

# Do Bond Short Sellers React to Earnings Conference Calls?

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## Abstract

This paper investigates the utilization of soft information in firms' earnings conference calls by short sellers in trading corporate bonds. The results indicate increases in short-sale activities for bonds issued by firms that have more negative earnings conference calls. This relation cannot be attributed to looser short-sale constraints, such as more lendable shares or lower lending fees. Instead, bond short sellers exhibit adeptness in processing the soft information in earnings conference calls, particularly the information related to default risks. Bonds of firms with more negative conference calls are more prone to downgrades and defaults, and exhibit lower returns in the future. Additionally, there is a significant spillover effect of the tone of earnings conference calls conducted by public firms on the shorting volumes of bonds issued by private industry peers.

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## Abstract

This paper investigates the utilization of soft information in firms' earnings conference calls by short sellers in trading corporate bonds. The results indicate increases in short-sale activities for bonds issued by firms that have more negative earnings conference calls. This relation cannot be attributed to looser short-sale constraints, such as more lendable shares or lower lending fees. Instead, bond short sellers exhibit adeptness in processing the soft information in earnings conference calls, particularly the information related to default risks. Bonds of firms with more negative conference calls are more prone to downgrades and defaults, and exhibit lower returns in the future. Additionally, there is a significant spillover effect of the tone of earnings conference calls conducted by public firms on the shorting volumes of bonds issued by private industry peers.

*Keywords:* Corporate bonds, short sellers, earnings conference calls, linguistic tone, default risks

*JEL classification:* G12; G14

# 1 Introduction

*”The shorting of fixed-income instruments comprises a promising area for future research.”*

– *Bessembinder, Spatt, and Venkataraman (2020)*.

Shorting corporate bonds is an important market activity. From SIFMA, on average, the daily value of newly shorted corporate bonds represents 23% of daily corporate bond trading volumes, which reaches up to \$38.5 billion (YTD 2022). To short a bond, one has to locate the bond, post collateral, and borrow it mostly through a custodian bank. When the bond loan is terminated, the borrower returns the bond to its owner and receives collateral plus interest. Both the borrowing and shorting of corporate bonds take place in the over-the-counter (OTC) market. Investors could short bonds based on their evaluations of specific factors affecting bond yields such as credit risks, credit rating changes, expected inflation, etc. As noted in [Duong, Kalev, and Tian \(2023\)](#), short selling in the corporate bond market is an independent platform for investors to express their differences of opinions regarding bond-specific information and not a substitute for equities shorting.<sup>1</sup>

Several extant papers look at short-sale activities in the equity market based on the quantitative information in corporate news events, such as earnings announcements ([Christophe, Ferri, and Angel \(2004\)](#); [Daske, Richardson, and Tuna \(2006\)](#)) and cash flow news ([Nagel \(2005\)](#)). In addition, stock short sellers also make use of the soft (qualitative) information in unstructured data such as texts. There is evidence that stock short sellers target firms conducting earnings conference calls with highly abnormal linguistic tone ([Blau, DeLisle, and Price \(2015\)](#)), annual reports with more negative-related words ([Kot, Li, Liu, and Wei \(2022\)](#)), and social media activities with higher naïve tones ([Hu, Jones, Zhang, and Zhang \(2023\)](#)).

However, the literature on short sales of corporate bonds is quite limited. A recent branch of studies show how short-sale constraints affect the bond price efficiency ([Anderson,](#)

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<sup>1</sup>[Asquith, Au, Covert, and Pathak \(2013\)](#) also state that, according to practitioners, within an investment firm, the bond and stock trading desks may not trade in each other’s instruments. Hence, the bond desk may short the bonds, while the stock desk shorts the stocks.

Henderson, and Pearson (2018); Vladimirova, Markl, and Messow (2022)). In this paper, I fill the gap in the bond shorting literature by investigating whether short sellers use the qualitative information in unstructured data, specifically the tone of earnings conference calls (interchangeably, conference calls, earnings calls), to trade corporate bonds. Earnings conference calls are important channels through which managers discuss and disseminate the latest financial results and firm information to investors and analysts.<sup>2</sup> Compared to the static nature of formal firm documents and filings, the information environment for conference calls is more spontaneous and dynamic (Frankel, Jennings, and Lee (2022)). The interactive nature of the conference calls can lead to pertinent information about the firm (Blau, DeLisle, and Price (2015)) in addition to formal reports like 10-K and 10-Q files.<sup>3</sup>

With a comprehensive sample of daily short-sale activities from July 2006 to December 2021, I analyze the relationship between bond shorting volume (on loan shares defined as shares on loan scaled by the bond issuing amount) and the tone of conference calls using bond-day panel regressions with quarter and bond fixed effects. I use the “net negative tone” by multiplying the sentiment measure (Hassan, Hollander, Van Lent, and Tahoun (2019)) by -1, so that the higher the tone, the more negative the conference call. The presence of more negative conference calls is associated with greater bond shorting volumes. In particular, a one-standard-deviation increase in the bond issuer’s conference call tone is accompanied by an increase of 7-basis-points in the bond shorting volume. The finding remains robust after controlling for bond and firm characteristics, the risk measure of conference calls, and the sentiments of general firm news.

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<sup>2</sup>After the release of Regulation Fair Disclosure (Reg FD) by the SEC in October 2000, companies that conduct earnings and forecast calls to market professionals and certain shareholders must simultaneously issue a press release to make that information available to the general public. The National Investor Relations Institute (NIRI (2004)) states that fully accessible webcast conference calls are second only to news releases to wire services as the most widely used means for disseminating corporate information to investors.

<sup>3</sup>There is a bunch of evidence that earnings conference calls contain information orthogonal to that conveyed in corporate filings and press releases. For example, Bagnoli and Watts (2005) and Chapman and Steenburgh (2011) find that the level of accounting conservatism and intent of earnings management are revealed in earnings conference calls. Matsumoto, Pronk, and Roelofsens (2011) also find that both the presentation and discussion segments in conference calls have incremental information content over the accompanying press release, and the discussion periods are relatively more informative than presentation periods.

Then, I consider several potential explanations for the effect of conference call tone on bond shorting volumes. To examine the possibility that the higher shorting volumes based on negative conference calls are attributable to looser short-sale constraints, I rerun the baseline regressions with proxies for short-sale constraints as the dependent variable. There is no significant relation between the tone measure and lendable shares (or lending fees), implying that the higher bond shorting volumes according to more negative earnings conference calls are driven by the demand side. It is also likely that the effect of the call tone on bond shorting volumes is a spillover from the shorting activities in the equity market. I follow [Jostova, Nikolova, Philipov, and Stahel \(2013\)](#) to perform time-series regressions of bond on loan shares on its issuer’s on loan shares on the same day and derive a “clean” measure of bond on loan shares without the impact of stock short-sale activities, namely, the stock-adjusted bond on loan shares. The effect of conference call tone on the stock-adjusted bond on loan shares remains unchanged and significant, suggesting that bond short-sale activities based on the conference call tone cannot be absorbed by stock short-sale activities.

What information in the conference calls are bond short sellers sensitive to? I find that bonds with more negative conference calls are more likely to be downgraded and default in the year following the calls. Consistently, the effect of conference call tone on bond shorting volumes is much stronger among the bonds on the threshold of being downgraded to non-investment levels (i.e., bonds rated  $BBB^-$ ). These results imply that short sellers value the default-related information in earnings conference calls.

I also examine heterogeneities among bond short sellers’ reaction to the conference call tone. The effect of conference call tone on bond shorting volumes is stronger among bonds with higher information asymmetry, including bonds with shorter time-since-issuance, higher idiosyncratic volatility, and those issued by smaller firms and followed by fewer analysts. Besides, the effect is significantly amplified during periods with high uncertainties and interest rates.

A follow-up question is whether the bond short sellers anticipate the tone of conference

calls and target bonds in ex-ante.<sup>4</sup> I find that bond short-sale activities before the conference calls do not significantly predict the call tone, suggesting that bond short sellers are good at processing the soft information in earnings conference calls, instead of being informed beforehand.

Finally, I show how the short sellers’ response to the conference call tone impacts the underlying corporate bond market. Bonds with more negative conference calls and higher shorting volumes have lower returns following the calls. Moreover, there is also a sizable spillover effect of the industry-level (average) conference call tone on shorting volumes of bonds issued by private industry peers. The more negative the earnings conference calls of public firms in the same industry, the higher the shorting volumes of bonds issued by the private industry peers.

This paper contributes to the literature in several ways. Past literature has focused on the information sources traded by stock short sellers, such as earnings announcements (Christophe, Ferri, and Angel (2004)); Daske, Richardson, and Tuna (2006)), earnings conference calls (Blau, DeLisle, and Price (2015)), firm annual reports (Kot, Li, Liu, and Wei (2022)), and social media activities (Hu, Jones, Zhang, and Zhang (2023)). I document an information source utilized by bond short sellers, specifically issuers’ earnings conference calls which provide information orthogonal to that conveyed in general firm news.

Second, this study contributes to a growing literature on how bond market participants make use of soft information in unstructured data. Huang, Wermers, and Xue (2022) focus on the corporate bond mutual funds’ trading around corporate news covered by social media and find they tend to buy on negative news. This study concentrates on bond short sellers, who are relatively under-explored in the corporate bond market. Bond short sellers care

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<sup>4</sup>Some studies suggest that stock short sellers are exceptional at anticipating events such as earnings surprises, financial misconduct, insider sales, analyst downgrades, credit rating downgrades, mergers, repurchases, seasoned equity offerings, and social media activities (e.g., Safieddine and Wilhelm Jr (1996); Christophe, Ferri, and Hsieh (2010); Henry and Koski (2010); Karpoff and Lou (2010); Khan and Hai (2013); and Hu, Jones, Zhang, and Zhang (2023)). Another branch of literature shows that stock short sellers are skilled at information processing and do not have private information (Blau, Fuller, and Van Ness (2011); Engelberg, Reed, and Ringgenberg (2012); and Blau and Pinegar (2013)).

about the default-related information in the conference calls, different from stock short sellers who pay more attention to firm accounting measures (Kot, Li, Liu, and Wei (2022)). This also adds to the finding of Donovan, Jennings, Koharki, and Lee (2021) that the qualitative information disclosed in conference calls captures incremental information about credit risks.

