A Unified Approach to Spillovers: Evidence from Media Tone

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Abstract

Departing from prior research that focuses on spillover effects triggered by discrete events, this study introduces daily firm-level media tone as a unified measure that captures both event-driven and non-event information dynamics. Using a continuous information framework that explicitly accounts for peer co-movements, we show that positive media tone for one firm significantly lowers the stock returns of its peers. Identification based on earnings surprises yields consistent evidence. The effect is amplified under heightened investor attention, and peers respond more strongly to negative than to positive tone. Channel tests reveal that spillover effects are more pronounced when the media tone originates from firms with stronger competitive advantages or when the tone is forward-looking, confirming market rivalry as the underlying transmission channel. Overall, these findings offer new insights into firm interdependencies in financial markets.

JEL Classifications*:* G12, G14

Keywords: Firm news, Media tone, Peer firms, Spillover, Market rivalry

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1. Introduction

Numerous studies have explored how information spills over among peer firms, often concentrating on major corporate events such as earnings announcements and conference calls (e.g., Foster, 1981; Han and Wild, 1990; Brochet, Kolev, and Lerman, 2018; Hann, Kim, and Zheng, 2019). While these discrete events offer valuable insights into inter-firm dynamics, they provide a relatively narrow perspective on the broader dynamics of peer spillovers. Markets are influenced not only by headline-grabbing events but also by the ongoing stream of information that subtly shapes investor behavior over time. This limitation in the event-based literature creates a significant gap in our understanding of how information spillovers operate in real time. Frankel, Godigbe, and Rabier (2025) highlight this issue, showing that the co-movement of focal and peer stock returns is weaker on earnings announcement days than on non-announcement days. Their findings challenge the conventional emphasis on event-driven analysis and suggest that the most significant peer effects may occur outside scheduled events. Consequently, spillover analyses that focus solely on discrete events without accounting for peer co-movements particularly during non-event periods may produce biased estimates. However, adopting a continuous information framework that incorporates non-event dynamics poses its own challenges, particularly in devising a unified metric to quantify the magnitude of heterogeneous discrete event types, each varying in scale, context, and informational content, on a common scale.

To address this gap, we adopt a framework that leverages high-frequency, firm-level media tone - constructed from both news and social media sources - to capture the evolving flow of firm-specific information. In our approach, we compute the daily weighted average returns of a firm's peers and examine their correlation with the focal firm's media tone, explicitly controlling for peer co-movement. This framework enables us to standardize and compare measures derived from various discrete corporate events

as well as non-event dynamics, facilitating a more precise analysis of spillover effects among peers.

Our methodology offers several advantages over traditional event-study designs. First, firm-level media tone captures a broad spectrum of information, from hard idiosyncratic shocks such as earnings surprises and bankruptcies to softer, more diffuse signals such as media perception, customer satisfaction, and operational changes. As highlighted by Tetlock, Saar-Tsechansky, and Macskassy (2008), news media play a critical role in disseminating information in financial markets, capturing insights from diverse media sources, including financial analysts, journalists, and investors. Linguistic media content can reflect hard-to-quantify aspects of a firm's fundamentals, which investors rapidly incorporate into stock prices. By integrating traditional news and social media, media tone provides a rich, high-frequency proxy for firm-specific information, offering a more comprehensive view of the information environment than measures limited to discrete corporate events.

Second, firm media tone provides a quantitative measure of the intensity of firm-specific information, enabling a more nuanced analysis of spillover effects. Unlike discrete-event studies, which focus primarily on extreme shocks, news tone-based analysis allows for examining moderate and extreme changes. Leveraging high-frequency media tone data enhances our understanding of peer spillover effects and offers a more holistic view of firm interdependencies. Third, our approach relaxes the conventional assumption that spillovers occur exclusively from early earnings announcers to their peers. Instead, it allows for spillovers between any peer firms within an industry, irrespective of the timing of their disclosures. This flexibility is crucial, because firm-specific information can influence peers regardless of whether it is released before or after the peers have disclosed their own earnings.

In this study, we propose that firm media tone, after accounting for peer firm co-movements and industry-wide information, primarily captures firm-specific information.

Much like self-disclosures that reveal new insights, media tone-based signals can also generate spillover effects among peer firms. However, the direction of this spillover remains an open question. On the one hand, if the tone reflects information about a common industry development, such as a technological breakthrough or setback not yet fully priced in, it may positively influence peer returns, consistent with knowledge spillover effects. On the other hand, if the media tone reflects a firm-specific competitive advantage or weakness, it may negatively impact peers by signalling relative performance differences, suggesting rivalry-based spillover effects.

Our analysis using daily firm-level media tone data from LSEG MarketPsych Analytics from 1998 to 2023 reveals a significant rivalry-based spillover effect: higher (lower) firm media tone is associated with lower (higher) contemporaneous returns among peer firms. This relationship is statistically and economically significant, with a one standard deviation increase in a firm's daily media tone leading to a 2.14 basis point decline in peer firm returns (equivalent to 5.39% per annum). This effect is especially noteworthy given that it originates from the media tone of a single firm. Our finding holds across various robustness tests, including pairwise regressions, alternative peer group definitions, different media tone measures, and alternative methods to control for peer co-movements.

Our analysis of media tone and rivalry spillovers is guided by the theoretical framework of Bloom, Schankerman, and Van Reenen (2013), which distinguishes between two types of spillovers based on their underlying mechanisms and net effects on firms. Knowledge spillovers are positive externalities, where firms operating in close technological proximity benefit from shared capabilities, learning opportunities, and knowledge diffusion, ultimately enhancing firm performance. In contrast, product market rivalry spillovers are negative externalities, as competitive improvements by peers intensify market competition, eroding margins and market share through a business-stealing effect. While knowledge spillovers foster growth through information-sharing,

rivalry spillovers reduce profitability by increasing competitive pressure. Since knowledge spillovers rely on widely shared industry-level signals, as reflected in peer co-movements, firm-specific media tone is less likely to drive knowledge diffusion. Instead, its idiosyncratic nature is more closely tied to heightened competitive dynamics, predominantly portraying rivalry spillover effects. Our empirical findings strongly support this argument.

One potential concern is endogeneity, as firm media tone and peer returns may be jointly determined, i.e., peer firm performance could influence the media tone of the focal firm. To establish the causal effect of firm media tone on peer returns, we use earnings surprises as exogenous shocks and examine their relationship with peer returns on earnings announcement days. First, we show that earnings surprises are positively correlated with media tone and then demonstrate that higher (lower) earnings surprises lead to lower (higher) peer firm returns. These results reinforce our main findings within a continuous information framework and provide further evidence of the causal relationship from firm media tone to peer firm returns.

We further investigate how firm attention influences the relationship between firm media tone and peer returns. Our results show that firm attention significantly amplifies the negative spillover effects of media tone on peer returns, which aligns with the theory of Andrei, Friedman and Ozel (2023) suggesting that attention amplifies stock price reactions to shocks. This suggests that when a firm garners greater attention, its high (low) media tone is more widely disseminated and quickly interpreted as a signal of competitive strength (weakness), prompting investors to reallocate capital away from, or toward, its peers. Moreover, we find that the *negative media* tone has a stronger impact than positive tone, consistent with prior research indicating that negative news tends to exert a greater influence on market behavior than positive news (e.g., Akhtar et al., 2011, 2012; Agrawal et al., 2018).

To confirm that rivalry spillover is the economic channel through which a firm's media tone negatively affects peer returns, we conduct three analyses. First, we examine how interfirm rivalry influences this relationship. Drawing on Bloom et al. (2013), who suggest that rivalry spillovers arise primarily through business-stealing effects, we proxy rivalry using a firm's competitive advantage. When firms with stronger competitive positions release positive firm-specific news, the resulting business-stealing pressure on peers is likely to be more intense. Therefore, if rivalry drives these effects, firms with greater competitive advantages should exert stronger media-tone spillovers on their peers. Consistent with this, we find spillovers are amplified for firms with substantial market power or highly differentiated products, where imitation by rivals is less feasible.

Second, we separate forward- and backward-looking components of media tone. Forward-looking information - forecasts and expectations about growth opportunities - primarily signals future competitive positioning (Myers, 1977; Beyer, et al., 2010). By emphasizing business-stealing threats, it reinforces rivalry and produces negative spillovers. In contrast, backward-looking information - historical performance, firm outcomes, and lessons from past operations - facilitates knowledge diffusion across firms (Tseng and Zhong, 2024), creating positive spillovers as peers adapt or learn from the focal firm's experiences. Our results show that forward-looking tone is negatively associated with peer returns, while backward-looking tone is positively related, though to a lesser extent. Thus, rivalry emerges as the dominant mechanism, with knowledge spillovers playing only a minor role.

Finally, we test whether media tone merely reflects investor sentiment rather than firm-specific information. If so, the negative correlation could arise from temporary portfolio rebalancing following an attention-driven shock to the focal firm's stock (Tetlock, 2007). In this case, peer underperformance would reflect short-term mispricing and subsequent mean reversion rather than genuine rivalry. Our evidence rules out this explanation, reinforcing rivalry as the primary economic channel.

This study makes two key contributions to the firm spillover literature. First, we introduce a continuous information framework that captures the full spectrum of information affecting firm value and its spillover onto peers. This approach challenges the prevailing notion that spillover effects occur mainly around discrete corporate events (e.g., Clinch and Sinclair, 1987; Han, Wild, and Ramesh, 1989; Freeman and Tse, 1992; Leuz and Wysocki, 2016; Brochet et al., 2018; Hann et al., 2019). Instead, we provide evidence that spillovers are high-frequency and pervasive in daily market activity.[1]

Second, we provide empirical evidence supporting the product rivalry theory proposed by Bloom et al. (2013), showing that the intensity of negative spillovers is conditioned by a firm's competitive advantage. In doing so, we offer an alternative explanation of the weaker peer firm co-movement observed on earnings announcement days, as documented by Frankel et al. (2025). Rather than attributing this solely to a higher concentration of firm-specific versus common information, we show that market rivalry embedded in firm-specific news significantly contributes to this relationship. Additionally, we show that firm attention amplifies peer spillover effects, highlighting the critical role of news and social media in disseminating firm-specific information.

