# The Information Spillover Effect of Earnings Announcements in the Credit Market

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## Abstract

We document that information released around a firm's earnings announcements, as measured by changes in its credit default swap spreads around the earnings release or by the magnitude of the earnings change, triggers changes in the credit spreads of non-announcing peer firms. This information spillover effect is significantly smaller if the earnings release is more likely to reveal news specific to the announcing firm as opposed to industry-wide news. We also find that the spillover effect is present only if the non-announcing firms have high credit quality and have issued syndicated loans or are close to violating earnings based covenants. These latter findings suggest that the effect we document is likely due to the impact of industry-specific news on earnings based restrictions in debt contracts.

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## 1. Introduction

The empirical literature on intra-industry accounting information spillovers (or contagion) has documented that a firm-specific information event, such as an earnings announcement, a management forecast or an earnings restatement, leads to a simultaneous response in the stock prices of similar firms. However, little empirical evidence exists about the information spillovers generated by earnings releases in the credit market, where the demand for information is significantly different. In this paper, we test whether credit market participants re-assess industry-specific default probabilities in the credit spreads of firms that have not yet announced earnings, in reaction to the earnings releases of early-announcing firms within the same industry. In addition, we address reasons for the propagation of these information shocks in the credit market by identifying characteristics of the non-announcing firms and the earnings information released that trigger stronger information spillover effects.

A firm's earnings news can potentially contain information about the default risks faced by an entire industry. Earnings news is priced in the credit spreads of the announcing firms, suggesting that they provide relevant information about the announcing firm's default risk (Callen, Livnat and Segal, 2009; Easton, Monahan and Vasvari, 2009). The existence of close ties between firms in the same industry and the potential release, via earnings announcements, of information regarding future industry cash flows may yield credit spread reactions for similar non-announcing firms in the industry when a firm announces its earnings. Such an outcome is predicted by theoretical work that argues that firm defaults are correlated (King and Wadhwani, 1990; Jarrow and Yu, 2001; Giesecke, 2004; Collin-Dufresne, Goldstein and Helwege, 2009). To the extent that earnings announcements are informative about industry-specific factors that help forecast credit risks, one would expect this information to be relevant to the pricing of credit

spreads for the entire peer group to which the earnings announcing firm belongs.

Our empirical tests make use of credit default swap (CDS) spreads. These spreads are potentially more relevant for studying financial contagion because they capture the credit market's assessment of the probability of default and because CDS are standardized and homogenous contracts. In contrast, bond prices are more likely to be affected by the effect of interest rates, taxes and idiosyncratic bond contract features (e.g., seniority, coupon rates, embedded options, covenants, guarantees), which can cause substantial heterogeneity in the peer firms' reactions to earnings announcements. Also, the CDS market facilitates a continuous flow of trades compared to the bond market where short positions are difficult to achieve. Consistent with this, recent research by Blanco, Brennan, and March (2005) and Zhu (2006) has shown that CDS spreads respond more quickly to changes in credit conditions than do bond prices. Finally, CDS contracts tend to be highly liquid, while bonds are characterized by low levels of liquidity, causing bond spreads to reflect liquidity risk premiums.[1]

We examine the potential for credit market participants to revise their expectations about industry-wide default risks in reaction to earnings announcements by following a three step procedure. First, we measure changes in the CDS spreads of announcing firms around earnings releases to isolate any credit relevant movements that accompany the information event. Second, we measure changes in CDS spreads, coincident to the earnings news release, for a sample of non-announcing peer firms in the same industry based on Fama-French industry classifications. An information transfer effect is present when, on average, the CDS spread changes for non-announcing firms are significantly and economically associated with the information released by the announcing firm around its earnings release date. In the third and final step, we provide

[1] For example, Longstaff, Mithal and Neis (2005) and Chen, Lesmond, and Wei (2007) find that a large proportion of bond spreads are determined by liquidity factors, which do not necessarily reflect the default risk of the underlying asset.

corroborating evidence on cross-sectional differences in the magnitude of the CDS spread changes of non-announcing firms, which can be traced to differences in the type of information released or the characteristics of the non-announcing firms. Specifically, we investigate information releases that capture industry- as opposed to firm-specific information, since we expect greater credit market reactions when earnings announcements provide common industry news. We also partition the sample based on whether the non-announcing firms have issued bank loans, which are likely to have earnings-based covenants, or whether they are close to a covenant violation event. Stronger credit spread reactions for these non-announcing firms potentially indicate that earnings news provides information relevant to credit quality monitoring via covenants.

