various market phenomena such as the equity premium puzzle (e.g., Barberis and Huang (2008), Benartzi and Thaler (1995)). This also highlights the need for accounting research to more closely examine how market biases, such as loss aversion, influence financial reporting practices. Particularly, these behavioral tendencies suggest that managers may adjust their disclosure strategies to mitigate the heightened market sensitivity to bad news, an idea we explore further in our model.

A significant portion of the literature examining asymmetries in financial reporting has focused on the role of managerial incentives. This research investigated how managerial biases, such as empire building or overoptimism, can lead to a demand for asymmetric, more specifically in these studies, conservative, reporting practices. Here such reporting is often framed as a tool for mitigating agency problems and aligning managerial behavior with shareholder interests (e.g., Bertomeu et al. (2017), Chen et al. (2007), Gao (2013), Glover and Lin (2018)). While these insights have been valuable in understanding asymmetric reporting practices, they largely approach the problem from the manager’s perspective, assuming that the biases driving disclosure decisions are internal to the firm.

Our contribution departs from this tradition by focusing on the role of market biases, specifically loss aversion. We argue that when market participants exhibit behavioral tendencies such as loss aversion, managers may engage in more timely disclosure of bad news voluntarily to hedge against the negative price impact resulting from loss aversion.² This shift in focus from managerial to market biases is a novel contribution that distinguishes our work from much of the existing literature on reporting asymmetries.

Moreover, our model tackles the timing of disclosures in a dynamic setting, which is another notable feature of our approach. Much of prior research, including papers that incorporate behavioral concepts, has focused on static settings where managers make binary decisions about whether to disclose or withhold information once (e.g., Guay and Verrecchia (2018), Huang et al. (2025)). In contrast, our model addresses the strategic timing of disclosure, allowing the manager to decide not only whether but also when to disclose private information. The emphasis on timing is critical because corporate disclosure contexts are inherently dynamic. Managers face repeated decisions about the optimal moment to reveal information, particularly in the presence of pending future external news (e.g., Bagnoli and Watts (2021), Truong (2023)). By modeling the timing of disclosure, our work builds on and extends the findings in Acharya et al. (2011), which examines how the presence of pending news affects the decision to delay disclosure.

Finally, we test the main predictions implied by our model by examining how loss aversion influences disclosure timing. We use analyst forecasts and price target revisions to highlight their asymmetric reactions to bad versus good earnings surprises. This allows us to overcome challenges inherent in alternative approaches, as analysts' price revisions explicitly respond to firm-specific news, enabling a clean link between disclosure practices and loss aversion. Specifically, analysts lower their price targets (i.e., predictions) more sharply in response to

²We adopt the standard behavioral interpretation of loss aversion from prospect theory. It is worth noting, however, that asymmetric reactions to losses versus gains could also arise from other economic considerations such as portfolio constraints that may create asymmetric exposure to losses. Our framework remains agnostic to the source of loss aversion, and we interpret our findings as broadly applicable to any environment in which pricing behavior reflects greater sensitivity to negative news than to positive news of equal magnitude.

negative surprises than they increase them after positive surprises of the same magnitude, consistent with analysts internalizing prospect-theoretic market behavior. Building on this descriptive evidence, we find that firms with higher loss-averse analyst coverage provide more timely guidance for “miss consensus” and “match consensus” information, while the timing of “beat consensus” guidance remains unchanged. These results align with our theoretical prediction that loss-averse market participants incentivize firms to engage in preemptive disclosure. We further document that the relationship between loss aversion and disclosure timeliness exhibits the inverted-U pattern predicted by the model, and that the effect is concentrated among firms in richer information environments (i.e., higher correlation between private and public signals), consistent with the second non-monotonicity prediction. Turning to market returns, we find that firms with more loss-averse analyst coverage experience even more negative returns when they announce bad earnings news. This finding suggests that analyst behavior is related to loss aversion in the stock market. More importantly, we show that preemptive disclosure is associated with a dampened negative market reaction to bad news for firms followed by more loss-averse analysts. Together, these findings provide support for our model’s predictions, shedding light on how loss aversion in capital markets shapes preemptive disclosure strategies.

We contribute to the literature in several ways. First, we shift the focus from managerial to market biases, introducing loss aversion as a critical factor in understanding disclosure decisions. This perspective adds to the study of reporting asymmetries by showing that these can arise not solely from internal firm dynamics (e.g., agency problems or managerial overoptimism) but also from external pressures. Second, we emphasize the importance of disclosure timing. Unlike most previous models that treat disclosure as a static binary choice, our model allows the manager to choose when to disclose. Third, from an empirical perspective, we present novel insights on how firms respond to loss-averse markets through asymmetries in the timeliness of disclosing good versus bad news, including the non-monotonic patterns implied by the model. These findings support the predictions of our model.

Prior empirical literature has explored related themes, such as the impact of ambiguity aversion on disclosure timing, framing accounting conservatism as a rational best response to ambiguity-averse investors (e.g., Hsieh et al. (2019)), or the impact of leak risk on the timing of voluntary disclosures (e.g., Bloomfield et al. (2024)). However, to the best of our knowledge, no prior studies have investigated how loss aversion influences the timing of firms' voluntary disclosures. Our paper also complements the seminal findings in Skinner (1994), which documents that firms are more likely to preempt bad news than good news, attributing this asymmetry to managerial concerns over litigation threats and reputational costs. Our explanation is distinct from but complementary to that of Skinner (1994) in two respects. First, the mechanisms operate through different channels. Litigation pressure shapes preemption through expected legal damages, while loss aversion shapes preemption through the asymmetric pricing function loss-averse investors apply to bad news. Second, the predictions differ in shape. Litigation pressure suggests monotonic comparative statics, i.e. more legal exposure implies more preemption. Loss aversion, in our model, delivers non-monotonic comparative statics in both the intensity of investor loss aversion and the correlation between private and public signals. The empirical signature of preemption that follows from our mechanism is therefore qualitatively different from one driven by litigation alone. Further related empirical work has examined the effects of prospect theory on stock returns (e.g., Barberis et al. (2016)) and analyst forecast behavior (e.g., Ding et al. (2004)), but these studies do not consider disclosure strategies or their interaction with such biases.

The literature on voluntary disclosure has extensively examined how managers decide whether to reveal private information under conditions of uncertainty. Close to our setting, Dye (1985) and Jung and Kwon (1988) show that non-disclosure can be an equilibrium outcome when the market is uncertain about the manager's information endowment. More recent work, such as Bertomeu et al. (2022), Gigler and Hemmer (2001), and Stocken (2000), has examined the role of financial reports in influencing voluntary disclosure behavior, particularly with respect to how managers adjust disclosures to shape investor expectations

around earnings announcements. These studies focus on the mechanisms by which financial reporting affects managerial incentives to voluntarily disclose information. Building on this, other contributions related to our paper, including Beyer and Dye (2012), Guttman et al. (2014), and Marinovic et al. (2018), have highlighted the importance of forward-looking managers who consider the long-term impact of disclosure on future prices, while Einhorn and Ziv (2008) explores a setting where private information arrives in sequence, allowing managers to strategically withhold information in certain periods.

Our paper also relates to the growing literature on the impact of leak risks on voluntary disclosure. Frenkel et al. (2020) investigates how third-party disclosures influence corporate voluntary disclosure, showing that leak risks can alter the nature of information revealed. Ebert et al. (2022) demonstrates that the manager’s ability to respond ex post to leaked information affects their ex ante disclosure strategy, while Bloomfield et al. (2024) examines preemptive disclosure and finds that leak risks motivate managers to disclose bad news early, to preempt potential leaks. The authors show that higher probabilities of leaks lead to more frequent earnings guidance, with firms experiencing lower returns on voluntary disclosure dates but improved performance at the time of the potential leak.

Closest to our work are Guay and Verrecchia (2018) and Huang et al. (2025), both of which explore the intersection of investor characteristics and disclosure decisions. Guay and Verrecchia (2018) develops a model of conservative disclosure where managers are required to disclose bad realizations of firm value, which leads to higher average firm prices by reducing uncertainty. Guay and Verrecchia (2018) deals with a risk-aversion context and defines conservatism as reporting low values while high values are reported conservatively at zero. Huang et al. (2025) examines the impact of loss aversion on firms’ voluntary disclosure behavior. While this contemporaneous working paper shares our focus on loss-averse markets, it differs in several respects, most notably in that the manager makes a one-time binary disclosure decision. By emphasizing the dynamic timing of disclosures in response to external news arrival, our work extends beyond and complements these static frameworks. Finally,

we build on the model in Acharya et al. (2011), which analyzes the strategic timing of disclosure in the presence of pending external news.³ Acharya et al. (2011) demonstrates how managers may delay the release of information based on the arrival of external signals, with bad external news prompting immediate disclosure while good news tends to delay disclosure even further. Their model shows how external information flows lead to the clustering of negative announcements. While the focus in Acharya et al. (2011) is on how pending news impacts disclosure timing, we explore how loss aversion affects the manager’s trade-off between preemptive and delayed disclosure in the presence of pending news.

We thereby provide a novel explanation for the persistence of asymmetries in the timeliness of disclosing good versus bad news and add new insights into strategic disclosure timing in the presence of loss-averse audiences. While we do not claim that our explanation is the only driver of asymmetric reporting practices, we see our contribution as offering a new lens through which to view their occurrence. The remainder of the paper proceeds as follows. Section 2 presents the model. In Section 3, we provide the equilibrium analysis and comparative statics to the baseline model. Sections 4 and 5 discuss extensions. Section 6 provides our empirical analyses and results. Section 7 concludes.

2 Model

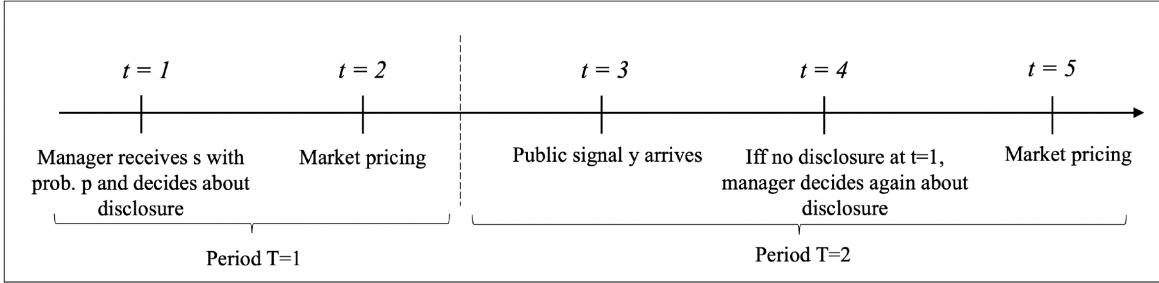
Our model features a risk-neutral firm manager facing a single representative investor in a two-period setting. At the beginning of period 1 the manager may privately observe signal S about uncertain firm value V with probability p or stay uninformed with probability $(1 - p)$.⁴ Thus, the central friction in the model preventing full *unraveling* is the uncertain information endowment of the manager as in Dye (1985) and Jung and Kwon (1988). In

³A similar setting is modeled in Bagnoli and Watts (2021), which builds on the same disclosure-timing framework but also incorporates a product market duopoly.

⁴For the sake of consistency, we maintain the assumption in Acharya et al. (2011) that the signal S represents the expectation of firm value conditional on the manager’s information set I such that $S = \mathbb{E}[V|I]$.

period 2 firm-external public news Y arrive and are observable to all players, where V , S and Y have joint standard normal distributions and positive correlation $\rho > 0$.⁵ Before the manager may receive her signal all players share common priors about the distributions and correlations of V , S and Y . The informed manager in this two-period game has a discrete set of actions: disclose immediately in the first period before the arrival of news Y , disclose in the second period after Y is revealed, or choose not to disclose at all. In contrast, the uninformed manager can only remain silent. At the end of each period, the investor prices the firm based on all available information at that time. Once the manager discloses the signal, the market price of the firm aligns with that signal, adjusted for the investor's loss aversion.⁶ The sequence of events is summarized in Figure 1.

Figure 1: **Sequence of Events**



The manager's utility is driven by the market price, with the sole objective of maximizing the firm's market value across both periods. Therefore the manager's objective function aggregates current and future market price and is represented as follows

$$U_M = \sum_{T=1}^2 \lambda(T)u(P_T), \quad (1)$$

where $T \in \{1, 2\}$ denotes the period, P_T denotes the market price in period T and $\lambda(T) \in (0, 1)$ is a weight that captures the sensitivity of the manager's compensation to share price

⁵We assume that the external information signal may come from a public source, such as the media, industry analyst disclosures, or disclosures of private information by another firm in the industry, as in Acharya et al. (2011).

⁶This implies that the firm's private information supersedes any additional informativeness of external news. We relax this assumption in Section 4.

in each period. We interpret the relative magnitude of the weights $\lambda(T)$ between periods 1 and 2 as a proxy for managerial myopia. While the manager’s objective function follows *Von Neumann-Morgenstern Expected Utility Theory* (Von Neumann and Morgenstern (1944)), the representative investor exhibits loss aversion as defined by *prospect theory* (Kahneman and Tversky (1979)). This means that while the investor values the firm based on its expected value, they also incorporate an asymmetric price adjustment reflecting the potential for future losses or declines in firm value,

$$P_t = \mathbb{E}[V - \gamma \cdot \mathbf{1}_{V < \mathbb{E}[V|\Omega_t]}|\Omega_t], \quad (2)$$

where Ω_t denotes the investor’s information set at time t , with $t \in \{1, 2, 3, 4, 5\}$ (see Fig. 1), $\gamma \geq 0$ represents the degree of loss aversion and the indicator function $\mathbf{1}_{V < \mathbb{E}[V|\Omega_t]}$ returns 1 if the firm’s realized fundamental value ultimately falls short of the investor’s conditional expectation and 0 otherwise. Thus, in expectation the indicator function is equal to the probability of this event. Note that eq. (2) builds on the idea that prospect theory applies to uncertain prospects rather than realized outcomes, as in Kahneman and Tversky (1979). Accordingly, the firm’s true value remains unresolved within the horizon of our model, preserving uncertainty. The representative investor therefore anticipates potential losses relative to expectations, rather than responding to realized disappointment.⁷

⁷Alternative formulations, such as $V - P_t$ or $P_2 - P_1$, implicitly assume resolution of uncertainty and shift the focus to short-term price movements, as in Huang et al. (2025). While Huang et al. (2025) predicts non-disclosure of moderately good news due to interim disappointment, where public news may cause prices to drop after early disclosure, we abstract from such short-term dynamics. In our setting, loss aversion pertains to long-term fundamentals. Even if short-term loss aversion were included, our manager’s option to disclose after public news arrival provides protection against interim downside. Thus, withholding moderately good news is not optimal in our model. This remains true even under incremental informativeness of external news, as long as firm-private signals are more precise than public news. We argue that such alternative formulations are less aligned with the original spirit of prospect theory, which emphasizes behavior under uncertainty and looming losses relative to a reference point. Our model therefore complements, rather than contradicts, Huang et al. (2025) by highlighting a dynamic strategic dimension - when to disclose, not just whether to disclose.

3 Equilibrium Analysis

We start by deriving the equilibrium in a static benchmark before moving on to the dynamic setting. Initially, we conjecture that an informed manager adopts a threshold strategy in equilibrium, which we subsequently confirm as the equilibrium disclosure strategy through formal analysis. All proofs are relegated to the Appendix.

Static benchmark. In the absence of pending news we follow Jung and Kwon (1988). In such a one-period model, the firm’s price is determined as follows. If the manager discloses the signal, the price is conditioned on $\Omega_t = \{S = s\}$. In the case of non-disclosure, $\Omega_t = \emptyset$, the investor forms an expectation accounting for the possibilities that the manager either did not receive a signal or strategically withheld information. We denote by $L(\Omega_t) \equiv \Pr(V < \mathbb{E}[V \mid \Omega_t] \mid \Omega_t)$ the “loss probability” that enters pricing. When Ω_t induces truncation (i.e., in the case of non-disclosure), the posterior $V \mid \Omega_t$ is not normal but a mixture-truncated normal (see Appendix A for closed-form ingredients). By contrast, under pure Gaussian conditioning (i.e., whenever the signal is disclosed) we have $L(\{s\}) = 1/2$ by symmetry. Let the non-disclosure (ND) set be defined as $\text{ND} = \{\emptyset\} \cup \{S \leq x^*\}$. Then, the price conditional on disclosure is

$$P^{\text{dis}} = s - \gamma \cdot L(\{s\}) = s - \gamma/2, \quad (3)$$

while the price conditional on non-disclosure is

$$P^{\text{nd}} = \frac{(1-p) \mathbb{E}[V] + p \Pr(S \leq x^*) \mathbb{E}[V \mid S \leq x^*]}{(1-p) + p \Pr(S \leq x^*)} - \gamma L(\text{ND}), \quad (4)$$

where x^* is the conjectured threshold at which the condition $P^{\text{dis}} = P^{\text{nd}}$ must hold in equilibrium. To align with the notation in Acharya et al. (2011), we replace $\frac{p}{(1-p)}$ with ω .⁸

⁸In Acharya et al. (2011), this is denoted as ρ . However, we rename it to ω here, as ρ is conventionally used for correlation coefficients.