The remainder of the paper is structured as follows: Section 2 reviews the relevant literature. Section 3 details the data sources and construction. Section 4 presents the empirical analysis. Section 5 provides further exploration of the market rivalry channel. Section 6 concludes the study.

[1] It is worth noting that although we refer to our measure as "continuous," the daily tone values ultimately reflect aggregated information from individual news stories and social media posts of varying size and visibility. The high frequency and breadth of these inputs allow the measure to approximate the day-to-day information environment faced by investors, integrating both major announcements and smaller, more diffuse signals. In doing so, our approach moves beyond traditional event studies, which typically focus on narrow event types, by offering a single high-frequency proxy for the overall flow of firm-specific information and reducing the need for numerous event-specific measures.

2. Literature Review

The literature has examined how firm-specific news affects peer firms, yet existing theories offer conflicting predictions about the direction of these spillover effects. This dual effect was first formalized by Bloom et al. (2013), who introduced two competing mechanisms: the knowledge spillover effect and the product market rivalry effect. The knowledge spillover perspective posits that news about a focal firm is often interpreted by investors as indicative of broader industry or sector conditions. Since firms within the same industry typically share common market dynamics, such as supply chains, regulatory environments, and demand, favorable developments for one firm can generate positive externalities for its peers, leading to stock price increases across the group. In contrast, the product market rivalry effect suggests a competitive dynamic: negative news for one firm can benefit its competitors by creating business-stealing opportunities. Here, the focal firm's decline in market share enables its rivals to strengthen their competitive position. These dual effects, knowledge and rivalry spillovers, form the foundation for much of the existing research on firm interdependencies.

According to the knowledge spillover theory, when a firm receives positive news, its peers may also benefit due to shared market dynamics. Bloom et al. (2013) examine the impact of R&D in driving growth through spillovers and provide evidence that information, expertise, or technological innovations from one firm can disseminate across the industry, enhancing the productivity and strategic decisions of others. Extending this idea, Baranchuk and Rebello (2018) develop a model analyzing how a firm's bankruptcy affects its product market-linked peers. They demonstrate that bankruptcies can create real economic spillovers for competitors, but the net effect depends on the relative strength of knowledge versus rivalry spillovers. Specifically, under a dominant knowledge spillover, a bankruptcy may signal broader industry distress, thereby dampening investor confidence in the sector and negatively affecting the valuations of peer firms.

Additional evidence of the knowledge spillover effect is provided by Brochet et al. (2018) who document significant intra-industry stock return co-movements around earnings releases. These return co-movements are both statistically and economically stronger during conference call windows than during earnings announcement windows. This phenomenon is attributed to information transfer mechanisms, including shared analyst coverage, industry recommendations by analysts, shared institutional ownership, and joint financial media mentions. Further supporting this effect, Hann et al. (2019) examine stock return volatility around earnings announcements and find a strong positive association between changes in the implied volatility of the first announcing firm in an industry and the volatility of its peers. Their findings suggest that earnings announcements help resolve uncertainty not only about the disclosing firm but also about other firms in the same industry.

However, positive news about a firm can also negatively impact its peers, consistent with the market rivalry effect explained in Bloom et al. (2013). This effect suggests that adverse news for one firm may benefit its competitors by creating business-stealing opportunities. In their framework, rivalry spillovers arise when a firm's R&D investment enhances its own market position at the expense of its rivals, diminishing their profitability and firm value. Complimenting this view, Baranchuk and Rebello (2018) identify a competition effect in the context of bankruptcy, where a bankrupt firm's weakened position signals opportunity for its peers. When the competition effect dominates, the exit of a rival enables remaining firms to capture greater market share, resulting in higher stock and debt prices and a reduced probability of bankruptcy for the surviving competitors.

Further supporting the market rivalry effect, Cao, Fang, and Lei (2021) examine the strategic use of negative peer disclosure, where firms publicize adverse news about industry competitors via social media. They find that such disclosures function as implicit positive self-disclosures, generating significant two-day abnormal returns for the

disclosing firms relative to both market and industry benchmarks. The incentives to issue these disclosures are especially strong when targeting peers with greater product market rivalry and technological proximity, as the competitive gains are more pronounced. Similarly, Dou et al. (2024) analyze the effects of consumer complaints against banks and find that rival institutions respond strategically. Following such complaints - often highlighting firm-specific weaknesses like poor underwriting, loan servicing, and foreclosure management - competitor banks increase mortgage approval rates, expand branch networks, and post more job openings in affected markets, capitalizing on the weakened position of the disclosing firm. Taken together, these studies suggest that peer spillover effects are highly context-dependent. In our setting, where firm-specific information is continuously captured via media tone, the direction and strength of these effects remain an open empirical question.

It is important to recognize that the existing literature on peer spillover effects primarily focuses on discrete events such as R&D-related announcements (Bloom et al., 2013), corporate bankruptcies (Baranchuk and Rebello, 2018), earnings releases (e.g., Foster, 1981; Thomas and Zhang, 2008; Brochet et al., 2018; Hann et al., 2019), negative corporate disclosures (Cao et al., 2021), and consumer complaints (Dou et al., 2024). This body of research demonstrates that firm disclosures - whether mandatory, voluntary, or strategically targeted - can influence not only the disclosing firm's valuation but also that of its industry peers, with important implications for investment strategies (Tookes, 2008), corporate disclosure behavior, and regulatory policy (e.g., Admati and Pfleiderer, 2000; Breuer, Hombach, and Müller, 2022; Truong, 2023). While event-based studies provide valuable insights, they suffer from inherent limitations. By design, such events are infrequent and fail to capture the high-frequency nature of information flow in the financial markets. For instance, R&D-related news like patent filings is observable only when formally submitted to patent offices, making them discrete by definition. Similarly, Chapter 11 bankruptcies are legally defined occurrences and often treated as exogenous

shocks, prompting research to adopt event study methodologies that focus narrowly on peer firm reactions within a short window surrounding the event.

Another key limitation of discrete-event studies is their tendency to concentrate on extreme firm-specific shocks, often overlooking the broader relevance of gradual and moderate information flows that shape firm interactions throughout the year. Ball and Shivakumar (2008) show that non-earnings-announcement days account for a substantial portion of stock return variation, with earnings announcements contributing only 1–2% to a firm's annual return. This finding, echoing earlier concerns raised by Brown (1989) and Schipper (1990), questions the informativeness of such discrete events, particularly for shareholders of peer firms. Frankel et al. (2025) further highlight this issue by providing empirical evidence that spillover effects are considerably weaker during earnings announcements than on non-announcement days. Their results emphasize the limitations of traditional event-based approaches and reinforce the need for a framework that captures the full spectrum of peer firm interactions as they evolve over time.

Motivated by prior research, this study builds on Frankel et al. (2025) to address a critical but previously underexplored question in the literature: How does evolving firm-specific information spill over to peer firms, and what economic mechanisms drive this effect? To investigate this, we employ a daily measure of firm-specific media tone, which mitigates the limitations associated with discrete event identification. This approach allows us to examine whether, and in what way, firm-specific media tone influences peer firms' stock returns.

3. Data

3.1. Firm media tone

We utilize the LSEG MarketPsych Analytics Indices (formerly the Thomson Reuters MarketPsych Indices, TRMI) to measure firm-specific media tone. TRMI is an advanced linguistic news tone index derived from the analysis of online media content

related to specific firms, countries, and asset classes. MarketPsych processes millions of real-time news articles and social media posts from leading financial news outlets (e.g., Reuters, The Wall Street Journal, The Financial Times, The New York Times) and widely-followed social media platforms and forums such as Twitter, Reddit, Yahoo! Finance, Seeking Alpha, and StockTwits. The content is analyzed using a high-speed, AI-driven natural language processing (NLP) algorithm that adapts to evolving language use, tracks shifts in word meaning over time, and captures the context in which words appear. Unlike traditional analytics techniques, TRMI accounts for grammatical structures and word correlations, resulting in a more refined and context-sensitive measure of media tone. This dataset has been increasingly adopted in academic research, including studies by Michaelides et al. (2015), Michaelides, Milidonis, and Nishiotis (2019) and Barber et al. (2022).

TRMI offers comprehensive, daily firm-specific media tone data for U.S. companies, with coverage dating back to 1998. It provides scores across three categories: *News* (derived from traditional media), *Social* (based on social media content), and *News&Social* (a combined measure of both sources). For our main analysis, we focus on the media tone in *News&Social* category (*Tone*) as it best captures the full spectrum of publicly available firm-related information, and we use media tone based on *News* ($Tone^{news}$) and *Social* ($Tone^{social}$) for robustness. The tone score represents the volume-weighted average difference between positive and negative mentions of a company over a 24-hour period, and ranges from -1 to 1. Higher values indicate a more positive, while lower values reflect more negative tone. A score of zero reflects neutral tone.

Additionally, we incorporate TRMI's firm-level positive (*Positive*) and negative (*Negative*) tone measures to examine potential asymmetries in spillover effects and use TRMI's firm-level 'buzz' variable (*Attention*) - an indicator of media attention - to assess how visibility influences per spillovers, following the approach of Barber et al. (2022). To evaluate whether rivalry-based spillover serves as the underlying economic mechanism,

we utilize two proxies for competitive advantage: market power and product market similarity. Product similarity (*Similarity*) is derived from the Text-based Network Industry Classification (TNIC), developed by Hoberg and Phillips (2016). This metric captures the degree of textual similarity in product descriptions across firms, with higher similarity suggesting greater ease of imitation and, therefore, lower competitive differentiation. Market power is measured using the firm-level TNIC Herfindahl-Hirschman Index (*HHI*) following Hoberg and Phillips (2016), where higher HHI values indicate greater market power and, consequently, stronger competitive advantage. Data for both *HHI* and *Similarity* are obtained from the Hoberg-Phillips Data Library.[2]

3.2. Stock market data and peer firms' returns

All individual-stock return and volume data used in this study are sourced from the Center for Research in Security Prices (CRSP). We obtain daily returns and volume from the CRSP daily stock file for the period from January 1, 1998, to December 31, 2023. Our sample includes all common stocks traded on the NYSE, NYSE MKT, and NASDAQ (exchange codes 1, 2, and 3). We use only stocks classified as ordinary common shares (CRSP share codes 10 and 11), excluding American depository receipts, shares of beneficial interest, certificates, units, real estate investment trusts, closed-end funds, companies incorporated outside the United States, and Americus trust components. We exclude stocks with prices below $5.

