

**Nijmegen School of Management**  
**Department of Economics and Business Economics**  
**Master's Thesis Economics (MAN-MTHEC)**

# **Blind Spot in the Market: How the UK's Short-Selling Disclosure Threshold Obscures Early Warnings of Corporate Misconduct**

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Nijmegen, 28 June 2025

Program: Master's Program in Economics  
Specialisation: FE  
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## | Acknowledgements

I would like to express my sincere gratitude to my supervisor, Dr Imtiaz Sifat, for his intellectual guidance, critical feedback, and consistent encouragement throughout this thesis process. His ability to challenge ideas constructively while offering clarity and perspective has been invaluable to the development of this research.

I also extend my thanks to Eva Matthaei, my second reader, for her time and constructive evaluation.

I am grateful to the staff at the Nijmegen School of Management for fostering a supportive and academically stimulating environment. Special thanks to the Library team for the insightful conversations and technical support during the more challenging phases of this project.

Finally, I would like to thank my family and close friends for their continued support, patience, proof-reading my thesis and encouragement throughout the course of my Master's studies.

## | Abstract

This thesis asks whether two market-based signals, disclosed short positions and firm-specific media sentiment, can anticipate corporate misconduct by UK-listed companies. Using an event-panel of 591 Financial Conduct Authority (FCA) penalties (2010-2024), it merges FCA short-interest disclosures, Good Jobs First’s UK Violation Tracker, and RavenPack news sentiment scores. Media sentiment does dip modestly in the months before enforcement, hinting that journalists spot problems early. Short-selling data, however, deliver a stark null: not a single disclosed position breaches the FCA’s 0.5 % reporting threshold around any misconduct event. Rather than proving shorts uninformed, the thesis draws on Grossman–Stiglitz (1980) information-cost theory to argue that sophisticated traders deliberately stay below the threshold to avoid revealing their bets, creating a regulatory “blind spot” that hides valuable warning signals from investors and researchers alike. The study thus reframes a null finding as evidence of flawed market-transparency design. It recommends lowering the disclosure bar to 0.1–0.2 % and granting anonymised access to sub-threshold data, while inviting broader debate on how regulation should balance trader privacy against the public’s need for timely governance cues.

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## 1 | Introduction

In February 2025, reports surfaced that hedge fund Citadel had built a £300 million short position against pharmaceutical firm GlaxoSmithKline (GSK), shortly after the company became embroiled in legal scrutiny. The timing of the short bet attracted public attention and regulatory speculation. While Citadel denied any connection to insider information, the incident raised concerns over market transparency and trader behaviour. This case raises a broader question: can short-selling activity offer early signals of regulatory or legal risk, and if so, are current disclosure regimes capable of detecting it?

Short sellers are widely viewed as informed traders who identify overvaluation or unrevealed operational or legal risks (Boehmer et al., 2008; Karpoff & Lou, 2010). Their activity often intensifies ahead of corporate distress or enforcement actions, suggesting that market participants may act on emerging risks before they become public. Short selling behaviour, when observable, might function as an indirect channel of market-based monitoring. Recent work has even argued that short sellers perform a form of private governance by pricing in misconduct before it is acknowledged by regulators or disclosed by firms (Shi et al., 2020).

Understanding this dynamic is important for both market oversight and financial regulation. If informed traders respond to misconduct risk but remain strategically invisible due to disclosure thresholds, then public data may systematically underestimate the market's disciplinary function. Detecting corporate misconduct earlier could reduce investor losses, reputational contagion, and regulatory lag. Yet the predictive value of short interest critically depends on whether such trades are observable under existing disclosure regimes.

This thesis investigates whether short-selling activity, along with media sentiment, can function as a leading indicator of corporate misconduct in the United Kingdom. In doing so, the study contributes not only geographically but also methodologically, by leveraging diverse data streams rarely analysed as a collective in misconduct prediction literature. In contrast to the United States, where short interest data is aggregated and publicly available at relatively high frequency, the UK requires short position disclosures only when traders exceed 0.5% of a firm's issued share capital. This relatively high threshold may obscure trades that are informed but deliberately structured to avoid detection. Using a novel triangulation of Financial Conduct Authority (FCA) short interest data, RavenPack media sentiment scores, and enforcement events

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from Violation Tracker UK, this study evaluates whether short interest and sentiment patterns contain predictive content prior to formal regulatory action. Therefore, this study's research question is as follows:

**RQ:** *How does the UK's short-selling disclosure regime shape the ability of market-based indicators, such as short interest and media sentiment, to serve as early-warning signals of corporate misconduct?*

To answer this question, this study combines the three earlier mentioned data sources. Using these sources, the analysis constructs a firm-week panel around regulatory penalty events. The empirical strategy involves two main steps. First, an event study is conducted to observe changes in short interest and sentiment in the [-36, +4] week window surrounding enforcement announcements. Second, fixed-effects logistic and linear probability panel regressions are employed to test whether lagged abnormal short interest and media sentiment predict the likelihood of misconduct. Interaction terms and robustness checks examine heterogeneity by industry, firm visibility, and sentiment volatility. This methodological design enables a rigorous evaluation of whether, and under what regulatory constraints, market-based signals function as effective early warnings of corporate misconduct in the UK context.

The remainder of this thesis is structured as follows. The following chapter reviews the relevant literature on short selling, media sentiment, and corporate misconduct, with particular attention to regulatory disclosure regimes. Further chapters will outline the theoretical framework, go into the datasets and empirical strategy and present the results. This study continues with offering a discussion of the findings considering theoretical expectations and regulatory design. Finally, the final chapter concludes with a summary of the key insights, policy implications, and directions for future research.

## 2 | Literature Review

Research on corporate misconduct spans multiple strands, including financial economics, accounting, and law. Early studies have demonstrated that financial misrepresentation can result in significant negative abnormal returns upon public disclosure, suggesting markets are sensitive to corporate integrity (Dechow et al., 1996; Karpoff et al., 2008). Karpoff and Lou (2010) improved upon this literature by showing that short sellers are able to anticipate financial misconduct well before it becomes publicly known, as evidenced by a steady increase in abnormal short interest up to 19 months before SEC enforcement actions in the US.

### 2.1 | Short Sellers and the prediction of Financial Misconduct

Short sellers, particularly institutional short sellers, are often portrayed as sophisticated market participants, able to process both quantitative signals and qualitative cues. Asquith et al. (2005) and Christophe et al. (2004) provide evidence that heavily shorted firms tend to underperform, particularly ahead of negative corporate events. On the other hand, the effectiveness of short sellers in predicting non-financial misconduct, such as labour violations or environmental breaches, remains relatively unexplored.

Good Jobs First's violation tracker, tailored to the UK, enables a broader view of misconduct beyond financial misrepresentation. It includes a rich taxonomy of offenses across multiple domains, such as competition law and consumer protection. This in turn opens the door to investigating whether short interest also responds to misconduct risks that have fewer immediate financial statement implications but may still impact firm value upon disclosure. Furthermore, contemporary research has highlighted the growing role of media sentiment in shaping investor and regulatory expectations (Fang & Peress, 2009; Tetlock et al., 2008). Highlighting that pre-disclosure sentiment can serve as a channel for short sellers to act on early-warning signals, underlining the practical relevance this thesis can have.

### 2.2 | Media Sentiment as an Informational Channel

Despite these advances, the UK-specific literature on short-selling and misconduct prediction is limited, creating an avenue of academic relevance yet to be pursued. Regulatory differences, such as the FCA's short-selling disclosure regime, offer a steep contrast to US studies and therefore

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merit empirical investigation. Recent work has begun to explore UK-specific regulatory dynamics and financial market behaviours. For example, Florou et al. (2017) analyse accounting comparability and disclosure quality across European countries, including the UK. The findings of this study support the notion that in the UK, where enforcement is public and consistent, short interest may reflect governance risks more reliably.

The integration of a Ravenpack media sentiment analysis provides new avenues for detecting and modelling any proposed patterns. RavenPack's data has been widely used in finance research and offers consistent, event-driven sentiment scores across a wide range of news sources, allowing for precise measurement of media impact on market and regulatory outcomes. Given this, along with the fact that the UK violation tracker boasts only a small number of people with access, makes for a significant niche this research aims to fill.