Thus, we can rewrite the non-disclosure price as

$$P^{\text{nd}}(x^*, \omega) = \frac{\mathbb{E}[V] + \omega \Pr(S \leq x^*) \mathbb{E}[V \mid S \leq x^*]}{1 + \omega \Pr(S \leq x^*)} - \gamma L(\text{ND}). \quad (5)$$

Lemma 1 *In the static benchmark model there exists a unique equilibrium threshold x^* solving $P^{\text{dis}} = P^{\text{nd}}$, such that an informed manager discloses when $s \geq x^*$ and remains silent otherwise. The threshold x^* is decreasing in ω , decreasing in γ , and satisfies*

$$x^* = \frac{\mathbb{E}[V] + \omega \Pr(S \leq x^*) \mathbb{E}[V \mid S \leq x^*]}{1 + \omega \Pr(S \leq x^*)} - \gamma L(\text{ND}).$$

Lemma 1 states that the manager's equilibrium disclosure strategy is characterized by a single threshold x^* , where the informed manager discloses her private signal if and only if its realization is sufficiently good, i.e., $s \geq x^*$. For $\gamma = 0$ the threshold defaults back to the well-known result established in Jung and Kwon (1988).

Dynamic setting with pending news. We now shift our focus to the dynamic two-period model with pending news Y , where an informed manager must decide whether to never disclose, disclose before, or after the external signal becomes public. We introduce an investor with *prospect theory* preferences into the dynamic framework of Acharya et al. (2011) and derive our key result. We then show that setting the loss-aversion parameter to zero replicates the delayed disclosure strategy equilibrium in the original framework. Finally, we derive and discuss comparative statics. The model is solved by backward induction, starting with the optimal disclosure strategy in period $T = 2$ after the arrival of public news Y . As in the static benchmark, we hypothesize and verify later that the optimal disclosure strategy in both periods is characterized by a single threshold. Let x_1 and x_2 denote the conjectured thresholds for periods 1 and 2, respectively. The price conditional on disclosure at $T = 2$ resembles the static disclosure price and is independent of the signal Y , because

the manager's information overrides any incremental informativeness of Y , so

$$P_{T=2}^{\text{dis}} = s - \gamma \cdot L(\{S = s\}) = s - \gamma/2. \quad (6)$$

The price conditional on non-disclosure on the other hand is a function of external news, i.e.

$$P_{T=2}^{\text{nd}}(z, Y, \omega) = \frac{\mathbb{E}[V \mid Y] + \omega \Pr(S \leq z \mid Y) \mathbb{E}[V \mid S \leq z, Y]}{1 + \omega \Pr(S \leq z \mid Y)} - \gamma \cdot L(\text{ND} \mid Y, z), \quad (7)$$

where $z(Y) = \min\{x_1, x_2(Y)\}$ and $L(\text{ND} \mid Y, z)$ is the loss probability under the non-disclosure mixture implied by z and Y .⁹ The equilibrium second-period threshold $x_2(Y)$ equates the disclosure price and the non-disclosure price evaluated at the binding selection criterion $z(Y) = \min\{x_1, x_2(Y)\}$, such that we can write

$$x_2(Y) = P_{T=2}^{\text{nd}}(\min\{x_1, x_2(Y)\}, Y, \omega). \quad (8)$$

The intuition for the binding selection criterion $z(Y)$ in the second-period threshold is as follows. Due to the arrival of external public news, the second-period threshold can actually exceed the first-period threshold, leading to a *regret effect*. In this scenario, while the signal itself remains unchanged, the thresholds may differ. For instance, if the manager observes $s \in [x_1, x_2(Y))$ and $x_1 < x_2(Y)$, she discloses the signal in period 1 but, in hindsight, would not have made the same disclosure decision in period 2. Conversely, if $x_1 > x_2(Y)$, there is no basis for regret. In this case, we still observe the bad news clustering result from the underlying model, as a manager who chose not to disclose in period 1 will only disclose in period 2 if the external public news is sufficiently negative to push $x_2(Y)$ below x_1 .¹⁰ However, in our model, the frequency of this outcome is significantly reduced, as will be demonstrated in Proposition 1. Lemma 2 below formally states this result. When

⁹As shown in Appendix A, $L(\text{ND} \mid Y, z)$ is computed from the corresponding mixed truncated Gaussian using inverse Mills ratios and the bivariate normal cumulative distribution function.

¹⁰Acharya et al. (2011) provide a detailed discussion on the regret effect and the clustering phenomenon in the absence of loss aversion.

dealing with a loss-averse investor, the regret effect still exists, as the second-period disclosure decision mirrors the static case. But, its indirect impact on the first period, which creates an *option value* of delaying disclosure to see if external news brings any upside, is significantly altered. This option value drives the delayed disclosure result in the reference model. For a large parameter range, this effect is not only diminished but also reversed in the presence of prospect theory, as we will demonstrate in characterizing the optimal disclosure policy in period 1.

Lemma 2 *Assuming that the period 1 disclosure strategy is characterized by a unique threshold x_1 , there exists an optimal disclosure threshold for period 2 that satisfies*

$$x_2(Y) = P_{T=2}^{\text{nd}}(\min\{x_1, x_2(Y)\}, Y, \omega).$$

With the optimal disclosure threshold for the second period established, we now shift our focus to the first period. We previously conjectured that the equilibrium disclosure policy is defined by a unique threshold x_1 . In the static model, this would imply that the manager discloses if and only if her private signal, adjusted for the loss aversion penalty, exceeds the non-disclosure price. However, in the dynamic model at $T = 1$, additional factors come into play that influence this decision. First, in period 1, the manager faces a real option which is what drives the delayed disclosure finding in Acharya et al. (2011). Upon receiving the private signal s , there is a possibility that the external public news Y may exceed the manager's private signal. As a result, choosing non-disclosure in period 1 carries an *option value*, while immediate disclosure sacrifices this potential benefit. Second, due to the presence of a loss-averse investor, the manager is incentivized to manage expectations and mitigate the risk of future disappointment. Thus, choosing to disclose in period 1 carries what we refer to as a *hedging value*, as it reduces the likelihood of negative surprises later on. An informed manager will, therefore, opt for preemptive disclosure in the first period if, and only if, the hedging value outweighs the option value of delaying disclosure. This can be

expressed in terms of the manager's utility derived from preemptive disclosure ('PD') and delayed disclosure ('DD') across periods based on eq. (1), such that

$$U_M(PD) > \mathbb{E}[U_M(DD)]. \quad (9)$$

Reformulating this expression along the lines of Acharya et al. (2011) gives that the manager discloses a signal realization s if and only if

$$\underbrace{\sum_{T=1}^1 \lambda(T) [u(P_{T=1}^{\text{dis}}(s)) - u(P_{T=1}^{\text{nd}}(x_1^*))]}_{\text{Immediate gain from preemptive disclosure}} > \underbrace{\mathbb{E} \left[\sum_{T=2}^2 \lambda(T) [u(P_{T=2}^{\text{nd}}(x_2(Y))) - u(P_{T=1}^{\text{dis}}(s))] \middle| s \right]}_{\text{Expected gain from delaying disclosure}}, \quad (10)$$

where the left-hand side represents the immediate gain from preemptive disclosure, while the right-hand side captures the expected gain from delaying disclosure.

Proposition 1 *In the dynamic model there exists a unique equilibrium threshold characterizing the first period disclosure policy x_1^* solving eq. (9), such that an informed manager will disclose if and only if $s \geq x_1^*$ and remain silent otherwise. That is,*

$$x_1^* = P_{T=1}^{\text{nd}}(x_1^*) + \alpha \mathbb{E}[P_{T=2}^{\text{nd}}(x_2(Y)) - P_{T=1}^{\text{dis}}(s) \mid s = x_1^*],$$

where $P_{T=1}^{\text{dis}}(s)$ is as in (6) and $P_{T=2}^{\text{nd}}(\cdot)$ is given by (7). This first period disclosure threshold drops below the non-disclosure price for $0 < \gamma < \bar{\gamma}$, such that

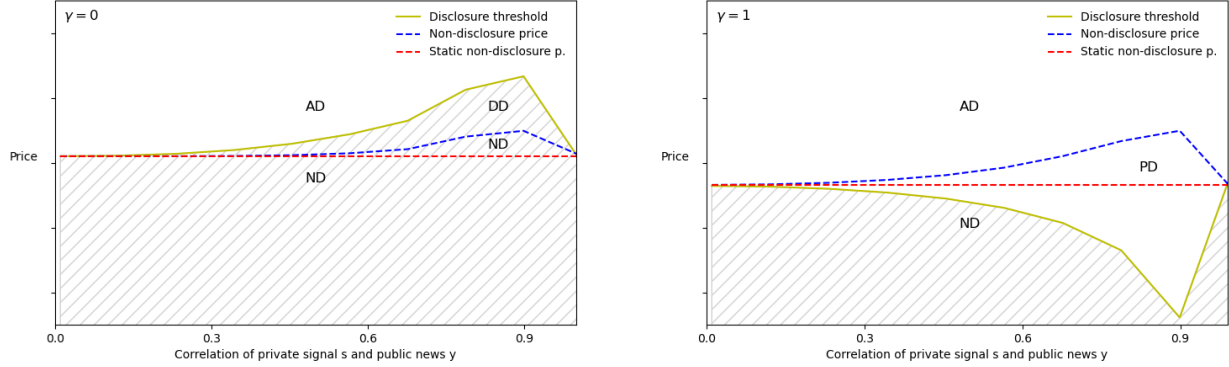
$$x_1^* < P_{T=1}^{\text{nd}}(x_1^*),$$

where $\alpha = \sum_{T=2}^2 \lambda(T) / \sum_{T=1}^1 \lambda(T)$. Thus, the presence of a loss-averse investor with pending external news prompts preemptive disclosure, compared to a dynamic setting with a rational investor.

In Proposition 1 we formally show that the equilibrium in the dynamic setting features a single threshold x_1^* . In this equilibrium the threshold is characterized by two main com-

ponents. The first is the non-disclosure price in period 1, $P_{T=1}^{\text{nd}}(x_1^*)$. Hence, intuitively the threshold strictly increases in the non-disclosure price for the same period. The second is the expected gain from delaying disclosure. This is defined as the expected difference between the non-disclosure price in period 2 less the price upon disclosing immediately in period 1 conditional on having observed signal s and weighted by the manager's relative compensation sensitivity to share price across periods, $\alpha \mathbb{E} [P_{T=2}^{\text{nd}}(x_2(Y)) - P_{T=1}^{\text{dis}}(s) \mid s = x_1^*]$. Again, the first period threshold is increasing in this difference. The reasoning behind this is that, once the manager discloses her private signal s , the market price of the firm aligns with the signal for all subsequent periods, becoming independent of external news Y . This occurs because the firm's private information is assumed to outweigh any additional informativeness from external news. Thus, intuitively speaking, the strategic disclosure timing of the manager in our model is driven by two main effects. The first is the option value associated with delaying disclosure until after the arrival of external news. The second is the hedging value of disclosing earlier, i.e., preempting private information, to mitigate the negative pricing effect of loss aversion. The relative magnitude of these two effects is mainly driven by the correlation ρ between the manager's private signal S and the external signal Y as we show in Figure 2. In this figure we replicate the results in the absence of loss-averse behavioral investors in the left panel, where $\gamma = 0$ (see Acharya et al. (2011)) and we plot our results in the presence of loss-averse behavioral investors in the right panel, i.e., where $\gamma = 1$. All thresholds, disclosure and non-disclosure prices refer to period 1. To establish a benchmark, we first plot the static disclosure thresholds (red dashed lines) in the model without pending external news. Note that in this case the non-disclosure price coincides with the disclosure threshold and separates the disclosure and non-disclosure area. We then plot the non-disclosure price and the disclosure threshold for the dynamic model in the presence of a rational investor ($\gamma = 0$) to replicate the benchmark finding in the left panel and in the presence of a behavioral loss-averse investor ($\gamma = 1$) in the right panel.

Figure 2: **Strategic Timing of Disclosure in the Absence and Presence of Loss Aversion**



Notes: The left panel illustrates the replicated main finding in Acharya et al. (2011), where $\omega = 9$, $\alpha = 30$ and $\gamma = 0$. The right panel shows our main finding in the presence of a loss-averse investor, where $\omega = 9$, $\alpha = 30$ and $\gamma = 1$. For both plots s and y have joint standard normal distributions. We denote the areas as AD=Always Disclosure, ND=Never Disclosure, DD=Delayed Disclosure and PD=Preemptive Disclosure. The hatched areas indicate non-disclosure.¹¹

Note that in the dynamic model it is no longer true that the non-disclosure price coincides with the disclosure threshold as formally derived in Proposition 1. In the replicated benchmark graph the disclosure threshold (yellow solid line) lies above the non-disclosure price (blue dashed line), which implies delayed disclosure (DD). Moderately bad signal realizations that fall into the “DD” area are withheld in the hope to secure the option value that generates from the pending external news in period 2. The delay is first increasing in the correlation between the manager’s private signal s and pending external public news y and then decreasing in it. This is because for zero or perfect correlation of s and y the option value intuitively collapses. Furthermore, very good signal realizations that fall into the “Always Disclosure” (AD) area are disclosed right away and very bad signal realizations that fall into the “Never Disclosure” (ND) area withheld irrespective of the correlation value ρ . We show how this result flips once we introduce a loss-averse behavioral investor in the

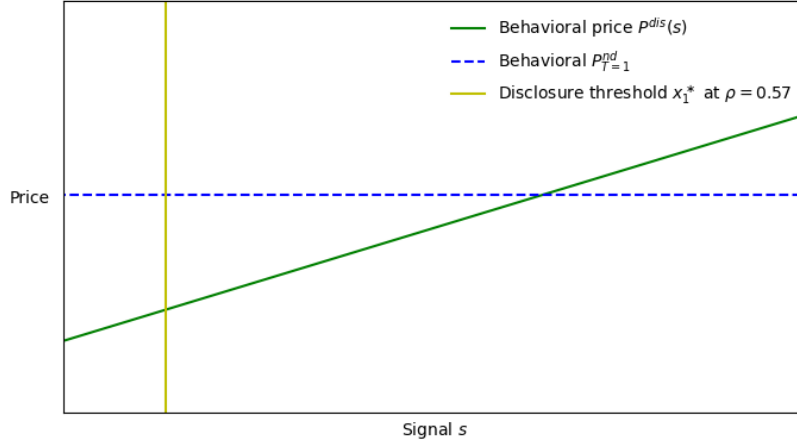
¹¹The parameter values $\omega = 9$ ($p = 0.9$) and $\alpha = 30$ follow Acharya et al. (2011) and are chosen to render the preemptive disclosure area visually distinguishable. The qualitative result—preemptive disclosure for moderate γ —holds for a wide range of parameter values. In particular, the comparative statics in Figures 4 and 5 use $\alpha = 1$, a more conventional calibration, and confirm the same patterns.

right panel. Now, the disclosure threshold (yellow solid line) lies below the non-disclosure price (blue dashed line), which implies preemptive disclosure (PD). Moderately bad signal realizations that fall into the “PD” area are preempted, meaning that the manager discloses these signals in a more timely manner to dampen the negative price effect resulting from loss aversion even if that means foregoing a higher non-disclosure price in the current period.¹² The rationale for this result is that the manager trades off the option value that is attached to delayed disclosure against the hedging value attached to preemptive disclosure. Similar to the non-monotonicity in disclosure delay, preemptive disclosure is first increasing in the correlation between the manager’s private signal s and pending external public news y and then decreasing in it. For zero or perfect correlation of s and y the option value and the hedging value both collapse. This non-monotonic relationship between the correlation of private and public information and the extent of preemptive disclosure is one of the central predictions of the model: it establishes that the interaction of hedging and option value generates an interior optimum in ρ , rather than a monotonic expansion of preemption as the information environment becomes richer. To further validate our preemptive disclosure finding, we plot the price upon disclosure (green solid line), the price upon non-disclosure (blue dashed line), and the disclosure threshold (yellow solid line) in period 1 as a function of the private signal s in Figure 3. We do so for a fixed correlation value of $\rho = 0.57$, which corresponds to the expanding “PD” area in the right panel of Figure 2. The plot confirms our preemptive disclosure result, showing that the threshold x_1^* lies to the left of the point where the disclosure price and non-disclosure price intersect, which is precisely where the threshold would fall in a static model. Figure 3 also illustrates that the manager continues to withhold very bad signals below the threshold, corresponding to the “ND” area, while disclosing very good signals above the intersection of the disclosure and non-disclosure prices, which aligns with the “AD” area.¹³

¹²In Figure 3 we demonstrate that our preemptive disclosure result indeed speaks to moderately bad news as does the delayed disclosure result.

¹³We acknowledge that our model may not fully capture the notion of conservatism, as very bad signals remain undisclosed in equilibrium and preemptive disclosure does not occur for these realizations. However,

Figure 3: **Strategic Timing of Disclosure for Fixed Pending News Correlation ρ .**



Notes: The plot demonstrates the relationship between disclosure and the manager's private signal s for a fixed pending news correlation in period 1, where $\omega = 9$, $\alpha = 30$, $\gamma = 1$ and s and y have joint standard normal distributions. We denote the areas as AD=Always Disclosure, ND=Never Disclosure and PD=Preemptive Disclosure.