There are several approaches to identifying peer firms. In our main analysis, we follow Frankel et al. (2025) and define peer firms as those sharing the same four-digit Standard Industrial Classification (SIC) code as the focal firm. To ensure the robustness of our results, we also employ the Global Industry Classification Standard (GICS). To measure peer returns, we calculate both value-weighted and equal-weighted averages using the following formula:

[2] Source: https://hobergphillips.tuck.dartmouth.edu.

$$ret_{i,t}^{peer} = \sum_j w_{i,j,t} \cdot ret_{j,t}, \tag{1}$$

where $ret_{j,t}$ denotes the return of peer firm j on day t, and $w_{i,j,t}$ represents the weight of firm j within the peer group of firm i. We use market capitalization to determine value weights. For clearer economic interpretation, we standardize and normalize all explanatory variables, except for raw return measures and earnings surprises, which are retained in their original units.

The summary statistics presented in Table 1 offer important insights into the distribution and relationships among the variables in the study. Panel A highlights the central tendencies and dispersion measures of the main variables. The mean values of both value-weighted and equal-weighted peer returns (0.091% and 0.088%, respectively) are nearly identical, with slightly lower standard deviation compared to individual stock returns (mean = 0.093%, SD = 2.922), suggesting that averaging across peer firms smooths volatility. The dataset includes approximately 2.7 million daily observations, ensuring broad coverage. We also analyze the impact of earnings surprises on peer returns, with 56,472 earnings surprise events identified over the sample period. The earnings surprises variable (ES) has a mean of 0.345 and a relatively high standard deviation (1.031), suggesting substantial variation in firm-level earnings shocks.

Panel B presents the correlation matrix. The high correlation (0.922) between value-weighted and equal-weighted peer returns indicates that both measures capture highly similar underlying trends. Individual stock returns exhibit moderate positive correlation with peer returns (0.461 and 0.479), suggesting that firm performance is partially driven by industry-wide factors, while still retaining a substantial idiosyncratic component. Firm media tone is weakly but positively correlated with both firm returns (0.055) and peer returns (0.012). Earnings surprises exhibit a moderate correlation with firm returns (0.163) and firm media tone (0.195), supporting the view that stronger

earnings results are typically associated with more positive media coverage. Notably, firm attention shows negligible correlations with most other variables, implying that media attention may capture unique informational effects that are not directly embedded in return-based measures.

INSERT TABLE 1 HERE

4. Empirical analysis

4.1. Firm media tone and peer returns

In our main analysis, we investigate the relationship between firm-specific media tone and peer returns using the following regressions:

$$ret_{i,t}^{peer} = \alpha + \beta \cdot Tone_{i,t} + \epsilon_{i,t}, \tag{2}$$

where $ret_{i,t}^{peer}$ is the average return of firm $i's$ peers on day t, and $Tone_{i,t}$ is the media tone of firm i on the same day. All regressions include firm fixed effects to control for time-invariant firm characteristics, along with year, month-of-the-year (moy), and day-of-the-week (dow) dummy variables to capture seasonal and calendar effects. Standard errors are two-way clustered by industry and firm: the former addresses potential cross-sectional correlation in peer returns among firms within the same industry, while the latter accounts for autocorrelation and heteroskedasticity in residuals at the firm level.[3]

It is important to note that while *Tone* primarily captures idiosyncratic firm information, it may also reflect broader industry trends or market-wide shocks. To isolate the firm-specific component of media tone, we further include industry-date joint fixed effects, which absorb shocks common to all firms within an industry on a given day, as

[3] Our results are robust to alternative clustering strategies, including two-way clustering by industry and date, two-way clustering by firm and date, and three-way clustering by firm, industry, and date. Results are available upon request.

well as market-level factors. This approach allows us to interpret the coefficient on *Tone* as the effect of firm-specific news on peer returns, controlling for contemporaneous industry and market developments. By doing so, we ensure that our results reflect genuine spillover effects driven by firm-level information rather than confounding signals from broader economic or industry sector news.

The baseline regression results in Table 2, specifically models (1) and (6), provide strong empirical evidence for a significant relationship between firm media tone and peer firm returns. The coefficient on *Tone* is negative and statistically significant, indicating that more positive firm-specific media tone is associated with lower peer returns – consistent with a rivalry-based spillover effect. The magnitude of the effect is economically meaningful: a one-standard-deviation increase in firm's daily media tone corresponds to a decline of 2.82 bps in value-weighted peer returns and 3.31 bps in equal-weighted peer returns. To ensure the robustness of these findings, the subsequent models progressively incorporate fixed effects for firm, year, month-of-the-year, and day-of-the-week fixed effects, thereby accounting for time-invariant firm characteristics and common seasonal return patterns. The negative relationship between firm tone and peer returns remains consistent and significant across all model specifications.

INSERT TABLE 2 HERE

In Columns (4), (5), (9) and (10), we introduce lagged dependent variables as control variables to account for potential persistence in returns. The inclusion of these lags slightly reduces the magnitude of the *Tone* coefficients but preserves their negative sign and statistical significance. Moreover, the adjusted R-squared values increase relative to the baseline models, suggesting that the addition of lagged peer returns improve the model's explanatory power.

To further test the robustness of our results, we conduct several variations of our model. First, we estimate pairwise regressions using TNIC data. To account for peer co-movement, we include the peer's contemporaneous return as a control. Since peer return and media tone may be correlated, for each firm, we orthogonalize the original peer tone by regressing it on return and using the residual as the key explanatory variable. We then regress the focal firm's return on this orthogonalized peer tone with controls. Results based on over 20 million firm-day observations, reported in Appendix A.1, closely match the statistical and economic significance of our main results in Table 2. Second, we conduct the regression analysis by industry sector, retaining the fixed effects and control variables from Equation (2). Figure 1 depicts the estimated coefficients of *Tone* by sector along with their corresponding t-statistics. The results show that all sectors exhibit negative and statistically significant coefficients, indicating that rivalry spillover effects are pervasive across industries and not driven by a handful of sectors - consistent with our main findings.[4] Third, we control for market-wide sentiment by orthogonalizing firm media tone with respect to the U.S. market sentiment, obtained also from TRMI. Specifically, we extract the residual component, denoted as $Tone^{\perp}$, and use it as the explanatory variable in our regression analysis. The results remain robust and consistent, as reported in the Online Appendix A.3. Fourth, we redefine peer firms using the GICS instead of the SIC codes used in our main analysis. The results, reported in Online Appendix A.4, remain qualitatively unchanged. Lastly, we disaggregate our media tone variable by source to examine whether news and social media contribute differently to spillover effects. While our primary analysis uses a combined measure, separate regressions for each source - reported in Online Appendix A.5 - suggest that both news and social media tone have similar and consistent effect on peer returns.

INSERT FIGURE 1 HERE

[4] Full estimation results by sector are reported in the Online Appendix A.2.

4.2. Earnings surprises for identification

One potential concern is endogeneity, as firm media tone and peer returns may be jointly determined, i.e., peer firm performance could influence the media tone of the focal firm. To address this issue, we use earnings announcements as exogenous shocks to isolate the direction of causality and examine their impact on peer returns specifically on announcement days. We collect firm earnings data from the Institutional Brokers' Estimate System (IBES) and construct earnings surprises using the "standardized news" approach (see, e.g., Andersen et al., 2007; Peress, 2014). More specifically, earnings surprise is defined as the difference between the actual earnings per share (EPS) and the mean analysts' forecast, scaled by the standard deviation of the forecast errors during the estimation period.[5]

We begin by examining whether earnings surprises are positively associated with firm media tone. Table 3 presents the results across a series of progressively controlled regressions.[6] In all specifications, the coefficient on *Surprise* is positive and statistically significant at the 1% level, indicating a robust association between better-than-expected earnings and higher firm media tone. As we introduce additional controls - including firm fixed effects (column 2), time fixed effects (column 3), the lagged dependent variable (column 4), and the fully specified model (column 5) - the magnitude of the *Surprise* coefficient declines slightly but remains statistically significant throughout. Notably, the adjusted R-squared increases from 0.043 in the baseline to 0.153 in the fully specified model, indicating a substantial improvement in explanatory power. These results support

[5] Alternatively, we compute earnings surprises using the median forecast instead of the mean, as well as scaling the surprise by the standard deviation of estimated EPS for each firm-quarter. The results of these alternative specifications remain consistent and are reported in the Online Appendix A.6.

[6] To account for peer co-movement while preserving a sufficient number of observations, we control for daily industry returns in Tables 3 and 4 instead of using industry-date fixed effects. Controlling for industry-date fixed effects would omit observations when only one firm releases an earnings announcement within a SIC industry on a given date - a situation that occurs frequently in practice. Nevertheless, for completeness, we also report results using industry-date fixed effects in the Online Appendix A.7, and our findings remain robust despite the reduction in sample size.

the use of earnings announcements as exogenous events in addressing endogeneity concerns.

INSERT TABLE 3 HERE

Table 4 presents the results from regressing peer returns on the focal firm's earnings surprises. Across all model specifications, earnings surprises exhibit a consistently negative and highly significant impact on peer returns.[7] The strong negatives on *Surprise* suggest that positive earnings surprises by a focal firm are perceived as a threat to industry peers, leading to declines in peer firm valuations, consistent with a rivalry-based spillover effect. These results reinforce our main findings within a continuous information framework and provide further evidence of the causal relationship from firm media tone to peer returns.