Prior studies, including Aitken, Frino, McCorry, and Swan (1998), Boehmer, Jones, and Zhang (2008), and Dechow, Hutton, Meulbroek, and Sloan (2001), have consistently identified a negative relationship between short selling and subsequent returns in the equity market. Engelberg, Reed, and Ringgenberg (2012) further nuanced this by highlighting a stronger negative correlation during firm-specific news events, such as earnings announcements. Building on this, this research examines the influence of short sellers' trading decisions on bond returns. Bonds of firms with negative conference call tones, coupled with significant shorting activity, exhibit low returns in the days following the calls. This finding bridges the gap between short selling, conference call tone, and bond market performance.

Finally, while extensive research has been conducted on the spillover of information across peer public firms (e.g., Foster (1981); Han, Wild, and Ramesh (1989); Hou (2007); and Young and Zeng (2015)), few studies have examined the impact of information spillovers from public firms to private firms in the same industry. Shroff, Verdi, and Yost (2017) and Badertscher, Shroff, and White (2013) discover evidence of spillovers from public firms to private industry peers in the context of private firms' debt financing and investment efficiency, respectively. I show that the average earnings conference call tone of public firms has a significant impact on the short-sale activities of bonds issued by private industry peers who do not hold conference calls.

The rest of the paper is structured as follows. Section 2 describes the data and sample. Section 3 examines the relationship between the tone of earnings conference calls and short-sale activities in the corporate bond market, with robustness and heterogeneity tests. Section 4 investigates potential explanations for the main findings and points out the specific information in the conference call tone that bond short sellers react to. Section 5 discusses

the impacts of bond short-sale activities on the underlying bond market. Section 6 concludes the paper.

## 2 Data, variable construction, and summary statistics

### 2.1 Data and sample

The study combines data from several sources and assembles comprehensive panel data from July 2006 to December 2021. I use the overall sentiment variable in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) to measure the linguistic tone of earnings conference calls.<sup>5</sup> Specifically, [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) construct an overall sentiment measure by analyzing the entire conference call transcript, including a beginning presentation by management and a following question-and-answer (Q&A) session with call participants. Thus, an earnings conference call transcript contains both voluntary disclosure information and interactions between the senior management and market participants.

[Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) split each conference call transcript of firm  $j$  in quarter  $q$  into a list of words  $b = 1, 2, \dots, B_{j,q}$ . Then, they count the number of occurrences of words indicating positive or negative sentiments, conditioning on proximity to positive and negative words based on the sentiment dictionary in [Loughran and McDonald \(2011\)](#). Finally, the number is divided by the total number of words in the transcript, deriving the sentiment, or the tone, of the conference call for firm  $j$  in quarter  $q$ , as follows:

$$Sentiment_{j,q} = \frac{\sum_{b=1}^{B_{j,q}} S(b)}{B_{j,q}} \quad (1)$$

where  $S(b)$  is an indicator function that assigns a value of +1 if word  $b$  is associated with positive sentiment, a value of  $-1$  if word  $b$  is associated with negative sentiment, and zero otherwise. To facilitate interpretation, I define the net negative tone measure for firm  $j$  in

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<sup>5</sup>The data has been widely used in recent studies, such as [Ho, Kagkadis, and Wang \(2023\)](#) on the equity option market and [Gad, Nikolaev, Tahoun, and van Lent \(2023\)](#) on credit markets.



quarter  $q$  by multiplying the sentiment measure by  $-1$  so that the higher the value, the more negative the earnings conference call tone.

$$Net\ negative\ tone_{j,q} = -1 \times Sentiment_{j,q} \quad (2)$$

Following [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#), the net negative tone measure is standardized across the full sample to have a mean of zero and standard deviation of one and capped at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter.

The corporate bond short selling data is obtained from the Markit Securities Finance Analytics database. The database covers security-level daily information for U.S. corporate bonds. It provides information on lending fees, the quantity of bonds available for lending, the quantity of bonds on loan, and the quantity of lending-borrowing transactions. Markit collects data throughout the day from a large number of securities finance practitioners, including custodial banks, agent lenders, sell-side brokers, and buy-side firms, and indicates that the reporting contributors account for approximately 85% of U.S. securities loans. The sample begins in July 2006 when bond short selling data is available at a daily frequency.

I supplement the bond data with the Mergent Fixed Income Securities Database (FISD), which contains both bond issue- and issuer-specific information, such as coupon rate, interest payment frequency, issue date, maturity date, issue size, and bond rating. I focus on fixed-rate bonds and exclude bonds that are puttable, convertible, or perpetual. I exclude the corporate bonds that cannot be matched to FISD. Mortgage-backed, asset-backed, agency-backed, and equity-linked securities, Canadians, structured notes, and issues denominated in foreign currency are also excluded. Furthermore, following the existing literature, I exclude newly-issued or about-to-mature bonds (i.e., with age or time-to-maturity of fewer than six months), as their trading patterns are likely to be driven by mechanical factors.

For corporate bond transaction data, I turn to the Enhanced Trade Reporting and Compliance Engine (TRACE) database. I follow the procedures in [Dick-Nielsen \(2014\)](#) to minimize data reporting errors by removing all transactions marked as cancellations, corrections,

or reversals, as well as their matched original trades. Agency transactions that may raise concerns about double counting are also deleted. For intraday data, bond transactions that (i) are labeled as when-issued, locked-in, or have special sales conditions, (ii) are with more than a 2-day settlement, or (iii) have a trading volume smaller than \$10,000 are eliminated.

For firm-level equity information, I use the Center for Research on Security Prices (CRSP) and COMPUSTAT. The institutional holdings data (Thomson Reuters 13F), the analyst coverage and forecast data (I/B/E/S), and the general news sentiment data (RavenPack News Analytics) are also utilized. After matching the bond short selling data with the conference call tone measure, the final sample contains 23,650 earnings calls conducted by 874 firms and covers short-sale activities of 7,154 bonds.

## 2.2 Summary statistics

Table 1 presents descriptive statistics for all the variables used in the sample (bond-day) panel. Panel A reports the number of observations (N), mean, standard deviation (Std), lower quartile (Q1), median, and upper quartile (Q3) of the bond lending data in percentage, including on loan shares, lendable shares, utilization ratio, and lending fees, and bond characteristics including rating, time-to-maturity (Maturity) in years, time-since-issuance (Age) in years, bond illiquidity (ILLIQ), coupon rate in percentage, and the logarithm of bond issue size ( $\text{Ln}(\text{bond size})$ ). Detailed definitions are included in the Appendix A.

On average, 23.10% of bond issuing amounts are available for lending, with 1.49% being on loan. The average utilization ratio is 6.95% with the average lending fee of 0.41%. On loan shares (daily shares on loan scaled by bond issuing size) and lendable shares (shares available for lending scaled by bond issuing size) have sizeable variations, with the standard deviation of 2.78% and 10.75%, respectively. Bonds in the sample have an average rating of 8.23 (equivalently, BBB+ for S&P or Baa1 for Moody's), an average time-to-maturity of 9.65 years, and an average time-since-issuance of 4.42 years. The average bond issuing size is about 655 million dollars. The summary statistics are similar to those in the prior literature.

[Insert Table 1 about here]

Panel B reports statistics for firm-level characteristics. The key independent variable, the net negative tone of earnings conference call, is relatively evenly distributed. The issuers on average are large firms (with nearly 10 billion market caps) and have high stock institutional ownerships (about 77%). Panel C shows the correlations among all the variables. The correlation between bond on loan shares and its issuer’s earnings conference call tone is positive. Besides, bond on loan shares is positively correlated with rating, maturity, and issuer B/M, and negatively correlated with bond age, bond issuing size, firm size, and SUE.

### 3 The effect of the conference call tone on bond shorting volumes

Past literature has documented the superior ability of stock short sellers to obtain and make use of information in the context of corporate news events. Equity short-sale activities based on the quantitative information derived from earnings announcements ([Christophe, Ferri, and Angel \(2004\)](#); [Daske, Richardson, and Tuna \(2006\)](#)) and cash flow news ([Nagel \(2005\)](#)) have been frequently studied. Furthermore, another branch of literature stresses stock short sellers’ strategic use of textual information in firms’ conference calls, annual reports, and social media activities ([Blau, DeLisle, and Price \(2015\)](#); [Kot, Li, Liu, and Wei \(2022\)](#); and [Hu, Jones, Zhang, and Zhang \(2023\)](#)).

Similar to equity short selling, to short sell a bond, it must be located, collateralized, and borrowed, typically through a custodian bank serving as an intermediary. The lender is protected from counterparty risk by collateral, which typically exceeds the value of the bond by about 102%. When the bond loan is terminated, the bond is returned and the borrower receives the collateral, along with interest. The cost of borrowing is calculated as the difference between the market rate and the rebate rate.<sup>6</sup>

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<sup>6</sup>Generally, borrowing costs are positive and are influenced by factors such as the loan size, percentage of

On the other hand, bonds are traded over-the-counter (OTC) rather than in a centralized location like stocks, which makes bonds much more illiquid. In addition, there are specific factors affecting bond valuation such as credit risks, credit rating changes, expected inflation, etc. [Duong, Kalem, and Tian \(2023\)](#) document that short selling of corporate bonds is not a substitute for equity shorting and option trading, and is independent for investors to express their differences of opinions regarding bond-specific information. Therefore, the trading behaviors of bond short sellers may be distinct from those of stock short sellers. However, there is a lack of research on the information source utilized by short sellers in the corporate bond market, especially soft information.