Comparative Statics. Having established preemptive disclosure as an equilibrium outcome and characterized its non-monotonic dependence on ρ , we now turn to the comparative statics that yield the paper's central non-monotonicity result with respect to loss aversion γ . We explore how changes in the degree of loss aversion γ that characterizes the representative investor in our model affect our main preemption finding. There are various contexts in which markets or investor types may exhibit heterogeneity in their levels of loss aversion, such as through differences in reference points, as described by rank-dependent utility. Other contributing factors include shifts in systematic uncertainty in market conditions, varying investment horizons, or investors' past experiences. Specifically, as γ increases, indicating a higher degree of loss aversion, the negative price effect associated with the possibility of future disappointment becomes more pronounced. We also examine how variations in the manager's relative compensation sensitivity to share price across periods, represented by α , impact preemptive disclosure. There are numerous reasons why this parameter might vary

we view our model as speaking more broadly to reporting asymmetries in the timeliness of good versus bad news disclosure. Thus, while not all bad signal realizations are preempted, bad news is, on average, disclosed more promptly than good news compared to a dynamic setting with a rational investor.

in different contexts, such as the firm's lifecycle stage, prevailing market conditions, investor pressure or activism, manager tenure, or changes in the firm's ownership structure, to name a few. As α increases, the manager's total compensation becomes more sensitive to the second period's market price relative to the first period's market price, thereby increasing the manager's long-term incentives to maximize share price. The following corollary summarizes the results.

Corollary 1 *In the dynamic model featuring pending news and a loss-averse investor, the preemptive disclosure area $PD(\rho, \gamma, \alpha) = \int_{\rho=0}^{\rho=1} [P_{T=1}^{\text{nd}}(x_1^*) - x_1^*] d\rho$*

1. *expands for moderate levels of loss aversion ($0 < \gamma < \gamma^*$) but contracts for higher levels ($\gamma > \gamma^*$). When loss aversion exceeds a value of $\bar{\gamma}$, where $\bar{\gamma} > \gamma^*$, the negative price impact outweighs the hedging value of preemptive disclosure, leading the manager to revert to delaying disclosure in hopes of securing the option value associated with pending news Y , that is*

$$\frac{\partial PD(\rho, \gamma, \alpha)}{\partial \gamma} > 0 \quad \text{for } 0 < \gamma < \gamma^*,$$

$$\frac{\partial PD(\rho, \gamma, \alpha)}{\partial \gamma} < 0 \quad \text{for } \gamma^* < \gamma < \bar{\gamma},$$

$$\frac{\partial PD(\rho, \gamma, \alpha)}{\partial \gamma} = 0 \quad \text{for } \gamma = \gamma^*$$

$$\text{and } PD(\rho, \gamma, \alpha) = 0 \quad \text{for } \gamma \geq \bar{\gamma}.$$

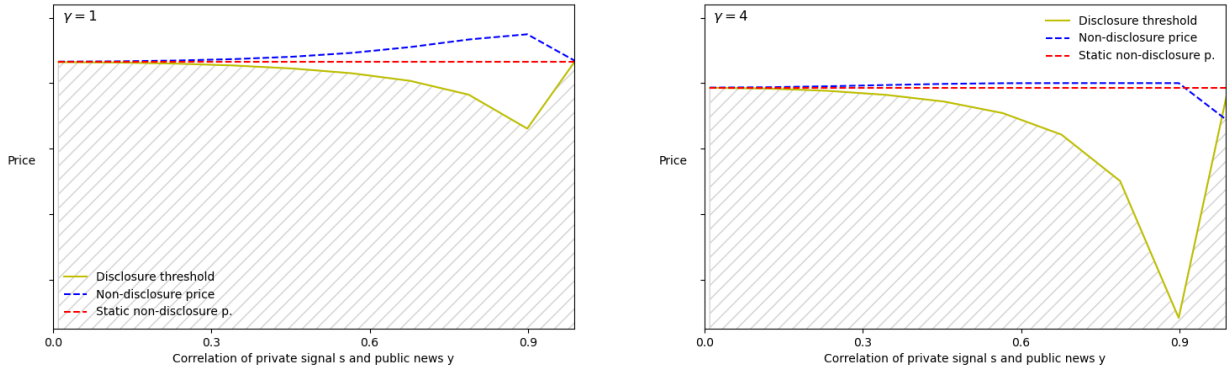
2. *expands with increasing relative long-term price sensitivity, i.e., α , that is*

$$\frac{\partial PD(\rho, \gamma, \alpha)}{\partial \alpha} > 0 \quad \text{for } \alpha > 0.$$

In Figure 4 and 5 we plot our comparative statics results formally described in Corollary 1. In Figure 4, we illustrate the effect of varying loss aversion, represented by γ ,

on the preemptive disclosure area as described in Corollary 1. The two panels show how changes in γ influence the manager's disclosure behavior. For moderate levels of loss aversion ($0 < \gamma < \gamma^*$), the preemptive disclosure area expands, reflecting the increasing hedging value of preemptive disclosure to avoid potential negative price shocks. However, as γ continues to rise beyond γ^* , the area begins to contract for high correlations between s and y . This shrinking preemptive disclosure area occurs because the negative price effect associated with greater loss aversion outweighs the benefits of preemptive disclosure, leading the manager to delay disclosure in hopes of capturing the option value tied to pending external news. As γ approaches $\bar{\gamma}$, the preemptive disclosure area eventually disappears and the result reverts back to delayed disclosure despite the presence of loss aversion.¹⁴

Figure 4: **Varying Loss Aversion γ**



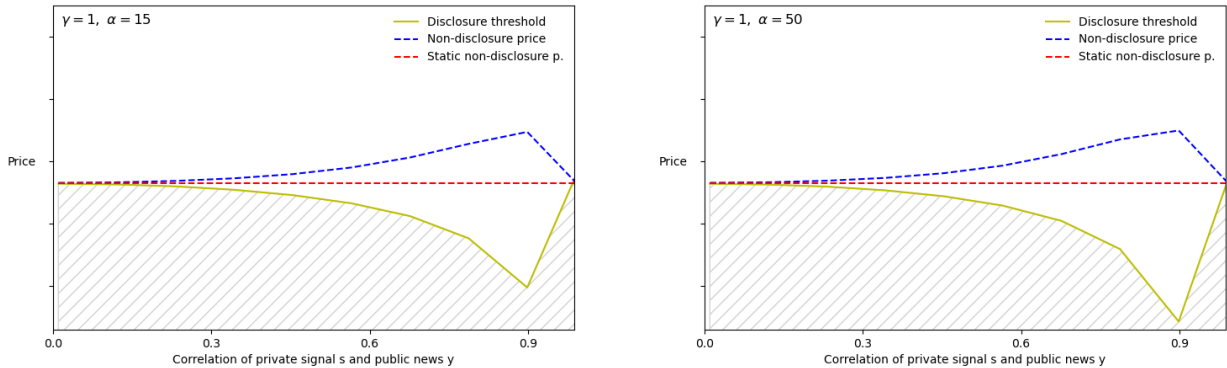
Notes: This graph shows how changes in the degree of loss aversion γ that characterizes the representative investor in our model affect our main preemption finding. We vary loss aversion γ , where $p = 0.9$, $\omega = \frac{p}{1-p}$, $\alpha = 1$ and s and y have joint standard normal distributions. The hatched areas indicate non-disclosure.

In Figure 5, we focus on the impact of varying the manager's relative compensation sensitivity to share price across periods, represented by α . The plot shows how changes in α affect the manager's incentive for preemptive disclosure. Note that when $\alpha = 0$, the

¹⁴While Corollary 1 introduces the threshold values γ^* and $\bar{\gamma}$, we do not provide closed-form expressions for these. The equilibrium threshold x_1^* is defined implicitly via a fixed-point condition that depends on the non-disclosure price in period 1 and an expected continuation value involving the joint distribution of private and public signals as well as the endogenous threshold $x_2(Y)$. These dependencies render closed-form solutions for γ^* and $\bar{\gamma}$ analytically intractable. We therefore determine γ^* and $\bar{\gamma}$ numerically.

model simplifies to a static setting, where the static threshold, the dynamic non-disclosure price, and the disclosure price converge to the same value. Conversely, as α increases, the manager's compensation becomes more sensitive toward long-term price performance, which encourages preemption. The preemptive disclosure area expands as α increases, as evidenced by the widening region from the left to the right panel. This pattern is consistent with the intuition that when the manager's compensation is tied to long-term outcomes, there is greater incentive to mitigate the risk of future disappointment by disclosing earlier. Both figures confirm our comparative statics results. We demonstrate how varying degrees of loss aversion (γ) and relative compensation sensitivity (α) can significantly influence the manager's strategic disclosure behavior. For γ the effect is non-monotonic, preemptive disclosure initially expands but contracts as loss aversion increases beyond a certain point while for α , the preemptive disclosure region expands with increasing values of α .

Figure 5: **Varying the Manager's Relative Compensation Sensitivity to Share Price α .**



Notes: This graph shows how changes in the manager's relative compensation sensitivity to share price across periods, represented by α , impact preemptive disclosure. We vary managerial myopia α , where $p = 0.9$, $\omega = \frac{p}{1-p}$, $\gamma = 1$ and s and y have joint standard normal distributions. The hatched areas indicate non-disclosure.

4 Incremental Information in Pending News

In our baseline model, once the manager discloses the private signal, the firm's market price aligns with that signal, adjusted for the investor's loss aversion. This implies that the firm's private information fully supersedes the informativeness of any external news. While it is reasonable to assume that internal private information often carries greater weight than external sources, there are situations where external news might still provide some incremental informativeness and influence market prices even after the firm's disclosure. In this section, we extend the model to account for the possibility that external news offer additional information beyond the manager's private signal, S . Specifically, we assume that Y represents another noisy signal about firm value V . As before, we assume that S and Y follow a joint standard normal distribution. Both signals are positively correlated with the fundamental V , such that the correlation between the manager's private information and the firm fundamental always exceeds the correlation between outside news and firm fundamental, i.e., $\rho_{S,V} > \rho_{Y,V}$.¹⁵ We now denote the correlation between S and Y as $\rho_{S,Y}$. Assuming that pending news may come with incremental informativeness in period 2 the price after the arrival of public news Y and disclosure of S will still resemble the static case but with the conditional expectation of firm value V , given both signals S and Y feeding into price, i.e.,

$$P_{T=2}^{\text{dis}} = \mathbb{E}[V \mid \Omega_t = \{S = s, Y = y\}] - \gamma \cdot L(\{s, y\}) = \mathbb{E}[V \mid s, y] - \gamma/2. \quad (11)$$

¹⁵Note that in Sections 2 and 3, we abstracted from explicitly modeling the correlations between the manager's information and the fundamental, as well as between the external information and the fundamental. This simplification was justified since our primary focus was on the effect of the correlation between S and Y , assuming that once the manager's private information reaches the market, external information becomes irrelevant.

The price conditional on non-disclosure remains a function of external news. As in the main analysis, let $z(Y) = \min\{x_{1Inc}, x_2(Y)\}$ and write the period-2 non-disclosure price as

$$P_{T=2}^{nd}(z, Y, \omega) = \frac{\mathbb{E}[V | Y] + \omega \Pr(S \leq z | Y) \mathbb{E}[V | S \leq z, Y]}{1 + \omega \Pr(S \leq z | Y)} - \gamma \cdot L(\text{ND} | Y, z). \quad (12)$$

Accordingly, the second-period threshold satisfies the fixed-point condition

$$x_2(Y) = P_{T=2}^{nd}(\min\{x_{1Inc}, x_2(Y)\}, Y, \omega). \quad (13)$$

This modifies the dynamics in period one as follows. The manager still faces the option that is attached to delaying disclosure in the presence of pending news. However, the value of this option diminishes with incremental informativeness of news Y . This is because even if the manager discloses in period one, the arrival of favorable news Y will still push prices upward in period 2. While the impact of positive external news on the market price is less pronounced when Y is not the sole signal, it remains significant. The manager also still faces the hedging value of preempting news to mitigate negative pricing effects of loss aversion. Unlike the option value, the hedging value increases with the incremental informativeness of news Y , owing to a reduced regret effect. When information is preemptively disclosed in period one, and news Y in period two raises the disclosure threshold, it also raises the price in period two, which would have otherwise been fixed after disclosing S . Thus, as pending news Y becomes incrementally informative, the option value decreases, while the hedging value increases. These effects operate in the same direction, thereby strengthening incentives for preemptive disclosure. Proposition 2 summarizes these findings.

Proposition 2 *In the dynamic model featuring pending news with incremental informativeness the equilibrium threshold characterizing the first period disclosure policy x_{1Inc}^* lies below the threshold without incremental information in external news Y , such that*

$$x_{1Inc}^* < x_1^*.$$

Thus, the presence of incremental information in pending external news intensifies preemptive disclosure, compared to a setting where firm internal information supersedes any external signals.

5 Stochastic Pending News Arrival

In contrast to the assumption in our baseline model that external news Y is guaranteed to arrive in period 2, real-world markets often involve uncertainty regarding both the timing and the likelihood of external information arrival. To capture this uncertainty, we extend the model such that the arrival of Y is stochastic rather than certain. This extension allows for a scenario, where the arrival of both the manager's private signal and external news is uncertain, influencing the manager's disclosure strategy. As a second step, we condition the probability of external news arrival on the extremity of the manager's private information. The more extreme the private signal, the more likely it is that external parties independently uncover related information and release it. With this we integrate the idea into the model that extreme underlying fundamentals, whether positive or negative, often attract market scrutiny, trigger analysts' attention, media coverage, or regulatory interest, regardless of the firm's own actions. Let $q \in (0, 1)$ denote the probability that external news Y arrives in period 2, with a probability of $(1 - q)$ for no news arrival. Working backwards from period 2, we now consider two possible scenarios for market pricing. If external news arrives, the prices in the second period follow those in the baseline model (see eqs. (7) and (8)). If no external news arrives, the pricing mirrors the static model without pending news, as described by eqs. (3) and (4). Shifting our focus to period 1, as before the manager will compare the immediate gain from preemptive disclosure to the expected gain from delaying disclosure. Under stochastic news arrival, the option value attached to non-disclosure in period 1 and the hedging value attached to preemptive disclosure in period 1 change. Both are increasing in the probability q that external news arrives in period 2. We can thus adjust eq. (10)

accordingly, such that the manager discloses a signal realization s if and only if

$$\underbrace{\sum_{T=1}^1 \lambda(T) [u(P_{T=1}^{\text{dis}}(s)) - u(P_{T=1}^{\text{nd}}(x_{1,\text{sto}}^*))]}_{\text{Immediate gain from preemptive disclosure}} > \underbrace{\mathbb{E} \left[\sum_{T=2}^2 \lambda(T) [u(P_{T=2}^{\text{nd}}(x_{2,\text{sto}}(Y))) - u(P_{T=1}^{\text{dis}}(s))] \middle| s \right]}_{\text{Expected gain from delaying disclosure}}, \quad (14)$$

where the second-period non-disclosure price is a weighted average of the “arrival” and “no arrival” scenarios, i.e.

$$P_{T=2}^{\text{nd}}(x_{2,\text{sto}}(Y)) = q P_{T=2}^{\text{nd}}(\min\{x_1, x_2(Y)\}, Y, \omega) + (1 - q) P_{T=2}^{\text{nd}, \text{no } Y}(\min\{x_1, x_2(\emptyset)\}, \omega), \quad (15)$$

with

$$P_{T=2}^{\text{nd}}(z, Y, \omega) = \frac{\mathbb{E}[V | Y] + \omega \Pr(S \leq z | Y) \mathbb{E}[V | S \leq z, Y]}{1 + \omega \Pr(S \leq z | Y)} - \gamma L(\text{ND} | Y, z), \quad (16)$$

$$P_{T=2}^{\text{nd}, \text{no } Y}(z, \omega) = \frac{\mathbb{E}[V | \emptyset] + \omega \Pr(S \leq z | \emptyset) \mathbb{E}[V | S \leq z, \emptyset]}{1 + \omega \Pr(S \leq z | \emptyset)} - \gamma L(\text{ND} | \emptyset, z). \quad (17)$$

In Proposition 3, we show that the equilibrium in the dynamic setting with stochastic news is characterized by a single threshold, $x_{1,\text{sto}}^*$, defined by the same two components as in the baseline model’s equilibrium threshold, the non-disclosure price in period 1 and the expected gain from delaying disclosure. The latter is calculated as the expected difference between the weighted average non-disclosure price in period 2, $q P_{T=2}^{\text{nd}}(x_2(Y)) + (1 - q) P_{T=2}^{\text{nd}, \text{no } Y}$, and the immediate disclosure price in period 1, conditioned on the manager’s observed signal s and weighted by the manager’s relative compensation sensitivity to share price across periods. The effect of stochastic news arrival is straightforward. The non-disclosure price in period 2 without external news matches the static non-disclosure price, hence preemptive disclosure is diluted. Therefore, as $q \rightarrow 0$, the first-period disclosure threshold, non-disclosure price, and static threshold converge. Conversely, as $q \rightarrow 1$, the model reverts to the baseline dynamic setting, as illustrated in the right panel of Figure 2.