INSERT TABLE 4 HERE

4.3. The role of investor attention

Investor attention is a well-established driver of asset price dynamics. Seminal work by Da, Engelberg, and Gao (2011) demonstrates that surges in investor attention, measured using Google search volume, predict future stock returns, particularly for stocks with high retail investor ownership. More recently, Andrei et al. (2023) and Fernandez-Perez, Indriawan, and Khomyn (2025) document that investor attention amplifies stock price reactions to shocks and emotions. Together, this evidence suggests that investor attention not only increases a firm's media exposure but also intensifies the

[7] As an additional robustness check, we first orthogonalize peer returns with respect to focal firm returns. We denote the residual from this regression as $PeerRet^{\perp}$ and use it as the dependent variable in our regression analysis. The results, reported in the Online Appendix A.8, confirm that our findings remain robust.

market impact of media coverage by concentrating investor focus and accelerating the dissemination of firm-specific signals.

Building on this insight, we posit that firm-specific media tone is more likely to generate pronounced spillover effects when investor attention is high. Heightened public and investor attention - driven by intensified news coverage, viral media content, or surges in trading interest - makes a firm's media tone more salient, increasing its influence on market expectations. In such contexts, a positive tone shock is more readily perceived as a signal of competitive advantage, prompting investors to reallocate capital away from peer firms in anticipation of shifting market dynamics. Thus, investor attention functions as an amplifier in the transmission channel between media tone and peer firm returns.

To examine the above dynamic, we interact firm media tone with a firm-level measure of investor attention (proxied by the *buzz* variable in TRMI, measuring the total number of relevant references to a company) and assess its effect on peer returns. Table 5 introduces firm attention as an explanatory variable and examines its interaction with firm-level media tone. The coefficient on *Attention* is negative and statistically significant, indicating that higher stock attention is associated with lower contemporaneous peer returns. The interaction term ($Tone \times Attention$) is strongly negative and significant, particularly at shorter lags, implying that heightened investor attention amplifies the negative spillover effect of firm media tone on peer returns. Economically, a one-standard-deviation increase in firm attention nearly triples the negative impact of firm media tone on peer returns. These results suggest that both media tone and attention play crucial roles in driving spillover effects, with attention intensifying the impact of media tone on peer firms.

INSERT TABLE 5 HERE

4.4. Positive vs. negative media tones

Prior research has also shown that positive and negative news may exert asymmetric effects on stock returns, although the empirical evidence is mixed. For instance, Chen, Noronha, and Singal (2004) and Barber and Odean (2008) find that positive news tends to have a stronger influence on stock prices, whereas Akhtar et al. (2011, 2012) and Agrawal et al. (2018) show that negative news has a more pronounced market impact. Despite these insights, existing studies have not explicitly explored whether such asymmetry extends to the spillover relationship between a firm's media tone and the returns of its peers.

To explore this, we utilize the *Positive* and *Negative* tone scores provided by TRMI, which capture the tone of media coverage directed at the firm. We expect the coefficient on *Negative* tone to exhibit the opposite sign of the *Positive* tone coefficient. As shown in Table 6, we find that a more positive media tone for the focal firm is consistently associated with lower peer firm returns across all model specifications. In contrast, a more negative media tone - reported by TRMI as a positive value - is associated with higher peer returns. This inverse relationship suggests that unfavorable news about a firm is perceived by investors as beneficial to its competitors, consistent with a rivalry-based spillover effect. These results are in line with Cao et al. (2021), who document that negative disclosures about peer firms can generate positive abnormal returns for the disclosing firm, reinforcing the notion that firm-specific news often reshapes competitive positioning rather than conveying common industry-wide signals.

INSERT TABLE 6 HERE

More importantly, the coefficient on *Negative* tone (in absolute magnitude) is larger than that on *Positive* tone, indicating that negative news elicits a stronger spillover response among peer firms. To formally assess whether this difference is statistically

significant, we conduct a Wald test comparing the absolute values of the two coefficients. The reported F-statistic and p-value at the bottom of Table 6 confirm that the difference is indeed significant. These findings are consistent with prior research, including Akhtar et al. (2011, 2012) and Agrawal et al. (2018), which document that negative news tends to have a more pronounced effect on market behavior than positive news.

4.5. Peer media tone and firm returns

As an additional descriptive robustness test, we mirror the main analysis by regressing a firm's returns on the average media tone of its industry peers. While our main specification examines how a firm's media tone affects the returns of its peers, this alternative approach evaluates whether peer firms' media tone impacts the focal firm's returns. In this specification, the key explanatory variable is *PeerTone*, defined as the standardized average media tone of peer firms. The dependent variable is the firm's return, *Ret*, with controls including up to five lags of the firm's own returns. Table 7 shows a consistently significant and negative relationship between peer media tone and firm returns across all specifications. Specifically, the coefficient on *PeerTone* is strongly negative (-0.480 for value-weighted and -0.584 for equal-weighted returns), indicating that an increase in peers' media tone is associated with a decline in the focal firm's return. This result suggests that positive media tone among peers puts downward pressure on a firm's stock price, reinforcing the presence of rivalry-based spillover effects.

INSERT TABLE 7 HERE

5. Rivalry channel

5.1. Competitive advantage

Thus far, our finding supports the presence of rivalry spillovers, where favorable news for one firm often leads to negative outcomes for its competitors. In this section,

we further investigate the mechanism driving this effect. Drawing on Bloom et al. (2013), who argue that rivalry spillovers primarily operate through business-stealing channels, we use a firm's competitive advantage as a proxy for rivalry intensity. When firm-specific positive news pertains to a company with a stronger competitive position, its peers are likely to experience greater business-stealing pressure. Therefore, if rivalry-based spillover is indeed the underlying mechanism, we would expect the negative relationship between firm's media tone and its peer returns to become more pronounced as the focal firm's competitive advantage increases.

According to the pricing power theory, firms that dominate their markets possess significant competitive advantages, enabling them to influence prices and shape market dynamics. In highly concentrated industries, leading firms often benefit from advantages, such as superior access to capital, proprietary technologies, strong brand loyalty, or cost efficiencies - advantages that are difficult for smaller rivals to replicate. When such a dominant firm receives firm-specific news, the associated media tone often signals a shift in competitive positioning. For instance, a positive media tone may reflect strategic advancements or market expansion that peers are unlikely to match, thereby intensifying perceptions of competitive disparity. Consequently, investors may revise downward the valuations of rival firms. This mechanism suggests that positive media tone for dominant firms intensifies competitive pressure and leads to more pronounced negative spillover effects on peer firm returns.

To measure a firm's market power, we adopt the firm-level TNIC Herfindahl-Hirschman Index (*HHI*) following Hoberg and Phillips (2016). Firms with higher HHI scores typically have more market power within their industries, leading us to hypothesize that media tone will exert a stronger spillover effect on peer returns for these firms. To test this, we augment Equation (2) by including firm-level *HHI* and its interaction term with *Tone* (*Tone* $\times$ *HHI*). The estimated coefficient of this interaction term captures how the impact of media tone varies with a firm's market power.

Consistent with our expectation, a negative and significant coefficient would indicate that the negative spillover effect of firm media tone on peer returns intensifies as the firm's market power increases.

In addition to market power, we consider an alternative measure of competitive advantage: product similarity. In markets where firms offer highly similar products, competitive advantages tend to be less durable and more easily imitated. When firms share comparable product lines and organizational structures, any strategic or operational improvement by one firm is more transparent and can often be quickly emulated by others. In such cases, positive news about one firm is less likely to signal a strong competitive edge and more likely to reflect broader, potentially shared opportunities. As a result, the perceived threat to peers is reduced, weakening the negative spillover effect. This observation is evident in the weak rivalry spillovers observed in the Utilities sector (Figure 1), where firms exhibit the highest within-sector product similarity - offering virtually identical services such as electricity, gas, and water - which limits differentiation and intensifies substitution. By contrast, firms with lower product similarity are more difficult to imitate, thereby preserving their competitive advantages and amplifying rivalry spillovers. In short, high product similarity implies lower competitive advantage, which tempers the rivalry channel and fosters conditions under which peer firms may interpret one firm's success as a positive signal rather than a competitive threat.

We incorporate the product market similarity metric from Hoberg and Phillips (2016), based on the Text-based Network Industry Classification (TNIC). This measure quantifies the degree of textual similarity between firms' product descriptions and captures how closely firms compete within the same product space. Unlike the HHI, which focuses on overall market power, TNIC emphasizes that firms compete with a unique set of peers depending on the uniqueness of their product offerings. To examine the role of product similarity, we include firm-level product similarity (*Similarity*) and

its interaction term with media tone (*Tone*× *Similarity*) in Equation (2). Since higher TNIC-based similarity reflects lower competitive advantage, we expect the interaction coefficient to be positive. A positive coefficient implies that the negative relationship between firm media tone and peer returns weakens as firms become more similar to their product market peers.

Table 8 empirically tests our hypotheses by examining how competitive advantages influence the relationship between firm media tone and peer returns. Panel A focuses on market power, proxied by *HHI*. Across all model specifications, whether using value- or equal-weighted peer returns, and under varying combinations of fixed effects and control variables, the interaction term *Tone* × *HHI* is consistently negative and highly significant. This provides strong evidence that rivalry spillover effects intensify as a firm's market power increases. The inclusion of firm, time, and joint industry-date fixed effects, along with extensive controls, reinforces the robustness of these results. Interestingly, the main effect of *HHI* itself is statistically insignificant, implying that its relevance is mainly through the interaction with media tone rather than a direct impact on peer returns. Panel B turns to product similarity, and we observe that the interaction term *Tone* × *Similarity* is positive and significant across all model specifications. These results suggest that the negative spillover effect is weakened as firms become more similar in their product offerings. This finding aligns with our expectation that higher product similarity reflects lower competitive advantages, reducing the perceived threat posed by positive news.

INSERT TABLE 8 HERE

For robustness, we also examine how competitive advantages affect the link between earnings surprises (*Surprise*) and peer returns using the same setup. The results in Table 9 mirror those in Table 8. Specifically, *Surprise* exerts a significantly negative

effect across all specifications. Moreover, in Panel A the *Surprise* × *HHI* interaction is consistently negative and highly significant, whereas in Panel B the *Surprise* × *Similarity* interaction is significantly positive.