Our intra-industry analysis reveals a significant information spillover effect in the credit market. We find that the CDS spread changes of non-announcing peer firms are significantly associated with the news provided by announcing firms around earnings releases. The CDS spreads of peer firms change by about 48 basis points over a 5-day window around the earnings announcement. We measure the news released with two proxies: the credit spread change for the announcing firm around the earnings release date and the change in earnings before interest expense. The magnitude of this contagion effect is significantly smaller if the peer or announcing firm is rated speculative grade or if the magnitude of the news released is large (either in the top quartile or the bottom quartile of the distribution). This finding suggests that the information spillover is more limited when firm-specific information is more likely to be released, as is the case with extreme news or when speculative grade firms release information. Similarly, a speculative peer firm's CDS spreads are more likely to be sensitive to firm-specific rather than to industry-specific information, given their higher probability of default. This evidence indicates

that the earnings news released by one firm causes credit market investors to reassess the default risks of other firms in the same industry and that contagion driven by earnings based information is concentrated among firms that provide news about the components of cash flows that are common to all firms in the industry.

Finally, we find that the contagion effects are stronger if the peer firms have high ratings quality and have issued a syndicated loan, a debt contract which typically requires earnings based restrictions. We also document stronger credit spread reactions in the quarters just before non-announcing firms report a covenant violation, indicating that information spillovers are more pronounced for peer firms that are close to violating a covenant. Overall, consistent with our expectations, these findings show that the contagion effects we document around earnings announcements in the credit market are partly due to the potential impact of industry-specific information on restrictions in debt contracts.

We add to the existing literature along several dimensions. First, our paper makes an important contribution to the literature on the role of accounting information in debt markets, which documents debt markets' reaction around the announcement of earnings or management forecasts (Callen, Livnat and Segal, 2009; Easton, Monahan and Vasvari, 2009; Shivakumar et al., 2011). Our results highlight that earnings announcements not only provide relevant information about the announcing firms' default risks but that they also serve as a catalyst for debt market investors to reassess the default risks of their industry peers. Along this dimension, the incremental spillover effect to earnings announcements enhances our understanding about the price discovery process in the credit market.

Second, our paper adds to the emerging literature on contagion effects around significant events such as bankruptcies, defaults, credit downgrades or overall market downturns. Jorion and

Zhang (2007) examine the effect of financial distress on the spreads of industry competitors' credit default swaps. Depending on the nature of the credit event, they find evidence of contagion effects. Theocharides (2007) investigates contagion in the corporate bond market and finds empirical support for an information-based transmission of crises. Our paper shows that another source of information, earnings announcements, leads to common movements in credit risk premia, reflecting risks that may not be mitigated by holding a well-diversified portfolio of debt securities.

Third, we contribute to the literature that attempts to identify the components of credit spreads. Most empirical studies of structural models of default have found that only a small fraction of observed credit spreads for investment grade debt can be explained in terms of compensation for credit risk (Jones, Mason and Rosenfeld, 1984; Huang and Huang, 2003; Eom, Helwege and Huang, 2004). This problem is especially severe for investment grade bonds with short maturities. Our findings suggest that researchers should consider also a "contagion-risk" premium in the case of high credit quality firms, where the credit spreads change due to earnings releases by other firms in the same industry.

The paper is structured as follows. Section 2 discusses the previous empirical and theoretical literature on information spillovers and contagion and hypotheses development. We present the data, the sample selection process and descriptive statistics in Section 3. Section 4 presents the main results, sensitivity analyses and additional results on cross-sectional tests. Section 5 concludes the paper.

## 2. Literature review and hypotheses development

Sudden large changes or jumps in credit spreads across debt issuers may not appear independent from each other. The spread change of one issuer, possibly due to a rating

downgrade, news announcement or default, could lead to a simultaneous market-wide response in the spreads of other issuers. Theoretical work predicts the existence of such information spillovers or contagion effects in debt markets when information relevant to the assessment of credit risks at the industry or macroeconomic level is released. Specifically, Giesecke (2004) shows that credit spreads will display contagion effects when information about a borrower's fundamentals is not publicly known.[2] Using a similar information asymmetry framework, King and Wadhwani (1990) provide a model where rational agents transmit a shock from one market to another because they have imperfect information and cannot distinguish an idiosyncratic from a systematic shock. In addition, models that investigate event risks also predict contagion. Jarrow and Yu (2001) argue that there can be contagion risk in the sense that the default of one firm can trigger an increase in the intensity (or risk) of default of other peer firms. Finally, Collin-Dufresne, Goldstein, and Helwege (2009) propose a model where contagion within the bond market propagates through a Bayesian updating of beliefs. In their model, the unexpected default of an individual firm leads to a market-wide increase in credit spreads. As such, the jump-to-default risk is not conditionally diversifiable, and hence commands a risk premium.