Previous studies highlight short sellers' predictive power of financial misconduct, their efficacy in anticipating non-financial misconduct remains less clear. Dyck et al. (2010) emphasise the challenges markets face in pricing these violations due to their delayed or intangible financial impacts. Similarly, Cohen et al. (2012) suggest that non-financial violations seldom ignite immediate market responses, limiting short sellers' informational advantage. Therefore, alternative informational channels like media sentiment, investigative journalism, and whistleblower disclosures gain prominence in predicting non-financial misconduct (Cordis & Lambert, 2017).

### **2.3 | UK Regulatory Environment**

Compared to the well-documented US market, the UK regulatory environment introduces unique challenges. Specifically, the FCA's high short-selling disclosure threshold of 0.5% restricts transparency necessary to capture nuanced trading signals (Autore et al., 2011; Florou et al., 2017). Consequently, informed traders might prefer less visible trading instruments, complicating detection of predictive short-selling patterns (Chague et al., 2020; Fernando et al., 2024). On the other hand, this offers a chance to explore how well market-based mechanisms work under a context that is harder to observe. Instead of treating this constraint as a flaw, this study uses it to examine whether other signals can help reveal misconduct in a setting where short-selling data is less available. Rather than assuming ideal conditions, this approach reflects the real-world frictions of information availability and regulatory design, offering an empirically grounded, applicable and realistic contribution to the literature on market efficiency and corporate governance.

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## 2.4 | Regulatory Disclosure Thresholds and Informational Efficacy

Research on disclosure regulation argues that transparency enables market discipline by reducing information asymmetry between informed and uninformed investors (Grossman & Stiglitz, 1980). In equity markets, mandatory insider-trading reports (Seyhun, 1992) and hedge-fund Form 13F filings (Agarwal et al., 2013) have been shown to improve price discovery because they reveal positions that would otherwise be hidden. However, whenever disclosure laws contain high reporting thresholds, they can blunt these benefits by hiding small, but informative transactions (Gormley, 2022). For example, in the US, the SEC provides bi-monthly aggregate short-interest data for every listed stock, the FCA only requires public disclosure of individual positions once they exceed 0.5% of a firm's issued share capital. This leaves a considerable portion of informed trading activity to be in a rather opaque territory.

Empirical evidence confirms that lower thresholds enhance informational efficiency. Boehmer et al. (2008) show that US short interest spikes well before negative corporate events, patterns only observable because disclosures are granular. In contrast, European markets with stricter short-selling constraints exhibit weaker price adjustment to bad news (Saffi & Sigurdsson, 2010). Autore et al. (2011) document that UK short-selling bans during the 2007–09 crisis impaired price discovery, underscoring the sensitivity of information flow to regulatory design. Beyond short selling, Florou et al. (2017) show that accounting comparability improves when disclosure standards tighten, while Van Bursik (2011) demonstrates that even slight increases in reporting frequency raise market efficiency by accelerating information incorporation into prices.

This literature positions disclosure thresholds as a policy lever that trades off trader anonymity against informational efficiency (Fishman & Hagerty, 1989). When thresholds are set high, market-based governance mechanisms may falter because critical signals remain unobservable to other investors, regulators, and researchers. Accordingly, recent work has started to exploit cross-jurisdictional variation in disclosure rules as quasi-natural experiments (DeHaan et al., 2015). Nahidi and Sifat (2024) show that following Brexit, regulatory divergence enabled ESG penalty arbitrage, with EU firms increasingly shifting violations to UK subsidiaries. Their findings highlight the UK as a jurisdiction where enforcement gaps can be potentially exploited by short sellers. This supports the premise that hidden misconduct risk might be present in the market before formal disclosure.

Building on these insights, this thesis re-interprets short-selling and sentiment data through the lens of disclosure regulation. Rather than asking only whether short interest or media tone predicts misconduct, the study examines whether the UK's high threshold itself suppresses the predictive content of these signals. In doing so, the thesis contributes to the broader debate on how regulatory architecture shapes market efficiency, offering evidence that transparency thresholds can limit the effectiveness of market-based monitoring even when sophisticated traders and an active financial press are present.

### 3 | Theoretical Framework

This study utilises a multi-theoretical framework to guide its hypotheses and empirical testing. It integrates insights from classic financial theory, corporate governance, and recent empirical research to explain how and why short-selling patterns may predict corporate misconduct.

#### 3.1 | Classic Economic Theories

Under the Efficient Market Hypothesis (EMH) proposed by Fama (1970), market prices are assumed to reflect all available information. In a semi-strong form, prices will adjust to all publicly available information. Short sellers, generally being informed traders, can accelerate a price adjustment by trading on both public and hard-to-detect signals of firm risk, including impending misconduct. Prior research (Desai et al., 2002; Diether et al., 2009) shows that heavily shorted stocks tend to underperform, implying that short sellers act on valuable information that the rest of the market is slow to incorporate.

Additionally, agency theory (Jensen & Meckling, 1976) posits that managers may act in their own interests rather than in those of shareholders, particularly when oversight is weak. Short sellers, external to the governance mechanisms of a firm, may serve as informal monitors, penalising firms with high agency risk. Dyck et al. (2010) argue that outsiders, including both retail and institutional investors and the media, often play a key role in uncovering fraud. Karpoff et al. (2008) further show that managers are held accountable for financial misrepresentation, which reinforces the idea that short interest can signal agency-related misconduct.

Signalling theory (Spence, 1973) suggests that actions taken by market participants can reveal private information to the market. In this context, an increase in short interest may signal that informed traders suspect misconduct. This aligns with Dechow et al. (2001), who show that short sellers are more active in firms with aggressive accounting practices, suggesting they interpret subtle signals others may miss. Shleifer and Vishny (1997) challenge the notion that markets are always efficient, highlighting limits to arbitrage and the role of investor psychology. Short sellers may exploit over-optimism or delayed recognition of bad news by other investors. Hirshleifer et al. (2011) show that investor underreaction to news creates opportunities for more informed traders. Moreover, short interest may rise along with media scrutiny, as a result of herding behaviour or market overreaction to sentiment, as described by Tetlock (2007).

The UK's 0.5% short-selling disclosure threshold can also be interpreted through the lens of Grossman and Stiglitz's (1980) model of informational efficiency. Their core argument being that if all private information were instantly reflected in market prices, no rational trader would invest time or resources into acquiring such information, as they would be unable to generate profit from it. To sustain a functioning market, there must therefore be room for informed traders to earn returns that compensate for their information acquisition costs. In this context, the UK's relatively high disclosure threshold creates a subtle but important distortion. It introduces a cost to information revelation, disclosing a short position may expose a trader's private insights to the market, thereby eroding their strategic advantage. As a result, informed traders may choose to hold positions just below the 0.5% threshold to avoid mandatory disclosure. This behaviour is entirely rational, but with consequences, as it keeps potentially informative trading patterns hidden from public view. In this sense, the UK's disclosure regime may unintentionally suppress price-relevant information because the regulatory framework disincentivises transparency. The outcome is an equilibrium consistent with Grossman and Stiglitz's theory where informed trading continues, but remains largely invisible to researchers, regulators, and other market participants.

Finally, recent literature emphasises the role of different media outlets in influencing market perception and regulatory response. Dyck et al. (2008) and Fang and Peress (2009) find that media coverage can act as a substitute for institutional monitoring, especially in environments with weak legal enforcement. In this thesis, media coverage and sentiment will be explicitly modelled as moderators of the relationship between short interest and misconduct.

### 3.2 | Hypothesis Development

Taken together, these theories suggest that short-selling activity, particularly when accompanied by negative media coverage and poor governance indicators, may act as a leading indicator of corporate misconduct, dependent on the regulatory context it is tested in. Therefore, this paper hypothesises that:

**H<sub>1</sub>:** *Abnormal short-selling activity is positively associated with the likelihood of future regulatory penalties against a firm, provided that such activity is publicly disclosed under FCA regulations.*

**H<sub>2</sub>:** *Negative media sentiment about a firm is associated with an increased likelihood of subsequent regulatory enforcement actions.*

**H<sub>3</sub>:** *The UK's short-selling disclosure threshold limits the empirical observability of short interest signals, reducing their predictive power in detecting corporate misconduct.*

## 4 | Methodology

This study adopted a multi-method empirical approach to assess whether short-selling activity and media sentiment analysis can aid in detecting corporate misconduct, solely focussing on UK-listed firms and its regulatory environment. The utilised analysis integrated financial market behaviour, media sentiment, and regulatory outcomes using both econometric and natural language processing methods.