INSERT TABLE 9 HERE

5.2. Forward-looking media tone

In addition to competitive advantages, we also consider forward-looking media tone as a channel for testing rivalry, given that discussions of a firm's future actions are particularly informative for understanding rivalry-based spillovers (Myers, 1977; Beyer, et al., 2010). Media coverage and social media conversations often contain future-oriented narratives highlighting upcoming strategic initiatives, such as product launches, market expansions, or pricing moves. These narratives are not limited to the firm's own disclosures; they incorporate interpretations and speculations from journalists, analysts, and investors about how a firm's strategies may shape future competitive dynamics. Strategic management theory suggests that such forward-looking information is inherently competitive, as it signals potential business-stealing actions and provokes anticipatory responses from rivals (Heil and Robertson, 1991; Chen and Miller, 2012).

When investors and competitors are confronted with reports about a firm's future plans, they revise expectations about market share and profitability, which can immediately depress the valuations of peer firms. Forward-looking media tone thus serves as a meaningful proxy for the intensity of competitive threats embedded in the information environment. By capturing how future-oriented narratives shape expectations and influence rivals' strategic behavior, it helps quantify the extent to which rivalry drives spillover effects in financial markets.

While our baseline specification uses industry–date fixed effects to absorb common industry-wide information that contributes to knowledge spillovers, one could

still argue that even when firms are exposed to the same public information, their ability to interpret, absorb, and act on that information may vary. This heterogeneity may lead to differences in how learning and diffusion effects manifest across firms. To address this concern, we explicitly control for backward-looking media tone as a direct measure of potential knowledge spillovers, capturing the extent to which information about past outcomes and realized innovations differentially affects peer firms.

Compared to forward-looking media tone, backward-looking tone is primarily descriptive, focusing on past performance, realized innovations, or historical outcomes. Such reporting is less about threatening rivals and more about disseminating observable information that other firms can study and potentially imitate. This characterization is consistent with the concept of knowledge spillovers, where peers benefit from shared learning and diffusion of ideas (Bloom et al., 2013). By separating forward-looking from backward-looking media tone, we can empirically distinguish between negative spillovers driven by competitive threats and positive spillovers driven by knowledge diffusion. This framework allows us to test whether discussions centered on a firm's future strategies are more closely associated with rivalry-based peer effects, whereas backward-looking narratives are more indicative of collaborative learning and shared industry growth.

To operationalize these measures, we draw on forward-looking media tone variables from TRMI dataset, namely *Optimism* and *Pessimism*, which capture future-tense positive and negative narratives, respectively. We construct the aggregate forward-looking tone, *Tone_forward*, as the difference between *Optimism* and *Pessimism*, so that higher values indicate a more positive outlook about a firm's future actions.

To measure backward-looking tone, we first regress positive media tone (*Positive*) on *Optimism* and negative tone (*Negative*) on *Pessimism* for each firm to remove the forward-looking component. The residuals from these regressions, which represent tone not explained by forward-looking narratives, are labeled *Positive_backward* and *Negative_backward*. We then define the aggregate backward-looking tone,

Tone_backward, as the difference between *Positive_backward* and *Negative_backward*, capturing the portion of media tone that reflects historical performance and past events rather than expectations about future actions.

Our empirical results reported in Panel A of Table 10 show that *Tone_forward* is negatively correlated with contemporaneous peer returns. This is consistent with the idea that future-oriented narratives emphasize competitive threats and rivalry spillovers. By contrast, Panel B shows that *Tone_backward* is positively correlated with peer returns, aligning more closely with a knowledge spillover channel, where peers benefit from information about past performance and realized innovations. Importantly, when we include both measures simultaneously in the regressions (Panel C), their coefficients remain statistically significant and retain their expected signs, providing strong evidence that forward-looking and backward-looking media tone capture distinct and economically meaningful spillover mechanisms.

It is worth noting, however, that the two measures differ in their economic significance. Based on Column (5), the effect of forward-looking tone is economically meaningful, with a one-standard-deviation increase associated with a 2.5 basis point daily decline in peer returns (approximately 6.1% annually), consistent with strong rivalry spillovers. In contrast, the effect of backward-looking tone, while statistically significant, is economically modest, with a 0.3 basis point daily increase in peer returns (approximately 0.79% annually). This suggests that although knowledge spillovers exist, their magnitude is limited once peer co-movement is controlled for, and that the observed relationship is dominated by rivalry effects, consistent with our main findings.

INSERT TABLE 10 HERE

Overall, these results confirm that market rivalry is the primary channel through which media tone negatively affects peer returns, while backward-looking narratives capture positive knowledge spillover effects.

5.3. Investor overreaction

Another potential explanation might be that the media tone may simply reflect investor sentiment toward a firm rather than conveying firm-specific information. Under this view, the observed negative correlation could arise because investors mechanically rebalance their portfolios in response to a temporary, attention-driven shock to the focal firm's stock price, rather than reflecting fundamental rivalry spillovers. For example, if media coverage induces such overreaction in the focal firm's stock, a mechanical negative correlation with peer returns can emerge. More specifically, when the focal firm's price temporarily overshoots due to heightened attention, investors may rebalance away from peers in the short run, and as the focal firm subsequently mean-reverts, peers appear relatively stronger. In this case, our main results would be driven by short-term mispricing and overreaction to news (Tetlock, 2007) rather than genuine competitive dynamics.

As discussed earlier, Table 5 shows that the negative spillover effect remains robust even after controlling for investor attention, suggesting that attention alone cannot fully explain our findings. To further rule out a mispricing-based explanation, we conduct predictive regressions to test whether media tone has forecasting power for future peer returns. If the negative correlation between focal firm media tone and peer returns were primarily due to overreaction and mispricing, we would expect to observe subsequent reversals and, consequently, predictive effects of firm media tone on future peer returns. However, results in Appendix A.9 show that *Tone* does not predict future peer returns, indicating that our media tone measure primarily reflects firm-specific information rather than temporary mispricing.

Collectively, these findings confirm that competitive dynamics are a key mechanism through which high-frequency firm-specific media tone affects peer firm returns.

6. Conclusion

We examine whether firm-specific media tone, controlling for peer firm co-movements, affects peer firm returns through spillover effects. Using daily firm-level media tone data from LSEG MarketPsych Analytics from 1998 to 2023, we find strong evidence of the *rivalry spillovers*. Specifically, a higher (lower) media tone for a focal firm is associated with significantly lower (higher) contemporaneous returns for its peers. Economically, a one standard deviation increase in media tone corresponds to a 5.39% decline in peer returns annually. These results suggest that investors interpret firm-specific news primarily through a competitive lens.

Our findings are consistent with the theoretical distinction made by Bloom et al. (2013), where knowledge spillovers promote mutual gains, while rivalry spillovers reflect zero-sum competition. Given that firm-specific media tone is largely idiosyncratic, it is more likely to trigger rivalry-based rather than knowledge-based spillovers. To address potential endogeneity, we use earnings announcements as exogenous shocks and find that unexpected positive (negative) earnings from a focal firm lead to significantly negative (positive) peer returns, supporting a causal interpretation. Additionally, we show that investor attention amplifies these spillover effects: when a firm attracts greater visibility, its media tone exerts a stronger influence on peers, as investors interpret it more readily as a signal of competitive positioning. Finally, we find that spillover effects are more pronounced for firms with stronger competitive advantages, such as those with greater market power and for firms with lower product similarity, where imitation is more difficult. These findings highlight the importance of market structure in shaping competitive dynamics.

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Figure 1. Coefficient estimates by industry sector

This figure reports the coefficient estimates (left-axis) of Tone from Equation (2) and the corresponding t-statistics (right-axis) by sector. We pooled firms from the same sector into a single group for the regression analysis.

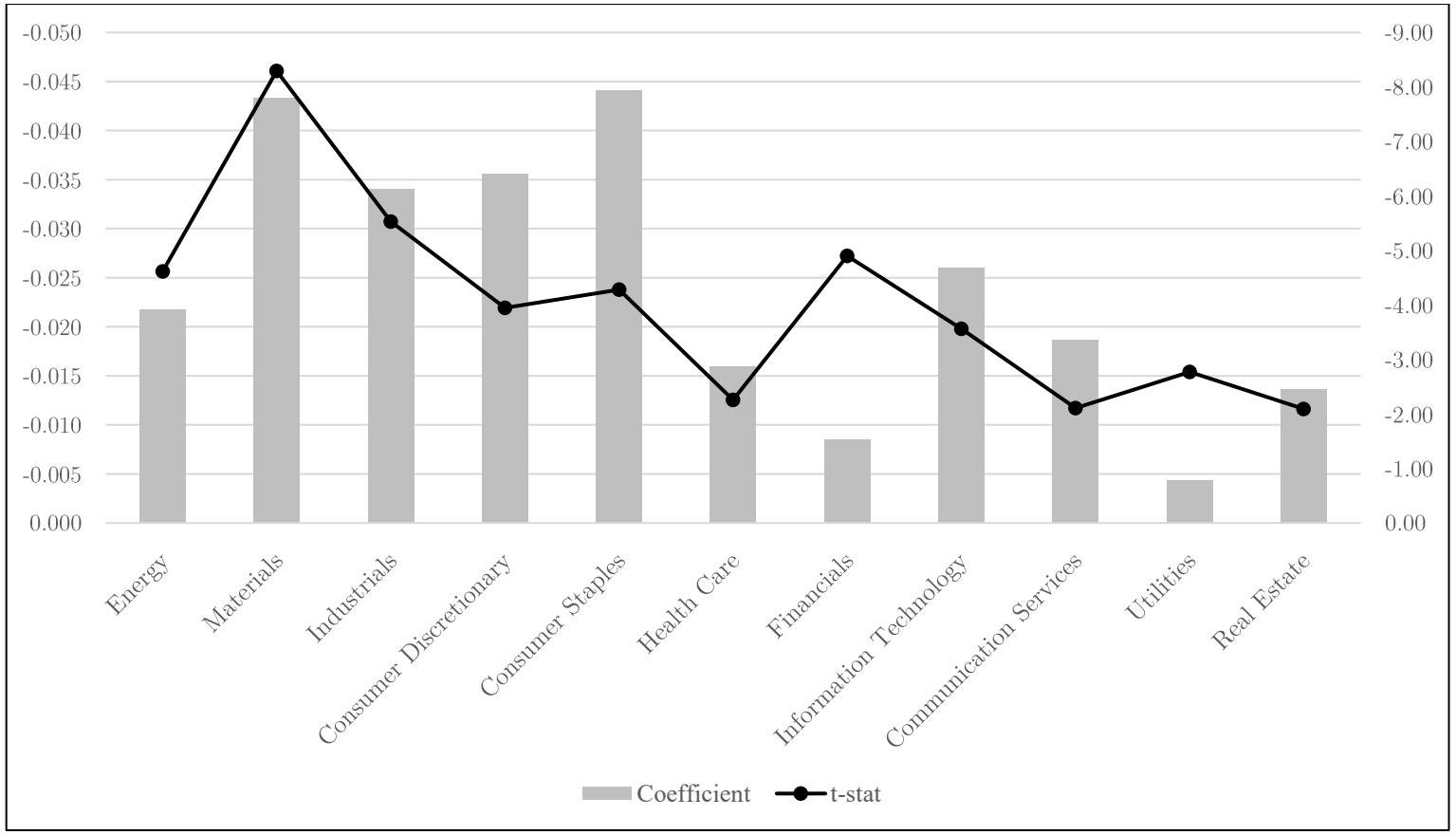

Table 1. Summary statistics

This table provides summary statistics for the variables used in the study. Panel A presents a detailed description of each variable, along with key statistics, including the number of observations, mean, standard deviation, median, and the 5th and 95th percentiles. Apart from *PeerRet*, *Ret*, and *ES*, all other variables are standardized to have a mean of zero and unit standard deviation. Panel B reports the correlation matrix, showing the relationships among the variables.