In this paper, I examine whether bond short sellers react to the soft information conveyed in firms' earnings conference calls, which provide an essential platform for management and analysts to express their views of the firm's recent performance and future prospects in a spontaneous way. Unlike mandatory disclosures, the conference calls allow managers to release information with different tones. For example, managers may inflate good news (or mitigate bad news) when they read the prepared script at the beginning of the presentation. Moreover, the subsequent unscripted discussion component provides an important opportunity for management and analysts to express their opinions about the firm recent performance and future potential in a spontaneous way and creates an additional layer of information. Consistently, previous literature has shown that conference calls contain information beyond the mandatory disclosures ([Frankel, Johnson, and Skinner \(1999\)](#); [Brown, Hillegeist, and Lo \(2004\)](#); and [Price, Doran, Peterson, and Bliss \(2012\)](#)).

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inventory lent, credit rating, and borrower identity. However, the borrowing cost of a bond can be negative when the lender pays a rebate rate above the market rate, there are discrepancies in reported short-term rates, or Federal Reserve intervenes. [Asquith, Au, Covert, and Pathak \(2013\)](#) find that the cost of borrowing corporate bonds is comparable to that of borrowing stocks, between 10 and 20 basis points per year.

### 3.1 Baseline results

I investigate the relationship between daily bond on loan shares and the conference call tone by running the following panel regression:

$$\text{On loan shares}_{i,t} = \alpha_1 + \beta_1 \times \text{Net negative tone}_{j,q} + \delta_1 \times \text{Controls}_{i(j),t-1} + \vartheta_i + \mu_q + \epsilon_{i,t} \quad (3)$$

where *On loan shares*<sub>*i,t*</sub> is the shorting volumes of bond *i* on the day *t* (in quarter *q*), scaled by bond issuing size. *Net negative tone*<sub>*j,q*</sub> is the tone of issuer *j*'s conference call conducted in quarter *q*. To address the concern that the net negative tone measure may be potentially correlated with non-observable time-varying bond characteristics, which might confound the relationship between bond on loan quantity and the tone measure, bond fixed effects ( $\vartheta_i$ ) and quarter ( $\mu_q$ ) fixed effects are included. Standard errors are calculated using two-way clustering at the bond and quarter levels. The results are reported in Table 2.

Bond level controls include bond rating, time to maturity, age, and bond illiquidity (ILLIQ). In Column (2), after including bond controls, a one-standard-deviation increase in the net negative tone measure leads to an increase of 7-basis-points (bps) in the daily shorting volume, suggesting that short sellers are more likely to take a short position if they discover negative information in earnings conference calls. Given that the average bond market capitalization is \$655 million in the sample, 7-bps translate into a daily dollar impact of \$459K in the shares on loan.

[Insert Table 2 about here]

I then control for stock characteristics of the issuer in Column (3). The standardized unexpected earnings (SUE) of the earnings announcement in the same quarter with the conference call is included, in case that the tone of conference calls is another proxy for the degree of a firm (quantitative) earnings surprise and hence stands for the post-earnings announcement drift (PEAD) effect in the corporate bond market (Nozawa, Qiu, and Xiong (2023)). Other firm level controls include the logarithm of firm size (Ln(stock size)), the

logarithm of book-to-market ratio ( $\text{Ln}(\text{BM})$ ), and the stock institutional ownership (IO).

Results remain unchanged with similar magnitudes after including the stock controls. The information contained in the quantitative SUE measure does not assume the impact of the qualitative information in conference call tone on bond shorting volumes.<sup>7</sup> Besides, bond on loan shares is negatively associated with bond age, bond illiquidity, and issuer’s firm size, indicating that short sellers target bonds with better bond liquidity and higher information asymmetry.<sup>8</sup>

### 3.2 Confounding factors

Next, I examine confounding factors that potentially lead to the relationship between earnings conference call tone and bond short-sale activities, including the impact of past returns, firm overall risk, textual measures of general news, and lagged bond short-sale activities.

#### Control for the short selling volume on the last conference call day

Given that shorting volumes can be sticky over time,<sup>9</sup> past shorting activities could be a crucial determinant of the current short-sale activities due to the high serial correlation. Therefore, I consider an additional control in Column (1) of Table 3 - the lagged on loan shares, which is defined as the shorting volume of bond  $i$  on the earnings conference call day of quarter  $q - 1$ . The significantly positive coefficient on lagged on loan shares is consistent with the high correlation of bond shorting volumes.<sup>10</sup> The coefficient on the tone measure remains significantly positive.

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<sup>7</sup>The results are also robust after controlling the squared SUE for potential non-linearity in the effect of an earnings surprise as documented in [Das and Lev \(1994\)](#).

<sup>8</sup>The finding is consistent with prior studies on short-selling strategies. For example, [Lu, Chen, and Liao \(2010\)](#) document that information asymmetry enlarges the conflicts of interests between equity- and debt-holders, and also between informed and uninformed traders. Bonds issued by firms with higher information asymmetry are expected to provide more opportunities for the short sellers to profit from security mispricing.

<sup>9</sup>[Diether, Lee, and Werner \(2009a\)](#) and [Blau and Smith \(2014\)](#) find that daily shorting activity in the stock market is serially correlated and the level of autocorrelation in daily short volume is highest in stocks that are the most illiquid. In the sample, the average autocorrelation of bond shorting volumes on two consecutive conference call days is as high as 0.80, indicating the persistency of the bond shorting activities.

<sup>10</sup>In unreported results, I employ an alternative dependent variable: the change in on loan shares, calculated as the difference of the on loan shares between two consecutive conference call days. The negative tone measure still has a significantly positive effect on the change in on loan shares.

[Insert Table 3 about here]

#### Control for past bond returns

[Hendershott, Kozhan, and Raman \(2020\)](#) demonstrate that bond short sellers trade both on past negative information not yet fully incorporated into current prices and positive price pressures with overreaction, suggesting that bond short sellers adapt their strategies based on information of past return. To account for the effect of past returns, in Column (2), I additionally control for the average daily bond returns over the past 1 month ( $Ret_{[-30,-1]}$ ). The coefficient on the past average return is insignificant, while the conference call tone remains significantly positive with a similar magnitude to that in the baseline regression.

#### Control for the firm overall risk measure

Is the impact of conference call tone on bond short-sale activities related to higher risks? [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) as well construct an overall risk measure of the conference calls by counting the frequency of mentions of synonyms for risk or uncertainty and dividing it by the length of the transcript. The textual risk measure is documented to provide insight into the degree of the overall risk that a firm is facing. I add the risk measure as an additional control in Column (3). The coefficient on the net negative tone measure remains significantly positive, indicating that the tone measure of conference calls has a significant effect on bond short-sale activities even after controlling for the overall risk measure derived from the calls.

#### Control for the sentiment measure of general firm news

The pivotal role of general news in influencing short-selling behaviors is well-documented in the equity literature. For example, [Engelberg, Reed, and Ringgenberg \(2012\)](#) highlight the ability of stock short sellers to react to publicly available information, demonstrating their capacity to effectively analyze and integrate a wide variety of news sources in order to enhance trading strategies.

Would the effect of the conference call tone on bond shorting volume be a disguise of

the impact of the general news announced on the call day? To rule out this confounding factor, in Column (4), I control for the tone of firm general news on the call day. For each firm, I collect the composite sentiment score (CSS) from the WRDS RavenPack database of all related news (relevance score = 100, novelty score = 100) and calculate the daily average CSS. For a daily CSS lower (higher) than 50, the *CSS\_Neg* dummy is equal to 1 (-1) and zero otherwise.<sup>11</sup> The *CSS\_Neg* dummy does not have strong predictability for the same-day bond shorting volume, and the magnitude of the coefficient on the *CSS\_Neg* dummy is much smaller than that on the conference call tone. In contrast, the significance and magnitude of the coefficient on the conference call tone remain essentially unchanged.

In the last column of Table 3, I include all the above control variables. The inclusion of all these variables does not subsume the significant impact of the negative tone of earnings conference calls on the same-day bond shorting volumes. The robustness tests underscore the sensitivity of bond short sellers to the qualitative information in earnings conference calls.

### 3.3 Possible explanations

Findings in the above suggest that bond short sellers target more negative earnings conference calls. In this sub-section, I conduct a detailed investigation of the potential explanations for the high bond shorting volumes based on negative earnings conference calls. Specifically, I examine whether the higher bond shorting volume arises from looser short-sale constraints or is merely a spillover of higher equity short-sale activities in response to the issuer’s negative conference calls.

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<sup>11</sup>CSS represents the news sentiment of a given story by combining various sentiment analysis techniques. The score ranges from 0 to 100. Values of 50 indicate neutral sentiment, while values above (below) 50 indicate positive (negative) sentiment. Using the raw CSS instead of the dummy yields similar results.



### 3.3.1 Short-sale constraints

Short-sale constraints can have a significant impact on the price efficiency of the market. The constraints limit investors' ability to trade on negative information and result in informational inefficiency and slow incorporation of negative information into securities' prices. In the equity market, empirical research has found that proxies for short-sale constraints, such as lending fees and utilization, can predict negative stock abnormal returns. For example, [Engelberg, Reed, and Ringgenberg \(2018\)](#) discuss how static impediments to short selling significantly affect asset prices and efficiency. The authors state that if short selling is costly, short sellers may be less likely to trade, and as a result, prices may be biased or less efficient.

Similarly, in the corporate bond market, [Anderson, Henderson, and Pearson \(2018\)](#) have shown that bonds with both high lending fees and high utilization - where short-sale constraints are likely to be binding - display large negative excess returns. In addition, [Peng \(2023\)](#) demonstrate that bond short-sale constraints positively affect pricing discrepancies between the stocks and bonds of the same firms.