The empirical literature on intra-industry contagion that tests the above predictions in the debt-market setting is quite limited. Jorion and Zhang (2007) study the intra-industry effects due to bankruptcy announcements on the credit default swap market and conclude that intra-industry contagion effects after Chapter 11 bankruptcies exist. Also, Theocharides (2007) and Collin-Dufresne, Goldstein and Helwege (2009) investigate contagion in the corporate bond market and document market-wide increases in credit spreads around specific credit events such as market-

[2] With incomplete information investors are not able to precisely assess how close the assets are to the default threshold; therefore the default becomes an unpredictable event. They form a prior distribution on firms' default thresholds, which reflects the fact that similar firms share the same industry conditions in the sense that these thresholds are not independent of each other.

wide shocks or significant jumps in the credit spreads of individual firms.

In light of these theoretical arguments and empirical evidence, we predict that earnings announcements are important information events that also induce information spillover or contagion effects in the credit market. Several arguments support our conjecture. First, the previous literature has documented that earnings news provides important industry-specific information that generates contagion in the equity market.[3] One of the early papers analyzing intra-industry effects following earnings surprises is Foster (1981) who finds a negative impact of a firm's earnings release on the stock prices of other firms operating in the same sector, but only if the announcing firm reacts negatively itself. Since then, several studies have documented information spillover effects around earnings news releases: earnings announcements (Clinch and Sinclair, 1987; Pownall and Waymire, 1989; Han and Wild, 1990; Freeman and Tse, 1992; Ramnath, 2002), management earnings forecasts (Baginski, 1987; Han, Wild and Ramesh, 1989; Pyo and Lustgarten 1990; Anilowski, Feng and Skinner, 2007) or accounting restatements (Gleason, Jenkins and Johnson, 2008; Goldman, Payer and Stefanescu, 2009).[4]

Second, earnings announcements have been shown to convey information about the default risk of the announcing firm. Callen, Livnat and Segal (2009) document that short-window earnings surprises are negatively and significantly correlated with changes in credit default swap premia in the three-day window surrounding the preliminary earnings

[3] We note that the evidence from equity markets does not necessarily imply that earnings news can also generate information spillovers in credit markets as there are significant differences in the information needs of these two markets. As holders of a call option on the firm value, equity investors are more interested in a firm's upside potential than in its downside risks, while credit markets are concerned primarily with firms' default risks. As a result, an earnings announcement may represent good news to equity holders but may provide an adverse shock to creditors. For instance, earnings news provided by a firm might increase the likelihood that other firms in the industry increase dividend payments or share repurchases, leading to a positive response in the stock market but causing credit markets to react negatively (Dhillon and Johnson, 1994).

[4] Several finance papers document stock market contagion effects in other settings. Lang and Stulz (1992) and Jarrow and Yu (2001) find that a firm-specific shock has a negative impact on the firm's suppliers and customers, while the effect on rival firms depends on the level of concentration within a particular industry. Also, Slovin et al. (1999) document contagion effects at commercial banks around dividend reduction events.

announcement. Also, Easton, Monahan and Vasvari (2009) find a significant reaction of the bond returns over the short interval surrounding earnings announcements to earnings news.

Third, information asymmetry is larger around earnings announcements (Kim and Verrecchia, 1994). Larger information asymmetry between market participants is reflected in the existence of investors with differential information: informed investors who possess firm-specific and private information regarding the probability of default and uninformed investors who do not have access to this information. As suggested by theoretical work of Giesecke (2004) and King and Wadhwani (1990), if earnings announcements exacerbate information asymmetries between credit market investors then the contagion effect is likely to be stronger.

These arguments provide support for a reaction of the credit spreads of non-announcing firms in the same industry to the earnings news of announcing firms. We expect, however, a stronger effect in two situations. In the first case, the CDS reaction should be stronger when the earnings release provides industry-specific news. This type of news allows credit market investors to price the debt instruments of other firms in the industry affected by similar fundamentals. If the information provided by the announcing entity is firm specific, then only that company's credit spreads should react. To the extent that extreme earnings news (either positive or negative) is more likely to capture firm- specific performance, we would expect the information spillover effect to be more limited when such news is released. Another proxy that we use to capture the extent of the firm-specific news released is the credit rating of the announcing or peer firm. We expect the contagion effect to be lower if earnings are announced by financially troubled firms, as captured by their speculative grade ratings, since their earnings releases are likely to reflect firm-specific conditions. Similarly, the credit spreads' reaction to industry-specific cash flow news should be weaker when the non-announcing peer firms have

low credit quality, since they are potentially more sensitive to idiosyncratic firm-specific information.