Panel A: Summary statistics

Variable	Description	N	Mean	SD	Median	P5	P95
(1) *PeerRet*(%)	Value-weighted average peer returns	2,748,887	0.091	2.114	0.093	-3.008	3.128
(2) *PeerRet*(%)	Equal-weighted average peer returns	2,748,887	0.088	2.104	0.100	-2.981	3.081
(3) *Ret*(%)	Stock return	2,748,887	0.093	2.922	0.064	-3.862	4.094
(4) *Tone*	Stock media tone	2,748,887	0.000	1.000	-0.007	-1.638	1.664
(5) *Attention*	Stock attention	2,748,887	0.000	1.000	-0.145	-0.169	0.386
(6) *ES*	Earnings surprise	56,472	0.345	1.031	0.198	-0.986	2.114
(7) *HHI*	Market power	2,691,456	0.000	1.000	-0.372	-0.838	2.443
(8) *Similarity*	Product similarity	2,703,034	0.000	1.000	-0.378	-0.444	2.376

Panel B: Correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) *PeerRet*(%)	1.000							
(2) *PeerRet*(%)	0.922	1.000						
(3) *Ret*(%)	0.461	0.479	1.000					
(4) *Tone*	0.012	0.012	0.055	1.000				
(5) *Attention*	-0.001	-0.002	-0.005	-0.034	1.000			
(6) *ES*	0.012	0.015	0.163	0.195	0.030	1.000		
(7) *HHI*	0.001	0.000	0.001	0.025	0.064	0.034	1.000	
(8) *Similarity*	0.003	0.002	0.003	-0.026	-0.033	-0.090	-0.295	1.000

Table 2. Baseline regression results

This table presents the baseline regression results, where the dependent variable is either the value- or the equal-weighted peer returns. The explanatory variables include firm-level media tone (*Tone*). The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone_t$	-0.0282***	-0.0289***	-0.0282***	-0.0209***	-0.0214***	-0.0331***	-0.0338***	-0.0331***	-0.0262***	-0.0268***
	(0.00518)	(0.00524)	(0.00518)	(0.00406)	(0.00411)	(0.00590)	(0.00597)	(0.00590)	(0.00494)	(0.00500)
Constant	0.0917***	0.0917***	0.0917***	0.0928***	0.0930***	0.0890***	0.0890***	0.0890***	0.0892***	0.0894***
	(3.15e-05)	(1.89e-06)	(3.15e-05)	(0.000479)	(0.000489)	(6.04e-05)	(2.45e-06)	(6.04e-05)	(0.000353)	(0.000361)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,630,677	2,630,655	2,630,677	2,389,742	2,389,707	2,630,677	2,630,655	2,630,677	2,389,733	2,389,698
Adjusted R-squared	0.826	0.826	0.826	0.876	0.877	0.843	0.843	0.843	0.894	0.894

Table 3. Earnings surprises and media tone

This table presents the regression results, where the dependent variable is firm media tone and the explanatory variable is the firm's earnings surprises (*Surprise*), calculated as the difference between the actual earnings per share and the mean analysts' forecast, divided by the standard deviation of that difference across our sample period. The control variable includes lagged *Tone*. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, daily industry return is included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	$Tone_t$	$Tone_t$	$Tone_t$	$Tone_t$	$Tone_t$
$Surprise_t$	0.160^{***}	0.143^{***}	0.139^{***}	0.137^{***}	0.114^{***}
	(0.00672)	(0.00666)	(0.00601)	(0.00555)	(0.00608)
Firm FE	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES
Industry Return	YES	YES	YES	YES	YES
Observations	56,302	56,302	56,302	45,032	44,962
Adjusted R-squared	0.043	0.123	0.074	0.068	0.153

Table 4. Earnings surprises and peer returns

This table presents the regression results, where the dependent variable is the value-weighted and the equal-weighted peer returns (*PeerRet*). The explanatory variable is the firm's earnings surprises (*Surprise*), calculated as the difference between the actual earnings per share and the mean analysts' forecast, divided by the standard deviation of that difference across our sample period. The control variable includes the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, daily industry return is included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Surprise_t$	-0.127***	-0.143***	-0.134***	-0.111***	-0.131***	-0.135***	-0.149***	-0.143***	-0.119***	-0.139***
	(0.0128)	(0.0128)	(0.0147)	(0.0116)	(0.0133)	(0.0153)	(0.0147)	(0.0166)	(0.0143)	(0.0149)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry Return	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	56,302	56,302	56,302	50,806	50,761	56,302	56,302	56,302	50,805	50,760
Adjusted R-squared	0.573	0.575	0.573	0.595	0.600	0.677	0.678	0.677	0.724	0.729

Table 5. Media tone and stock attention

This table presents the regression results, where the dependent variable is the value-weighted and the equal-weighted peer returns. The explanatory variables include firm-level media tone (*Tone*), firm-level attention (*Attention*), and the interaction between the two. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone_t$	-0.0464***	-0.0483***	-0.0464***	-0.0381***	-0.0396***	-0.0445***	-0.0459***	-0.0445***	-0.0366***	-0.0377***
	(0.00752)	(0.00774)	(0.00752)	(0.00623)	(0.00644)	(0.00776)	(0.00794)	(0.00776)	(0.00658)	(0.00674)
$Attention_t$	-0.0476***	-0.0511***	-0.0476***	-0.0452***	-0.0488***	-0.0302***	-0.0314***	-0.0302***	-0.0278***	-0.0291***
	(0.0107)	(0.0125)	(0.0107)	(0.00995)	(0.0116)	(0.00729)	(0.00836)	(0.00729)	(0.00648)	(0.00743)
$Tone \times Attention_t$	-0.136***	-0.143***	-0.136***	-0.129***	-0.136***	-0.0850***	-0.0893***	-0.0850***	-0.0778***	-0.0818***
	(0.0256)	(0.0273)	(0.0256)	(0.0235)	(0.0251)	(0.0197)	(0.0209)	(0.0197)	(0.0175)	(0.0186)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,630,677	2,630,655	2,630,677	2,389,742	2,389,707	2,630,677	2,630,655	2,630,677	2,389,733	2,389,698
Adjusted R-squared	0.827	0.827	0.827	0.877	0.877	0.843	0.843	0.843	0.894	0.894

Table 6. Effects of positive and negative tones

This table presents the regression results, where the dependent variable is the value-weighted and the equal-weighted peer returns. The explanatory variables include firm-level positive media tone (*Positive*) and negative media tone (*Negative*). TRMI reports *Negative* using positive values. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. The Wald test is based on absolute Positive and Negative coefficients. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Positive_t$	-0.0101***	-0.0106***	-0.0101***	-0.00760***	-0.00798***	-0.0111***	-0.0115***	-0.0111***	-0.00866***	-0.00903***
	(0.00208)	(0.00213)	(0.00208)	(0.00166)	(0.00169)	(0.00224)	(0.00228)	(0.00224)	(0.00184)	(0.00187)
$Negative_t$	0.0214***	0.0217***	0.0214***	0.0158***	0.0159***	0.0259***	0.0262***	0.0259***	0.0206***	0.0209***
	(0.00384)	(0.00386)	(0.00384)	(0.00299)	(0.00301)	(0.00448)	(0.00451)	(0.00448)	(0.00377)	(0.00381)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,630,680	2,630,658	2,630,680	2,389,752	2,389,717	2,630,680	2,630,658	2,630,680	2,389,743	2,389,708
Adjusted R-squared	0.826	0.826	0.826	0.876	0.877	0.843	0.843	0.843	0.894	0.894
Wald F	25.41	24.49	25.41	21.84	20.72	30.65	29.98	30.65	27.84	27.04
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 7. The impact of peer media tone on focal firm's returns

This table presents the regression results, where the dependent variable is the value- and the equal-weighted firm returns (*Ret*). The key explanatory variable is the equal-weighted media tone of peer firms (*PeerTone*). The control variables include the lagged dependent variable up to five lags. Industry-date joint fixed effects are included to account for peer firm co-movement and other industry- or market-level shocks. In addition, the model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted peer media tone					Equal-weighted peer media tone				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Ret_t	Ret_t	Ret_t	Ret_t	Ret_t	Ret_t	Ret_t	Ret_t	Ret_t	Ret_t
Panel A: Regression of firm return on peer media tone										
$PeerTone_t$	-0.465***	-0.473***	-0.465***	-0.471***	-0.480***	-0.569***	-0.575***	-0.569***	-0.577***	-0.584***
	(0.0199)	(0.0205)	(0.0199)	(0.0199)	(0.0206)	(0.0286)	(0.0292)	(0.0286)	(0.0286)	(0.0293)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,630,677	2,630,655	2,630,677	2,623,704	2,623,679	2,630,677	2,630,655	2,630,677	2,623,704	2,623,679
Adjusted R-squared	0.312	0.313	0.312	0.314	0.315	0.313	0.313	0.313	0.315	0.315