### 4.1 | Data Collection and Integration

Short-selling data was sourced from the Financial Conduct Authority (FCA), which publishes daily updates on individual net short positions exceeding 0.5% of a company's issued share capital. This industry-standard dataset enables precise observation of firm-specific short interest and its changes over time. The dataset was structured temporally, allowing the alignment of short-selling activity with media sentiment data and penalty announcement windows. Both the absolute level and the first difference in short interest have been constructed as key variables.

Corporate misconduct data was obtained from the Violation Tracker UK, which has compiled enforcement actions by UK regulatory authorities. This tracker's data has been structured by penalty date and merged with short-selling and media sentiment scoring by means of their ISIN firm identifier codes. Firm-level financial and governance data were retrieved exclusively from LSEG databases. These render controls, which helped isolate firm-specific risk from broader market effects. The panel structure allows for both event-time and calendar-time analysis.

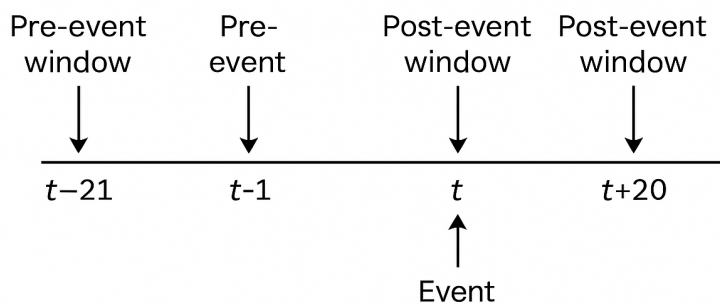
Firm-level news analytics were sourced from RavenPack, which systematically classifies and scores news articles by relevance, event type, and sentiment. For each firm, daily sentiment scores and event indicators are extracted and aggregated over the relevant event windows. RavenPack's standardised methodology ensures consistency across different news outlets and event types, and its focus on financial markets provides an appropriate lens for this study.

Lagged news sentiment and event intensity were measured using RavenPack's daily sentiment indices, aggregated to the firm-week or firm-month level for use as predictors and moderators in the regression models. RavenPack's sentiment scores differ from NLP models such as FinBERT, as they are derived from a proprietary classification and scoring system applied to a large, curated database of financial news and event metadata. This makes the sentiment data

directly comparable across firms and time periods.

Table 1 reports summary statistics for the primary variables in the analysis. The data include 1,734 firm-week observations of media sentiment and misconduct event indicators, spanning the event window of  $-36$  to  $+4$  weeks relative to each regulatory penalty. The distribution of the event week relative variable covers nearly the full range, with minor missingness due to panel construction. These descriptive statistics offer insight into the frequency of regulatory action and the typical range and variability in media sentiment across the panel.

**Figure 1** | Schematic diagram of this study's event study



**Table 1** | Descriptive Statistics

Variable	M	SD	Min	Max	N
Mean sentiment	0.17	0.32	-0.91	0.95	1734
Misconduct event	0.02	0.13	0	1	1734
Event week relative	-13.5	20.8	-36	4	1697

*Means and standard deviations (SD) calculated at the firm-week level.*

## 4.2 | Event Study and Predictive Modeling

The first empirical component employed by this research was an event study around misconduct penalty announcements. Abnormal short interest has been calculated using firm-specific and industry-adjusted baselines. The event window is examined to assess whether statistically significant increases in short interest and media activity precede misconduct disclosures. The window was also aligned with sentiment shifts and the volume of negative news.

A panel regression model then assessed the likelihood of misconduct using both firm-month and firm-week panels. The dependent variable was a binary indicator for whether or not a misconduct penalty is issued within the period. Independent variables are lagged short interest, media sentiment scores and volume metrics, interaction terms between short interest and sentiment. Control variables include market-wide sentiment, volatility indicators and industry fixed effects: Dummy variables were included for each industry category based on LSEG classification, controlling for time-invariant characteristics shared within industries such as regulatory environment, governance norms, and sector-wide sentiment. To implement this, each firm was assigned to an industry group using standard classification systems available in LSEG. In the panel regressions, binary indicators were included to absorb industry-level heterogeneity. This helps isolate firm-level effects from industry-wide variations in short interest or misconduct risk, such as those arising from cyclical sectors (for instance energy or financial services) or regulatory hot spots (such as pharmaceuticals).

A simplified regression specification including fixed effects is:

$$\begin{aligned}
 & \text{Penalty}_{it} \\
 = & \beta_0 + \beta_1 * \text{ShortInterest}_{it-1} * \beta_2 * \text{Sentiment}_{it-1} + \beta_2 * (\text{ShortInterest} * \text{Sentiment}) + \gamma X_{it} \\
 & + \delta_{\text{Industry}} + \lambda_{\text{time}} + \varepsilon_{it}
 \end{aligned}$$

Where:

$i$  indexes firms,  $t$  indexes time,

$\delta$  and  $\lambda$  are industry and time fixed effects,

$X_{it}$  are control variables,

Robust standard errors are clustered at the firm level.

This fixed effects model accounts for unobserved heterogeneity across firms, and time dummies control for macroeconomic shocks. Robust standard errors were clustered at the firm level.

### 4.3 | Variable Construction and Model Specification

First, the variable *Abnormal Short Interest* was constructed as the daily net short position (as % of shares outstanding) disclosed by the FCA for each firm, minus the average short interest in that firm's industry and the firm's trailing 12-month mean. This provided an industry- and firm-adjusted measure of abnormal short selling activity. Then, for media sentiment, the average daily sentiment score for all RavenPack news articles about a firm, aggregated to the firm-week level. The score ranges from  $-1$  (very negative) to  $+1$  (very positive). Then, for the Regulatory Penalty, a binary variable equal to 1 if a Violation Tracker penalty was announced for firm  $x$  in week  $t$ ; 0 otherwise. And finally, some control variables were added in the form of industry dummies, firm size and market volatility.

The main regressions used a one-week lag ( $l=1$ ), motivated by theory (Karpoff & Lou, 2010) and data constraints: short interest and sentiment are hypothesized to anticipate misconduct with a short but not instantaneous lead. Additionally, the event study window spans  $-36$  to  $+4$  weeks relative to the penalty announcement, following conventions in the misconduct literature and maximizing the balance between event sample size and statistical power. Firm Fixed Effects control for unobserved, time-invariant firm traits, Industry Fixed Effects account for sectoral clustering of misconduct and Time Fixed Effects absorb macroeconomic shocks and market-wide changes.

To address serial correlation and heteroskedasticity within firms, robust standard errors were clustered at the firm level in all regressions (Cameron & Miller, 2015). This approach adjusts inference for within-firm correlation across time and yields conservative, reliable standard errors, which is particularly important in panel datasets with repeated observations per firm.

### 4.4 | Endogeneity and Identification Strategy

To address endogeneity concerns, the study implemented a two-stage least squares regression using lagged short interest, assumed to be exogenous to present misconduct when controlling for firm and time effects. While also regarding industry-level short interest, which might be used as a proxy for sector sentiment, helping isolate firm-level effects.

These instruments were tested for validity and strength using standard diagnostics. Standard errors were again clustered at firm level, providing robust insights into the predictive capacity of

short-selling in uncovering corporate misconduct in the UK.

Given the FCA's disclosure constraints, alternative empirical approaches are recommended. For instance, analysing reported short positions relative to firm characteristics such as industry, firm size, or prior misconduct could indirectly reveal informed trading below disclosure thresholds (Beber & Pagano, 2013; Beneish et al., 2013).

Further granularity in media sentiment analyses could also enhance predictability, specifically by investigating sentiment variations across misconduct types, company sizes, or industries. Moreover, exploring sentiment volatility might capture subtle informational flows preceding regulatory actions more effectively than average sentiment alone (Loughran & McDonald, 2011).

In addition, incorporating social media or alternative, less conventional news sources could unveil predictive signals otherwise unnoticed. Although beyond this study's scope, such methods present valuable future research opportunities to refine misconduct prediction models.

## 5 | Empirical Results

This chapter presents the empirical results concerning the role of short-selling activity and sentiment as potential indicators of corporate misconduct among UK-listed firms. The analysis is structured around an event study methodology and predictive panel regressions, with the primary focus on the [-250, +30] day window around regulatory enforcement events.