A potential explanation for the findings above is that the higher shorting volumes of bonds with more negative conference calls are due to looser short-sale constraints for these bonds. To address this possibility, I use various proxies for short-sale constraints as the dependent variable and run the following regression: i) lendable shares that measure the supply quantity of the bonds to be borrowed are equal to shares available for lending relative to bond issuing size, ii) the lending fee which is the average transaction-weighted rate,<sup>12</sup> and iii) the utilization ratio that measures investors' demand to short bonds is equal to the ratio

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<sup>12</sup>Lending fees typically are not quoted directly but rather are derived from quoted rebate rates. The bond borrower usually provides cash collateral to the bond lender, and the bond lender pays interest (the rebate rate) on the cash collateral that it holds. The lending fee is the difference between the market short-term interest rate and the rebate rate paid on the cash collateral. Markit uses the Federal Funds Open rate as the short-term interest rate in calculating the indicative lending fee, which proxies for the buy-side borrowing cost.

of bonds borrowed from institutional lenders to the bonds that they have made available.

$$\begin{aligned} \text{Short-sale constraints}_{i,t} = & \alpha_2 + \beta_2 \times \text{Net negative tone}_{j,q} \\ & + \delta_2 \times \text{Controls}_{i(j),t-1} + \vartheta_i + \mu_q + \epsilon_{i,t} \end{aligned} \quad (4)$$

In Table 4, there is no significant impact of the earnings conference call tone on the lendable shares or on lending fees, implying that the supply of bond lendable shares is not significantly higher for bonds issued by firms with more negative conference calls. Therefore, there is no strong evidence for short-sale constraints to affect bond shorting activities based on the conference call tone.

[Insert Table 4 about here]

On the other hand, the utilization ratio is significantly higher for bonds with more negative conference calls. Combined with the main finding that on loan shares are higher among these bonds, the results suggest that the larger shorting volume based on negative conference call tone is driven by the demand side: short sellers increase their demands for bonds issued by firms conducting more negative calls.

### 3.3.2 Spillover from equity short selling

A stream of studies has addressed the utilization of qualitative information from unstructured data, such as textual data, among short sellers in the equity market. [Blau, DeLisle, and Price \(2015\)](#) document that stock short sellers rely on the soft information contained in earnings conference calls as pertinent information for stock valuation. Specifically, the stock short sellers target firms with simultaneous high earnings surprise and abnormally high management tone. There is a concern of the information flow from stocks to bonds ([Hendershott, Kozhan, and Raman \(2020\)](#)). Therefore, in this sub-section, I examine whether the bond short sellers' reaction to the negative tone of earnings conference calls is merely a spillover from stock short-sale activities.

In order to account for the impact of stock short-sale on bond short-sale activities, I run time-series regressions of daily bond on loan shares on the issuer’s same-day stock on loan shares in the full sample following [Jostova, Nikolova, Philipov, and Stahel \(2013\)](#). The *stock-adjusted bond on loan shares* $_{i,t}$  is defined as the sum of the intercept  $\alpha_i$  and residual  $\epsilon_{i,t}$  in Equation (5).

$$\text{Bond on loan shares}_{i,t} = \alpha_i + \beta_i \times \text{Stock on loan shares}_{i,t} + \epsilon_{i,t} \quad (5)$$

$$\begin{aligned} \text{Stock-adjusted bond on loan shares}_{i,t} = & \alpha_3 + \beta_3 \times \text{Net negative tone}_{j,q} \\ & + \delta_3 \times \text{Controls}_{i(j),t-1} + \vartheta_i + \mu_q + \epsilon_{i,t} \end{aligned} \quad (6)$$

I then regress the stock-adjusted bond on loan shares on the conference call tone in Table 5, with the same bond and stock controls as in the baseline regressions. The coefficient on the conference call tone represents the clean effect of the tone on bond on loan shares, without the impact on stock short-sale activities. With bond controls in Column (2), a one-standard-deviation increase in the net negative tone measure leads to a significant increase of nearly 6-basis-points in the stock-adjusted daily bond shorting volume, similar magnitude to that in the corresponding baseline regression. The coefficient remains significantly positive with stock controls. Therefore, the impact of the conference call tone on bond shorting volume is not merely a spillover from equity shorting volumes and cannot be explained by stock short-sale activities.

[Insert Table 5 about here]

The findings align with [Duong, Kalev, and Tian \(2023\)](#) who claim that corporate bond market investors utilize short selling as a platform to express different views, and bond short-sale activity is not merely a substitute for the corresponding equity short selling. This distinction between bond and equity short-sale activities is further underscored in [Asquith, Au, Covert, and Pathak \(2013\)](#), who observe that, according to industry practitioners, bond

and stock trading desks within investment firms typically operate independently. Consequently, while the stock desk shorts stocks, the bond desk may concurrently short bonds.

## 4 Why do bond short sellers pay attention to earnings conference call tone?

Thus far, the findings indicate that neither short-sale constraints nor equity short-sale activities could fully explain the effect of conference call tone on bond short-sale activities. In this section, I move a step further to identify the underlying information in earnings conference calls that appeals to bond short sellers. I further investigate heterogeneities in bond short sellers' reactions under different levels of bond information asymmetry and market uncertainties. Lastly, I discuss whether bond short sellers anticipate the conference call tone.

### 4.1 Information in the earnings conference call tone

#### 4.1.1 Predictability for future default risks

[Borochin, Cicon, DeLisle, and Price \(2018\)](#) find that measures of conference call tones are negatively related to investors' perceived price risk (i.e., value uncertainty) about firms generated from the equity options market. They demonstrate that the impact of conference call tone extends beyond the simple conveyance of expected value information to market participants to their perceptions of expected risk as well. Applied to our setting, I hypothesize that the information included in the conference call tone is related to the bond specific risk: the default risk.

I use various proxies for future default risks, including bond downgrades and real bond defaults.<sup>13</sup> Specifically, DG (Real default) is a dummy variable equal to one if the bond

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<sup>13</sup>Data on historical rating changes by major rating agencies are obtained from the Mergent Fixed Income Securities Database (FISD). I follow [Ellul, Jotikasthira, and Lundblad \(2011\)](#) to define the rating change

will be downgraded (default) in one year following the earnings conference call, and zero otherwise. Then I regress the default risk proxies on the conference call tone in both OLS and Probit settings, as shown in Table 6.

[Insert Table 6 about here]

The panel regressions in Columns (1) and (3) indicate that the tone of earnings conference calls positively and significantly predict bond downgrades and real defaults in the subsequent year. The Probit model yields similar results. The more negative the earnings conference call, the higher future bond default risks. A one-standard-deviation increase in the tone measure leads to a 12% (43%) higher probability for the bond to be downgraded (default) in the year following the call.

There is a concern that the text-based overall risk measure induced from conference calls could subsume the predictability of conference call tone measure for future bond default risks. Therefore, I additionally control for overall risk measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) in each regression. In unreported results, I find that the overall firm risk measure does not significantly predict future bond default risks, while the net negative tone measure still has strong predictability, both economically and statistically significant.

[Donovan, Jennings, Koharki, and Lee \(2021\)](#) used a text-based measure of the CDS spread based on conference calls to predict future events that reflect a firm’s credit risk, including bankruptcy, interest rate spreads, and credit rating downgrades. I expand their research to the corporate bond market and show that the net negative tone of earnings calls is a significant predictor for future bond default risks. The results indicate that bond short sellers trade on conference call tone because of its predictability for future bond default risks.

#### 4.1.2 Bonds with high downside risks

[Ellul, Jotikasthira, and Lundblad \(2011\)](#) illustrate that if a bond is downgraded from investment-

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event as the date of the first downgrade by a rating agency (Standard & Poor’s, Moody’s, Fitch, and Duff & Phelps).

grade (IG) to non-investment-grade (NIG), there would be fire sales, triggering non-negligible fragility and price pressure on the corporate bonds sold. Given that the conference call tone provides valuable information on future bond default risks, it is expected that the impact of the conference call tone on bond shorting volumes to be more pronounced among bonds rated  $BBB^-$ , that are one notch to be downgraded to non-investment level and become fallen-angles. Default-related information is especially important to these bonds.

[Insert Table 7 about here]

To test whether bond short sellers’ reaction to conference call tone is more pronounced among bonds on the verge of becoming “fallen angels”, I further interact the tone measure with the  $BBB^-$  dummy equal to one for bonds rated  $BBB^-$ , and zero otherwise. Results in Table 7 suggest that short sellers are much more likely to target the bond on the margin when its issuer’s conference call tone is more negative. Specifically, for  $BBB^-$ -rated bonds, a one-standard-deviation increase in the tone measure is associated with an increase of more than 12-basis-points in bond short-sale activities, nearly twice the corresponding magnitude in the full sample. Besides, the coefficients on the tone measure are still significantly positive, suggesting that the impact of conference call tone on bond shorting volumes holds generally.

In a nutshell, in this sub-section, I document the predictive power of earnings conference call tone for future bond default risks. The default-related information is of especially value to bonds with high default risks, and therefore bond short sellers’ reaction to the tone is much more pronounced among such bonds.

## 4.2 Heterogeneities

Next, I investigate how bond short-sale activities based on the conference call tone vary with the level of information asymmetry and market conditions.

#### 4.2.1 Information asymmetry

So far, the findings suggest that the tone of conference calls provides additional information about future bond default risks. Short sellers could take advantage of the slow incorporation of information, which is stronger among firms with higher information asymmetry ([Hendershott, Kozhan, and Raman \(2020\)](#)). If the bonds, or the issuers, have a higher degree of information asymmetry, the incremental information in the linguistic tone is supposed to be more valuable to short sellers in targeting bonds.

To proxy for information asymmetry, at the bond level, I use bond age and bond idiosyncratic volatility (IVOL). The longer a bond has been issued, the more historical data and information investors have access to, and the lower the information asymmetry. An increase in bond IVOL reflects a higher uncertainty in the bond’s future price movements and indicates a higher degree of information asymmetry. In addition, I use firm size and the number of analysts following the firm to proxy for firm-level information asymmetry. Larger firms exhibit lower level of information asymmetry due to the greater availability of pre-disclosure information ([Atiase \(1985\)](#)) and increased news coverage in the Wall Street Journal compared to smaller firms ([Atiase \(1987\)](#)). Analysts play a pivotal role in disseminating firm-specific information to the market, thereby reducing the cost of capital ([Derrien and Kecskés \(2013\)](#)). Fewer analyst coverage indicates a higher level of information asymmetry.