In the second case, the CDS reaction should be stronger when the peer non-announcing firms have issued bank loans, typically characterized by a large set of covenants, and when these firms are close to violating covenant restrictions in their debt contracts. Debt investors, who have incentives to closely monitor the debt contracts of non-announcing firms, are more likely to react to other firms' earnings announcements to gather early signals about potential distress, which may require renegotiations of their claims. Banks closely monitor borrowers because of their larger exposure to a given borrower (which can extend to activities that go beyond lending such as advisory services and cash management). Likewise, lenders of companies close to violating debt covenants more closely monitor borrowers in order to extract substantial concessions when they renegotiate credit agreements that contain financial covenants. Roberts and Sufi (2009) and Nini, Smith and Sufi (2009) document that lenders obtain significantly better terms during renegotiations.

## 3. Sample selection, variables measurement and descriptive statistics

### 3.1. Data sources and sample selection

We retrieve credit default swap (CDS) spreads from the Markit database which covers a majority of CDS contracts written on U.S. based entities. Markit provides daily CDS spread quotes which are available for different contract maturities ranging from 6 months to 30 years. Markit also provides the type of CDS contract (i.e., the restructuring clause), the entity's credit rating and, in the case of the 5 year CDS contracts, the market depth (i.e., the number of market makers that contribute with information on quotes). Typically Markit reports a composite daily CDS spread which is an average across the quotes provided by all market makers after removing

outlying observations. We obtain firm characteristics and earnings announcement dates from the COMPUSTAT Quarterly database. Loan related data is retrieved from the DealScan database provided by the Thomson Reuters Loan Pricing Corporation while covenant violation data is provided by Amir Sufi and Michael Roberts.

Table 1, Panel A summarizes the sample selection process. We focus on 5-year maturity contracts as they represent the most liquid contracts across different maturities. For the period from 2001 to 2009, Markit reports 5 year CDS contracts for 1,757 U.S. firms. After manually merging this sample with COMPUSTAT, we identify 1,237 U.S. based public firms with quarterly financial statements available. Next, we exclude firms with insufficient firm data, such as the earnings announcements date or CDS spreads during 5 day window around the earnings announcement, leaving 1,020 announcing firms. Finally, we match the earnings announcing firms to non-announcing peer firms based on the Fama-French industry classifications. To more precisely capture the contagion effect, we eliminate peer firm-quarter observations for which the 5 day earnings announcement window overlaps with the announcing window of the announcing treatment firm. The resulting sample contains 933 firms covering 14,370 firm-quarter observations (*No-overlap sample* thereafter). We also perform an analysis for a more restricted sample of peer firms that announce earnings following the earnings release of the treatment firms (*Later sample* thereafter); this sample contains 644 firms which cover 5,263 firm-quarter observations.

Table 1, Panel B presents the industry distribution of our sample according to the Fama-French 30 industries classification. We match 14,370 firm-quarter observations of announcing firms in the No-overlap sample to 757,431 firm-quarters of non-announcing peer firms. Similarly, we match 5,263 firm-quarter observations of the announcing firms in the Later sample

to 329,243 firm-quarters of the non-announcing peer firms. For both samples, the highest concentration of announcing and non-announcing firms is in Banking, Insurance, Real Estate and Trading. The next most represented industry is Utilities, followed by Retail, Communications, Healthcare and Business Equipment.

### 3.2. Variables Measurement

We measure the news released by treatment firms around earnings announcements with two proxies. The first proxy is the change in the CDS spread of the announcing firm during the 5-day window around the earnings announcement date (*Spread-news*). The second proxy is the change in the ratio of reported operating income after depreciation to total assets in the current relative to the previous quarter (*Earnings-news*). The first measure is likely to better incorporate the credit relevant information released around earnings announcements since it reflects not only earnings information but also other pieces of information released together with the earnings numbers, such as cash flow and balance sheet numbers. Further, this measure captures mainly the credit relevant information released by the earnings announcement. Given these arguments, we expect to find stronger results with the first measure.

In order to isolate the impact of other pieces of industry specific credit relevant information that might be concurrently released via other information events, we include a control which captures the average spread changes for the CDS market over the same 5 day announcement window. We compute two types of CDS market index changes, one using the entire universe of entities which have CDS quotes available for that 5 day interval and another based on a matched basket of CDS contracts with the same credit rating category as the announcing firm that has CDS quotes available over the same interval. Our results are robust to both indices; thus, after presenting our base specification, we focus only on tests which use the first index as a control

variable. We define the remaining variables used in our tests in the Appendix.