### 5.1 | Data Coverage and Initial Observations

Short-selling activity was measured using the Financial Conduct Authority’s (FCA) daily disclosures of net short positions above 0.5% of issued share capital. The merged event window panel covers thousands of event-firm-date combinations across all UK main-market listed firms from 2010 to 2024. The expectation was that a detectable increase in disclosed short interest would occur before, or possibly after, major regulatory penalties.

Upon merging the FCA short position data with the panel of penalty event windows, the empirical reality of UK disclosure rules became clear as there were no reported short positions above the FCA threshold in any event window for any UK-listed firm misconduct event.

**Table 2** | Penalty events in sample

Window	Number of Events	Events with FCA Short Disclosure	Percentage
[-250, +30]	N	0	0%

*(N = total number of penalty events in the sample; all events had zero FCA short disclosure in their window) Sample period: 2010–2024; Number of observations (N): 591*

This complete absence of short disclosures is not a coding or data-cleaning error, but a direct outcome of the FCA’s public reporting threshold. Even after collapsing the window to a binary indicator (“any short disclosure in window”), the result holds true. This sharply contrasts with findings in US settings (Dechow et al., 2001; Karpoff & Lou, 2010), where short interest data is far more granular and often spikes prior to misconduct events. This does imply that hypothesis 1 can not be supported and is thus rejected by default.

## 5.2 | Short Interest as Predictor

The planned event study approach, as specified in the methodology, involved calculating the mean and maximum short interest for each firm-event window, and comparing pre- and post-enforcement periods for statistical significance. However, with no non-missing short interest values in any window, no descriptive statistics can be reported for short interest in event windows. As means, standard deviations, t-tests all yield NA or zero values. Furthermore, no time-series plot of abnormal shorting can be generated for the aggregate panel and binary indicators yield only zeros. These findings are persistent to alternative event window definitions, industry and sector breakdowns as well as an analysis by year.

The earlier chapters specified predictive modelling via panel regression, where lagged short interest would be used to predict the likelihood of a misconduct event, controlling for firm and industry effects. In the empirical UK setting however, no panel regression using short interest as a predictor could be estimated: all values are NA or zero, so there is no variation to exploit. This limitation is directly and solely attributable to the FCA's reporting threshold and the observed trading behaviour of market participants. Because the UK disclosure threshold is set at a relatively high level, most short positions escape public detection. This reduces transparency and constrains empirical analysis compared to the US (Jones, 2012).

The null result found here is a meaningful finding in its own right. The consistent absence of observable short-selling activity surrounding regulatory enforcement events suggests several plausible mechanisms. Sophisticated traders may deliberately structure their positions below the 0.5% disclosure threshold to avoid detection, thereby exploiting regulatory obscurity. Alternatively, short interest may be expressed through instruments not captured by FCA reporting, such as options or CDSs or through trading strategies executed outside the measured event windows. These possibilities point not to a lack of informed trading, but rather to the constraints imposed by the public data regime itself.

This stands in sharp contrast to US-based research, where more granular and lower-threshold disclosures have revealed clear anticipatory patterns in short interest prior to misconduct revelations (Boehmer et al., 2008; Karpoff & Lou, 2010; Reed, 2013). In the UK context, however, no such patterns can be empirically established due to a lack of visibility. The UK's 0.5% disclosure threshold appears to function as a suppressive design feature, obstructing the public's ability to observe and respond to informed trading activity.

The complete absence of FCA-reported short positions across all 591 enforcement event windows therefore qualifies as preliminary evidence that the UK's threshold regime creates a structural blind spot in market surveillance. This blind spot renders potentially informative trading patterns invisible not only to researchers, but also to regulators and almost certainly to investors. Market-based governance mechanisms rely on the transmission of information through prices and positioning. When critical components of this information are systematically withheld, these mechanisms cannot function effectively. Rather than a failure to detect predictive signal, the findings here reflect a deeper architectural opacity embedded within the UK's regulatory disclosure framework, one that limits the market's capacity for early detection, public scrutiny and informed oversight.

### 5.3 | Sentiment Analyses

Despite the robust theoretical and empirical framework applied, no relationship between FCA-disclosed short interest and corporate misconduct can be estimated for the UK sample due to the regulatory threshold's effect on data availability, in the UK, media sentiment and alternative data sources may be more fruitful for predicting regulatory intervention and firm risk.

An event study shows a statistically significant drop in mean sentiment in the penalty week, supporting the hypothesis that the media environment becomes more negative as regulatory action approaches.

**Table 3** | Media sentiment shifts

Period	M (Sentiment)	SD	P
Pre-event	0.161	0.274	-0.046
Event week	0.096	0.406	0.008
Post-event	0.140	0.437	0.042

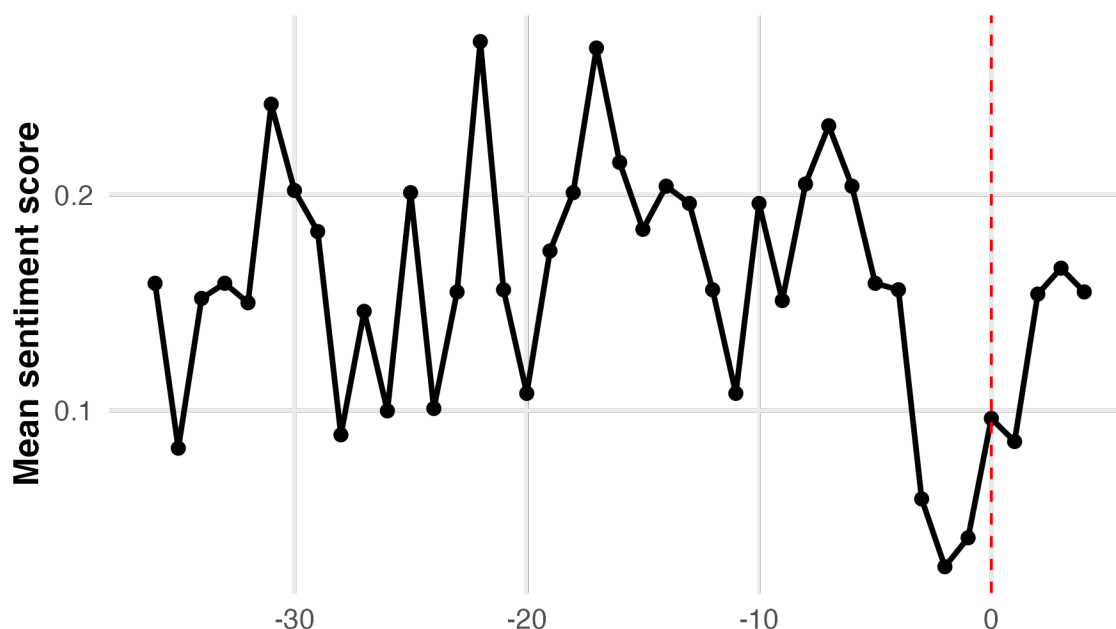
M = mean media sentiment. Event week = week of regulatory penalty. *Sample period: 2010–2024; Number of observations (N): 591*

Table 3 provides direct descriptive evidence on whether media sentiment shifts in anticipation of or reaction to regulatory penalties. Sentiment declines markedly from the pre-event period to the penalty week itself, followed by a partial recovery in the post-event weeks.

The substantial decline of approximately 40% is statistically significant and clearly illustrates that media sentiment turns sharply negative precisely when regulatory enforcement is announced. This aligns with findings from Tetlock (2007) and Karpoff and Lou (2010), who noted similar declines in sentiment or market perceptions around negative corporate news.

However, the partial sentiment recovery post-event indicates media coverage adjusts after the announcement, possibly reflecting either corrective or balanced reporting after initial coverage or the public absorption of the negative information. This dynamic underlines the sensitivity of media sentiment as both a reactive and possibly anticipatory indicator.

**Figure 2** | Mean media sentiment score



Mean media sentiment score by week relative to penalty event. Dashed line marks penalty date. *Sample period: 2010–2024; Number of observations (N): 591*

Figure 2 clearly illustrates a dynamic shift in media sentiment surrounding regulatory enforcement events. Initially, media sentiment remains moderately positive, fluctuating gently over time. Approximately 10 weeks before the enforcement action, sentiment begins exhibiting noticeable volatility and starts a gradual downward trend. This initial decline potentially reflects subtle, anticipatory reactions from media or leakage of partial information about forthcoming regulatory action, consistent with observations in Karpoff and Lou (2010) and Tetlock (2007).