At each quarter, I divide bonds into terciles based on bond age, bond IVOL, issuer’s firm size, and analyst coverage. Bonds in the top (bottom) tercile ranked by bond IVOL (bond age, firm size, or analyst coverage) are bonds with high information asymmetry, while all the others are with low information asymmetry. I then replicate the baseline regressions in the sub-groups with high and low information asymmetry, separately.

[Insert Table 8 about here]

In Table 8, I find the effect of the earnings conference call tone on bond short-sale activities is significant and stronger for the younger bonds, bonds with higher IVOL, and

bonds issued by firms with smaller sizes and covered by fewer analysts, i.e., the bonds with higher information asymmetry. The results confirm that conference calls provide an additional information source for short sellers in trading corporate bonds, especially for bonds (issuers) with high information asymmetry.

#### 4.2.2 Market conditions

The market condition is of importance to bond short sellers. [Hendershott, Kozhan, and Raman \(2020\)](#) show bond short sellers adjust their trading strategies based on market conditions, with a shift in behavior from the pre-Lehman to the post-Lehman periods. Specifically, the shorting volume in response to past positive returns was half (tripled) that of past negative returns in the pre- (post-) Lehman period. Whether the impact of the conference call tone on bond short-sale activities varies with market conditions as well? Next, I examine how macroeconomic uncertainties and interest rate fluctuations impact the relationship between conference call tone and bond short-sale activities.

When the economic uncertainty is higher, the conference call tone is more likely to be a valuable information signal and the bond short sellers could be more sensitive to the tone. To test this, I obtain the 1-month-ahead economic uncertainty index (UNC) from the FRED.<sup>14</sup> This composite index stands for the degree of uncertainty or unpredictability in the economy for the upcoming month. A higher index value generally indicates a higher level of macroeconomic uncertainty. I average the monthly economic uncertainty index (UNC) in each quarter and calculate the percentage change in the quarterly UNC. The full sample period is split into two halves, based on whether the percentage change in UNC is positive or negative, or above or below the sample median. Periods with positive or above the sample median changes indicate higher macroeconomic uncertainties.

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<sup>14</sup>The 1-month-ahead economic uncertainty index (UNC) is obtained from the FRED's website: <https://fred.stlouisfed.org/release?rid=670>. It is constructed in [Jurado, Ludvigson, and Ng \(2015\)](#). Specifically, they use a factor-based approach to measure economic uncertainty. They compile a comprehensive time series of macroeconomic activities, including real output, employment, consumer expenditure, housing, inventories, and market indexes. They then aggregate individual conditional volatilities into a macro uncertainty index.



I run the baseline regressions in the two sub-periods separately in Panel A of Table 9. The significantly positive coefficients on the conference call tone measure are amplified during periods with increasing (or high) UNC, which is consistent with the hypothesis that bond short sellers are more responsive to the information in the conference call tone during uncertain times.

[Insert Table 9 about here]

Short sellers in the stock market are usually concerned with their expectations of a company’s future earnings (the primary factor determining stock price), whereas bond short sellers are most concerned with future bond yields (the determining factor of bond price). A keen understanding of interest rate fluctuations is crucial for anticipating bond yields. I average the interest rate (1-month commercial paper rate obtained from FRED) in each quarter and get the quarterly percentage change.<sup>15</sup> Similarly, the full sample period is split into periods with positive (negative), or above (below) median interest rate changes. I examine the relation between conference call tone and bond shorting volumes in the sub-periods separately in Panel B of Table 9.

The effect of the earnings conference call tone on bond short-sale activities is only significant when the base interest rate is higher (or increasing). Both the bank lending channel and the balance sheet channel views of monetary policy imply that as interest rate increases, credit spreads of corporate bonds would increase.<sup>16</sup> The wider credit spreads imply higher perceived risk and lead to decreases in the bond prices, attracting short sellers. However, when the interest rates decrease, credit spreads narrow and bond prices are pushed upwards.

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<sup>15</sup>The 1-month commercial paper rate is obtained from the FRED’s website: <https://fred.stlouisfed.org/series/RIFSPPFAAD30NB>. An alternative to the commercial paper rate is the Fed Funds rate. I follow Asquith, Au, Covert, and Pathak (2013) to use the commercial paper rate because it more accurately represents the rate the borrowers could get on their collateral. In the sample, the commercial paper and Fed Funds rates correlate highly.

<sup>16</sup>The bank lending channel: higher interest rates can reduce the supply of bank credit and lead to wider credit spreads (Bernanke and Blinder (1988); Kashyap, Stein, and Wilcox (1993)). The balance sheet channel: rising interest rates can adversely affect the net worth of borrowers, increase agency costs, and further widen credit spreads (Bernanke and Gertler (1989); Kiyotaki and Moore (1997)).

To sum up, the above results provide heterogeneities of bond short-sale activities in response to issuers’ earnings conference call tone. I find the effect of the tone on daily bond shorting volumes is more pronounced when there is a higher level of information asymmetry, market uncertainty, and interest rate.

### 4.3 Anticipation or reaction?

Some studies suggest that short sellers are exceptional at anticipating events in the equity market. In an effort to explain their predictive abilities, [Christophe, Ferri, and Hsieh \(2010\)](#) and [Khan and Hai \(2013\)](#) imply that short sellers may be the beneficiaries of information leaks. The Securities and Exchange Commission has suggested that short sellers spread “false rumors” to manipulate companies. In addition, there have been allegations in the popular press of insider trading by well-known hedge funds such as SAC Capital Advisors and Galleon.<sup>17</sup> On the other hand, other studies document that stock short sellers are skilled information processors. [Blau, Fuller, and Van Ness \(2011\)](#), [Engelberg, Reed, and Ringgenberg \(2012\)](#), and [Blau and Pinegar \(2013\)](#) show that short sellers act on public firm information following, not prior to, its release, and benefit from their advanced information processing skills.

The same question arises of whether the bond short sellers anticipate the conference call tone and trade in ex-ante. To conduct a formal analysis, I regress the tone of conference calls on bond short-sale activities before the calls, specifically shorting volumes on the day  $t - 1$ ,  $t - 2$ , and the average shorting volumes in the windows of  $[t - 5, t - 3]$  and  $[t - 10, t - 6]$  in the Appendix Table [A.1](#). The coefficients on the shorting volumes on day  $t - 1$  and  $t - 2$ , as well as the average shorting volumes in the past windows are all insignificant, suggesting that shorting volumes before the conference calls do not predict the conference call tone.

Combined with the previous findings, these results imply that bond short sellers react to the default-related information in the earnings conference call tone, instead of anticipating

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<sup>17</sup>Refer to: <https://www.wsj.com/articles/SB10001424052748703864204576317060246641834>.

the conference call tone. The studies on whether bond short sellers have private information in advance are sparse. I add to the literature by providing evidence that bond short sellers are skilled at information processing while not informed beforehand.

## 5 Market impacts

Next, I examine whether short sellers' response to conference call tone has any impact on the underlying corporate bond market, specifically on the bond returns. Intuitively, bonds with more negative conference calls are supposed to experience lower subsequent returns if they are largely targeted by the short sellers. In addition, I expand the sample to include bonds of private firms and explore the spillover effect of conference call tone on shorting volumes of bonds issued by private industry peers.

### 5.1 Impacts on bond returns

The results thus far indicate that bond short sellers are adept at processing the soft information contained in earnings conference calls. How would the trading behaviour affect the underlying corporate bonds? Prior research has demonstrated a negative relationship between equity short selling and future returns ([Senchack and Starks \(1993\)](#); [Aitken, Frino, McCorry, and Swan \(1998\)](#); [Dechow, Hutton, Meulbroek, and Sloan \(2001\)](#); [Desai, Ramesh, Thiagarajan, and Balachandran \(2002\)](#); [Boehmer, Jones, and Zhang \(2008\)](#); and [Diether, Lee, and Werner \(2009b\)](#)). If short sellers target the bonds issued by firms with more negative calls, these bonds are expected to experience lower returns after the calls.

I investigate the impact of shorting based on the conference call tone on the underlying bond return using the following panel regression:

$$\begin{aligned}
 \text{Abnormal return}_{i,[t+1,t+d]} = & \alpha_4 + \beta_4 \times \text{Net negative tone}_{j,q} \times \text{High on loan}_{i,t} \\
 & + \gamma_4 \times \text{Net negative tone}_{j,q} + \phi_4 \times \text{High on loan}_{i,t} \\
 & + \delta_4 \times \text{Controls}_{i(j),t-1} + \vartheta_i + \mu_q + \epsilon_{i,t}
 \end{aligned} \tag{7}$$

where  $Abnormal\ return_{i,[t+1,t+d]}$  is the cumulative abnormal return of bond  $i$  from day  $t + 1$  to day  $t + d$ . Following Jiang, Li, Sun, and Wang (2022), the abnormal return is computed as daily bond return subtracted by the size-weighted average daily return of the pool of bonds that share similar credit ratings and time to maturity.  $High\ on\ loan_{i,t}$  is a dummy variable equal to one if bond on loan share ranks in the top half among all bonds issued by firms conducting earnings conference calls on the same day.

The results presented in Table 10 indicate that bonds with more negative conference calls and higher shorting volumes experience significantly lower abnormal returns in the days following the calls. The negative return effects are significant and generally increase in magnitudes over time. Specifically, in one week after earnings conference calls, returns of bonds with high shorting volumes are 4-bps lower than those with low shorting volumes. That is to say, shorting volumes based on conference call tone significantly predict lower bond returns in the future.

[Insert Table 10 about here]

Engelberg, Reed, and Ringgenberg (2012) find that this negative relationship between short selling and future returns in the equity market is stronger on days with earnings announcements. Therefore, I additionally control for the interaction of SUE and the *High on loan* dummy. In the Appendix Table A.2, coefficients on the interaction term of tone and *High on loan* dummy remain significantly negative, with similar magnitudes to those in Table 10. Although the interaction term of  $SUE \times High\ on\ loan$  generally has negative effect on future bond returns with absolute increasing magnitudes, the coefficients are insignificant. These results suggest that the significantly negative impact of high bond shorting volumes in response to negative conference calls on future bond returns is independent of the effect of high shorting volumes based on SUE, further reinforcing the notion that soft information plays an independent role alongside the quantitative information for short sellers in the bond market.