Proposition 3 *In the dynamic model with unconditional stochastic news arrival there exists a unique equilibrium threshold characterizing the first period disclosure policy $x_{1,\text{sto}}^*$ solving eq. (14), such that an informed manager will disclose if and only if $s \geq x_{1,\text{sto}}^*$ and remain silent otherwise. That is,*

$$x_{1,\text{sto}}^* = P_{T=1}^{\text{nd}}(x_{1,\text{sto}}^*) + \alpha \mathbb{E} \left[q P_{T=2}^{\text{nd}}(x_2(Y)) + (1 - q) P_{T=2}^{\text{nd}, \text{no } Y} - P_{T=1}^{\text{dis}}(s) \mid s = x_{1,\text{sto}}^* \right],$$

where

$$x_{1,\text{sto}}^* > x_1^*.$$

Now, in a second step, we condition the probability of external news arrival on the extremity of the signal s , such that we have

$$q(s) = \frac{2}{1 + e^{-ks^2}} - 1 \tag{18}$$

as the probability that external news will arrive. Using this sigmoid function allows us to model the likelihood of external news arrival as a smooth, nonlinear response to the extremity of the signal. The parameter k controls the sensitivity of this relationship, where higher values of k make the probability $q(s)$ increase more sharply as realizations of s become extreme, while lower values provide a more gradual increase. We restrict the sensitivity parameter such that $k \in [0, +\infty]$. This approach captures the intuition that more extreme signals, whether positive or negative, are more likely to attract market scrutiny, analyst attention, or other forms of external news.¹⁶ Working backwards from period 2 remains similar to the case with unconditional stochastic news arrival. If external news arrives, the prices in the second period follow those in the baseline model (see eqs. (7) and (8)). If no external news arrives, the pricing mirrors the static model without pending news, as described by eqs. (3) and (4). However, there is one key difference, in the absence of external news, the investor updates its beliefs about the realization of signal s , as the lack of external

¹⁶Note that conveniently for $k = 0$ the model reverts back to the static setting without pending news, while for $k \rightarrow +\infty$ the model reverts back to the dynamic case with certain external news arrival. Alternative functional forms could also express the conditional probability without changing the qualitative nature of our results. For example, a quadratic form such as $q(s) = \frac{s^2}{1+s^2}$ with a scaling factor could also model the increasing likelihood of external news arrival with signal extremity, though with a more direct, less smooth progression.

news arrival is informative about the extremity of s . To formalize this, the investor interprets no news arrival as evidence that s is likely closer to zero, since extreme values of s would have been more likely to trigger external news. Therefore the updating process results in a revised conditional distribution of the signal s . This distribution incorporates the information that no external news arrived, which suggests that the signal may not be extreme. As such, the expected non-disclosure price in period 2 under no news arrival should be based on this updated distribution, i.e.,

$$P_{T=2}^{nd, no\ Y}(z, \omega) = \frac{\mathbb{E}[V \mid \emptyset] + \omega \Pr(S \leq z \mid \emptyset) \mathbb{E}[V \mid S \leq z, \emptyset]}{1 + \omega \Pr(S \leq z \mid \emptyset)} - \gamma L(\text{ND} \mid \emptyset, z). \quad (19)$$

Here z again denotes the respective binding selection criterion in the no-arrival branch, i.e. $\min\{x_{1,\text{stoc}}, x_{2,\text{stoc}}(\emptyset)\}$. Moving to period 1, the manager now anticipates this conditional non-disclosure price in the second period, incorporating it into her utility function when evaluating the expected gain from delaying disclosure and the immediate gain from preempting disclosure. The disclosure threshold in period 1 is thus revised to incorporate the updated $P_{T=2}^{nd, no\ Y}$, capturing the investor's inference based on the absence of external news. This adjusted threshold reflects the influence of conditional stochastic news, where the absence of external news itself provides information, subtly guiding the manager's disclosure strategy. In Figure 6, we illustrate the effect of varying the arrival sensitivity parameter k on the manager's preemptive disclosure behavior, as described in Corollary 2.

Corollary 2 *In the dynamic model with conditional stochastic news arrival there exists a unique equilibrium threshold characterizing the first period disclosure policy $x_{1,\text{stoc}}^*$, such that an informed manager will disclose if and only if $s \geq x_{1,\text{stoc}}^*$ and remain silent otherwise.*

Thus,

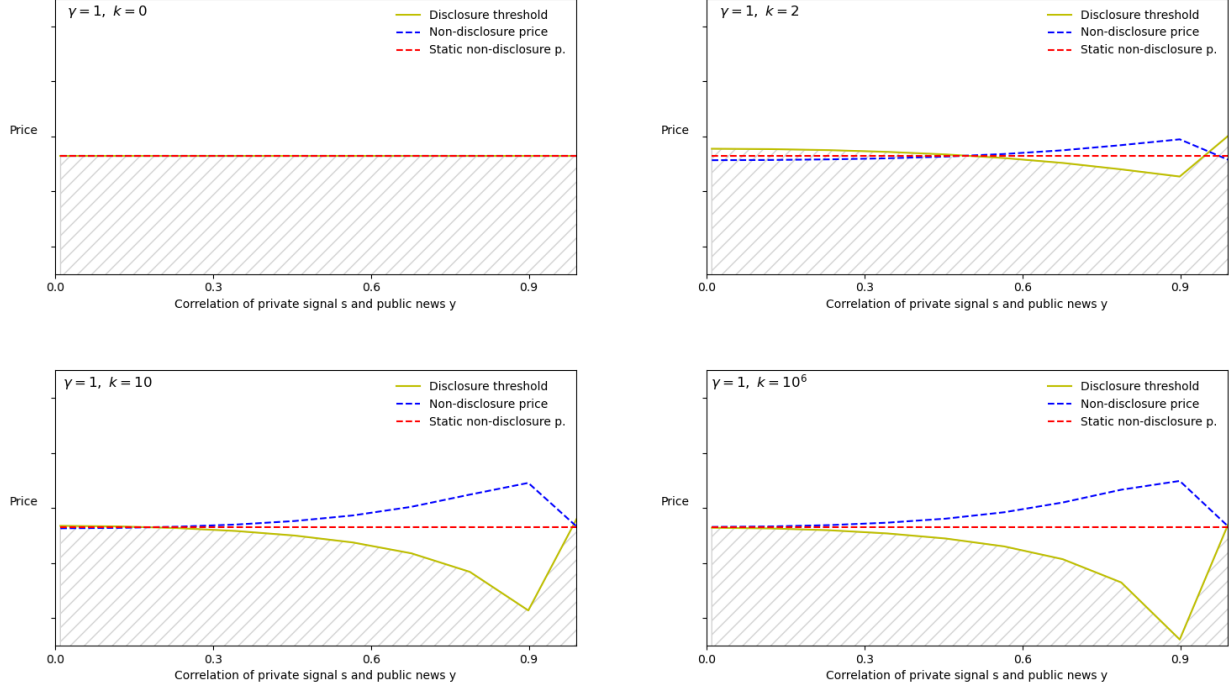
$$x_{1,\text{stoc}}^* = P_{T=1}^{nd}(x_{1,\text{stoc}}^*) + \alpha \mathbb{E} \left[q P_{T=2}^{nd}(x_2(Y)) + (1 - q) P_{T=2}^{nd, no\ Y} - P_{T=1}^{\text{dis}}(s) \mid s = x_{1,\text{stoc}}^* \right],$$

where

$$x_{1,\text{stoc}}^* \geq x_1^*.$$

The four panels in Figure 6 show how different values of k influence the manager's equilibrium disclosure in period 1. We begin with the boundary cases, where the conditional probability $q(s)$ becomes unconditional. For $k = 0$ the model reverts to the static setting, as shown in the upper-left panel. Here, the static threshold, dynamic non-disclosure price, and disclosure price all converge. At the other extreme, as $k \rightarrow \infty$, the model reverts to the main dynamic setting with certain external news arrival, as shown in the lower-right panel. The more insightful cases are those with intermediate values of arrival sensitivity k . In the upper-right panel, where $k = 2$, disclosure is delayed at low to moderate correlations, then switches to preemptive disclosure for intermediate to high correlations, and switches back to delay as the correlation approaches one. Intuitively, when correlation is low, the option value of waiting dominates because public news is only weakly informative about the manager's private information and the loss probability receives little weight. As correlation rises, two forces push in favor of preemption. First, conditional on non-disclosure, the mixed truncated posterior raises the loss probability, and second $q(s)$ loads more of the period-2 price on the news arrival scenario, making the loss penalty bite. At very high correlations however, external news almost replicates the private signal, which restores the option value of waiting while the loss penalty attenuates. In the lower-left panel, where $k = 10$, preemptive disclosure prevails.

Figure 6: Varying News Arrival Sensitivity Parameter k .



Notes: This graph shows how changes in the news arrival sensitivity to extreme values k affect our main preemption finding. We vary k , while $p = 0.9$, $\omega = \frac{p}{1-p}$, $\alpha = 1$ and s and y have joint standard normal distributions. The hatched areas indicate non-disclosure.

Finally, we introduce one additional layer to this model extension by allowing the probability of external news arrival to be more sensitive to extreme negative signals than to extreme positive signals. This approach reflects the tendency for adverse information to attract greater external scrutiny, where negative signals, such as poor performance indicators or unfavorable forecasts, are more likely to prompt market reactions, regulatory interest, or analyst attention. Positive signals, on the other hand, might not attract the same level of scrutiny, reducing the likelihood of external news arrival.¹⁷ To capture this asymmetry, we modify the probability function $q(s)$ so that extreme negative signals are more likely to

¹⁷This assumption is conceptually related to Bloomfield et al. (2024), who examine how asymmetric information leak risks affect firms voluntary disclosure behavior.

trigger news arrival than extreme positive signals of the same magnitude. We specify the probability of external news arrival as

$$q(s) = \frac{2}{1 + e^{-k(s+a)s}} - 1, \quad (20)$$

where $a \in (-\infty, 0)$ introduces an asymmetry that favors external news arrival in response to extreme negative signals. This modification ensures that for extreme negative values of s , the probability of news arrival $q(s)$ increases more sharply than for positive values of s of the same magnitude. This amplifies the hedging value associated with preemptive disclosure in the first period. As a becomes more negative, the likelihood of news arrival triggered by extreme negative signal realizations grows, enhancing the incentive for the manager to disclose earlier to mitigate potential negative price effects. Consequently, as a decreases, the equilibrium disclosure threshold $x_{1,\text{astoc}}^*$ also decreases. This relationship is summarized formally in Corollary 3.

Corollary 3 *In the dynamic model with conditional asymmetric news arrival there exists a unique equilibrium threshold characterizing the first period disclosure policy $x_{1,\text{astoc}}^*$, such that an informed manager will disclose if and only if $s \geq x_{1,\text{astoc}}^*$, where $x_{1,\text{astoc}}^* \leq x_{1,\text{stoc}}^*$ for $a \in (-\infty, 0)$.*

6 Empirical Analysis

While our theoretical model centers around a representative investor who exhibits loss aversion under prospect theory, our empirical analysis leverages analyst forecast data to test predictions implied by the model. We make this choice for several important reasons. Analysts serve as intermediaries between firms and the broader investment community, reflecting and often shaping the preferences and biases of investors, including loss aversion, as they compete to provide actionable insights to investors.

Among all the quantitative outputs supplied by analysts, we focus on price targets to bridge the gap between investor beliefs and analyst outputs, as prior studies show that price target revisions elicit stronger market reactions than revisions in earnings forecasts or discrete stock recommendations do (Asquith et al., 2005; Brav and Lehavy, 2003).¹⁸ Due to their significant market impact, analysts build credibility by ensuring the accuracy of their predictions (Basu and Markov, 2004; Jackson, 2005). Given that loss-averse investors react asymmetrically to losses and gains of equivalent magnitude, analysts may place greater emphasis on avoiding the credibility loss associated with overestimations, which could lead investors to buy stocks and realize lower-than-expected returns, compared to the potential credibility loss from underestimations, where investors might refrain from investing and miss out on higher-than-expected returns. It follows that if investors are prospect-theoretic, analysts will also price stocks in a loss-averse way. As such, analysts provide a good proxy for investor behavior, offering structured, observable measures, such as price targets, that align well with the theoretical construct of prospect theory (e.g., Brav and Lehavy (2003), Brown (2001)). At the same time, the analyst setting allows us to overcome challenges inherent in alternative approaches. For instance, directly studying investor behavior through market reactions introduces significant noise, as stock price movements aggregate the actions of diverse market participants and are influenced by external factors such as macroeconomic trends, industry-wide developments, and speculative trading. By contrast, analysts' price revisions explicitly respond to firm-specific news, enabling a clean link between disclosure practices and loss-averse behavior.

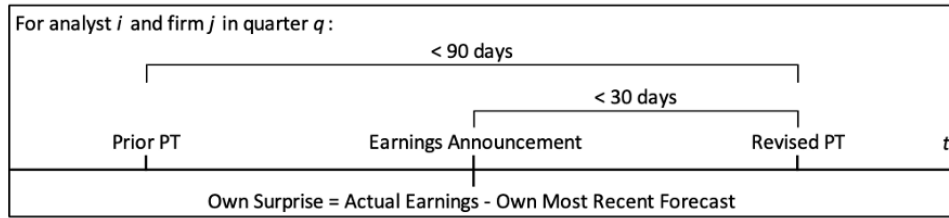
For our purposes, we draw on analysts' price target revisions conditional on the actual earnings missing or beating their own forecast, and develop a measure of loss aversion as revealed by each analyst's track record of price predictions. This analyst-year level measure

¹⁸Brav and Lehavy (2003) find that market reactions to price target revisions are immediate, substantial, and permanent. Asquith et al. (2005) find that price target revisions explain the variation in market reactions significantly better than earnings forecasts and stock recommendations. When including textual information as controls, the effect of price target revisions still persists, while the effect of the other two is significantly reduced, if not eliminated.

is then aggregated at the firm-year level to proxy for each firm’s exposure to market loss aversion.¹⁹ We begin by verifying whether analysts indeed exhibit prospect-theoretic behavior in pricing the stocks they follow, and validate that markets respond consistently. Then, we examine how loss aversion affects the timeliness of firm preemptive disclosure, including the non-monotonic and moderating effects predicted by our model, and how effective the preemptive disclosure is in mitigating the downward price effect of loss aversion upon a negative surprise of earnings.

Data and sample. We obtain analyst forecasts including earnings estimates and one-year-ahead price targets from I/B/E/S for all U.S. companies from 1999 to 2023. Our sample period begins in 1999 due to insufficient data on price targets prior to that year. We refine the sample by requiring (a) that the price target is issued within a month after the quarterly earnings announcement and (b) that the analyst’s previous price target is released prior to the quarterly earnings announcement but less than 90 days stale when the current price target is updated (See Figure 7). This yields 380,368 analyst-firm-quarter observations for the estimation of analyst loss aversion.

Figure 7: **Sample Selection.**



Notes: This graph visualizes our refined sample selection of price targets (PT) for analyst i and firm j in quarter q . Analyst i ’s surprise is measured as the actual quarterly earnings announced less the analyst’s most recent forecast.

¹⁹Unlike recommendations, which can be optimistically biased to curry favor with institutional clients and managers, analysts’ earnings forecasts can be treated as a fair representation of their expectation of earnings, as they strive to forecast earnings accurately to avoid reputational costs. For example, Hong and Kubik (2003) shows that analysts with higher forecast accuracy experience more favorable career outcomes, and only after controlling for accuracy do they find that those issuing more optimistic recommendations also benefit. This aligns with the findings in Lin and McNichols (1998), which demonstrate that analysts issue significantly more optimistic recommendations for firms with underwriting relations but do not bias their earnings forecasts systematically.

We also collect management earnings guidance from I/B/E/S and firm financials from Compustat. The sample period starts in 2003 because, as will be discussed later, a five-year moving window of historical price target revisions is used to estimate analyst loss aversion. After dropping missing values, our main sample consists of 38,582 firm-year observations, including 61,512 management guidance issuances in total. Appendix C provides the variable definitions used in our analysis. Descriptive statistics are reported in Table 1.

Table 1: **Descriptive Statistics**

Variables	N	Mean	SD	p25	p50	p75
<i>PTRev</i>	380,368	0.007	0.174	-0.060	0.032	0.094
<i>SurAna</i>	380,368	0.001	0.007	-0.000	0.001	0.002
<i>BNAna</i>	380,368	0.274	0.446	0.000	0.000	1.000
<i>Horizon</i>	61,512	0.571	0.326	0.312	0.638	0.847
<i>ALA</i>	48,403	0.872	0.769	0.243	0.745	1.295
<i>AER</i>	48,403	1.223	0.930	0.478	1.111	1.819
<i>Size</i>	38,582	21.400	1.718	20.195	21.318	22.503
<i>Age</i>	38,582	2.792	0.863	2.197	2.890	3.401
<i>ROA</i>	38,582	0.005	0.152	0.001	0.028	0.072
<i>BTM</i>	38,582	0.703	0.933	0.261	0.479	0.800
<i>StdRet</i>	38,582	0.115	0.068	0.068	0.098	0.143
<i>IH</i>	38,582	0.722	0.263	0.578	0.790	0.917
<i>NumAna</i>	48,403	1.549	0.636	1.099	1.386	2.079
<i>CAR</i>	33,079	0.003	0.076	-0.038	0.001	0.042
<i>Preempt</i>	33,079	0.171	0.377	0.000	0.000	0.000
<i>BN</i>	33,079	0.365	0.481	0.000	0.000	1.000

Estimating loss aversion. To estimate loss aversion, we refer to eq. (2) and focus on three components, i.e., price target revisions (*PTRev*), earnings surprise to the analyst (*SurAna*), and an indicator of loss (*BNAna*). *PTRev* is measured as the analyst’s revised price target less the last price target scaled by the stock price at the beginning of the month, following Brav and Lehavy (2003). *SurAna* equals the actual earnings less the analyst’s most recent earnings forecast prior to earnings announcement scaled by the stock price at the beginning of the month (Brown (2001)). *BNAna* is a dummy that equals one if *SurAna* is negative, and otherwise zero. For each analyst-year, we retrieve all price target revisions issued by the analyst over the past 5 years (i.e., 20 quarters) and estimate the following regression,

$$PTRev_{j,q} = \beta_0 + \beta_1 SurAna_{j,q} + \beta_2 SurAna_{j,q} \times BNA_{j,q} + \varepsilon_{j,q}, \quad (21)$$

where j and q denote firm and quarter, and all variables are defined as above.²⁰ Our coefficient β_1 captures the magnitude of the analyst's response to earnings news, and β_2 captures the asymmetric response to negative news, i.e., loss aversion. To the extent that analysts are prospect-theoretic, we expect both coefficients to be positive. For each analyst-year, we measure the analyst's earnings response and loss aversion as the t-statistic of β_1 and β_2 , respectively.²¹ Then, we aggregate both measures at the firm-year level by taking the mean of analysts' earnings response (*AER*) and loss aversion (*ALA*) as proxies for the investors' earnings response and loss aversion, respectively. Figure 8 plots the mean price target revision of all analysts, conditional on different levels of earnings surprise, which shows a distinct asymmetry in how analysts respond to negative versus positive earnings news. For example, while a positive earnings surprise equivalent to 1% of the price on average leads to a 5% upward revision of price targets, a negative earnings surprise of the same magnitude results in a 10% reduction in the price predictions. We also estimate eq. (21) by pooling all price target revisions in our sample (see Table 2).