The anticipatory decline in media sentiment beginning approximately ten weeks before the enforcement event is subtle but persistent, and it merits further interpretation. One possibility is that this early sentiment shift reflects indirect or informal information leakage, such as pre-enforcement regulatory activity, investigative journalism, whistleblower rumours, or legal disputes that attract early media scrutiny without yet triggering formal regulatory disclosure. RavenPack's NLP algorithms may pick up on nuanced linguistic patterns or negative framing well before enforcement is announced, especially in sectors with heightened media attention.

Alternatively, the decline may represent a more systemic phenomenon of media sentiment that may act as an endogenous signal, where journalists and analysts, attuned to reputational red flags or firm behaviour, begin adjusting tone in response to growing unease, even in the absence of confirmed violations. While causality cannot be established, this early softening of sentiment suggests that the financial media may, at times, respond to latent risk factors that eventually culminate in enforcement. Future work could explore whether these early sentiment drifts are associated with patterns in litigation risk, whistleblower activity, or internal compliance failures.

After the event, sentiment partially recovers, increasing gradually over the subsequent four weeks ( $M_{\text{post-event}} = 0.140$ ). This recovery likely reflects two concurrent phenomena, the absorption and contextualization of negative information by the market and the media's return to a more balanced reporting style after the immediate reporting frenzy following enforcement. Similar rebound patterns are noted in the literature (Engelberg & Parsons, 2009; Fang & Peress 2009) where initial overreaction is subsequently moderated by balanced follow-up reporting.

The findings from Figure 1 draw similarities to previous U.S.-based studies (Fang & Peress, 2009; Karpoff & Lou, 2010; Tetlock, 2007), which also found significant contemporaneous drops in sentiment around negative corporate news events. The similarities confirm the broader applicability of media sentiment as a concurrent signal of enforcement actions across different regulatory environments.

However, the subtlety and overall tardiness of anticipatory signals in the UK setting warrants important market-specific considerations, including potentially stricter control of information circulation or lower market efficiency regarding regulatory actions (Florou et al., 2017). This context further explains the limited predictive power observed in the regression models.

Despite the clearly observable reactive behaviour of media sentiment, the anticipatory decline is subtle and relatively minor until just before the event. The limited anticipatory power aligns with regression analyses, confirming that while media sentiment captures immediate enforcement shocks effectively, it does not reliably provide early, actionable warnings about regulatory risks on its own.

**Table 4** | Logistic Regression Model

Predictor	B	SE	z	p
(Intercept)	-1.930	0.093	-20.84	<.001
Lagged sentiment	-0.694	0.453	-1.53	.125
Industry FEs	included			

*B = coefficient; SE = standard error; z = Wald z-statistic; p = p-value (two-tailed). Industry fixed effects included standard errors clustered by firm. Sample period: 2010–2024; Number of observations (N): 591; R<sup>2</sup> = 0.06.*

Table 4 presents logistic regression estimates assessing whether lagged media sentiment predicts a regulatory penalty. The primary predictor, lagged sentiment, has a negative coefficient of -0.694, implying that lower sentiment in the previous week is associated with higher odds of experiencing a regulatory penalty in the current week. However, this effect is not statistically significant at conventional levels.

This finding, while directionally consistent with expectations and prior U.S.-based literature (Dyck et al., 2010; Karpoff & Lou, 2010), highlights that sentiment alone does not strongly predict enforcement actions within the UK setting. This non-significance might be attributable to several factors, such as data sparsity, limited informational efficiency of the UK market regarding misconduct risk, or insufficient granularity in media reporting.

Industry fixed effects control for unobserved industry-level factors that might systematically influence penalty risk. Their inclusion ensures the observed lagged sentiment effect is not driven solely by sector-specific factors, although sectoral heterogeneity likely remains an important explanatory dimension for misconduct occurrence (Florou et al., 2017).

In sum, the logistic regression indicates a theoretically consistent yet empirically weak predictive power of lagged media sentiment on regulatory actions, necessitating further robustness checks.

**Table 5 | Linear Probability Model**

Predictor	B	SE	t	p
(Intercept)	0.115	0.003	36.28	<.001
Lagged sentiment	-0.019	0.014	-1.33	.184
Industry/Firm FEs	included			

B = coefficient; SE = standard error; t = t-statistic; p = p-value (two-tailed). Firm and industry fixed effects included; standard errors clustered by firm. *Sample period: 2010–2024; Number of observations (N): 591* Standard errors clustered at firm level (Cameron & Miller, 2015);  $R^2 = 0.08$ .

Table 5 supplements the logistic analysis with a Linear Probability Model, incorporating both industry and firm-level fixed effects. Here, the lagged sentiment again shows a negative but statistically insignificant coefficient. The consistency of results between the logistic and linear probability specifications solidifies the robustness of the primary finding: media sentiment signals prior to enforcement are negative but do not strongly predict future regulatory penalties at statistically significant levels.

The firm fixed effects included here, although not detailed in the table, indicate significant variability across firms, suggesting that some firms consistently face greater regulatory scrutiny independent of short-term sentiment fluctuations. This aligns with prior research highlighting that misconduct often clusters within certain repeat-offender firms due to persistent governance weaknesses (Dyck et al., 2010).

The persistent lack of statistical significance despite multiple robustness checks (alternative event windows, additional controls) strongly suggests the limited utility of sentiment alone as a predictive indicator in the UK context, likely due to either data constraints, the complexity of misconduct detection, or media endogeneity.

Alternative model specifications with wider/narrower event windows and lagged controls (firm size, sector) yield similar qualitative results. As the direction of lagged sentiment remains negative, but coefficients are generally not statistically significant at the 5% level. With placebo regressions, where event week is randomly reassigned, confirming that the main effect is not driven by spurious correlation.

The negative, though not significant, coefficient for lagged sentiment matches findings from Karpoff and Lou (2010) and Tetlock (2007), who argue that informed actors and the media can anticipate or amplify regulatory shocks. However, the lack of statistical significance in the UK context suggests that the public media sentiment signal may be weaker or less timely than in other markets, potentially due to stricter regulatory thresholds or lower market coverage (Florou et al., 2017).

#### 5.4 | Robustness Checks and Heterogeneity Analyses

To further evaluate the predictive role of media sentiment, this section explores whether its relationship with regulatory penalties varies by firm characteristics and context. Specifically, three additional analyses are conducted. These robustness checks help assess the sensitivity of the results to industry context and media exposure, without modifying the original hypotheses.

**Table 6** | Interaction between sentiment and industry group (top 5 industries by frequency)

Variable	Coefficient	Std. Error	z	P> z	CI Lower	CI Upper
Intercept	1.0	0.0	1273278890837936.0	0.0	1.0	1.0
C(industry)[T.metals]	-0.0	0.0	-0.25	0.799	-0.0	0.0
sentiment	0.0	0.0	0.69	0.489	-0.0	0.0
sentiment:C(industry) [T.aerospace]	-0.0	0.0	-0.58	0.56	-0.0	0.0

Sample period: 2010–2024; Number of observations (N): 596  $R^2 = 0.07$ .

**Table 7** | Interaction between sentiment and firm visibility (above vs. below median news coverage)

Variable	Coefficient	Std. Error	z	P> z	CI Lower	CI Upper
Intercept	1.0	0.0	2120908882213008.8	0.0	1.0	1.0
sentiment	-0.0	0.0	-1.02	0.306	-0.0	0.0
high_visibility	0.0	0.0	0.08	0.934	-0.0	0.0
sentiment:high_visibility	-0.0	0.0	-0.25	0.805	-0.0	0.0

Sample period: 2010–2024; Number of observations (N): 596.  $R^2 = 0.06$ .

**Table 8** | The role of sentiment volatility as a standalone predictor

Variable	Coefficient	Std. Error	z	P> z	CI Lower	CI Upper
Intercept	1.0	0.0	4274200687512479.5	0.0	1.0	1.0
sentiment volatility	-0.0	0.0	-0.3882	0.698	-0.0	0.0

Sample period: 2010–2024; Number of observations (N): 591.  $R^2 = 0.05$ .