## 5.2 Spillover to bonds issued by private industry peers

Financial information disclosure is not mandatory for privately held enterprises. Therefore, it is more challenging for bond market participants to access information on bonds issued by private firms. Recent research finds that a public firm’s disclosure has important economic consequences for its private peers. For instance, a public firm’s disclosure influences peer firms’ investment decisions (Badertscher, Shroff, and White (2013)). Since firms in the same industry are exposed to common shocks, peer disclosures could have spillover effects that reduce information asymmetry between managers and investors, as well as among investors, for all firms operating in the same industry (Shroff, Verdi, and Yost (2017)). Thus, I wonder whether tones of public firms’ conference calls affect the trading decisions of shorting volumes of bonds issued by private firms in the same industry.

To test this hypothesis, I examine the relation between the shorting volumes of bonds issued by private firms and the average conference call tone of public firms in the same industry.<sup>18</sup> Specifically, I measure the industry-level conference call tone by taking the average (equal-weighted or firm size-weighted) and the median of conference call tones of public firms in the same industry, respectively.

[Insert Table 11 about here]

The results in Table 11 demonstrate a positive and significant relation between the industry average tone of public firms’ earnings conference calls and bond shorting volumes issued by peer private firms, consistent across different measures of industry-level conference call tone. With industry and quarter fixed effects, a one-standard-deviation increase in the industry median conference call tone is associated with an increase of nearly 3-basis-points in bond shorting volume.<sup>19</sup> Although the magnitude is much smaller than the effect of con-

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<sup>18</sup>I use the Fama-French 48 industry classification for these analyses. Results are robust to other industry classifications, such as the Fama-French 30 and 49 industry classification.

<sup>19</sup>The standard deviations of the equal-weighted average, firm size-weighted average, or the median tone of conference calls conducted by public firms in the same industry are 0.74, 1.16, and 0.76, respectively.

ference call tone on shorting volumes of public bonds, 3-bps still translate into a daily dollar impact of \$101K in the shorting volume given the average private bond issuing size to be \$335 million in the sample. The results still hold after controlling the bond fixed effects.

In a nutshell, I investigate the impact of short sellers' trading based on conference call tone on the underlying bond market. Bonds issued by firms conducting more negative conference calls and largely targeted by short sellers have lower returns in the days following the calls. Consistent with the argument that disclosure by public firms contains industry-wide information, I further document a spillover effect of the industry-level average conference call tone by public firms on short-sale activities of bonds issued by private peers, suggesting public firms' conference calls to be an alternative information source for short sellers in targeting private bonds in the same industry.

## 6 Conclusion

There are a bunch of papers investigating how stock short sellers react to firm news, such as earnings announcements, downgrades, cash flow news, etc. Nevertheless, studies on the information source of short-sale activities in the corporate bond market are limited. In this paper, I provide supporting evidence that short sellers make use of soft information in earnings conference calls to target corporate bonds. Earnings conference call is an information-rich disclosure medium that provides an important window for management and analysts to express their opinions about recent performance and future firm potential.

Specifically, I find that shorting volumes of the bonds issued by firms conducting more negative conference calls are higher, which is robust after controlling for SUE, the lagged on loan shares, past bond returns, text-based firm-level risk measure, and the sentiment of general firm news. I rule out potential explanations that the larger shorting volumes of these bonds are due to looser short-sale constraints or spillover from higher stock shorting volumes.

Then, I move a step further to explore the underlying information bond short sellers value in the earnings conference calls. The earnings conference call tone could predict future bond default risks, and the default-related information appeals to bond short sellers. The more negative the call, the more likely the underlying bond to be downgraded or default in the year following the calls. Consistently, the short-sale activities based on the conference call tone are more pronounced for bonds with higher default risks, such as the  $BBB^-$ -rated bonds.

Moreover, the effect of conference call tone on bond shorting volumes is stronger among bonds with high information asymmetry, such as younger bonds, bonds with higher idiosyncratic volatility, and the bonds issued by firms with smaller sizes and followed by fewer analysts. This impact of conference call tone is also amplified during periods with high macroeconomic uncertainties and interest rates.

Bond short activities in response to the conference call tone have significant impacts on the underlying corporate bond market. Bonds with more negative conference calls and higher shorting volumes have lower abnormal returns following the calls. Furthermore, there exists a sizeable spillover effect of the (average) public firms' conference call tone on short-sale activities of bonds issued by private industry peers. The negative earnings conference calls of public firms contribute to an increase in the short-sale activities of bonds issued by private industry peers, implying that public firms' conference calls is an alternative information source for short sellers in targeting private bonds in the same industry.

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**Table 1. Summary statistics**

This table provides descriptive statistics of the panel (bond-day) data used in our empirical analysis over the period from July 2006 to December 2021. Panel A reports the number of observations (N), mean, standard deviation (Std), lower quartile (Q1), median, and upper quartile (Q3) of the bond lending data in percentage, including on loan shares, lendable shares, utilization ratio, and lending fees, and bond characteristics including rating, time-to-maturity (Maturity) in years, time-since-issuance (Age) in years, bond illiquidity (ILLIQ), coupon rate in percentage, and the logarithm of bond issue size (Ln(bond size)). Panel B reports statistics for firm level characteristics. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Other firm variables include the logarithm of firm size in million dollars (Ln(stock size)), the logarithm of book-to-market ratio (Ln(BM)), the unexpected earnings surprises (SUE), and stock institutional ownership (Stock IO) in percentage. Panel C shows the correlations between the variables. The variable definitions are provided in the Appendix A. I focus on fixed-rate bonds and exclude bonds that are puttable, convertible, or perpetual. Mortgage-backed, asset-backed, agency-backed, or equity-linked securities, Canadians, structured notes, or issues denominated in foreign currency are also excluded. Bonds with age or maturity of fewer than six months are deleted. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level.

	N	Mean	Std	Q1	Median	Q3
Panel A: Bond level characteristics						
On loan shares (%)	106,727	1.49	2.78	0.13	0.48	1.53
Lendable shares (%)	106,702	23.10	10.75	15.86	22.06	28.85
Lending fee (%)	105,276	0.41	0.42	0.27	0.38	0.38
Utilization ratio(%)	106,702	6.95	13.16	0.68	2.37	7.10
Rating	106,727	8.23	3.05	6.00	8.00	9.50
Maturity (in years)	106,727	9.65	8.98	3.43	6.19	9.84
Age (in years)	106,727	4.42	3.54	1.91	3.53	5.96
ILLIQ	106,727	0.59	4.78	0.01	0.06	0.25
Coupon	106,727	4.81	1.78	3.50	4.75	6.00
Ln(bond size)	106,727	20.30	0.66	19.81	20.21	20.72
Panel B: Firm level characteristics						
Net negative tone	23,650	-0.01	0.97	-0.66	-0.02	0.61
Ln(stock size)	23,650	23.02	1.54	21.98	23.09	24.04
Ln(BM)	23,650	-0.79	0.87	-1.25	-0.69	-0.20
SUE	23,650	-0.01	0.16	0.00	0.00	0.01
Stock IO	23,650	0.79	0.18	0.71	0.82	0.90

Panel C: Pearson correlations among the variables												
	On loan shares	Lendable shares	Lending fee	Utilization ratio	Rating	Maturity	Age	ILLIQ	Ln(bond size)	Ln(stock size)	Ln(BM)	SUE
Net negative tone	0.06	0.09	0.02	0.05	0.10	-0.06	0.02	0.11	-0.08	-0.18	0.24	-0.06
On loan shares		0.26	0.20	0.79	0.19	0.09	-0.14	0.01	-0.05	-0.17	0.10	-0.04
Lendable shares			-0.16	-0.07	-0.02	0.30	-0.09	0.03	-0.07	-0.04	0.04	0.00
Lending fee				0.38	0.24	-0.08	0.06	0.04	-0.13	-0.22	0.10	-0.07
Utilization ratio					0.27	0.00	-0.10	0.02	-0.07	-0.22	0.10	-0.05
Rating						-0.14	-0.01	0.06	-0.34	-0.78	0.32	-0.04
Maturity							-0.01	0.05	0.11	0.18	-0.06	0.01
Age								0.05	-0.14	0.03	0.02	0.01
ILLIQ									-0.08	-0.08	0.04	-0.03
Ln(bond size)										0.58	-0.02	0.01
Ln(stock size)											-0.34	0.04
Ln(BM)												-0.02

**Table 2. Effects of conference call tone on bond shorting volumes**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond shorting volumes over the period from July 2006 to December 2021. The dependent variable is on loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Other independent variables are measured at the most recent month-end before conference calls and defined in the Appendix A. Column (2) controls for bond characteristics, including bond rating, maturity, age, and illiquidity. Column (3) further controls for stock characteristics, including unexpected earnings surprise (SUE), the logarithm of firm size (Ln(stock size)), the logarithm of book-to-market ratio (Ln(BM)), and stock institutional ownership (Stock IO). The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable: On loan shares			
	(1)	(2)	(3)
<b>Net negative tone</b>	<b>0.065***</b> <b>(3.23)</b>	<b>0.070***</b> <b>(3.41)</b>	<b>0.071***</b> <b>(3.46)</b>
Rating		0.043 (1.07)	0.012 (0.30)
Maturity		0.026 (0.82)	0.024 (0.76)
Age		-0.290** (-2.06)	-0.289** (-2.05)
ILLIQ		-0.011*** (-5.19)	-0.012*** (-5.39)
SUE			-0.083 (-0.46)
Ln(stock size)			-0.164** (-2.14)
Ln(BM)			0.034 (0.63)
Stock IO			-0.038 (-0.11)
Time FE	Y	Y	Y
Bond FE	Y	Y	Y
Adj. $R^2$	0.502	0.503	0.503
# of obs	106,727	106,727	106,727