²⁰To assess robustness of our estimates to changes in the moving window's length used to calculate historical price target revisions, we repeat our analyses using a three-year window. We find similar results for guidance timeliness. The result on preemption effectiveness remains positive but becomes statistically insignificant under the shorter window. (See Appendix Table B.5)

²¹We use the t-statistic rather than the raw coefficient because it jointly captures both the magnitude of the asymmetric response and the precision with which it is estimated from the analyst's revision history. This is desirable because our theoretical parameter γ governs the *degree* to which loss aversion distorts prices, and an imprecisely estimated coefficient, even if large, provides a noisy signal of the underlying behavioral tendency. Untabulated robustness tests using the raw coefficient yield qualitatively similar results. To further mitigate measurement errors, we drop analyst-years with fewer than 20 observations. For analyst-years with negative coefficients, we impute zero as the analyst's earnings response to facilitate interpretation.

Table 2: Estimating Analyst Loss Aversion

	(1)	(2)
	<i>PTRev</i>	<i>PTRev</i>
<i>SurAna</i>	2.187*** (35.14)	2.484*** (38.68)
<i>SurAna</i> × <i>BNAna</i>	3.712*** (41.85)	3.113*** (33.46)
Year FE	Yes	Yes
Analyst FE	No	Yes
N	380,368	379,135
Adjusted R^2	0.086	0.111

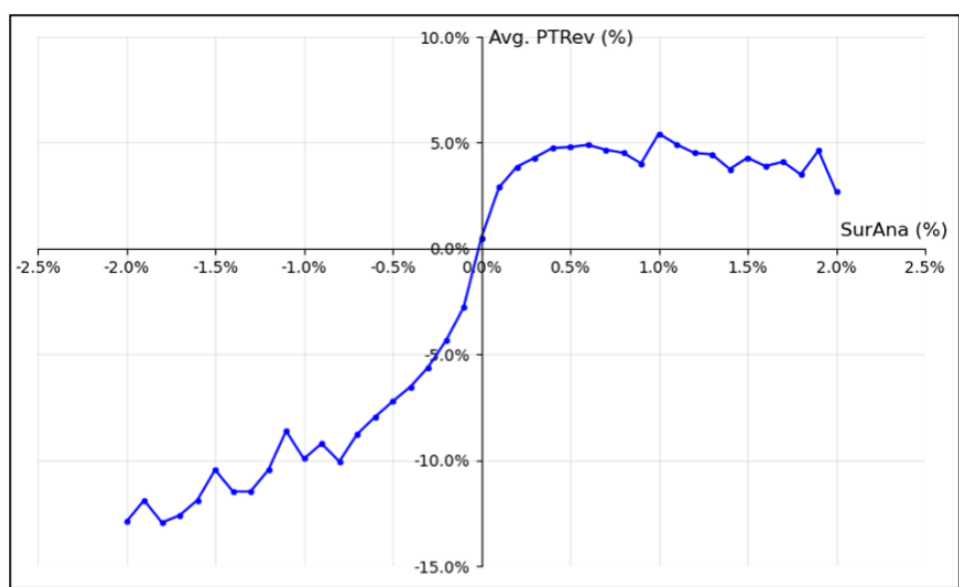
Notes: This table presents the result on price target revisions in response to quarterly earnings surprise, conditional on the sign of surprise. *PTRev* is measured as the analyst’s revised price target less their previous target scaled by beginning-of-month stock price. *SurAna* is the actual earnings less the analyst’s most recent forecast scaled by beginning-of-month stock price. *BNAna* is an indicator of whether *SurAna* is below zero. We include the year fixed effect in column (1) and further include the analyst fixed effect in column (2). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

We control for year fixed effects in column (1), and year and analyst fixed effects in column (2). In both columns, β_1 and β_2 are significantly positive, consistent with analysts being loss averse in their price predictions.²² In terms of magnitude, the downward revision per unit of negative earnings surprise is approximately 2.25 times ($= (2.484 + 3.113) \div 2.484$) the upward revision per unit of positive earnings surprise, which is of similar magnitude to the loss aversion derived from experimental settings in Kahneman and Tversky (1979) (2.25) and Abdellaoui et al. (2007) (1.93). Comparable asymmetries also arise in experiments conducted with financial-market professionals. For example, Haigh and List (2005) show that professional traders display behavior consistent with loss aversion to a greater extent than students. To provide more insight into our loss aversion proxy, we plot the median

²²To mitigate percentage-scaling concerns (a \$1 change from a smaller base price representing a larger percentage change than a \$1 change from a larger base price), note that we scale both *PTRev* and *SurAna* by the same beginning-of-month price. Thus β_1 reads as the change in the price target per \$1 earnings surprise. Absent loss aversion, downward revisions should be smaller than upward revisions because (i) targets are bounded below while earnings are not, and (ii) disappointments should raise discount rates, reducing the price change per \$1 of earnings (i.e. earnings-capitalization model). To address the concern of implicit up-weighting of low-price firms under percent scaling, we reweight the sample via entropy balancing so that bad- and non-bad-news observations have identical price moments (mean, standard deviation, and skewness) and the Table 2 coefficients are unchanged (untabulated). We also estimate “mixed-unit” specifications (raw *PTRev* with scaled *SurAna*, and vice versa). Both yield similar asymmetry.

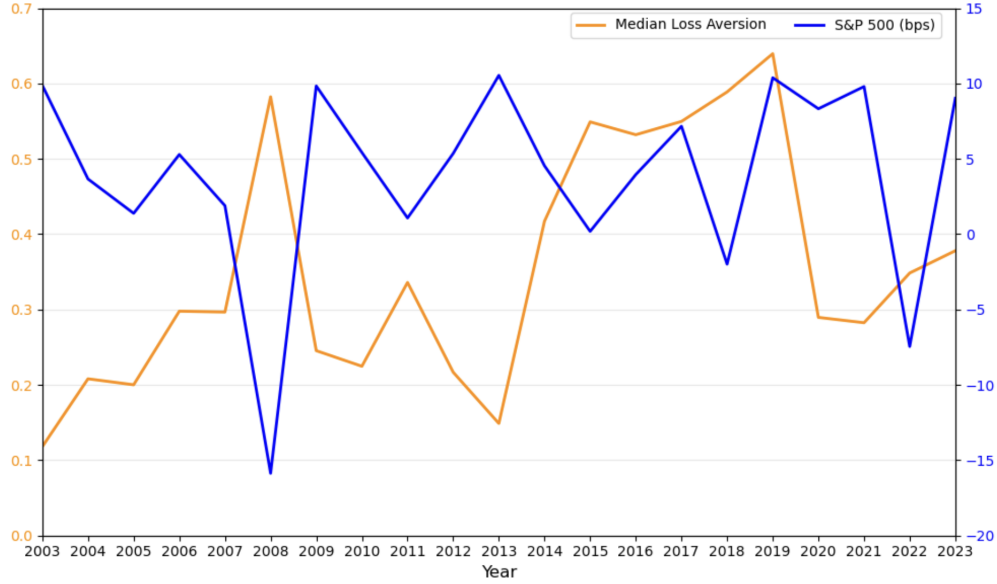
analyst loss aversion in each year and compare it to the daily average return of the S&P 500 index over the same year in Figure 9. Despite the measure being calculated using five years of lagged data, there is a considerable intertemporal variation in loss aversion, which, as the graph shows, almost always moves in opposite directions to the market return, most notably around the 2008 financial crisis. This could either be attributed to heightened loss aversion in bearish times, or heightened loss aversion exacerbating market downturns, or both.

Figure 8: **Earnings Surprise and Price Target Revision.**



Notes: This figure plots the average price target revision ($PTRev$) conditional on different levels of earnings surprise to the analyst ($SurAna$). The bin width is 0.1%, with the interval $[-0.05\%, 0.05\%)$ in the center.

Figure 9: **Market Returns and Loss Aversion.**



Notes: This figure plots the time series of the median analyst loss aversion (left axis, measured in t-statistics) and the daily average market return (right axis, measured in basis points) from 2003 to 2023.

Validating loss aversion with market reactions. To bridge the gap between our analyst-based proxy and actual market behavior, we compare our loss aversion measure with two market-based measures. First, we plot the average market-adjusted cumulative abnormal return (CAR) around earnings announcements conditional on earnings surprise (i.e., actual earnings less consensus earnings forecast) in Figure 10. Panel (a) shows a distinct asymmetry: for example, a negative earnings surprise of -0.1% is associated with a CAR of approximately -2.15% , whereas a positive surprise of the same magnitude generates a return of only 0.95% . Panel (b) partitions the sample based on whether the firm’s analyst loss aversion is above or below the median. Consistent with our measure capturing meaningful variation in market sentiment, the high- ALA curve falls below the low- ALA curve on both the negative and positive sides, indicating that when analysts are more loss averse, investors react more severely to negative surprises and less severely to positive surprises.²³

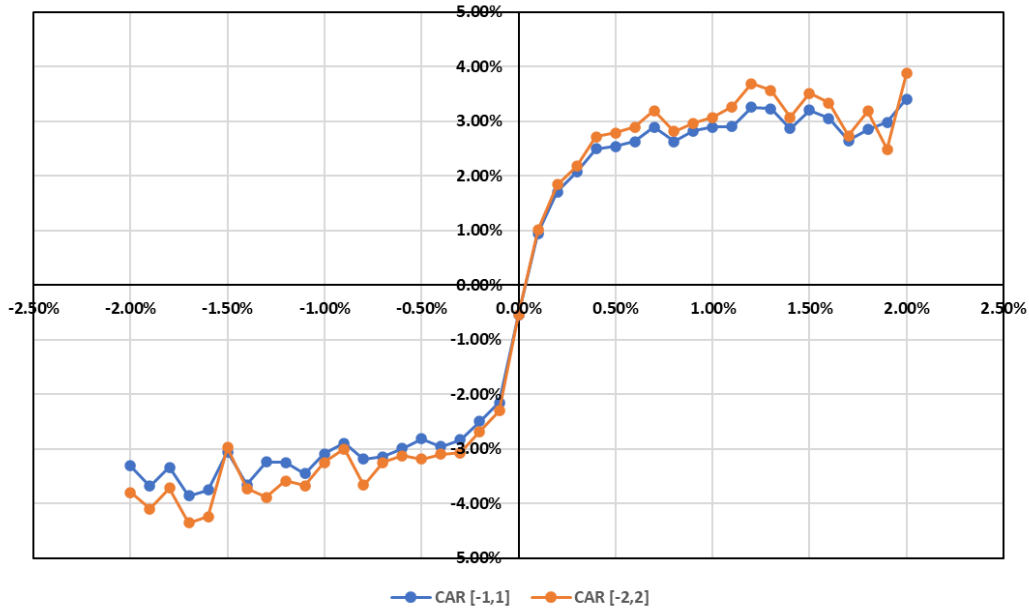
²³Appendix Table B.1 provides formal regression evidence that supports these patterns after controlling for the nonlinear relationship between price reaction and earnings surprise.

Second, we correlate the analyst loss aversion with a measure developed by Barberis et al. (2016) that infers from a stock’s historical return distribution the extent to which investors might price the stock prospect-theoretically. This measure relies on two assumptions: that investors view historical returns as a representation of future returns and that loss averse investors apply a prospect-theoretic utility function (Kahneman and Tversky, 1979) to compute a “prospect theory value” (denoted TK) based on this representation. Therefore, firms receiving a higher score of TK would be more appealing to loss averse investors and be priced accordingly. In Appendix Table B.2, we show that this return-based measure positively correlates with our analyst-based measure (ALA), even after controlling for year and firm fixed effects. Moreover, we also manage to replicate our main results on disclosure timing using this alternative measure. Collectively, our tests consistently support the asymmetric response by analysts as a valid proxy for market loss aversion. We discuss the advantages and limitations of our measure at the end of this section.

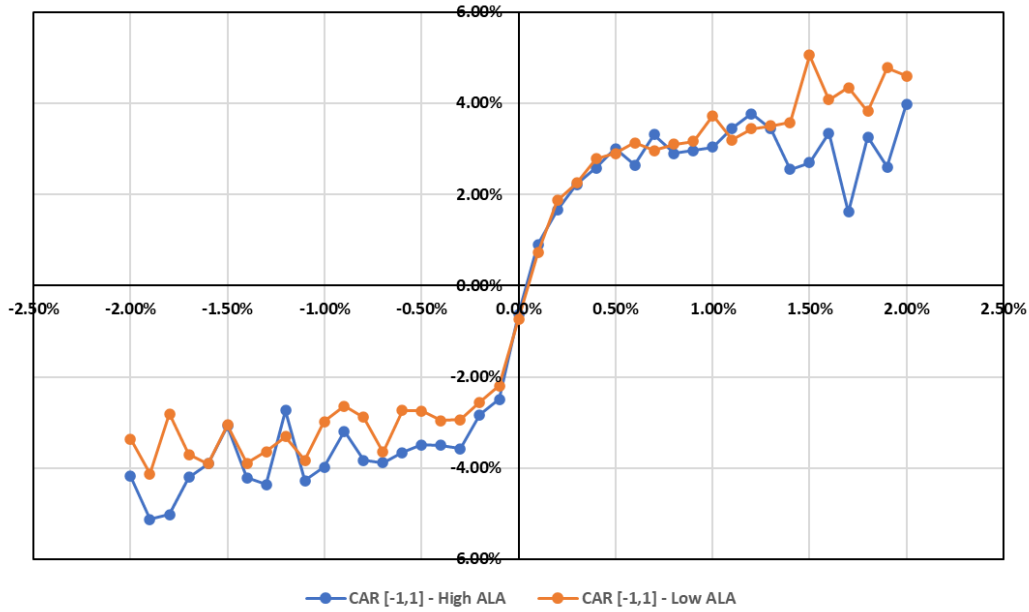
Loss aversion and disclosure timeliness. Next, we proceed to test the main predictions of our model on firm preemptive disclosure. Specifically, we focus on management earnings guidance, which is a widely adopted form of voluntary disclosure for firms to reduce information asymmetry, manage market expectations, and preempt the disclosure of negative information (e.g., Hui et al. (2009)). Our primary focus, is on the *timing* of disclosure. The model predicts that firms facing heightened loss aversion will disclose negative news earlier, preempting the potential arrival of adverse public signals. To test this, we measure the timeliness of each management forecast as the number of days between the release of the guidance and the fiscal year-end divided by 365 ($Horizon$), and estimate the following:

$$Horizon_{j,t,k} = \beta_0 + \beta_1 ALA_{j,t-1} + \sum \mathbf{X}'_{j,t-1} \boldsymbol{\gamma} + \mu_j + \delta_t + v_k + \varepsilon_{j,t,k}, \quad (22)$$

Figure 10: Validating Loss Aversion Measure with Market Reaction.



Panel (a). Full sample



Panel (b). By analyst loss aversion

Notes: The figures plot the average abnormal announcement return (CAR) conditional on earnings surprise (Sur), which is calculated as actual earnings less most recent consensus scaled by the stock price at the beginning of the month. The bin width is 0.1%, with the interval $[-0.05\%, 0.05\%)$ in the center. Panel (a) includes the full sample. Panel (b) partitions the sample based on whether analyst loss aversion is above or below the median.

where the tuple (j, t, k) denotes the k -th management forecast that firm j issues for fiscal year t , and $\mathbf{X}$ is the vector of control variables that includes earnings response (AER), firm size ($Size$), firm age (Age), return on assets (ROA), book-to-market ratio (BTM), return volatility ($StdRet$), institutional ownership (IH), and number of analysts following ($NumAna$), all assigned the value of the previous year. We specifically include an order fixed effect (v_k) to ensure that we do not bias against forecasts that are issued after many other forecasts by the same firm in the same year. The results are reported in Table 3. Column (1) pertains to the full sample, and shows that firms release management guidance earlier in the year (i.e., longer horizon) when facing heightened loss aversion.²⁴ We further partition all forecasts into those that “Miss,” “Match,” or “Beat” analyst consensus, as classified by I/B/E/S, and estimate the same regression. The effect of loss aversion on timeliness is significant for “Miss” and “Match”, but not for “Beat Consensus” forecasts, consistent with firms preempting negative-to-neutral news when facing greater loss aversion in the market.^{25,26}

²⁴The total number of observations in Column (1) exceeds the sum of those in Columns (2) to (4) because the full sample includes all guidance events, including those that cannot be clearly classified as “Miss,” “Match,” or “Beat”. Columns (2) to (4) restrict the sample to those forecasts with a valid classification.