### 3.3. Descriptive statistics

We begin with the description of the No-overlap sample in Panel A of Table 2. The CDS spread of the announcing firms changes on average by 0.4% during the 5-day window around the earnings announcement date, with an inter-quartile range of 5.4%. The mean change in the CDS spread of the peer firms is 0.9%, while the inter-quartile range is 4.4%. The average earnings news for the announcing firms, calculated as the change in the ratio of operating income after depreciation to total assets in the current relative to the previous quarter, is zero; earnings news changes from -0.4% for the lower quartile to 0.4% for the upper quartile.

Our sample firms are relatively big, with the mean of total assets of $42,987 Mil. and $76,609 Mil. across announcing and peer firm-quarter observations, respectively. For announcing (peer) firm-quarter observations, the average leverage ratio is 29% (30%) and the average profitability is 2.1% (1.6%). About 77% of the peer firm quarter observations are from firms which have syndicated loans outstanding. The majority of these loans are subject to earnings based covenants.

With respect to the Later sample (Table 2, Panel B), the CDS spread of the announcing firms changes on average by -0.2% during the 5-day window around the earnings announcement date, with the inter-quartile range of 5.4%. The mean change in the CDS spread of the peer firms is 0.5%, with an inter-quartile range of 4.4%. The distribution of the earnings news variable is similar to that for the No-overlap sample. Similarly to the No-overlap sample, the vast majority of the firm-quarter observations are characterized by syndicated loans outstanding; the majority of these loans have earnings-based covenants.

Panel C of Table 2 presents the distribution of firm-quarter observations by rating category.

For the No-overlap sample, 36.3%, 41.0% and 22.8% of firm-quarter observations are high investment grade (credit ratings ranging from AAA to A), low investment grade (BBB credit rating) and speculative grade (credit ratings from BB to D), respectively. For the Later sample, the distribution of the peer firm-quarter observations by the credit rating category is as follows: 30.5% are in the high investment grade category, 44.1% are in the lower investment grade category and 25.0% are in the speculative grade category.

The correlation table, presented in Panel A of Table 3, reveals, as expected, the negative correlation between the 5 day window spread change (*Spread-news*) and the earnings surprise of the announcing firms *(Earnings-news).* This negative correlation suggests that positive earnings surprises are associated with a reduction in the CDS spreads, which indicates a decrease in the credit risk. More interestingly, earnings surprises of the announcing firms are also negatively associated with the CDS spread changes of the peer firms. Although the correlation is modest, it is consistent with our prediction that earnings announcements generate contagion in credit markets. In addition, the correlation table indicates that the loan and covenant variables differ significantly with credit rating, emphasizing the importance of controlling for credit risk category when analyzing the effect of these variables on contagion.

## 4. Results

### 4.1. The contagion effect in the credit market

We investigate whether a contagion effect around earnings announcements exists in the credit market by running multivariate regressions of changes in the CDS spreads of non-announcing firms, coincident to the earnings news release, on one of our two proxies for the news released by the treatment firm and a control for the change in the spread of a CDS market

index. An information spillover effect is present if the CDS spread changes for non-announcing firms are significantly and economically associated with the information released by the announcing firm around its earnings release date.

Table 4 presents the results of our main specification for the No-overlap and Later samples. We start with our first and more comprehensive news measure – *Spread-news*, which is estimated by the changes in the CDS spread of the announcing firm (Columns 1 and 2). Controlling for the change in the market CDS spread, we find a positive and significant coefficient on the *Spread-news* variable, which indicates that the change in the CDS spread of the announcing firm affects the spreads of the non-announcing peer firms. Economically, for the No-overlap sample, an inter-quartile change in *Spread-news* of 540 basis points translates into an increase of 48 basis points in the CDS spread of the average peer firm. For the Later sample, the inter-quartile change in *Spread-news* of 440 basis points translates into a 38 basis points increase in the CDS spread of the peer firms. The contagion effect that we document is consistent with the theoretical work of Giesecke (2004), King and Wadhwani (1990) and Jarrow and Yu (2001) which argues that because of imperfect information, information about default of one firm released via earnings announcements may trigger an increase in the risk of default of other peer firms.