**Table 3. Effects of conference call tone on bond shorting volumes: Confounding factors**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond shorting volumes over the period from July 2006 to December 2021. The dependent variable is on loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. Additional controls include the lagged on loan shares (the on loan shares of bond  $i$  on the previous quarter conference call day multiplied by 100), the average daily bond returns over the past 1-month ( $Ret_{[-30,-1]}$ ), the overall firm-level risk in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#), and the *CSS\_Neg* dummy equal to one for CSS score below 50, respectively in Columns (1) to (4). All additional variables are included in column (5). The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable: On loan shares					
	(1)	(2)	(3)	(4)	(5)
<b>Net negative tone</b>	<b>0.059***</b> (4.23)	<b>0.071***</b> (3.46)	<b>0.070***</b> (3.39)	<b>0.072***</b> (3.41)	<b>0.061***</b> (4.11)
Lagged on loan shares	0.567*** (28.68)				0.566*** (27.01)
$Ret_{[-30,-1]}$		0.071 (0.02)			1.820 (0.78)
Risk			0.008 (0.56)		0.003 (0.29)
CSS_Neg				-0.002 (-0.24)	-0.004 (-0.51)
Bond controls	Y	Y	Y	Y	Y
Stock controls	Y	Y	Y	Y	Y
Bond FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y
Adj. $R^2$	0.688	0.505	0.503	0.503	0.688
# of obs	95,773	105,320	106,727	106,727	94,559

**Table 4. Effects of conference call tone on bond short-sale constraints**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond short-sale constraints over the period from July 2006 to December 2021. The dependent variable is i) lendable shares defined as the shares available for lending relative to bond issuing size, ii) the utilization ratio of bonds borrowed from institutional lenders to the bonds that they have made available on the conference call day  $t$  multiplied by 100, and iii) the lending fee which is the average transaction-weighted rate reported by Markit, separately. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Other independent variables are measured at the most recent month-end before conference calls and defined in the [Appendix A](#). The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable	Lendable shares	Lending fee	Utilization ratio
	(1)	(2)	(3)
<b>Net negative tone</b>	<b>-0.036</b> <b>(-0.67)</b>	<b>0.005</b> <b>(1.49)</b>	<b>0.270***</b> <b>(3.15)</b>
Rating	-0.477*** (-4.27)	0.050*** (4.98)	0.740*** (3.77)
Maturity	0.092 (0.75)	0.007 (0.84)	0.108 (0.86)
Age	-0.445 (-1.05)	-0.052*** (-3.18)	-0.726* (-1.69)
ILLIQ	-0.028*** (-3.94)	0.001 (1.01)	-0.035** (-2.28)
SUE	0.307 (1.28)	-0.144* (-1.72)	-1.407 (-1.38)
Ln(stock size)	0.727*** (3.22)	-0.088*** (-5.58)	-1.154*** (-2.83)
Ln(BM)	0.404*** (2.90)	0.023** (2.29)	0.182 (0.74)
Stock IO	-0.062 (-0.07)	-0.257*** (-3.04)	-1.177 (-0.63)
Bond FE	Y	Y	Y
Time FE	Y	Y	Y
Adj-R2	0.790	0.414	0.509
# of obs	106,701	105,248	106,701

**Table 5. Effects of conference call tone on stock-adjusted bond shorting volumes**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond shorting volumes over the period from July 2006 to December 2021. The dependent variable is the adjusted bond on loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. To obtain the stock-adjusted bond on loan shares, I run time-series regressions of daily bond on loan shares on a constant and the firm's contemporaneous daily stock on loan shares. The intercept and residuals represent stock-adjusted bond on loan shares. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Other independent variables are measured at the most recent month-end before conference calls and defined in the Appendix A. Column (2) controls for bond characteristics, including bond rating, maturity, age, and illiquidity. Column (3) further controls for stock characteristics, including unexpected earnings surprise (SUE), the logarithm of firm size (Ln(stock size)), the logarithm of book-to-market ratio (Ln(BM)), and stock institutional ownership (IO). The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable: Stock-adjusted on loan shares			
	(1)	(2)	(3)
<b>Net negative tone</b>	<b>0.058***</b> <b>(2.87)</b>	<b>0.061***</b> <b>(3.02)</b>	<b>0.062***</b> <b>(3.03)</b>
Rating		0.034 (0.84)	0.008 (0.19)
Maturity		0.027 (0.85)	0.024 (0.79)
Age		-0.289** (-2.05)	-0.287** (-2.03)
ILLIQ		-0.012*** (-5.37)	-0.012*** (-5.47)
SUE			-0.047 (-0.26)
Ln(stock size)			-0.134* (-1.76)
Ln(BM)			0.034 (0.64)
Stock IO			-0.240 (-0.68)
Time FE	Y	Y	Y
Bond FE	Y	Y	Y
Adj. $R^2$	0.497	0.497	0.497
# of obs	106,368	106,368	106,368

**Table 6. Predictability of conference call tone for future default risks**

This table reports both OLS and Probit regression results for the effects of the net negative tone of earnings conference calls on future default risks over the period from July 2006 to December 2021. The dependent variable DG (real default) is a dummy variable equal one if the bond will be downgraded (default) in the next year after the conference call. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. On loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. For the panel model, I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable	DG		Real default	
Model	OLS	Probit	OLS	Probit
	(1)	(2)	(3)	(4)
<b>Net negative tone</b>	<b>0.011***</b> <b>(3.29)</b>	<b>0.114***</b> <b>(18.96)</b>	<b>0.003***</b> <b>(2.78)</b>	<b>0.362***</b> <b>(13.59)</b>
Bond Controls	Y	Y	Y	Y
Stock Controls	Y	Y	Y	Y
Time FE	Y	N	Y	N
Bond FE	Y	N	Y	N
Adj. $R^2$	0.187		0.302	
Pseudo. $R^2$		0.036		0.336
# of obs	106,727	106,727	106,727	106,727

**Table 7. Effects of conference call tone on bond shorting volumes:  $BBB^-$  bonds**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond shorting volumes over the period from July 2006 to December 2021. The dependent variable is on loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. The  $BBB^-$  dummy is equal to one for bonds rated  $BBB^-$ , and zero otherwise. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: On loan shares		
	(1)	(2)
Net negative tone	0.053** (2.42)	0.054** (2.42)
<b>Net negative tone <math>\times</math> <math>BBB^-</math></b>	<b>0.115*</b> <b>(1.70)</b>	<b>0.122*</b> <b>(1.80)</b>
$BBB^-$	0.016 (0.16)	0.019 (0.17)
Bond controls	Y	Y
Stock controls	N	Y
Time FE	Y	Y
Bond FE	Y	Y
Adj. $R^2$	0.508	0.508
# of obs	104,898	104,898

**Table 8. Effects of conference call tone on bond shorting volumes: Conditional on information asymmetry**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond shorting volumes in sub-samples over the period from July 2006 to December 2021. Each quarter, I split bonds into terciles for each firm based on the variable of i) bond age, ii) bond IVOL, iii) firm size, and iv) number of analysts following the firm. Bonds in the top (bottom) tercile ranked by bond IVOL (bond age, firm size, or analyst coverage) are bonds with "High" information asymmetry, while all the others are in the "Low" group. The dependent variable is on loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: On loan shares								
Sorting variable	Bond age		Bond IVOL		Firm size		Analyst coverage	
	Low	High	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Net negative tone</b>	<b>0.079***</b> (3.66)	<b>0.034</b> (1.64)	<b>0.044**</b> (2.50)	<b>0.092**</b> (2.16)	<b>0.105**</b> (2.64)	<b>0.042*</b> (1.99)	<b>0.072**</b> (2.50)	<b>0.040</b> (1.48)
Bond controls	Y	Y	Y	Y	Y	Y	Y	Y
Stock controls	Y	Y	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y	Y	Y
Bond FE	Y	Y	Y	Y	Y	Y	Y	Y
Adj. $R^2$	0.576	0.547	0.554	0.525	0.530	0.467	0.529	0.507
# of obs	71,094	35,360	61,090	30,281	42,241	64,291	52,676	53,069

**Table 9. Effects of conference call tone on bond shorting volumes: Market conditions**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls and bond shorting volumes in sub-samples over the period from July 2006 to December 2021. In Panel A, I average the monthly economic uncertainty index (UNC) in each quarter and calculate the percentage change in quarterly UNC. The full sample is split into two periods, based on whether the percentage change in UNC is positive or negative, or above or below the sample median. Periods with positive or above the sample median changes (High) indicate higher macroeconomic uncertainties. In Panel B, I average the interest rate (1-month commercial paper rate obtained from FRED) in each quarter and get the percentage change in the quarterly average interest rate. Similarly, I split the full sample into sub-periods with positive (negative), or above (below) median interest rate changes. Periods with a change to be positive or above the sample median (High) indicate a higher interest rate. The dependent variable is on loan shares of bond  $i$  on the conference call day  $t$ , multiplied by 100. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: On loan shares				
Panel A: Based on the percentage change in UNC				
	Negative	Positive	Low	High
	(1)	(2)	(3)	(4)
<b>Net negative tone</b>	<b>0.052**</b> <b>(2.24)</b>	<b>0.092***</b> <b>(3.36)</b>	<b>0.044*</b> <b>(1.80)</b>	<b>0.090***</b> <b>(3.58)</b>
Bond controls	Y	Y	Y	Y
Stock controls	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Bond FE	Y	Y	Y	Y
Adj. $R^2$	0.490	0.545	0.484	0.544
# of obs	57,568	47,969	51,160	54,325
Panel B: Based on the percentage change in interest rate				
	Negative	Positive	Low	High
	(1)	(2)	(3)	(4)
<b>Net negative tone</b>	<b>0.048</b> <b>(1.65)</b>	<b>0.089***</b> <b>(3.99)</b>	<b>0.050</b> <b>(1.62)</b>	<b>0.087***</b> <b>(4.03)</b>
Bond controls	Y	Y	Y	Y
Stock controls	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Bond FE	Y	Y	Y	Y
Adj. $R^2$	0.489	0.529	0.496	0.519
# of obs	46,264	59,590	47,112	58,662