²⁵We repeat the analysis using only the earliest guidance in each firm-year to rule out that results are driven by repeated guidance and find similar results (see Appendix Table B.6). This reinforces our interpretation that firms tend to issue earlier guidance when facing heightened loss aversion.

²⁶We also document that firms with greater exposure to investor loss aversion issue management guidance more frequently (see Appendix Table B.3).

Table 3: Loss Aversion and Disclosure Timeliness

	(1)	(2)	(3)	(4)
	Full Sample	Miss Consensus	Match Consensus	Beat Consensus
	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>
<i>ALA</i>	0.007** (2.30)	0.010** (2.32)	0.008** (2.06)	0.005 (0.98)
<i>AER</i>	0.006* (1.85)	0.009** (2.01)	0.007* (1.89)	0.008* (1.65)
<i>Size</i>	0.027*** (4.51)	0.020*** (2.64)	0.027*** (4.09)	0.018** (2.33)
<i>Age</i>	0.075*** (4.44)	0.038 (1.65)	0.077*** (3.76)	0.092*** (4.94)
<i>ROA</i>	-0.030 (-0.74)	-0.001 (-0.01)	-0.055 (-1.20)	-0.042 (-0.65)
<i>BTM</i>	-0.001 (-0.11)	0.014 (1.58)	-0.009 (-0.86)	0.007 (0.57)
<i>StdRet</i>	-0.114* (-1.70)	-0.078 (-0.78)	-0.112 (-1.30)	-0.218** (-2.13)
<i>IH</i>	0.040* (1.68)	0.040 (1.34)	0.039 (1.18)	0.086*** (2.82)
<i>NumAna</i>	0.002 (0.36)	0.008 (0.85)	-0.001 (-0.16)	0.021** (2.38)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Order FE	Yes	Yes	Yes	Yes
N	51,457	8,947	29,310	8,861
Adjusted R^2	0.656	0.739	0.655	0.695

Notes: This table presents the result on analyst loss aversion and disclosure timeliness. *Horizon* equals the number of days between the guidance release and the fiscal year-end divided by 365. Column (1) pertains to the full sample, while columns (2)–(4) pertain to management forecasts that miss, match, and beat analyst consensus, respectively. In all specifications, we include the year, firm, and order fixed effects and cluster standard errors at the firm level. See Appendix C for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Non-monotonic effect of loss aversion. A central prediction of our model is that the relationship between loss aversion and disclosure timeliness is non-monotonic. Corollary 1(i) establishes that the preemptive disclosure area first expands as loss aversion increases from zero to a threshold γ^* , then contracts as γ rises beyond γ^* , and eventually vanishes at $\bar{\gamma}$. Intuitively, moderate loss aversion strengthens the hedging value of preemptive disclosure, i.e., by disclosing moderately bad news early the manager dampens the amplified downside

reaction that a loss-averse market would impose upon the joint arrival of negative signals. However, when loss aversion becomes sufficiently large, the negative price impact on the disclosure price itself dominates, eroding the benefit of early disclosure and causing the manager to revert to the "later" disclosure equilibrium in hopes of capturing the option value attached to pending news. The resulting non-monotonic pattern is a genuinely non-trivial implication of the model as it demonstrates that asymmetric market preferences do not mechanically translate into monotonically stronger preemption incentives, but instead generate an interior optimum that reflects the tension between hedging and option value. To test this prediction, we augment eq. (22) with the quadratic term ALA^2 :

$$Horizon_{j,t,k} = \beta_0 + \beta_1 ALA_{j,t-1} + \beta_2 ALA_{j,t-1}^2 + \sum \mathbf{X}'_{j,t-1} \boldsymbol{\gamma} + \mu_j + \delta_t + v_k + \varepsilon_{j,t,k}. \quad (23)$$

If Corollary 1(i) holds in the data, we expect $\beta_1 > 0$ and $\beta_2 < 0$: the linear term captures the increasing effect of loss aversion on disclosure timeliness at moderate levels, while the negative quadratic term captures the reversal at high levels. Together, the two coefficients trace out a non-monotonicity whose vertex, $-\hat{\beta}_1/(2\hat{\beta}_2)$, identifies the level of loss aversion at which the preemption incentive is strongest.

The results are reported in Table 4. In the full sample (column 1), $\hat{\beta}_1$ is positive and significant ($t = 2.38$) and $\hat{\beta}_2$ is negative and significant at the 10% level ($t = -1.76$), consistent with the predicted non-monotonicity. The implied turning point is $-0.020/(2 \times -0.005) = 2.0$, which lies well above the 75th percentile of the ALA distribution (1.295; see Table 1), roughly 1.5 standard deviations above the sample mean. This indicates that for the vast majority of firm-years, greater loss aversion is associated with more timely disclosure, with the reversal occurring only in the upper tail of the distribution. The pattern is most pronounced for "Miss Consensus" forecasts (column 2), where both the linear ($t = 2.46$) and quadratic ($t = -1.88$) terms are stronger, suggesting that the non-monotonic effect is concentrated in precisely the setting where the model's mechanism operates, the preemptive disclosure of bad

news. For “Match Consensus” and “Beat Consensus” forecasts (columns 3 and 4), neither the linear nor the quadratic term is individually significant, consistent with the theoretical prediction that the hedging-versus-option-value trade-off is most relevant when the manager holds unfavorable private information.

Table 4: **Non-Monotonic Effect of Loss Aversion.**

	(1)	(2)	(3)	(4)
	Full Sample	Miss Consensus	Match Consensus	Beat Consensus
	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>
ALA^2	-0.005* (-1.76)	-0.007* (-1.88)	-0.003 (-0.84)	-0.002 (-0.52)
ALA	0.020** (2.38)	0.027** (2.46)	0.015 (1.45)	0.011 (0.89)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Order FE	Yes	Yes	Yes	Yes
N	51,457	8,947	29,310	8,861
Adjusted R^2	0.656	0.739	0.655	0.695

Notes: This table presents the non-monotonic effect of analyst loss aversion on disclosure timeliness by including the quadratic term of ALA . Column (1) pertains to the full sample, while columns (2)–(4) pertain to management forecasts that miss, match, and beat analyst consensus, respectively. In all specifications, we include the year, firm, and order fixed effects and cluster standard errors at the firm level. See Appendix C for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Moderating effect of pending public news. The second central non-monotonicity predicted by our model concerns the correlation ρ between the manager’s private signal and pending public news. As established in the discussion of Proposition 1 and illustrated in Figure 2, the preemptive disclosure area first expands as ρ increases from zero, because a moderate correlation raises both the likelihood that external news partially reveals the manager’s private information and the hedging value of preempting that revelation, but then contracts as ρ approaches unity. Here private and public signals become near-perfect substitutes and neither the option value nor the hedging value provides a meaningful incentive to deviate from the static benchmark. To bring this prediction to the data, we require proxies

for cross-sectional variation in the richness of the information environment, which we interpret as capturing variation in the correlation between private and public signals. We use two measures. The first is the number of analysts following the firm (*NumAna*), which captures the breadth of independent external scrutiny. That is, firms with more analysts are subject to more frequent and diverse public signals, as for example earnings forecasts, price targets, and written reports, that are likely correlated with the manager’s private information. The second is the number of forecasts issued by the most active analyst in the prior year (*Freq*), which captures the intensity of public information flow for a given firm. Both proxies operationalize the idea that a richer information environment corresponds to a higher effective ρ in the model.²⁷ We restrict the sample to “Miss Consensus” forecasts, where the preemption mechanism is most relevant, and partition observations at the within-year quartiles of each proxy.

The results, reported in Table 5, show that the effect of loss aversion on disclosure timeliness is concentrated among firms with above-median analyst following (column 3, $\hat{\beta} = 0.022$, $t = 2.07$; column 4, $\hat{\beta} = 0.034$, $t = 2.38$) and in the third quartile of forecast frequency (column 3, $\hat{\beta} = 0.030$, $t = 2.67$), while the effect is economically small and statistically insignificant in the other subsamples. This pattern is generally consistent with the increasing portion of the predicted non-monotonicity, while marginally indicating a decreasing trend in the top range of coverage intensity. As the information environment becomes richer, the hedging value of preemptive disclosure grows and the relationship between loss aversion and timeliness strengthens.

Notably, the data do not consistently exhibit the decreasing portion of the non-monotonic relationship that the model predicts for very high values of ρ . We argue that this is to be expected. The theoretical reversal requires the correlation between private and public signals to approach unity, a regime in which external news nearly perfectly replicates the

²⁷To tightly identify ρ would require access to firm private information, which by definition must be obtained from proprietary sources. We use coverage-based proxies rather than a direct real-time informativeness measure such as Blankespoor et al. (2022) because our firm-year panel spans 2003–2023 and predates the broad availability of high-frequency alternative-data measures.

manager’s private information. Such extreme informational overlap is implausible in real capital markets, where even the most extensively covered firms retain meaningful private information that is not fully anticipated by analysts or other external sources. The sample split therefore captures variation across the empirically relevant range of ρ , where the model’s prediction is unambiguously positive. Note that this is one example of where mixed-method approaches add value. Our theoretical model maps out the full non-monotonic shape across the entire parameter space, including boundary cases that are analytically instructive but empirically unattainable, while the archival insights validate the portion of the prediction that corresponds to the parameter ranges observed in the data. The absence of the decreasing part is itself informative as it suggests that real-world information environments do not approach the extreme correlation regime, anchoring the model’s predictions to observable economic conditions.

Table 5: **Moderating Effect of Pending Public News.**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	<i>NumAna</i> Quartile				<i>Freq</i> Quartile			
<i>Horizon</i>	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>ALA</i>	0.004 (0.62)	0.010 (1.23)	0.022** (2.07)	0.034** (2.38)	0.007 (1.10)	-0.004 (-0.41)	0.030*** (2.67)	0.026 (1.62)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Order FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2,046	1,991	2,044	2,140	2,032	1,984	2,034	2,130
Adjusted R^2	0.787	0.798	0.787	0.743	0.801	0.808	0.742	0.744

Notes: This table presents the moderating effect of pending public news on the effect of loss aversion. The sample is restricted to “miss consensus” guidance. The correlation between pending public news and management private information is proxied by the number of analysts following the firm (*NumAna*) and the number of forecasts issued by the most active analyst following the firm (*Freq*). Columns (1)–(4) and (5)–(8) report the results for the subsamples partitioned by the quartiles of these two variables, respectively. In all specifications, we include year, firm, and order fixed effects and cluster standard errors at the firm level. See Appendix C for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Preemption effectiveness. Finally, we examine whether preemptive disclosure achieves its hedging value, mitigating the negative return to bad earnings news in markets characterized by loss aversion. The regression model is as follows,

$$\begin{aligned}
CAR_{j,t} = & \beta_0 + \beta_1 BN_{j,t} + \beta_2 BN_{j,t} \times ALA_{j,t-1} + \beta_3 Preempt_{j,t} \times BN_{j,t} \times ALA_{j,t-1} \\
& + \beta_4 Preempt_{j,t} \times BN_{j,t} + \beta_5 Preempt_{j,t} \times ALA_{j,t-1} + \beta_6 Preempt_{j,t} \\
& + \beta_7 ALA_{j,t-1} + \sum \mathbf{X}'_{j,t-1} \boldsymbol{\gamma} + \mu_j + \delta_t + \varepsilon_{j,t},
\end{aligned} \tag{24}$$

where $CAR_{j,t}$ is the market-adjusted cumulative return around the earnings announcement day of firm j in fiscal year t , $BN_{j,t}$ is an indicator of whether the actual earnings are lower than the analyst consensus as of the earnings announcement, $Preempt_{j,t}$ is an indicator of whether firm j has issued a “Miss Consensus” guidance for fiscal year t , and all other specifications are identical to eq. (22).

The results are reported in Table 6. In column (1), the dependent variable is the return over the $[-1,1]$ trading window around the earnings announcement. Above all, the coefficient on BN is, intuitively, negative ($t = -8.90$). The coefficient on $BN \times ALA$ is also negative ($t = -2.20$), suggesting that firms releasing bad news suffer an even lower return when followed by loss-averse analysts. This also shows that analyst behavior effectively proxies for loss aversion in the stock market. Most importantly, the coefficient on $Preempt \times BN \times ALA$ is significantly positive ($t = 2.28$), consistent with firms capturing the hedging value of preemptive disclosure that compensates the negative return induced by loss aversion. In column (2), we find consistent results using a longer trading window. To validate our findings we perform a placebo test in columns (3) and (4) where we define $Preempt$ as whether the firm has issued a “Beat Consensus” forecast for the current fiscal year. To the extent that the hedging value is only achieved by preemptively disclosing “moderately bad news” according to the model, we expect the coefficient on $Preempt \times BN \times ALA$ to be insignificant in the placebo test, which is indeed what we find.²⁸

²⁸Unreported results show that if $Preempt$ is defined as whether a neutral (“Match Consensus”) guidance

Table 6: **Preemption Effectiveness.**

	(1)	(2)	(3)	(4)
	Main Test		Placebo Test	
	CAR [-1,1]	CAR [-2,2]	CAR [-1,1]	CAR [-2,2]
<i>BN</i>	-0.023*** (-8.90)	-0.023*** (-7.63)	-0.024*** (-9.30)	-0.024*** (-8.15)
<i>BN</i> × <i>ALA</i>	-0.003** (-2.20)	-0.004** (-2.54)	-0.003* (-1.81)	-0.003** (-2.02)
<i>Preempt</i> × <i>BN</i> × <i>ALA</i>	0.009** (2.28)	0.010** (2.42)	0.005 (1.07)	0.003 (0.70)
<i>Preempt</i> × <i>BN</i>	-0.009** (-2.05)	-0.013*** (-2.71)	-0.003 (-0.67)	-0.004 (-0.74)
<i>Preempt</i> × <i>ALA</i>	-0.005** (-2.42)	-0.005** (-2.24)	-0.003 (-1.37)	-0.002 (-0.97)
<i>Preempt</i>	0.006** (2.21)	0.006** (2.19)	0.000 (0.17)	-0.000 (-0.06)
<i>ALA</i>	0.002** (2.09)	0.003** (2.28)	0.002* (1.71)	0.002* (1.84)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	29,453	29,452	29,453	29,452
Adjusted R^2	0.080	0.072	0.080	0.071

Notes: Columns (1)–(2) report the main test using market-adjusted returns over the [-1,1] and [-2,2] trading-day windows around the earnings announcement date, respectively. *BN* equals one if actual earnings are below analyst consensus, and zero otherwise. *Preempt* equals one if the firm has released a “miss consensus” forecast for the fiscal year at least once, and zero otherwise. Columns (3)–(4) report a placebo test where *Preempt* equals one if the firm has released a “beat consensus” forecast at least once. All specifications include year and firm fixed effects; standard errors are clustered at the firm level. See Appendix C for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Discussion. We acknowledge a conceptual gap between our model, in which managers preempt information which may arrive in the form of external signals such as media reports or peer disclosures, and our empirical tests, which use earnings announcements as the primary proxy for pending public information. We provide supporting evidence which shows that earnings announcements closely coincide with elevated levels of external information. Specifically, Appendix Figure B.1 illustrates that firms receive consistent media coverage throughout the year, with a noticeable increase in article volume in the days surrounding

has been issued for the current fiscal year, the coefficient on *Preempt* × *BN* × *ALA* is insignificant ($t = 1.55$) for *CAR* [-1,1] and marginally significant ($t = 1.81$) for *CAR* [-2,2].

earnings announcements. This pattern supports the notion that earnings announcements coincide with broader surges in public information arrival, aligning with the theoretical mechanism in our model.

More broadly, earnings announcement windows serve as focal points for the arrival of aggregate public information, making them a natural empirical counterpart to the model’s external news Y . During these windows, market participants process not only the firm’s own earnings release but also concurrent analyst reports, media commentary, industry benchmarks, and peer firm disclosures that cluster around the reporting calendar. The information environment thus resembles the model’s setup in which the manager’s private signal S is correlated with a public signal Y that aggregates multiple external sources. From the manager’s perspective, the decision to issue preemptive guidance ahead of earnings reflects precisely the trade-off our model formalizes, i.e., disclosing early to hedge against the amplified negative reaction that loss-averse markets would deliver upon the joint arrival of this information. In this sense, the empirical proxy captures the *functional role* of pending news, creating option value and hedging value, even if the institutional source differs from the purely external signal in our stylized model.²⁹

While we suggest caution in interpreting our results as causal, the analysis demonstrates that the analyst setting offers an appropriate framework for examining the relationship between loss aversion and the strategic timing of disclosures. Analysts are influenced by various incentives, such as fostering relationships with firm management, and advancing their careers, yet these factors do not undermine the validity of our approach. The strength of our methodology lies in its reliance on price target revisions by the same analyst for the same firm, conditional on earnings surprises. By focusing on revisions rather than absolute levels, we mitigate concerns about systematic biases that might arise from optimistic tendencies or other strategic behaviors. Notably, as shown in Figure 8, revisions approach zero in the

²⁹We further note that the endogeneity concern, that preemptive disclosure itself could influence whether the firm meets or misses consensus, is addressed in Appendix Table B.4, where we use an instrumental-variable approach to show that results are robust to this alternative channel.

absence of earnings surprises, supporting the idea that analysts' forecasts primarily reflect firm-specific news rather than strategic manipulation. Thus, our measure of loss aversion aligns closely with the theoretical construct it seeks to capture. We acknowledge, however, that external factors, such as exogenous shocks to brokerage policies, may influence analysts' asymmetric responses and, indirectly, firm disclosure practices. While we address simultaneity concerns by lagging the loss aversion measure by one year, we recognize that omitted variable bias may still exist.