Table 8. Rivalry spillover and competitive advantages

This table presents the baseline regression results, where the dependent variable is either the value- or the equal-weighted peer returns. The explanatory variables include firm-level media tone (*Tone*), the firm-level Herfindahl-Hirschman Index (*HHI*), and the Hoberg and Phillips (2016) firm product similarity score (*Similarity*). *HHI* and *Similarity* are standardized. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The impact of firm HHI on peer-returns and firm media tone relationship

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone_t$	-0.0288***	-0.0296***	-0.0288***	-0.0215***	-0.0221***	-0.0337***	-0.0346***	-0.0337***	-0.0269***	-0.0275***
	(0.00125)	(0.00129)	(0.00125)	(0.00106)	(0.00109)	(0.00113)	(0.00116)	(0.00113)	(0.000910)	(0.000935)
HHI_t	-0.000620	-2.40e-05	-0.000620	0.000804	2.61e-07	-0.000945	0.000655	-0.000945	0.000272	0.000949
	(0.000695)	(0.00122)	(0.000695)	(0.000614)	(0.000976)	(0.000673)	(0.00116)	(0.000673)	(0.000565)	(0.000910)
$Tone \times HHI_t$	-0.00685***	-0.00727***	-0.00685***	-0.00487***	-0.00506***	-0.00749***	-0.00785***	-0.00749***	-0.00562***	-0.00577***
	(0.00111)	(0.00115)	(0.00111)	(0.000880)	(0.000916)	(0.00107)	(0.00110)	(0.00107)	(0.000845)	(0.000871)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,567,262	2,567,245	2,567,262	2,332,285	2,332,248	2,567,262	2,567,245	2,567,262	2,332,276	2,332,239
Adjusted R-squared	0.827	0.827	0.827	0.877	0.877	0.844	0.844	0.844	0.895	0.895

Panel B: The impact of firm product similarity on peer-returns and firm media tone relationship

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone_t$	-0.0294***	-0.0303***	-0.0294***	-0.0220***	-0.0226***	-0.0344***	-0.0353***	-0.0344***	-0.0274***	-0.0281***
	(0.00130)	(0.00134)	(0.00130)	(0.00111)	(0.00114)	(0.00118)	(0.00122)	(0.00118)	(0.000953)	(0.000982)
Similarity	-0.000565**	0.00420**	-0.000565**	-0.000868***	0.00205	-0.00100***	0.00416***	-0.00100***	-0.00129***	0.00196
	(0.000280)	(0.00177)	(0.000280)	(0.000256)	(0.00166)	(0.000268)	(0.00155)	(0.000268)	(0.000240)	(0.00127)
$Tone \times Similarity_t$	0.00741***	0.00770***	0.00741***	0.00539***	0.00557***	0.00804***	0.00834***	0.00804***	0.00610***	0.00631***
	(0.000542)	(0.000562)	(0.000542)	(0.000455)	(0.000470)	(0.000503)	(0.000521)	(0.000503)	(0.000410)	(0.000423)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,579,057	2,579,037	2,579,057	2,343,617	2,343,582	2,579,057	2,579,037	2,579,057	2,343,608	2,343,573
Adjusted R-squared	0.827	0.828	0.827	0.877	0.878	0.844	0.844	0.844	0.895	0.895

Table 9. Earnings surprises and competitive advantages

This table presents the regression results, where the dependent variable is either the value- or the equal-weighted peer returns. The explanatory variable is the firm's earnings surprises (*Surprise*), the firm-level Herfindahl-Hirschman Index (*HHI*), and the Hoberg and Phillips (2016) firm product similarity score (*Similarity*). *HHI* and *Similarity* are standardized. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The impact of firm HHI on peer-returns and earnings surprises relationship

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Surprise_t$	-0.127***	-0.143***	-0.134***	-0.112***	-0.133***	-0.134***	-0.148***	-0.142***	-0.118***	-0.139***
	(0.0113)	(0.0114)	(0.0132)	(0.0103)	(0.0118)	(0.0142)	(0.0134)	(0.0153)	(0.0133)	(0.0137)
HHI_t	0.0162**	0.0322*	0.0150*	0.0179**	0.0189	0.0139**	0.0285*	0.0122*	0.0151**	0.0161
	(0.00777)	(0.0172)	(0.00792)	(0.00821)	(0.0180)	(0.00663)	(0.0147)	(0.00680)	(0.00712)	(0.0151)
$Surprise \times HHI_t$	-0.0499***	-0.0563***	-0.0506***	-0.0478***	-0.0541***	-0.0477***	-0.0532***	-0.0484***	-0.0451***	-0.0494***
	(0.0107)	(0.0122)	(0.0107)	(0.0104)	(0.0116)	(0.0104)	(0.0117)	(0.0105)	(0.0102)	(0.0114)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry Return	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	55,216	55,216	55,216	49,760	49,717	55,216	55,216	55,216	49,759	49,716
Adjusted R-squared	0.575	0.577	0.575	0.597	0.603	0.677	0.678	0.677	0.724	0.729

Panel B: The impact of firm product similarity on peer-returns and earnings surprises relationship

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Surprise_t$	-0.131***	-0.147***	-0.139***	-0.115***	-0.136***	-0.137***	-0.152***	-0.146***	-0.120***	-0.142***
	(0.0107)	(0.0111)	(0.0121)	(0.00971)	(0.0112)	(0.0132)	(0.0126)	(0.0141)	(0.0124)	(0.0128)
Similarity	-0.0129***	-0.0151	-0.0160***	-0.0125**	-0.00644	-0.00405	0.00698	-0.00674*	-0.00318	0.0153
	(0.00496)	(0.0228)	(0.00488)	(0.00511)	(0.0221)	(0.00309)	(0.0106)	(0.00356)	(0.00312)	(0.0101)
$Surprise \times Similarity_t$	0.0309***	0.0366***	0.0316***	0.0286***	0.0335***	0.0318***	0.0363***	0.0329***	0.0286***	0.0320***
	(0.00823)	(0.00960)	(0.00833)	(0.00814)	(0.00903)	(0.00616)	(0.00672)	(0.00613)	(0.00587)	(0.00575)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry Return	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	55,506	55,506	55,506	50,046	50,002	55,506	55,506	55,506	50,045	50,001
Adjusted R-squared	0.576	0.578	0.576	0.598	0.604	0.678	0.680	0.678	0.725	0.730

Table 10. Forward-looking media tone

This table presents the regression results, where the dependent variable is the value-weighted or the equal-weighted peer returns. The explanatory variables are forward-looking media tone (*Tone_forward*) and backward-looking media tone (*Tone_backward*). *Tone_forward* is defined as the difference between TRMI optimism and pessimism, which capture future-tense positive and negative tone, respectively. *Tone_backward* is constructed by regressing positive (negative) tone on optimism (pessimism) to remove the forward-looking component for each firm, then taking the difference between the resulting residuals. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Forward-looking media tone for rivalry spillovers

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone\_forward_t$	-0.333***	-0.335***	-0.333***	-0.286***	-0.290***	-0.338***	-0.340***	-0.338***	-0.294***	-0.296***
	(0.0682)	(0.0667)	(0.0682)	(0.0600)	(0.0587)	(0.0688)	(0.0673)	(0.0688)	(0.0612)	(0.0600)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	856,954	856,849	856,954	831,261	831,159	856,954	856,849	856,954	831,259	831,157
Adjusted R-squared	0.818	0.819	0.818	0.846	0.846	0.859	0.860	0.859	0.887	0.888

Panel B: Back-looking media tone for knowledge spillovers

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone\_backward_t$	0.0118***	0.0116***	0.0118***	0.00951***	0.00933***	0.0101***	0.0101***	0.0101***	0.00762***	0.00780***
	(0.00298)	(0.00307)	(0.00298)	(0.00253)	(0.00258)	(0.00270)	(0.00280)	(0.00270)	(0.00223)	(0.00230)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	856,939	856,849	856,939	831,252	831,159	856,939	856,849	856,939	831,250	831,157
Adjusted R-squared	0.818	0.819	0.818	0.845	0.846	0.859	0.860	0.859	0.887	0.888

Panel C: Combined effects of forward- and backward-looking media tone

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone\_forward_t$	-0.330***	-0.333***	-0.330***	-0.284***	-0.288***	-0.336***	-0.338***	-0.336***	-0.292***	-0.295***
	(0.0678)	(0.0663)	(0.0678)	(0.0597)	(0.0584)	(0.0684)	(0.0670)	(0.0684)	(0.0610)	(0.0598)
$Tone\_backward_t$	0.00809***	0.00900***	0.00809***	0.00631***	0.00706***	0.00636***	0.00744***	0.00636***	0.00433**	0.00547***
	(0.00254)	(0.00272)	(0.00254)	(0.00218)	(0.00230)	(0.00231)	(0.00249)	(0.00231)	(0.00195)	(0.00206)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	856,939	856,849	856,939	831,252	831,159	856,939	856,849	856,939	831,250	831,157
Adjusted R-squared	0.818	0.819	0.818	0.846	0.846	0.859	0.860	0.859	0.887	0.888

A Unified Approach to Spillovers: Evidence from Media Tone

Appendix

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A.1. Pairwise regressions

This table reports the results of pairwise regressions using TNIC data. The dependent variable is the daily return of the focal firm. The key explanatory variable is adjusted peer media tone (*Tone_resid*), defined as the residual from regressing peer tone on contemporaneous peer returns to mitigate potential multicollinearity. Control variables include the peer's contemporaneous return to account for peer co-movement and up to five lags of the dependent variable. The model includes fixed effects for TNIC pair, year, month, and day of the week (dow). Standard errors, reported in parentheses, are two-way clustered by TNIC pair and date.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone\_resid_t$	-0.0321***	-0.0321***	-0.0327***	-0.0332***	-0.0318***	-0.0334***	-0.0309***
	(0.00606)	(0.00606)	(0.00437)	(0.00553)	(0.00609)	(0.00382)	(0.00348)
Peer co-movement	YES	YES	YES	YES	YES	YES	YES
Pair FE	NO	YES	NO	NO	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES	YES
Month	NO	NO	NO	YES	NO	YES	YES
Dow	NO	NO	NO	NO	YES	YES	YES
Control	NO	NO	NO	NO	NO	NO	YES
Observations	20,300,345	20,300,345	20,300,345	20,300,345	20,300,345	20,300,345	20,233,346
Adjusted R-squared	0.162	0.163	0.163	0.163	0.163	0.165	0.169