In Columns 3 and 4, we verify that our findings are unaffected by how we control for the market-wide changes in credit spreads. In this alternative specification, we control for the change in the CDS index based on the announcing firm's rating category and find that the results are consistent with those presented in Columns 1 and 2. In Columns 5-8, we substitute *Spread-news* with the *Earnings-news* variable. Consistent with the contagion hypothesis, we find that earnings news of the announcing firm affects the CDS spreads of the peer firms. Based on the

specification presented in Column 5, the inter-quartile change in *Earnings-news* decreases peer firms' CDS spread by 38 basis points.

### 4.2. Determinants of the contagion effect in the credit market

We extend our analysis by examining the cross-sectional determinants of the contagion effect in the following sub-sections. We report our results based on the market-based CDS index and the Later sample. All our inferences hold for the No-overlap sample and for the analysis based on the credit-risk-category-based CDS index. In addition, in robustness analyses, we base the *Earnings-news* variable on earnings before extraordinary items instead of operating income after depreciation, as in our main specification. The results are, generally, unchanged.

#### 4.2.1 The effect on contagion of industry specific information releases

The reaction of the credit spreads of non-announcing firms in the same industry to the earnings news of the announcing firms is expected to be stronger when the earnings release is providing industry specific news. The main reason is that this type of news allows investors to anticipate changes in the credit quality of other firms in the industry affected by similar fundamentals.

First, we start by exploring the effect of the magnitude of the news on the CDS market contagion. To the extent that extreme earnings news (either positive or negative) is more likely to capture firm specific information about credit quality, we expect the information spillover effect to be more limited when such news are released. We first measure the extent of the news by the CDS spread change of the announcing firm (Table 5, Column1). We augment our base specification with the indicator variables *Spread-news-incr-big* and *Spread-news-decr-big*,

which reflect changes in the CDS spread in the upper and bottom quartiles of the CDS spread change distribution, respectively, and with the interaction terms between these indicator variables and *Spread-news*. We find negative coefficients on both interaction terms, suggesting that the effect of the news on the peer firms is significantly smaller when the announcing firm's news is more extreme. Relative to the intermediate credit news category, captured by the coefficient on *Spread-news,* a 100 basis points change in the announcing firm's extreme credit spread results in credit spread reaction for the average peer firm which is 17 basis points smaller. To examine whether the contagion effect differs between relatively small increases and decreases in CDS spread news, in Column 2 of Table 5 we augment the previous specification with *Spread-news-incr-small*, which indicates relatively small increases in the CDS spread, and the interaction term between this variable and *Spread-news.* We find that the contagion effect does not differ across these small positive and negative credit news categories.

In Columns 3 and 4 of Table 5, we substitute *Spread-news* with the *Earnings-news* variable and define *Earnings-news-incr-big* and *Earnings-news-decr-big* as indicator variables reflecting changes in the CDS spread in the upper and bottom quartiles of the earnings news distribution, respectively. We continue to find that the contagion effect is significantly smaller for extreme earnings news and that it does not differ between small positive and negative news. Overall, these results suggest that when extreme news are reported, as captured by extreme spread or earnings changes for the announcing firm, the contagion effect is smaller. This is consistent with our interpretation that extreme news events are likely to be associated with firm-specific rather than industry-wide news.

Second, we investigate the magnitude of the contagion effect conditional on the credit riskiness of the announcing and non-announcing firms. We expect the contagion effect to be

lower if earnings are announced by financially troubled firms, as captured by their speculative grade ratings, since their earnings releases are likely to reflect firm specific conditions as opposed to industry specific information. Similarly, the contagion effect should be weaker when the non-announcing peer firms have low credit quality since their credit spreads are potentially more sensitive to idiosyncratic firm-specific information.

In Table 6 we present our analysis of the effect of the announcing and peer firms' credit risk on the contagion effect. As in the previous analysis, we start with the CDS spread-based news variable. First, we add to our base specification the *Speculative-announce* indicator variable, reflecting that the announcing firm is non-investment grade, and the interaction term between this variable and *Spread-news*. We find that the contagion effect is significantly smaller when the announcing firm is non-investment grade (Table 6, Panel A, Column 1). While a 100 basis points increase in the CDS spread of the investment grade announcing firm translates into a 9 basis points increase in the spread of the peer firm, the effect of the non-investment grade announcing firm is about 6 basis points. This result is consistent with our hypothesis that the earnings announcements of investment grade firms convey more industry related news than do the earnings announcements of speculative firms.