Finally, our choice of the analyst forecast setting over market-based approaches reflects the inherent challenges involved in isolating loss aversion from other factors in stock price movements. Market reactions aggregate the behaviors of a diverse and heterogeneous participant base, including retail and institutional investors, each with varying levels of sophistication, risk preferences, and biases. These reactions are further influenced by external factors, which introduce substantial noise and confound the ability to isolate the impact of loss aversion on disclosure practices. By contrast, analysts' price target revisions provide a structured and directly observable measure that is explicitly tied to firm-specific events, such as earnings surprises or guidance updates. Unlike market prices, these revisions reflect deliberate, professional assessments that internalize firm-specific news and investor preferences, including loss aversion. Importantly, because analysts compete to maintain credibility and build reputations, their revisions are more likely to filter out irrelevant noise and focus on fundamental drivers of firm value. Moreover, our approach leverages analyst revisions to estimate loss aversion and does not rely on utility functions with imputed loss aversion and probability weighting as in the return-based measure of Barberis et al. (2016). By aggregating loss aversion from the analysts' diverse coverage of firms other than the firm of interest, as compared to focusing on the firm's own returns, we also introduce variation exogenous to the firm, albeit still endogenous to industry trends, thereby alleviating omitted variable biases. Thus, even if market-based approaches could provide complementary insights, they are less aligned with the theoretical framework of our study due to their noisier nature.

7 Conclusion

We develop a two-period model to explore whether and how asymmetries in the timeliness of disclosing good versus bad news can arise as rational strategic responses to capital market biases, particularly investor loss aversion under prospect theory. We show that in the presence of such bias, the manager has an incentive to engage in preemptive disclosure of moderately bad news to mitigate amplified negative price reactions caused by asymmetric sensitivity to potential losses. This contrasts with prior models that suggest delayed disclosure of bad news and offers a novel explanation for the asymmetry in the timeliness of reporting good versus bad news. Crucially, this preemption incentive is non-monotonic along two dimensions, the degree of loss aversion and the correlation between private and pending public news.

By extending the model, we show how factors such as the incremental informativeness of pending news or the conditional arrival of stochastic news impact strategic preemptive disclosure. To examine the empirical content of our theoretical predictions, we use analyst forecast data as a proxy for market participants' loss aversion. We document that analysts exhibit asymmetric reactions to negative versus positive earnings surprises, consistent with prospect theory, and validate this measure against actual market reactions. We find that firms facing heightened loss aversion disclose negative news with greater timeliness, that this relationship exhibits the non-monotonic pattern predicted by the model, and that the effect is concentrated among firms in richer information environments. Importantly, our findings indicate that preemptive disclosure is associated with a dampened negative market response to bad news announcements when investors are loss averse. These empirical results provide support for our model's predictions and further highlight the strategic role of preemptive disclosure in capital markets shaped by behavioral biases. Our findings thus refine the presumption that firms must be pushed toward timeliness in adverse-news disclosure and suggest that the conditions under which voluntary timeliness emerges are themselves a useful object of empirical and policy attention.

At the same time, we recognize the limitations of our empirical approach. Analysts' forecast behavior serves as a convenient proxy for investor loss aversion, but analysts, unlike actual investors, do not directly bear the financial consequences of investment decisions. Additionally, analysts' incentives, which are shaped by career concerns and reputational pressures, may differ from those of the average investor. Nevertheless, as sophisticated actors in capital markets, analysts offer a lower-bound benchmark for gauging the influence of behavioral biases in these settings. Future research could explore more direct identification strategies to further validate the mechanisms proposed in this paper. By integrating both theoretical and empirical insights, this paper contributes to a broader understanding of asymmetric reporting as a dynamic and context-sensitive disclosure strategy.

A Proofs

A.1 Gaussian Selection and Loss-Probability Evaluation

For any information set Ω_t , define the loss probability $L(\Omega_t) \equiv \Pr(V < \mathbb{E}[V \mid \Omega_t] \mid \Omega_t)$. If the information set Ω_t is generated by affine Gaussian conditioning (e.g., observing $S = s$ and $Y = y$), then $V \mid \Omega_t \sim \mathcal{N}(\mu_{\Omega_t}, \sigma_{\Omega_t}^2)$ with $\mu_{\Omega_t} = \mathbb{E}[V \mid \Omega_t]$, and hence

$$L(\Omega_t) = \Pr\left(\frac{V - \mu_{\Omega_t}}{\sigma_{\Omega_t}} < 0 \mid \Omega_t\right) = \Phi(0) = \frac{1}{2}.$$

By contrast, when Ω_t includes selection or truncation events like non-disclosure, $V \mid \Omega_t$ is not normal but truncated or a mixture thereof. Thus, symmetry fails and $L(\Omega_t) \neq \frac{1}{2}$ in general. The corresponding loss probability must be computed from the truncated or mixture Gaussian using inverse Mills ratios and the bivariate normal CDF, as indicated below.

(V, S, Y) are joint standard normal, ϕ, Φ denote the standard normal pdf and cdf, and $\Phi_2(\cdot, \cdot, \rho)$ the bivariate standard normal cdf with correlation ρ . Let $\rho_S = \text{Corr}(S, V) \in (-1, 1)$ and $\rho_Y = \text{Corr}(Y, V) \in (-1, 1)$. Let $\omega \equiv \frac{p}{1-p} \in [0, +\infty)$. Define the ND set at threshold x by

$$\text{ND}(x) = \{\text{uninformed}\} \cup \{S \leq x\}.$$

One-sided truncation for (V, S) . For $x \in \mathbb{R}$ and the inverse Mills ratio $\lambda(x) \equiv \phi(x)/\Phi(x)$,

$$\mathbb{E}[V \mid S \leq x] = -\rho_S \lambda(x), \tag{A.1}$$

$$\Pr(V \leq t \mid S \leq x) = \frac{\Phi_2(t, x, \rho_S)}{\Phi(x)}. \tag{A.2}$$

Static ND mixture and reference point. With unnormalized weights $w_B = 1$ (uninformed)

and $w_A = \omega \Pr(S \leq x) = \omega \Phi(x)$, normalizer $Z = 1 + \omega \Phi(x)$,

$$\mu_{ND}(x) = \mathbb{E}[V \mid \text{ND}(x)] = \frac{\mathbb{E}[V] + \omega \Phi(x) \mathbb{E}[V \mid S \leq x]}{1 + \omega \Phi(x)} = \frac{\omega \Phi(x) (-\rho_S \lambda(x))}{1 + \omega \Phi(x)}. \quad (\text{A.3})$$

With standardization, $\mathbb{E}[V] = 0$ the static ND loss probability is

$$L(\text{ND}(x)) = \frac{\omega \Phi(x) \frac{\Phi_2(\mu_{ND}(x), x; \rho_S)}{\Phi(x)} + \Phi(\mu_{ND}(x))}{1 + \omega \Phi(x)}. \quad (\text{A.4})$$

Dynamic ND given public news $Y = y$. Note that we do not need $\rho_{s,y}$ explicitly as under joint normality, the conditional pair $(V, S) \mid Y = y$ remains bivariate normal with correlation ρ_S . Conditional means are $\mathbb{E}[V \mid y] = \rho_Y y$ and $\mathbb{E}[S \mid y] = \rho_S \rho_Y y$ with $\text{Corr}(V, S \mid y) = \rho_S$. For a binding $z = z(y)$ define

$$\alpha_y \equiv z - \rho_S \rho_Y y, \quad \lambda(\alpha_y) = \phi(\alpha_y) / \Phi(\alpha_y), \quad t_y \equiv t - \rho_Y y.$$

Then,

$$\mathbb{E}[V \mid S \leq z, y] = \rho_Y y - \rho_S \lambda(\alpha_y), \quad (\text{A.5})$$

$$\Pr(V \leq t \mid S \leq z, y) = \frac{\Phi_2(t_y, \alpha_y, \rho_S)}{\Phi(\alpha_y)}. \quad (\text{A.6})$$

With $w_B = 1$, $w_A = \omega \Phi(\alpha_y)$, $Z(y) = 1 + \omega \Phi(\alpha_y)$, the ND reference point and loss probability conditional on y are given by

$$\mu_{ND}(y, z) = \frac{\rho_Y y + \omega \Phi(\alpha_y) (\rho_Y y - \rho_S \lambda(\alpha_y))}{1 + \omega \Phi(\alpha_y)}, \quad (\text{A.7})$$

$$L(\text{ND} \mid y, z) = \frac{\omega \Phi(\alpha_y) \frac{\Phi_2(t_y, \alpha_y, \rho_S)}{\Phi(\alpha_y)} + \Phi(t_y)}{1 + \omega \Phi(\alpha_y)} \quad \text{with } t_y = \mu_{ND}(y, z) - \rho_Y y. \quad (\text{A.8})$$

Monotonicity facts we need for uniqueness. The maps $x \mapsto \mathbb{E}[V \mid S \leq x]$ and $x \mapsto \mu_{ND}(x)$

are increasing and continuous for fixed x (respectively for (y, z)). The map $t \mapsto \Pr(V \leq t \mid \text{ND}(x))$ (respectively for $t \mapsto \Pr(V \leq t \mid \text{ND}, y)$) is increasing and continuous too. Thus $x \mapsto L(\text{ND}(x))$ and $z \mapsto L(\text{ND} \mid y, z)$ are (weakly) increasing and continuous. ■

A.2 Proof of Lemma 1

Proof. We follow the spirit of the proof of Proposition 1 in Acharya et al. (2011) and show that x^* is the unique solution to the equilibrium condition

$$x^* = \frac{\mathbb{E}[V] + \omega \Pr(S \leq x^*) \mathbb{E}[V \mid S \leq x^*]}{1 + \omega \Pr(S \leq x^*)} - \gamma L(\text{ND}(x^*)). \quad (\text{A.9})$$

Define $g(x)$ as the right-hand side of (A.9). Each component $\Pr(S \leq x)$, $\mathbb{E}[V \mid S \leq x]$, and $L(\text{ND}(x))$ is continuous in x under Gaussian selection and the latter via continuity of inverse Mills ratios and the bivariate normal CDF. Hence g is continuous. As $x \rightarrow -\infty$, $\Pr(S \leq x) \rightarrow 0$, so $\mu_{\text{ND}}(x) \rightarrow \mathbb{E}[V]$ and the ND mixture collapses to the uninformed case, yielding $L(\text{ND}(x)) \rightarrow \frac{1}{2}$. Thus

$$\lim_{x \rightarrow -\infty} g(x) = \mathbb{E}[V] - \frac{\gamma}{2}.$$

As $x \rightarrow +\infty$, $\Pr(S \leq x) \rightarrow 1$ and $\mu_{\text{ND}}(x) \rightarrow \mathbb{E}[V]$. Thus, the ND mixture becomes the unconditional normal again, so $L(\text{ND}(x)) \rightarrow \frac{1}{2}$ and

$$\lim_{x \rightarrow +\infty} g(x) = \mathbb{E}[V] - \frac{\gamma}{2}.$$

Since $x \mapsto x$ is unbounded while $g(x)$ is bounded and continuous, a fixed point $x^* = g(x^*)$ exists by the intermediate value theorem applied to $x - g(x)$.

To prove uniqueness we show that g is strictly increasing with slope everywhere less than one

(i.e. single-crossing). First, standard Gaussian selection implies $\frac{d}{dx} \Pr(S \leq x) = \phi(x) > 0$ and $\frac{d}{dx} \mathbb{E}[V \mid S \leq x] \geq 0$ (the selection mean increases with a looser truncation). Hence the mixture mean $\mu_{ND}(x)$ is increasing in x . Second, for each x , the map $t \mapsto \Pr(V \leq t \mid \text{ND}(x))$ is increasing and continuous in t , so by the chain rule $x \mapsto L(\text{ND}(x)) = \Pr(V \leq \mu_{ND}(x) \mid \text{ND}(x))$ is (weakly) increasing and continuous. Differentiating g yields

$$g'(x) = \underbrace{\frac{\partial}{\partial x} \left[\frac{\mathbb{E}[V] + \omega \Pr(S \leq x) \mathbb{E}[V \mid S \leq x]}{1 + \omega \Pr(S \leq x)} \right]}_{\in(0,1) \text{ under Gaussian selection}} - \gamma \underbrace{\frac{d}{dx} L(\text{ND}(x))}_{\geq 0}.$$

The first term is strictly between 0 and 1 because it is a smooth average of an increasing probability and an increasing selection mean, divided by a positive normalizer $1 + \omega \Pr(S \leq x)$. The second term is nonnegative. Hence $g'(x) \in [0, 1)$ for all x , implying that $x \mapsto g(x)$ is (weakly) increasing with slope strictly less than one. Therefore $x \mapsto x - g(x)$ is strictly increasing, and the fixed point in (A.9) is unique. $\blacksquare$

A.3 Proof of Lemma 2

Proof. The proof follows Proposition 2 and 3 in Acharya et al. (2011). We conjecture that x_1 is the unique optimal threshold in period 1 (established later), and show that $x_2(Y)$ is the optimal disclosure threshold in period 2 given Y .

If $x_2(Y) \leq x_1$, the second-period problem is as if the model were a one-period problem with Y known *ex ante*, i.e. before the disclosure decision is made. Hence the period-2 threshold solves the fixed point

$$x_2(Y) = \frac{\mathbb{E}[V \mid Y] + \omega \Pr(S \leq x_2(Y) \mid Y) \mathbb{E}[V \mid S \leq x_2(Y), Y]}{1 + \omega \Pr(S \leq x_2(Y) \mid Y)} - \gamma L(\text{ND} \mid Y, x_2(Y)), \quad (\text{A.10})$$

where each term is the Y -conditional object from (A.5)–(A.8).

If $x_2(Y) > x_1$, the regret constraint binds and the relevant ND set at $T = 2$ truncates at x_1

$$x_2(Y) = P_{T=2}^{\text{nd}}(x_1, Y, \omega) = \frac{\mathbb{E}[V | Y] + \omega \Pr(S \leq x_1 | Y) \mathbb{E}[V | S \leq x_1, Y]}{1 + \omega \Pr(S \leq x_1 | Y)} - \gamma L(\text{ND} | Y, x_1). \quad (\text{A.11})$$

Equations (A.10)–(A.11) together are equivalent to the compact fixed-point

$$x_2(Y) = P_{T=2}^{\text{nd}}(\min\{x_1, x_2(Y)\}, Y, \omega),$$

which is the statement of Lemma 2 in the main text. Existence and uniqueness follow from continuity and the monotonicity facts collected in (A.7)–(A.8). $\blacksquare$

A.4 Proof of Proposition 1

Proof. The proof follows directly from Lemma 1 and eqs. (6)–(10) in the main text, using the positivity of the weights $\lambda(T)dT$, which ensures $\alpha > 0$, and the fact that the manager's utility is strictly increasing in prices. Under disclosure in $T = 1$, $L(\{S = s\}) = \frac{1}{2}$ by symmetry, hence $P_{T=1}^{\text{dis}}(s) = s - \gamma/2$. The non-disclosure prices appearing in eq. (10) are

$$P_{T=1}^{\text{nd}}(x_1) = \mathbb{E}[P_{T=2}^{\text{nd}}(\min\{x_1, x_2(Y)\}, Y, \omega)], \quad (\text{A.12})$$

$$P_{T=2}^{\text{nd}}(x_2(Y)) = \begin{cases} P_{T=2}^{\text{nd}}(x_2(Y), Y, \omega) & \text{if } x_2(Y) \leq x_1, \\ P_{T=2}^{\text{nd}}(x_1, Y, \omega) & \text{if } x_2(Y) > x_1, \end{cases} \quad (\text{A.13})$$

with

$$P_{T=2}^{\text{nd}}(z, Y, \omega) = \frac{\mathbb{E}[V | Y] + \omega \Pr(S \leq z | Y) \mathbb{E}[V | S \leq z, Y]}{1 + \omega \Pr(S \leq z | Y)} - \gamma L(\text{ND} | Y, z). \quad (\text{A.14})$$

All components are continuous in the truncation point and parameters by (A.5)–(A.8). Existence and uniqueness of the period-1 threshold then follow directly from Lemma 1.