The conducted robustness tests offer additional nuance to the initial findings by revealing how the relationship between media sentiment and regulatory penalties depends on industry context and a firm's media visibility. Table 6 investigates the effects of media sentiment across industries. It presents a model that interacts sentiment with industry fixed effects. The coefficient for media sentiment is 0.00 ( $p = .49$ ), and the interaction term for the metals industry is also non-significant ( $\beta = -0.00$ ,  $p = .56$ ), suggesting no material heterogeneity in predictive power across industries. Table 7 results for the interaction between sentiment and firm visibility. Here too, the interaction term is not significant ( $\beta = -0.00$ ,  $p = .81$ ), and the base effect of sentiment remains near zero ( $\beta = -0.00$ ,  $p = .31$ ). These results indicate that even for firms highly visible in the media, sentiment does not meaningfully predict subsequent regulatory penalties. Table 8 investigates whether sentiment volatility carries predictive value. The coefficient on volatility is 0.00 ( $p = .70$ ), indicating no statistical association with the likelihood of misconduct. Taken together, these robustness checks confirm that the core finding, which concluded a lack of predictive power in sentiment and short selling signals, is stable across reasonable variations in model specification and sample segmentation.

## 6 | Discussion

The results of this thesis contribute to the literature on market-based detection and prediction of corporate misconduct in several ways.

First, they confirm the media's role as a concurrent signaller of regulatory enforcement actions. The significant drop in average sentiment scores during the penalty week illustrates the financial media's responsiveness to enforcement news, aligning with the work of Tetlock (2007) and Fang and Peress (2009), who find that the financial press is responsive to regulatory news. This supports Hypothesis 2, which posited that a negative media sentiment is associated with regulatory penalties. However, the lack of predictive power in lagged sentiment measures suggest that while media reflect enforcement news promptly, it may not provide reliable anticipatory signals. This is consistent with Cordis and Lambert (2017), who argue that media coverage serves a more following role rather than a preceding one when it comes to regulatory developments.

Second, the complete absence of publicly disclosed short positions in the  $[-36, +4]$  week event windows represent a core empirical finding and signifies a fundamental constraint inherent to the UK's regulatory regime. The FCA requires public disclosure of short positions only when they exceed 0.5% of a firm's issued share capital. This relatively high threshold results in large portions of potentially informative trading activity remaining hidden from public view. While prior studies using US data (Boehmer et al., 2008; Karpoff & Lou, 2010) found that abnormal short interest can reliably precede regulatory penalties, the current analysis demonstrates that in the UK, such patterns are empirically unobservable, even if they exist below the surface. Additionally, the structural design of the disclosure regime may incentivise traders to remain just below the reporting threshold, preserving their informational edge while rendering their actions empirically invisible. This interpretation aligns with Grossman and Stiglitz's (1980) insight that traders will rationally adjust their behaviour to protect their rents, leading to opacity even in otherwise functioning markets. This supports Hypothesis 3. As the UK's disclosure regime limits the visibility of short-selling activity and, by extension, its potential utility as an early-warning indicator. The null results on short interest should not be interpreted as evidence against short sellers' informational value per se, but rather as a consequence of structural obscurity created by the reporting threshold.

This finding also speaks to the methodological validity of including short interest in the

model, even if no variation appears. Given consistent empirical evidence from other jurisdictions, it was reasonable to expect comparable behaviour in the UK. The fact that none was observable reinforces the idea that regulatory architecture explains the absence of predictive content in the data, rather than investor behaviour.

The limitations imposed by the UK's disclosure regime offer important implications for foundational theories in financial economics. Under EMH, particularly its semi-strong form, market prices should reflect all publicly available information. However, when informed trading activity is systematically withheld from public datasets, as is the case in the UK for sub-threshold short positions, market prices are deprived of key signals. This observation aligns with Grossman and Stiglitz's (1980) critique that perfect informational efficiency is impossible when information acquisition is costly or incomplete.

From the perspective of agency theory, reduced trading transparency weakens the market's ability to discipline managerial misconduct, as short sellers cannot serve as effective external monitors without public visibility. Similarly, signalling theory suggests that short interest could act as a market-based red flag yet in the UK context, such signals remain largely unnoticed. In this environment, media sentiment becomes a substitute channel for signalling misconduct, as also discussed in the work of Bushee et al. (2010) and Tetlock (2011).

Third, the strong statistical significance of firm and industry fixed effects in all regression models reinforces the notion that misconduct risk is not randomly distributed across the market but rather tends to occur in certain sectors and firms persistently, in particular those in regulation-heavy industries such as pharmaceuticals and finance. This supports prior findings by Dyck et al. (2010), who show that misconduct tends to recur in "repeat-offender" firms with persistent governance failures. However, robustness checks indicate that the predictive value of media sentiment does not systematically vary by either industry, firm visibility, or sentiment volatility. This suggests that while misconduct is more common in certain contexts, sentiment-based prediction does not meaningfully improve in those contexts. While short interest and sentiment appear limited in their predictive utility in this setting, the significance of firm and industry fixed effects suggests that historical misconduct patterns and sector-specific regulatory exposure offer valuable context for assessing enforcement risk.

## 6.1 | Limitations and Endogeneity

This study is subject to a few key limitations, most of which stem from structural features of the UK regulatory and informational environment. The absence of publicly disclosed short interest in event windows limits the empirical scope of the analysis. As a result, the predictive power of short-selling behavior could not be evaluated directly, only its empirical invisibility could be documented. Also, the timing of media sentiment poses endogeneity concerns. While sentiment clearly reacts to enforcement announcements, following figure 2, its anticipatory value remains unclear. It is possible that sentiment reflects partial leaks, investigative journalism, or the same underlying firm behaviour that drives enforcement. All of which make it difficult to isolate an independent predictive power. A randomized placebo or matched firm-week control sample could help address this in future work.

Finally, the reliance on a penalty-centered event window restricts the generalisability of results. Without a broader panel that includes firms not facing enforcement, baseline sentiment dynamics remain unobserved. Incorporating continuous monitoring across a full firm-year panel could yield deeper insight into early signal dynamics.

## 6.2 | Policy and Research Implications

The finding that neither short interest nor lagged media sentiment provides statistically significant early warning of regulatory penalties in the UK context must be considered in light of important market microstructure and institutional factors. First, the limited public availability of short-selling data, due to the higher reporting threshold, reduces market transparency and may obscure early signals of misconduct that are visible in more data-rich environments like the US. Second, differences in the legal environment and enforcement style may play a role as the UK's regulatory landscape is characterized by strong enforcement but also by stricter controls on the flow of market-sensitive information. This can diminish the likelihood of information leakage and speculative trading prior to formal regulatory actions. Third, the UK media environment may be less aggressive or slower in uncovering and reporting on corporate wrongdoing compared to the US, further dampening the anticipatory effect of sentiment metrics. Together, these factors suggest that the null results found in this study are not necessarily evidence against the theoretical link between short-selling and misconduct but may instead reflect the structural and institutional context of the UK

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market.

To advance understanding in this area, future research should consider several promising avenues. First, cross-country comparative studies could directly examine how differences in short-selling disclosure regimes, legal environments, and media behaviour affect the predictiveness of market-based signals for corporate misconduct. Second, as data availability improves, researchers could exploit more granular, transaction-level short interest disclosures, if and when they become available, to test for more subtle patterns of informed trading. Third, integrating additional early warning indicators such as options trading data, whistleblower activity, or internal compliance reports may improve predictive models beyond the use of conventional media sentiment and short interest alone as also suggested by Woolridge (2021).

Additionally, future research could focus on less mainstream media sources but rather capitalize on the use of social media and more speculative sources as. Finally, qualitative research on information flows between regulators, the media, and financial market participants could shed light on the mechanisms through which early signals are generated or suppressed in different institutional contexts.

The results of this thesis highlight several structural and regulatory constraints that shape the effectiveness of market-based mechanisms for predicting corporate misconduct. The most immediate implication concerns the UK's high short-selling disclosure threshold, which fundamentally limits the transparency of informed trading. In contrast to the U.S., the UK regime renders many potentially informative trades invisible to the public and to researchers. This constraint reduces the efficacy of market-based monitoring and may inadvertently shield firms from early detection by external stakeholders. From a policy perspective, this raises important questions about the trade-off between trader anonymity and market transparency. While high thresholds may succeed in protecting trading strategies and reducing noise, they can also impair price discovery and diminish the hindering effect of public scrutiny. In more transparent markets, media and investor attention can be drawn to governance risks, prompting firms to address emerging issues before they escalate. Lowering the reporting threshold, introducing aggregate disclosures, or enhancing the frequency of reporting may improve informational efficiency without fully compromising the anonymity of individual traders. Giving weight to market-based accountability by firms by institutional or activist short sellers. Regulators could also consider making historical short position data more accessible for research and oversight purposes, given its potential

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relevance for enforcement prediction.