**Table 10. Effects of conference call tone and bond shorting volumes on future bond returns**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls, bond shorting volumes, and cumulative bond abnormal returns over the period from July 2006 to December 2021. The dependent variable is the cumulative daily abnormal return of bond  $i$  from day  $t + 1$  to day  $t + d$ . High on loan is a dummy variable equal to one if the bond's on loan share ranks in the top half among all bonds with conference calls on the same day. The net negative tone measure is defined as the overall sentiment measure in Hassan, Hollander, Van Lent, and Tahoun (2019) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the Loughran and McDonald (2011) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: Cumulative daily abnormal returns				
$d =$	1	2	3	7
	(1)	(2)	(3)	(4)
Net negative tone	-0.026** (-1.96)	-0.034** (-2.09)	-0.043*** (-2.88)	-0.052** (-2.18)
<b>Net negative tone <math>\times</math> high on loan</b>	<b>-0.031*** (-2.78)</b>	<b>-0.028** (-2.33)</b>	<b>-0.032** (-2.60)</b>	<b>-0.043** (-2.00)</b>
High on loan	-0.010 (-1.01)	-0.011 (-0.95)	-0.018 (-1.35)	-0.016 (-0.90)
Bond controls	Y	Y	Y	Y
Stock controls	Y	Y	Y	Y
Bond FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Adj. $R^2$	0.019	0.026	0.027	0.047
# of obs	53,682	53,682	53,682	50,433

**Table 11. Spillover effects of conference call tone on shorting volumes of bonds issued by private industry peers**

This table reports panel regression results for the relation between bond shorting volumes issued by private firms and the net negative tone of earnings conference calls conducted by the public industry peers over the period from July 2006 to December 2021. The dependent variable is on loan shares of bond  $i$  issued by private firm  $j$  on day  $t$ , multiplied by 100, and the industry-level conference call tone is defined as the average (equal-weighted or firm size-weighted) or the median of conference calls of public firms in the same industry as  $j$  on day  $t$ . The Fama-French 48 industry classification is used for these analyses. Bond controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The industry level net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. In Columns (1), (3), and (5), I include quarter and industry fixed effects. Standard errors are clustered at the industry and quarter levels. In Columns (2), (4), and (6), the quarter and bond fixed effects are included. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: On loan shares					
	Equal-weighted		Firm size-weighted		Median	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Industry-level net negative tone</b>	<b>0.037**</b> <b>(2.11)</b>	<b>0.025**</b> <b>(2.32)</b>	<b>0.016**</b> <b>(2.11)</b>	<b>0.013***</b> <b>(2.76)</b>	<b>0.036**</b> <b>(2.12)</b>	<b>0.024**</b> <b>(2.28)</b>
Bond controls	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Bond FE	N	Y	N	Y	N	Y
Adj. $R^2$	0.217	0.570	0.217	0.570	0.217	0.570
# of obs	315,162	316,124	315,162	316,124	315,162	316,124

# Appendix for “Do Bond Short Sellers React to Earnings Conference Calls?”

## Appendix A Variable Definitions

Dependent Variables	
On loan shares	Daily shares on loan, scaled by bond issuing size.
Lendable shares	Shares available for lending, scaled by bond issuing size.
Lending fee	Average transaction-weighted rate reported by Markit.
Utilization	The ratio of bonds borrowed from institutional lenders to the bonds that they have made available.
Stock-adjusted on loan shares	To obtain the stock- adjusted bond on loan shares, I run time-series regressions of daily bond on loan shares on a constant and the firm’s contemporaneous daily stock on loan shares. The sum of the intercept and residual is stock-adjusted bond on loan shares.
DG	The DG is a dummy variable that equals one if the bond will be downgraded in the next year after the conference call.
Real default	The real default is a dummy variable that equals one if the bond will experience real defaults in the next year after the conference call.
Abnormal return	The daily abnormal return is then computed as the raw bond return subtracted by the size-weighted average return of the pool of bonds that share similar credit ratings and time-to-maturity on the same day.
Independent Variables	
Tone of earnings conference calls	<p>Hassan, Hollander, Van Lent, and Tahoun (2019) derive the sentiment measure in an earnings conference call as follows: first, each conference call transcript is decomposed into a list of words, <math>b = 1, 2, \dots, B_{j,q}</math>. Then, they count the number of occurrences of words indicating positive or negative sentiments, conditioning on proximity to positive and negative words based on the sentiment dictionary in Loughran and McDonald (2011). Finally, the number is divided by the total number of words in the transcript, deriving the sentiment, or the tone, in the conference call.</p> $Sentiment_{j,q} = \frac{\sum_{b=1}^{B_{j,q}} S(b)}{B_{j,q}}$ <p>where <math>S(b)</math> is an indicator function that assigns a value of +1 if word <math>b</math> is associated with positive sentiment, a value of -1 if word <math>b</math> is associated with negative sentiment, and zero otherwise.</p>

Net negative tone	<p>To facilitate interpretation, I define a net negative tone measure by multiplying the sentiment measure by -1 so that the higher the value, the more negative the earnings conference call tone.</p> $Net\ negative\ tone_{j,q} = -1 \times Sentiment_{j,q}$ <p>Following <a href="#">Hassan, Hollander, Van Lent, and Tahoun (2019)</a>, I standardize the net negative tone variable standardized across the full sample to have a mean of zero and a standard deviation of one, and cap it at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter.</p>
Rating	The average of credit ratings provided by S&P and Moody's when both are available or the rating provided by one of the two rating agencies when only one rating is available. A numerical score of 1 refers to the AAA rating by S&P and Aaa rating by Moody. A numerical score of 21 refers to C for both S&P and Moody. Investment-grade (low yield) bonds have ratings from 1 to 10. Non-investment-grade (high yield) bonds have ratings above 10. A larger number indicates higher credit risk or lower credit quality.
Maturity	Years to maturity.
Age	Years since issuance.
Coupon	Individual bond's coupon rate.
Ln(bond size)	The logarithm of the offering amount of individual bond.
Ln(stock size)	The natural logarithm of the market value (in million dollars) of the firm's equity at the end of last year.
Ln(BM)	The natural logarithm of book equity for the fiscal year-end in a calendar year is divided by market equity at the end of December of that year, as in <a href="#">Fama and French (1992)</a> .
Institutional ownership (Stock IO)	The percentage of common stocks owned by institutions in the previous quarter.
Analyst coverage	The number of analysts following the firm in the previous quarter.
Standardized unexpected earnings (SUE)	SUE is defined as the net income of the quarter minus that four quarters ago, divided by the standard deviation of quarterly net income over the past four years.

**Table A.1. Predictability of bond shorting volumes for the conference call tone**

This table reports panel regression results for the relation between the bond shorting volumes before conference calls and the net negative tone of earnings conference calls over the period from July 2006 to December 2021. The dependent variable is the net negative tone of the earnings conference call on day  $t$ . The independent variable is on loan shares of bond  $i$  on day  $t - 1$  and  $t - 2$ , and the average on loan shares in the windows of  $[t - 5, t - 3]$  and  $[t - 10, t - 6]$ , multiplied by 100, respectively. The net negative tone measure is defined as the overall sentiment measure in [Hassan, Hollander, Van Lent, and Tahoun \(2019\)](#) multiplied by -1, and is equal to the number of words indicating negative sentiments minus that indicating positive sentiments based on the [Loughran and McDonald \(2011\)](#) sentiment dictionary, divided by the total number of words in the transcript. The higher the net negative tone, the more negative the earnings conference call. The net negative tone variable is standardized across the full sample to have a mean of zero and a standard deviation of one. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: Net negative tone		
	(1)	(2)
-1	0.007 (0.87)	0.007 (0.98)
-2	0.005 (0.60)	0.005 (0.50)
$[-5, -3]$	-0.004 (-0.41)	-0.004 (-0.39)
$[-10, -6]$	-0.001 (-0.24)	-0.001 (-0.21)
Bond controls	Y	Y
Stock controls	N	Y
Bond FE	Y	Y
Time FE	Y	Y
Adj-R2	0.637	0.638
# of obs	104,824	104,824

**Table A.2. Effects of conference call tone and bond shorting volumes on future bond returns: Controlling for SUE**

This table reports panel regression results for the relation between the net negative tone of earnings conference calls, bond shorting volumes, and cumulative bond abnormal returns over the period from July 2006 to December 2021. The dependent variable is the cumulative daily abnormal return of bond  $i$  from day  $t + 1$  to day  $t + d$ . *High on loan* is a dummy variable equal to one if the bond's on loan share ranks in the top half among all bonds with conference calls on the same day. I additionally control for the interaction of the net negative tone measure and high on loan dummy and the interaction of SUE and the high on loan dummy. Bond and stock controls are measured at the most recent month-end before conference calls and defined in the Appendix A. The net negative tone measure is winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles each quarter, and all other variables are winsorized each quarter at the 0.5% level. I include quarter and bond fixed effects. Standard errors are clustered at the bond and quarter levels, with corresponding t-values in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable: Cumulative daily abnormal return				
$d =$	1	2	3	7
	(1)	(2)	(3)	(4)
Net negative tone	-0.026** (-1.94)	-0.034** (-2.14)	-0.042*** (-2.85)	-0.050** (-2.19)
<b>Net negative tone <math>\times</math> high on loan</b>	<b>-0.031*** (-2.67)</b>	<b>-0.028** (-2.27)</b>	<b>-0.034** (-2.50)</b>	<b>-0.045* (-1.84)</b>
SUE $\times$ high on loan	-0.155 (-0.33)	0.031 (0.09)	-0.366 (-0.80)	-0.481 (-0.57)
High on loan	-0.011 (-1.03)	-0.011 (-0.93)	-0.019 (-1.36)	-0.017 (-0.92)
SUE	0.275 (0.63)	0.011 (0.03)	0.353 (0.81)	0.460 (0.47)
Bond controls	Y	Y	Y	Y
Stock controls	Y	Y	Y	Y
Bond FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Adj. $R^2$	0.019	0.026	0.027	0.047
# of obs	53,682	53,682	53,682	50,433