We also examine whether the contagion effect of earnings announcements depends on the credit risk of the peer firm (Table 6, Column 2). We find that when the peer firm is rated speculative grade it is subject to a smaller contagion effect. A 100 basis points increase in the CDS spread of the announcing firm translates into about 10 basis points increase in the spread of the peer firms, the effect for the non-investment grade peer firm is about 5 basis points. These findings show that despite the higher sensitivity of credit spreads to speculative grade firm's own earnings news (e.g., Easton et al, 2009), these firms are less affected when their industry peers

announce earnings. Our results are again consistent with the argument that speculative grade firms are less affected by industry-wide news than investment grade firms.

It is also possible that the contagion effect is stronger when both the announcing and peer firms have a similar credit risk. We examine this conjecture by adding to our base specification three indicator variables - *Speculative-both* and *Investment-both,* which reflect whether both the announcing and peer firms are speculative or investment grade, respectively, and *Announcing-Invest-Peer-Spec,* which indicates when the announcing firm is investment grade and the peer firm is speculative (Table 6, Column 3). We also interact these indicator variables with *Spread-news*. We find that the contagion effect is significantly stronger when both the announcing and peer firms are investment grade, as reflected by the coefficient on the interaction term between *Investment-both* and *Spread-news*.

In Panel B of Table 6 we repeat all the credit-rating-based tests with the *Earnings-news* variable. Consistent with the credit-spread-based news measure, we find that earnings news generates less contagion when the announcing firm (Column 1) or the peer firm (Column 2) is speculative grade. We also continue to find that the contagion effect is the strongest when both firms are investment grade (Column 3).

In sum, when speculative grade firms report earnings or the non-announcing firms are rated speculative the contagion effect is smaller. This finding suggests that it is the industry wide news released by earnings announcements that generates information spillovers, and not the firm specific news, which increases the credit spread sensitivity of speculative grade firms.

### 4.2.2 The effect on contagion of earnings based restrictions in loan contracts

In our last set of analyses we examine whether the existence of private debt contracts for

peer firms affects these firms' susceptibility to the contagion effect. Private debt contracts typically have tightly set financial covenants based on earnings numbers. These contracts may also include performance pricing provisions that link the cost of debt to the borrower's earnings numbers. Therefore, we expect the earnings news of the announcing firm to have a stronger contagion effect if the peer firm has loans outstanding.

We perform our analysis separately for three credit risk categories, because, as discussed earlier, loan, financial covenant and performance-pricing provisions differ significantly with credit risk. In Columns 1-3 of Table 7 we augment our base specification with the *Loan* indicator variable, which takes the value of one if the peer firm has syndicated loans outstanding on the earnings announcement date of the announcing firm, and interact this variable with *Spread-news*. For the high investment grade category, we find a positive and significant coefficient on the *Loan* variable (Column 1). Borrowers in the high investment grade category are actually subject to contagion only if they have syndicated loans outstanding. For these firms, a 100 basis points increase in the CDS spread of the announcing firm results in a 16.8 basis points increase in their credit spread. For the low investment grade category, we also find that the contagion effect is stronger if a firm has private debt contracts (Column 2). For these firms, a 100 basis points increase in the CDS spread of the announcing firm results in a 8 basis points increase in their credit spread. We do not find any information spillover for speculative grade firms, again suggesting that industry-wide news has little effect on their earnings numbers (Column 3). In Columns 3-6 of Table 7, we substitute *Spread-news* with *Earnings-news.* Consistent with the results based on the CDS spread news variable, borrowers in the high investment grade category are subject to contagion only if they have syndicated loans outstanding (Column 3). We do not find that the contagion is affected by the existence of private debt contracts for low investment

grade and speculative firms.

In Table 8 we examine whether the tightness of loan covenants increases the information spillover effect. If a firm's financial ratios are close to the covenant threshold, indicating potential covenant violations, we expect the contagion effect to be stronger. Our ideal research design would be to measure how tight the financial covenants are relative to the underlying threshold for all peer sample firms with outstanding syndicated loans. However, DealScan does not provide sufficient information to measure covenant tightness. Also, there is substantial variation in the definition of covenants in loan agreements (Leftwich, 1983; Dichev and Skinner, 2002). For example, for the Debt/EBIT ratio, one of the most frequently used covenants in syndicated loan agreements, EBITDA may be defined as EBIT, EBITDA, net income or income before extraordinary items, while Debt might be defined as total debt, long-term debt, senior debt or total debt minus cash. Furthermore, covenants' thresholds change frequently over the life of the loan, with a threshold typically changing every quarter. DealScan reports only the original covenant threshold and does not provide the contract-specific covenant definitions.