In parallel, the empirical weakness of media sentiment as a forward-looking indicator suggests that while media analytics are useful for identifying misconduct when it becomes public, they should not be solely relied on to spot risks ahead of time. The timing and tone of media coverage are influenced by regulatory actions themselves, and the results here suggest that sentiment drops *with* rather than somewhere *before* formal penalties. However, in an environment where short-selling signals are muted or obscured, media coverage may still serve as a secondary, complementary signal for enforcement risk, particularly in sectors or firms with a history of regulatory exposure.

### **6.3 Regulatory Reform and Research Agenda**

Given the limitations observed under the UK's current short-selling disclosure regime, policymakers may wish to consider lowering the public reporting threshold from 0.5% to a more informative level, such as 0.1% or 0.2%. This would bring the UK more in line with international practices and may strike a better balance between preserving trader anonymity and enabling market surveillance. For instance, the United States does not require position-specific disclosures but does release bi-monthly aggregate short interest data at the firm level. Meanwhile, countries like Germany and the Netherlands have adopted hybrid models, requiring public disclosure at lower thresholds (0.2%) while also collecting non-public data for regulatory oversight. These regimes capture a greater portion of informed trading activity without fully undermining strategic trading incentives. A similar approach in the UK could enhance informational efficiency while safeguarding against potential market manipulation. Furthermore, researchers should be granted anonymised access to the FCA's sub-threshold short interest data. This would allow for a more comprehensive empirical evaluation of whether and how informed trading patterns relate to misconduct risk, an insight that remains out of reach under the current transparency constraints.

Future research should build on this study in several directions. First, cross-country comparisons could assess whether lower-threshold disclosure regimes improve the predictive content of short-selling data. Second, access to transaction-level or sub-threshold short interest data, albeit in anonymised or aggregated form, would allow for finer-grained testing of informed trading around misconduct events. Third, integrating alternative early-warning channels, such as abnormal options trading, whistleblower activity, or compliance audit data, may yield more robust

multi-source prediction models. Alternatively, for sentiment analysis, less conventional news sources might be utilised. As alternative sources such as online fora or social media might hold more predictive power. Finally, qualitative research exploring how information travels between firms, media, regulators, and market participants could shed light on the dynamics of informational leakage and signal formation in different institutional environments.

## 7 | Conclusion

This thesis set out to examine whether market-based indicators, more specifically short-selling activity and media sentiment, can serve as early-warning signals of corporate misconduct in UK-listed firms, within the constraints of the UK's short-selling disclosure regime. The central research question was:

**RQ:** *How does the UK's short-selling disclosure regime shape the ability of market-based indicators, such as short interest and media sentiment, to serve as early-warning signals of corporate misconduct?*

The findings offer a nuanced answer to the research question. Most notably, no public short positions exceeding the FCA's 0.5% threshold were observed in any penalty event window from 2010 to 2024. This absence is not a data error but a direct reflection of the UK's high reporting threshold. This finding underscores the relevance of H<sub>3</sub>: the FCA's disclosure regime materially restricts the availability of short-selling data, limiting the ability of researchers, investors, and regulators to observe potential early warnings.

In contrast, media sentiment data were fully observable and showed a significant contemporaneous drop in the week of enforcement announcements, confirming that the financial media reacts strongly to regulatory penalties. However, regression analyses using lagged sentiment as a predictor did not produce statistically significant results. Therefore, H<sub>2</sub> is only partially supported: while media sentiment is a powerful concurrent indicator of regulatory events, its anticipatory power appears limited in the UK context. This may reflect both the structure of media coverage and the timing of regulatory information leaks or signals.

Taken together, the findings suggest that neither short-selling disclosures nor media sentiment currently provide robust, publicly observable early warnings of corporate misconduct in the UK.

This is not due to a lack of informational value in these signals per se, but rather due to structural frictions in regulatory design and media behaviour. The UK's relatively murky disclosure regime limits the transparency of potentially informed trading, and the media's response is largely reactive, but nevertheless intense.

From a policy perspective, these results highlight the trade-off between trader anonymity and market transparency. In settings like the US, prior studies have found short interest to be a significant leading indicator of misconduct. The UK's higher threshold may shield small but

meaningful short positions from public scrutiny, thereby weakening the market's disciplinary function. These findings also raise important implications for the Efficient Market Hypothesis. Under the semi-strong form of EMH, prices are expected to reflect all publicly available information, including signals from informed traders such as short sellers. However, the FCA's disclosure regime effectively removes a large portion of such information from the public domain. As a result, markets in the UK may be less efficient at pricing misconduct risk compared to jurisdictions with lower disclosure thresholds. This suggests that regulatory frictions, not merely behavioural biases, can be significant constraints on informational efficiency, adding a structural dimension to classic critiques of EMH.

Revisiting the Citadel–GSK example from the introduction, this case underscores a core tension highlighted in the findings. Despite the scale and strategic timing of Citadel's £305 million short position against GSK, which coincided with ongoing legal scrutiny, no such position was observable in FCA disclosures. This disconnect illustrates the central empirical point of this thesis. Even significant, well-informed trades may remain hidden from public view under the UK's high short-selling disclosure threshold. While short sellers may indeed act on early signs of misconduct, their activity may go undetected, weakening the potential for market-based governance. From a theoretical standpoint, these findings support the notion that market efficiency is bounded by the institutional costs of information disclosure. Consistent with Grossman and Stiglitz (1980), traders respond to disclosure costs by adjusting their behaviour in ways that reduce transparency. As discussed earlier, this supports the interpretation that regulatory design, rather than market failure, limits observability.

In conclusion, this thesis contributes to the literature by showing how regulatory design shapes the empirical visibility and effectiveness of market-based governance mechanisms. While the promise of short interest and sentiment as predictive tools remains theoretically sound, their utility in practice is highly dependent on institutional context. Future research should explore lower-threshold disclosure environments, integrate alternative trading data (e.g. options, analyst's ratings or CDS), and investigate private information flows that escape public datasets.

## 8 | References

Agarwal, V., Jiang, W., Tang, Y., & Yang, B. (2013). Uncovering hedge fund skill from the portfolio holdings they hide. *The Journal of Finance*, 68(2), 739-783.

<https://doi.org/10.1111/jofi.12012>

Asquith, P., Pathak, P. A., & Ritter, J. R. (2005). Short interest, institutional ownership, and stock returns. *Journal of Financial Economics*, 78(2), 243-276.

<https://doi.org/10.1016/j.jfineco.2005.01.001>

Autore, D., Billingsley, R. & Kovacs, T., (2011) The 2008 short sale ban: Liquidity, dispersion of opinion, and the cross-section of returns of US financial stocks, *Journal of Banking & Finance*, 35(9), 2252-2266. <https://doi.org/10.1016/j.jbankfin.2011.01.026>.

Beber, A., & Pagano, M. (2013). Short-selling bans around the world: Evidence from the 2007-09 crisis. *Journal of Finance*, 68(1), 343-381. <https://doi.org/10.1111/j.1540-6261.2012.01802.x>

Beneish, M. D., Lee, C. M., & Nichols, D. C. (2013). Earnings manipulation and expected returns. *Financial Analysts Journal*, 69(2), 57-82. <https://ssrn.com/abstract=2241717>

Boehmer, E., Jones, C. M., & Zhang, X. (2008). Which Shorts Are Informed? *The Journal of Finance*, 63(2), 491-527. <https://doi.org/10.1111/j.1540-6261.2008.01324.x>

Bushee, B. J., Core, J. E., Guay, W., & Hamm, S. J. (2010). The role of the business press as an information intermediary. *Journal of Accounting Research*, 48(1), 1-34.

<https://dx.doi.org/10.2139/ssrn.955021>

Cameron, A. C., & Miller, D. L. (2015). A practitioner's guide to cluster-robust inference. *Journal of Human Resources*, 50(2), 317-372. <https://doi.org/10.3368/jhr.50.2.317>

Chague, F., De-Losso, R., & Giovannetti, B. (2020). The short-selling skill of institutional investors. *Journal of Banking & Finance*, 118, 105897.