A.2. Regression by industry sector

This table presents the regression results for each industry, where the dependent variable is the value-weighted and the equal-weighted peer returns. The explanatory variables include firm-level media tone (*Tone*). The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted	Equal-weighted
INDUSTRY	$PeerRet_t$	$PeerRet_t$
Energy	-0.0217***	-0.0270***
	(0.00470)	(0.00440)
Materials	-0.0433***	-0.0467***
	(0.00522)	(0.00549)
Industrials	-0.0340***	-0.0410***
	(0.00615)	(0.00680)
Consumer Discretionary	-0.0356***	-0.0411***
	(0.00902)	(0.00995)
Consumer Staples	-0.0441***	-0.0533***
	(0.0103)	(0.0104)
Health Care	-0.0159**	-0.0224**
	(0.00704)	(0.00908)
Financials	-0.00853***	-0.0111***
	(0.00174)	(0.00216)
Information Technology	-0.0260***	-0.0312***
	(0.00730)	(0.00835)
Communication Services	-0.0186*	-0.0322*
	(0.00882)	(0.0148)
Utilities	-0.00435**	-0.00597**
	(0.00157)	(0.00192)
Real Estate	-0.0136*	-0.0135**
	(0.00650)	(0.00546)

A.3. Orthogonalized firm media tone

This table presents the baseline regression results, where the dependent variable is either the value- or the equal-weighted peer returns (*PeerRet*). The explanatory variable is the firm-level media tone orthogonalized using the U.S. market sentiment ($Tone^{\perp}$). The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone^{\perp}_t$	-0.0279***	-0.0280***	-0.0279***	-0.0207***	-0.0208***	-0.0327***	-0.0328***	-0.0327***	-0.0259***	-0.0260***
	(0.00503)	(0.00507)	(0.00503)	(0.00395)	(0.00398)	(0.00574)	(0.00578)	(0.00574)	(0.00482)	(0.00485)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,630,665	2,630,655	2,630,665	2,389,741	2,389,707	2,630,665	2,630,655	2,630,665	2,389,732	2,389,698
Adjusted R-squared	0.826	0.826	0.826	0.876	0.877	0.843	0.843	0.843	0.894	0.894

A.4. Peer firm returns based on Global Industry Classification Standard (GICS)

This table presents the baseline regression results, where the dependent variable is either the value- or the equal-weighted peer returns. Peer firms are those sharing the same GICS as the focal firm. The explanatory variable is the firm-level media tone (*Tone*). The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone_t$	-0.00884***	-0.00896***	-0.00884***	-0.00804***	-0.00813***	-0.0130***	-0.0133***	-0.0130***	-0.0122***	-0.0124***
	(0.00120)	(0.00122)	(0.00120)	(0.00107)	(0.00108)	(0.00165)	(0.00169)	(0.00165)	(0.00154)	(0.00158)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	3,562,733	3,562,714	3,562,733	3,516,590	3,516,569	3,562,733	3,562,714	3,562,733	3,516,585	3,516,564
Adjusted R-squared	0.946	0.946	0.946	0.954	0.954	0.963	0.963	0.963	0.971	0.971

A.5. Alternative measures of firm media tone

This table presents the baseline regression results, where the dependent variable is either the value- or the equal-weighted peer returns (*PeerRet*). The explanatory variable is the firm-level media tone derived from news media ($Tone^{news}$) or from social media ($Tone^{social}$ The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Tone derived from news articles

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Tone^{news}{}_t$	-0.0350***	-0.0358***	-0.0350***	-0.0207***	-0.0212***	-0.0418***	-0.0427***	-0.0418***	-0.0282***	-0.0288***
	(0.00645)	(0.00648)	(0.00645)	(0.00405)	(0.00405)	(0.00739)	(0.00742)	(0.00739)	(0.00530)	(0.00529)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,733,933	1,733,888	1,733,933	1,500,890	1,500,827	1,733,992	1,733,947	1,733,992	1,500,976	1,500,913
Adjusted R-squared	0.812	0.812	0.812	0.891	0.892	0.827	0.828	0.827	0.904	0.904

Panel B: Tone derived from social media

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$Tone^{social}{}_t$	-0.0274***	-0.0278***	-0.0274***	-0.0192***	-0.0195***	-0.0324***	-0.0328***	-0.0324***	-0.0247***	-0.0250***
	(0.00507)	(0.00507)	(0.00507)	(0.00373)	(0.00374)	(0.00686)	(0.00581)	(0.00580)	(0.00465)	(0.00468)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,909,671	1,909,592	1,909,671	1,689,750	1,689,695	2,016,941	1,909,459	1,909,542	1,689,653	1,689,598
Adjusted R-squared	0.809	0.809	0.809	0.870	0.870	0.829	0.828	0.828	0.889	0.889

A.6. Alternative measures of earnings surprise

This table presents the regression results, where the dependent variable is the value-weighted peer returns (*PeerRet*). The explanatory variable in Panel A is the firm's earnings surprises ($Surprise^{median}$), calculated as the difference between the actual earnings per share and the median analysts' forecast, divided by the standard deviation of that difference across our sample period. The explanatory variable in Panel B is the firm's earnings surprises (*Surprise2*), calculated as the difference between the actual earnings per share and the median analysts' forecast, divided by the standard deviation of that difference for each quarter, each firm. The control variable includes lagged *Tone*. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, daily industry return is included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Surprise^{median}{}_t$	-0.00371**	-0.00477***	-0.00341**	-0.00301**	-0.00358**					
	(0.00153)	(0.00156)	(0.00156)	(0.00153)	(0.00153)					
$Surprise2_t$						-0.00481***	-0.00583***	-0.00453***	-0.00464***	-0.00524***
						(0.00159)	(0.00178)	(0.00156)	(0.00173)	(0.00187)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry Return	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	53,867	53,838	53,867	48,704	48,649	53,867	53,838	53,867	48,703	48,648
Adjusted R-squared	0.067	0.072	0.071	0.073	0.084	0.042	0.043	0.043	0.053	0.058

A.7. Earnings surprises controlling for industry-date fixed effects

This table presents the regression results, where the dependent variable is the value-weighted and the equal-weighted peer returns (*PeerRet*). The explanatory variable is the firm's earnings surprises (*Surprise*), calculated as the difference between the actual earnings per share and the mean analysts' forecast, divided by the standard deviation of that difference across our sample period. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$	$PeerRet_t$
$Surprise_t$	-0.0627**	-0.0625**	-0.0627**	-0.0481**	-0.0548**	-0.0757**	-0.0715***	-0.0757**	-0.0606**	-0.0632***
	(0.0256)	(0.0247)	(0.0257)	(0.0202)	(0.0221)	(0.0297)	(0.0262)	(0.0297)	(0.0239)	(0.0233)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	19,815	19,515	19,815	19,133	18,822	19,815	19,515	19,815	19,133	18,822
Adjusted R-squared	0.835	0.864	0.834	0.884	0.898	0.839	0.876	0.839	0.892	0.913

A.8. Earnings surprises and orthogonalized peer returns

This table presents the regression results, where the dependent variable is either the value- or equal-weighted peer returns, orthogonalized using the focal firm returns ($PeerRet^{\perp}$). The explanatory variable is the firm's earnings surprises (*Surprise*), calculated as the difference between the actual earnings per share and the mean analysts' forecast, divided by the standard deviation of that difference across our sample period. The control variables include the lagged dependent variable up to five lags. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted					Equal-weighted				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$	$PeerRet^{\perp}_{t}$
$Surprise_{t}$	-0.200***	-0.223***	-0.208***	-0.201***	-0.238***	-0.322***	-0.356***	-0.341***	-0.308***	-0.363***
	(0.0131)	(0.0127)	(0.0147)	(0.0139)	(0.0137)	(0.0195)	(0.0165)	(0.0215)	(0.0195)	(0.0177)
Firm FE	NO	YES	NO	NO	YES	NO	YES	NO	NO	YES
Year, month, dow FE	NO	NO	YES	NO	YES	NO	NO	YES	NO	YES
Controls	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
Industry Return	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	56,315	56,315	56,315	50,815	50,770	56,315	56,315	56,315	50,814	50,769
Adjusted R-squared	0.101	0.106	0.103	0.096	0.104	0.053	0.054	0.055	0.064	0.071

A.9. Predictive effects of peer media tone

This table presents the predictive regression results, where the dependent variable is either the value- or equal-weighted future peer return over the next four trading days. The explanatory variables include firm-level media tone (*Tone*). The control variables include the lagged dependent variable. The model incorporates fixed effects for firm, year, month, and day-of-the-week (dow). In addition, industry-date joint fixed effects are included to account for peer firm co-movement as well as industry- and market-level shocks. Heteroscedasticity-consistent standard errors, clustered by industry and firm, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Value-weighted				Equal-weighted			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$PeerRet_{t+1}$	$PeerRet_{t+2}$	$PeerRet_{t+3}$	$PeerRet_{t+4}$	$PeerRet_{t+1}$	$PeerRet_{t+2}$	$PeerRet_{t+3}$	$PeerRet_{t+4}$
$Tone_t$	0.0007	0.0003	-0.0002	-9.48e-07	-8.49e-05	-1.30e-06	-0.000353	0.0002
	(0.000695)	(0.000847)	(0.000962)	(0.00145)	(0.000874)	(0.000867)	(0.00101)	(0.00152)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year, month, dow FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry × Date FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,369,799	2,365,998	2,363,530	2,361,323	2,369,792	2,365,988	2,363,520	2,361,311
Adjusted R-squared	0.704	0.615	0.557	0.518	0.732	0.645	0.589	0.550