It remains to show that $x_1^* < P_{T=1}^{\text{nd}}(x_1^*)$ for $\gamma \in (0, \bar{\gamma})$. By eq. (10), the threshold satisfies $x_1^* = P_{T=1}^{\text{nd}}(x_1^*) + \alpha \Delta(x_1^*)$, where $\Delta(x_1^*) \equiv \mathbb{E}[P_{T=2}^{\text{nd}}(x_2(Y)) - P_{T=1}^{\text{dis}}(s) \mid s = x_1^*]$ is the expected gain from delay. At the threshold, $P_{T=1}^{\text{dis}}(x_1^*) = x_1^* - \gamma/2$, whereas $P_{T=2}^{\text{nd}}$ inherits the loss penalty $\gamma L(\text{ND} \mid Y, x_2(Y))$ from (A.14). Because the loss probability $L(\text{ND} \mid Y, x_2(Y))$ exceeds 1/2 for signal realizations near the threshold, the truncated posterior overweights the loss region, the period-2 non-disclosure price is depressed relative to the rational benchmark. For small $\gamma > 0$, this asymmetry ensures $\Delta(x_1^*) < 0$, i.e., the expected gain from delay is negative. It follows that $x_1^* = P_{T=1}^{\text{nd}}(x_1^*) + \alpha \Delta(x_1^*) < P_{T=1}^{\text{nd}}(x_1^*)$, establishing preemptive disclosure. As γ increases, the period-1 non-disclosure price $P_{T=1}^{\text{nd}}$ is itself depressed, eventually reversing the inequality at $\bar{\gamma}$. ■

A.5 Proof of Proposition 2

Proof. With incremental informativeness, disclosure at $T = 2$ conditions on both signals and remains a pure Gaussian update. Therefore

$$P_{T=2}^{\text{dis}} = \mathbb{E}[V \mid S = s, Y = y] - \gamma L(\{s, y\}) = \mathbb{E}[V \mid S = s, Y = y] - \frac{\gamma}{2}.$$

The conditional expectation is then given by:

$$\mathbb{E}[V \mid S, Y] = \alpha_S S + \alpha_Y Y, \quad \begin{bmatrix} \alpha_S & \alpha_Y \end{bmatrix} = \text{Cov}(V, (S, Y)) \Sigma_{SY}^{-1},$$

with

$$\text{Cov}(V, (S, Y)) = \begin{bmatrix} \rho_S & \rho_Y \end{bmatrix}, \quad \Sigma_{SY} = \begin{bmatrix} 1 & \rho_S \rho_Y \\ \rho_S \rho_Y & 1 \end{bmatrix},$$

which yields

$$\mathbb{E}[V \mid S, Y] = \frac{1}{1 - (\rho_S \rho_Y)^2} [(\rho_S - \rho_S \rho_Y^2)S + (\rho_Y - \rho_S^2 \rho_Y)Y].$$

The non-disclosure components at $T = 2$ are identical to (A.14), with $z(y) = \min\{x_{1Inc}, x_2(y)\}$ and $L(\text{ND} \mid y, z(y))$ given by (A.8). The rest of the argument, that incremental informativeness reduces the option value of waiting while increasing the hedging value, follows the comparative statics in the main text, implying $x_{1Inc}^* < x_1^*$. ■

A.6 Proof of Proposition 3

Proof. The proof mirrors Proposition 1, with the only difference that the second-period non-disclosure price is a mixture over the “arrival” and “no arrival” scenarios, i.e.

$$P_{T=2}^{nd,sto} = q P_{T=2}^{nd}(\min\{x_1, x_2(Y)\}, Y, \omega) + (1 - q) P_{T=2}^{nd,no}{}^Y(z, \omega),$$

where $P_{T=2}^{nd}(z, Y, \omega)$ is given by (A.14) and

$$P_{T=2}^{nd,no}{}^Y(z, \omega) = \frac{\mathbb{E}[V \mid \emptyset] + \omega \Pr(S \leq z \mid \emptyset) \mathbb{E}[V \mid S \leq z, \emptyset]}{1 + \omega \Pr(S \leq z \mid \emptyset)} - \gamma L(\text{ND} \mid \emptyset, z),$$

with the “no arrival” branch evaluated as in (A.4)/(A.8) depending on whether no-arrival is exogenous or informative (see the main text, stochastic arrival section). Period-1 pricing is then the expectation of the above, and the fixed-point for x_{1sto}^* follows by the same continuity and monotonicity argument as in Lemma 1. ■

B Additional Analyses

B.1 Media Coverage

Figure B.1: Media Coverage Relative to Earnings Announcement.



Notes: This figure plots the average number of news articles (source: RavenPack) about each firm in each year prior to its annual report release.

B.2 Validating Loss Aversion with Market Reaction

Table B.1: Validating Loss Aversion Measure with Market Reaction.

Panel A: Market loss aversion				
	(1)	(2)	(3)	
	Baseline	Nonlinearity Controlled	Unscaled Measure	
	<i>CAR</i> [-1,1]	<i>CAR</i> [-1,1]	<i>CAR</i> [-1,1]	
<i>Sur</i>	1.997*** (68.12)	1.510*** (32.77)	0.087*** (64.02)	
<i>Sur</i> × <i>BN</i>	-0.682*** (-17.08)	0.486*** (5.16)	0.004* (1.80)	
<i>Sur</i> ²		16.552*** (13.69)		
Year FE	Yes	Yes	Yes	
N	246,700	246,700	250,476	
Adjusted <i>R</i> ²	0.037	0.038	0.037	
Panel B: Interacting with analyst loss aversion				
	(1)	(2)	(3)	(4)
	Nonlinearity Controlled		Unscaled Measure	
	High <i>ALA</i>	Low <i>ALA</i>	High <i>ALA</i>	Low <i>ALA</i>
	<i>CAR</i>	<i>CAR</i>	<i>CAR</i>	<i>CAR</i>
<i>Sur</i>	1.811*** (19.25)	2.426*** (27.56)	0.083*** (36.06)	0.092*** (39.99)
<i>Sur</i> × <i>BN</i>	0.427** (2.17)	-0.661*** (-3.66)	0.020*** (4.97)	-0.003 (-0.87)
<i>Sur</i> ²	14.838*** (5.64)	9.982*** (4.28)		
Year FE	Yes	Yes	Yes	Yes
N	71,133	71,155	71,550	71,579
Adjusted <i>R</i> ²	0.039	0.051	0.043	0.046

Notes: Panel A pertains to the full sample. *Sur* is the actual earnings per share less the most recent analyst consensus scaled by the stock price at the beginning of the month. *BN* is an indicator of *Sur* < 0. Column (1) relates to the baseline model. Column (2) controls for the nonlinear relationship between price reaction and earnings surprise by including the quadratic term of *Sur*. This bias is potentially introduced by the fact that the level of *Sur* is positively correlated with the price-earnings ratio proxied by the coefficient between *CAR* and *Sur*, as investors require higher returns on low-quality assets. Column (3) uses the unscaled (raw) measure of earnings surprise to mitigate the concern that firms with better performance systematically have higher stock prices, which underestimates the level of, and overestimates the coefficient on, *Sur* for firms with higher values of *Sur*. Panel B partitions the sample based on whether analyst loss aversion is above or below the annual median. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

B.3 Return-Based Measure of Loss Aversion

Table B.2: Validating Loss Aversion Measure with Barberis et al. (2016).

Panel A: Descriptive statistics						
Variables	N	Mean	SD	p25	p50	p75
TK	45,843	-0.038	0.017	-0.046	-0.035	-0.026
Panel B: Correlation with analyst loss aversion						
		(1)		(2)		(3)
		TK		TK		TK
ALA		0.00093*** (6.03)		0.00111*** (7.38)		0.00019** (2.10)
AER		0.00378*** (26.88)		0.00414*** (28.84)		0.00046*** (5.24)
Year FE		No		Yes		Yes
Firm FE		No		No		Yes
N		45,843		45,843		44,702
Adjusted R ²		0.039		0.119		0.734
Panel C: Main results						
		(1)	(2)	(3)		(4)
	Full Sample	Miss Consensus	Match Consensus	Beat Consensus		
	Horizon	Horizon	Horizon	Horizon		
TK	0.110 (0.28)	1.243** (2.08)	-0.092 (-0.19)	-0.010 (-0.02)		
Controls	Yes	Yes	Yes	Yes		
Year FE	Yes	Yes	Yes	Yes		
Firm FE	Yes	Yes	Yes	Yes		
Order FE	Yes	Yes	Yes	Yes		
N	51,536	8,964	29,377	8,855		
Adjusted R ²	0.657	0.740	0.656	0.695		

Table B.2 (continued)

<i>Panel D: Main results (three-year window)</i>				
	(1)	(2)	(3)	(4)
	Full Sample	Miss Consensus	Match Consensus	Beat Consensus
	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>
<i>TK</i>	0.427 (1.47)	1.044** (2.38)	0.323 (0.88)	0.062 (0.13)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Order FE	Yes	Yes	Yes	Yes
N	51,533	8,964	29,376	8,853
Adjusted R^2	0.657	0.740	0.656	0.695

Notes: This table presents the return-based measure of investor loss aversion. Following Barberis et al. (2016), loss aversion (*TK*) is computed as the prospect theory value based on the stock's historical return distribution. We use the same five-year window to calculate the score. Panel A reports the descriptive statistics of this variable. Panel B reports the correlation between analyst loss aversion (*ALA*) and *TK*, while controlling for various fixed effects. Panel C replicates our main results on guidance timeliness. Panel D replicates the results using a three-year rolling window. Standard errors are clustered at the firm level. See Appendix C for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

B.4 Management Guidance Frequency

Table B.3: Management Guidance Frequency.

	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample			$MG > 0$		
	MG	MG	MG	MG	MG	MG
<i>ALA</i>	0.054*** (7.38)	0.028*** (4.67)	0.010** (2.25)	0.016*** (2.62)	0.012** (2.07)	0.014*** (2.68)
<i>AER</i>	0.045*** (5.81)	0.033*** (5.34)	0.014*** (3.09)	0.012** (2.08)	0.004 (0.69)	0.003 (0.45)
<i>Size</i>	0.067*** (8.64)	0.054*** (8.26)	0.043*** (5.52)	0.042*** (6.77)	0.043*** (7.11)	0.052*** (5.07)
<i>Age</i>	0.095*** (7.83)	0.069*** (6.62)	0.088*** (3.89)	0.042*** (5.22)	0.024*** (2.97)	0.122*** (4.31)
<i>ROA</i>	0.179*** (4.53)	0.272*** (6.49)	0.131*** (4.71)	-0.014 (-0.22)	-0.072 (-1.14)	-0.016 (-0.25)
<i>BTM</i>	-0.062*** (-10.98)	-0.000 (-0.02)	0.008 (1.25)	-0.020 (-1.50)	-0.007 (-0.55)	0.000 (0.03)
<i>StdRet</i>	-0.737*** (-8.26)	-1.071*** (-13.16)	-0.542*** (-8.79)	-0.569*** (-4.47)	-0.502*** (-4.18)	-0.304*** (-2.64)
<i>IH</i>	0.375*** (11.52)	0.244*** (8.21)	0.121*** (4.40)	0.086*** (2.77)	0.096*** (3.19)	0.069* (1.88)
<i>NumAna</i>	0.003 (0.21)	0.038*** (2.92)	0.019** (2.22)	0.016 (1.54)	0.014 (1.36)	0.019* (1.93)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes
N	38,582	38,582	37,458	12,061	12,060	11,519
Adjusted R^2	0.161	0.339	0.726	0.108	0.174	0.411

Notes: This table presents the result on analyst loss aversion and management guidance frequency. MG is log of one plus the number of management guidance releases for the current fiscal year. ALA is the average analyst loss aversion. Columns (1)–(3) pertain to the full sample, and columns (4)–(6) pertain to firm-years with at least one management guidance release, with each column adopting a different fixed effect specification. In all specifications, we cluster standard errors at the firm level. See Appendix C for variable definitions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

B.5 Ruling Out the Effect of Preemption on Meeting Consensus

Table B.4: Ruling Out the Effect of Preemption on Meeting Consensus.

	(1)	(2)	(3)	(4)	(5)
	First Stage	Main Test		Placebo Test	
	<i>BN</i>	<i>CAR</i> [-1,1]	<i>CAR</i> [-2,2]	<i>CAR</i> [-1,1]	<i>CAR</i> [-2,2]
<i>BN</i>		-0.023*** (-8.78)	-0.022*** (-7.56)	-0.024*** (-9.16)	-0.023*** (-8.00)
<i>BN</i> × <i>ALA</i>		-0.004** (-2.32)	-0.004** (-2.29)	-0.003* (-1.92)	-0.003* (-1.86)
<i>Preempt</i> × <i>BN</i> × <i>ALA</i>		0.009** (2.38)	0.010** (2.49)	0.005 (1.10)	0.004 (0.98)
<i>Preempt</i> × <i>BN</i>		-0.009** (-2.15)	-0.012*** (-2.64)	-0.004 (-0.72)	-0.005 (-0.99)
<i>Preempt</i> × <i>ALA</i>		-0.006** (-2.56)	-0.005** (-2.24)	-0.003 (-1.40)	-0.003 (-1.26)
<i>Preempt</i>	-0.064*** (-9.10)	0.008*** (3.14)	0.009*** (3.15)	0.001 (0.23)	0.000 (0.16)
<i>ALA</i>		0.002** (2.16)	0.002** (1.99)	0.002* (1.78)	0.002* (1.72)
Other controls	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes
N	33,079	29,453	29,299	29,453	29,299
Adjusted R^2	0.008	0.080	0.071	0.080	0.071

Notes: This table addresses the concern that firm preemptive disclosure may affect the outcome of *BN*. Column (1) reports the first-stage regression of *BN* on *Preempt*, which allows us to construct a counterfactual $\widehat{BN}$ for use in the second stage. Columns (2)–(3) report the main test and columns (4)–(5) report the placebo test. All specifications include year and firm fixed effects; standard errors are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

B.6 Using a Three-Year Rolling Window

Table B.5: **Timeliness Using a Three-Year Rolling Window.**

	(1)	(2)	(3)	(4)
	Full Sample	Miss Consensus	Match Consensus	Beat Consensus
	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>
<i>ALA</i>	0.008** (2.50)	0.007* (1.65)	0.007* (1.89)	0.009 (1.45)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Order FE	Yes	Yes	Yes	Yes
N	47,423	8,285	27,082	8,100
Adjusted R^2	0.656	0.735	0.651	0.692

Notes: This table replicates the main timeliness tests using a three-year rolling window to estimate analyst loss aversion. See Table 3 for the five-year window results. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

B.7 Earliest Guidance

Table B.6: **Timeliness Using Earliest Guidance Only.**

	(1)	(2)	(3)	(4)
	Full Sample	Miss Consensus	Match Consensus	Beat Consensus
	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>	<i>Horizon</i>
<i>ALA</i>	0.010*** (2.70)	0.010* (1.76)	0.007 (1.30)	0.021 (1.58)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	11,519	2,940	5,014	1,555
Adjusted R^2	0.286	0.301	0.292	0.366

Notes: This table repeats the results in Table 3 using only the earliest guidance for each firm-year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

C Variable Definitions

Table C.1: **Variable Definitions**

Variables	Definition	Granularity
<i>PTRev</i>	Price target revision, measured as the analyst's revised price target after the quarterly earnings announcement less their most recent price target prior to the announcement, scaled by the stock price at the beginning of the month.	Analyst–firm–quarter
<i>SurAna</i>	Earnings surprise, measured as the announced quarterly earnings less the analyst's most recent forecast, scaled by the stock price at the beginning of the month.	Analyst–firm–quarter
<i>BNAna</i>	Indicator equal to one if <i>SurAna</i> is negative, and zero otherwise.	Analyst–firm–quarter
<i>Horizon</i>	Number of days between the guidance release and the fiscal year-end divided by 365.	Guidance
<i>ALA</i>	Analyst loss aversion, measured as the mean loss aversion of all analysts following the firm in the prior fiscal year.	Firm–year
<i>AER</i>	Analyst earnings response, measured as the mean earnings response of all analysts following the firm in the prior fiscal year.	Firm–year
<i>Size</i>	Log of market value of equity at the end of the prior fiscal year.	Firm–year
<i>Age</i>	Log of number of years since the firm first appeared in Compustat.	Firm–year
<i>ROA</i>	Net income scaled by total assets in the prior fiscal year.	Firm–year
<i>BTM</i>	Book value of equity scaled by market value of equity at the end of the prior fiscal year.	Firm–year
<i>StdRet</i>	Return volatility, measured as the standard deviation of the monthly stock return in the prior fiscal year.	Firm–year
<i>IH</i>	Percentage of institutional holdings at the end of the prior fiscal year.	Firm–year
<i>NumAna</i>	Log of one plus the number of analysts following the firm in the prior fiscal year.	Firm–year
<i>CAR</i>	Market-adjusted return over the $[-1, 1]$ or $[-2, 2]$ trading-day window around the earnings announcement date.	Firm–year
<i>Preempt</i>	Indicator equal to one if the firm has released “miss consensus” guidance at least once for the current fiscal year, and zero otherwise.	Firm–year
<i>BN</i>	Indicator equal to one if the announced earnings are lower than the most recent consensus forecast, and zero otherwise.	Firm–year

D Model Notation

Table D.1: **Model Notation**

Symbol	Definition
$a \in (-\infty, 0)$	Asymmetry news arrival parameter after
I	The manager's information set
k	Sensitivity of news arrival to the extremity of the signal
$L(\text{ND})$	Loss term the investor attaches to non-disclosure
ND	Non-disclosure set
P^{dis}	Price conditional on disclosure
P^{nd}	Price conditional on non-disclosure
P_T	Market price in period T
p	Probability that the manager observes S
q	Probability that external news Y arrives in period 2
S	Signal about V the manager may privately observe
$T \in \{1, 2\}$	Time period of the game
$t \in \{1, \dots, 5\}$	Stage of the game
V	Uncertain firm value
x^*	Equilibrium disclosure threshold in the static benchmark
x_1^*	Equilibrium first-period disclosure threshold
$x_2(Y)$	Equilibrium second-period disclosure threshold
Y	Firm-external public news
z	Binding selection criterion in the second-period non-disclosure price
α	The manager's relative compensation sensitivity to share price across periods
γ	Degree of investor loss aversion
$\lambda(T) \in (0, 1)$	Weight on the period- T price in the manager's objective
$\rho > 0$	Correlation among firm fundamental value and signals
Ω_t	Investor information set at stage t
ω	Shorthand replacing $p/(1-p)$

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