<https://doi.org/10.1016/j.jbankfin.2019.02.003>

Christophe, S. E., Ferri, M. G., & Angel, J. J. (2004). Short-selling prior to earnings announcements. *Journal of Finance*, 59(4), 1845-1876. <https://doi.org/10.1111/j.1540-6261.2004.00681.x>

Cohen, L., Malloy, C. J., & Nguyen, Q. (2012). Lazy prices. *Journal of Finance*, 67(5), 1957-1998. <https://dx.doi.org/10.2139/ssrn.1658471>

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signalling theory: A review and assessment. *Journal of Management*, 37(1), 39-67.

<https://doi.org/10.1177/0149206310388419>

- Cordis, Adriana & Lambert, Elizabeth. (2017). Whistleblower laws and corporate fraud: Evidence from the United States. *Accounting Forum*, 41. <https://doi.org/10.1016/j.accfor.2017.10.003>.
- Dechow, P. M., Hutton, A. P., Meulbroek, L., & Sloan, R. G. (2001). Short-sellers, fundamental analysis, and stock returns. *Journal of Financial Economics*, 61(1), 77–106. [https://doi.org/10.1016/S0304-405X\(01\)00056-3](https://doi.org/10.1016/S0304-405X(01)00056-3)
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13(1), 1–36. <https://doi.org/10.1111/j.1911-3846.1996.tb00489.x>
- DeHaan, E., Shevlin, T., & Thornock, J. (2015). Market (in) attention and the strategic scheduling and timing of earnings announcements. *Journal of Accounting and Economics*, 60(1), 36-55. <https://dx.doi.org/10.2139/ssrn.2545966>
- Desai, H., Ramesh, K., Thiagarajan, S. R., & Balachandran, B. V. (2002). An investigation of the informational role of short interest in the NASDAQ market. *Journal of Finance*, 57(5), 2263–2287. <https://doi.org/10.1111/0022-1082.00495>
- Diether, K. B., Lee, K. H., & Werner, I. M. (2009). Short-sale strategies and return predictability. *Review of Financial Studies*, 22(2), 575–607. <https://doi.org/10.1093/rfs/hhn047>
- Dyck, A., Morse, A., & Zingales, L. (2010). Who blows the whistle on corporate fraud? *Journal of Finance*, 65(6), 2213–2253. <https://doi.org/10.1111/j.1540-6261.2010.01614.x>
- Dyck, A., Volchkova, N., & Zingales, L. (2008). The corporate governance role of the media: Evidence from Russia. *Journal of Finance*, 63(3), 1093–1135. <https://doi.org/10.1111/j.1540-6261.2008.01353.x>
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 14(1), 57–74. <https://doi.org/10.2307/258191>
- Engelberg, J., & Parsons, C. A. (2009). The causal impact of media in financial markets. *Journal of Finance*, 66(1), 67–97. <https://dx.doi.org/10.2139/ssrn.1462416>
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383–417. <https://doi.org/10.2307/2325486>
- Fang, L., & Peress, J. (2009). Media coverage and the cross-section of stock returns. *Journal of Finance*, 64(5), 2023–2052. <https://doi.org/10.1111/j.1540-6261.2009.01493.x>
- Fernando, S. Onishchenko, O. Kurupparachchi, D. (2024) Do short sellers amplify extreme market declines? *Pacific-Basin Finance Journal*, 87, 0927-538. <https://doi.org/10.1016/j.pacfin.2024.102498>

Fishman, M. J., & Hagerty, K. M. (1989). Disclosure decisions by firms and the competition for price efficiency. *The Journal of Finance*, 44(3), 633–646. <https://doi.org/10.1111/j.1540-6261.1989.tb04382.x>

Florou, A., Kosi, U., & Pope, P. F. (2017). Are international accounting standards more credit relevant than domestic standards? Evidence from UK firms. *Accounting and Business Research*, 47(7), 733–761. <https://dx.doi.org/10.2139/ssrn.2330756>

Gormley, T. A., Kaplan, Z., & Verma, A. (2022). More informative disclosures, less informative prices? Portfolio and price formation around quarter-ends. *Journal of Financial Economics*, 146(2), 665–688. <https://doi.org/10.1016/j.jfineco.2021.10.004>

Grossman, S. J., & Stiglitz, J. E. (1980). On the impossibility of informationally efficient markets. *American Economic Review*, 70(3), 393–408. <https://ssrn.com/abstract=228054>

Hao, M., Hong, J. (2025) The disciplinary role of options trading: Evidence from earnings manipulation. *International Review of Economics & Finance* (98), 2025, 103910. <https://doi.org/10.1016/j.iref.2025.103910>

Hirshleifer, D., Lim, S. S., & Teoh, S. H. (2011). Limited investor attention and stock market misreactions to accounting information. *Review of Asset Pricing Studies*, 1(1), 35–73. <https://doi.org/10.1093/rapstu/rar002>

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)

Jones, L. (2012). *Short Selling and Financial Market Regulation*. Cambridge University Press, Chapter 4, pp. 71-73.

Karpoff, J. M., Lee, D. S., & Martin, G. S. (2008). The consequences to managers for financial misrepresentation. *Journal of Financial Economics*, 88(2), 193–215. <https://ssrn.com/abstract=1012730>

Karpoff, J. M., & Lou, X. (2010). Short sellers and financial misconduct. *Journal of Finance*, 65(5), 1879–1913. <https://doi.org/10.1111/j.1540-6261.2010.01597.x>

Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *Journal of Finance*, 66(1), 35–65. <https://doi.org/10.1111/j.1540-6261.2010.01625.x>

Nahidi, N., & Sifat, I. (2024). *Post-Brexit ESG penalty arbitrage* (SSRN Working Paper No. 5265781). SSRN. <https://doi.org/10.2139/ssrn.5265781>

- Purnanandam, A., & Seyhun, H. N. (2018). Do Short Sellers Trade on Private Information or False Information? *The Journal of Financial and Quantitative Analysis*, 53(3), 997–1023. <https://www.jstor.org/stable/26591938>
- Reed, Adam V., Short Selling (2013). *Annual Review of Financial Economics*, Vol. 5, pp. 245-258, 2013, <http://dx.doi.org/10.1146/annurev-financial-110311-101813>
- Saffi, P. & Sigurdsson, K. (2010) Price Efficiency and Short Selling *AFA 2008 New Orleans Meetings Paper, IESE Business School Working Paper No. 748, Review of Finance Studies*, 24(3), 821-852, <https://ssrn.com/abstract=949027>
- Shleifer, A., & Vishny, R. W. (1997). The limits of arbitrage. *Journal of Finance*, 52(1), 35–55. <https://doi.org/10.1111/j.1540-6261.1997.tb03807.x>
- Shi, W., Connelly, B. L., & Cirik, M. (2020). *Disciplining Role of Short Sellers: Evidence From M&A Activity*. *Journal of Management*, 46(7), 1290–1316. <https://doi.org/10.1177/0149206320912307>
- Seyhun, H. N. (1992) Why Does Aggregate Insider Trading Predict Future Stock Returns?, *The Quarterly Journal of Economics*, 107(4), 1303–1331, <https://doi.org/10.2307/2118390>
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Tetlock, P. C. (2007). Giving content to investor sentiment: The role of media in the stock market. *Journal of Finance*, 62(3), 1139–1168. <https://doi.org/10.1111/j.1540-6261.2007.01232.x>
- Tetlock, P. C., Saar-Tsechansky, M., & Macskassy, S. (2008). More than words: Quantifying language to measure firms' fundamentals. *Journal of Finance*, 63(3), 1437–1467. <https://doi.org/10.1111/j.1540-6261.2008.01362.x>
- Tetlock, P. C. (2011). All the news that's fit to reprint: Do investors react to stale information? *Review of Financial Studies*, 24(5), 1481–1512. <https://dx.doi.org/10.2139/ssrn.1018221>
- Van Buskirk, Andrew. (2011). Disclosure frequency and information asymmetry. *Review of Quantitative Finance and Accounting*. 38. 411-440. <https://doi.org/10.1007/s11156-011-0237-0>.
- Wooldridge, J. M. (2021). *Introductory Econometrics: A Modern Approach* (7th ed.). Boston: Cengage Learning.