As an alternative research design, we identify firms with syndicated loans that violated financial covenants (we utilize data provided by Amir Sufi and Michael Roberts). We expect financial covenants to be very tight in the two quarters prior to a covenant violation and in the quarter in which covenants are violated. We perform our analysis for speculative grade borrowers only, as there are almost no covenant violations among investment grade borrowers (less than 1% of firm-quarter observations). We augment our base model with the *Violation*, *Violation-next-quarter* and *Violation-in-two-quarters* indicator variables, reflecting whether the covenant is violated in the current quarter, or whether it will be violated in the next quarter or in two quarters. We interact these variables with *Spread_news*. Consistent with our prediction, we

find that the contagion effect is significantly stronger for firms with financial covenants that are very close to their threshold. For these firms, a 100 basis points increase in the CDS spread of the announcing firm results in an 11 to 15 basis points greater increase in their credit spread relative to other firms. When we substitute *Spread-news* with *Earnings-news* (Columns 4-6), unfortunately, we do not get consistent results.

To summarize our findings in Tables 7 and 8, we show that the contagion effect we document is likely due to the impact of industry-specific news on earnings based restrictions in loan contracts.

## 5. Conclusions

Theory suggests that changes in credit spreads across debt issuers may not appear independently from each other. These credit spread movements generate information spillovers or contagion effects in debt markets, especially when information relevant to the assessment of credit risks at the industry or macroeconomic level is released. Although, the empirical literature on intra-industry accounting information spillovers has documented that firm-specific information events (announcements of earnings, management forecasts or earnings restatements) lead to a simultaneous response in the stock prices of similar firms, there is no evidence on the existence of a potential information spillover effect in the credit market around earnings announcements. Using a database with daily credit default swap (CDS) spreads, we test whether credit spreads of firms that have not yet announced earnings react to earnings releases of early-announcing firms within the same industry. We also investigate reasons for the propagation of these information shocks in the credit market.

We find that the CDS spread changes of non-announcing firms are significantly

associated with the news provided by announcing firms around earnings releases. The magnitude of this contagion effect is significantly smaller if the peer firm or the announcing firm are rated speculative grade or if the magnitude of the news released is large, suggesting that the information spillover is more limited when firm-specific information is likely to be released, as is the case with extreme news or when speculative grade firms release or react to information.

We also document that the contagion effects are stronger if the non-announcing peer firms have issued a syndicated loan or are about to report a covenant violation within a quarter or two. These latter findings indicate that the contagion effects we document around earnings announcements in the credit market are partly due to the potential impact of industry specific information on restrictions in debt contracts.

We contribute to the existing literature by providing evidence that earnings announcements not only provide relevant information about announcing firms' default risks, but also serve as a catalyst for debt market investors to reassess the default risks of their industry peers. In addition, our paper highlights that another source of information, earnings announcements, can lead to common movements in credit risk premia and that a "contagion-risk" premium is likely to be reflected in the spreads of high credit quality firms.

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# Appendix A - Variable Definitions

| Variable | Description |
|---|---|
| Spread_news | Change in CDS spread over (-2,2) window of announcing firm. |
| Earnings_news | Quarterly change in ROA (Operating income after depreciation/total assets) of announcing firm. |
| Spread_reaction | Change in CDS spread over (-2,2) window of peer firm. |
| Change in CDS index | Change in CDS market index over (-2,2) window. |
| Change in CDS index by rating class | Change in CDS market index by rating class over (-2,2) window. |
| CDS spread | Five-year CDS spread. |
| Spr5y_index | CDS market index: equal-weighted average of CDS spreads on day t. |
| Spr5y_index_ratclass | CDS market index by rating class: equal-weighted average of CDS spreads on day t for rating class = 1, 2, 3, 4, 5. |
| | |
| *Quarterly financial variables* | |
| Earnings | Operating income after depreciation (oiadpq). |
| Leverage | Ratio of total long-term debt to total assets, winsorized at 1 and 99th percentile (dlttq/atq). |
| ROA | Ratio of operating income after depreciation to total assets (oiadpq/atq). |
| | |
| *Debt Covenant Variables* | |
| Loan | Indicator equals 1 if the firm has a loan outstanding. |
| Covenant_or_pp | Indicator equals 1 if financial covenant present or performance pricing linked to accounting ratio, otherwise equals 0. |
| Violation | Indicator equals 1 if any covenant is violated in current quarter. |
| Violation-next-quarter | Indicator equals 1 if any covenant will be violated next quarter. |
| Violation-in-2-quarters | Indicator equals 1 if any covenant will be violated in 2 quarters. |
| | |
| Spec | Indicator equals 1 if firm's rating is speculative, 0 if investment grade, otherwise missing. |
| Speculative-both | Indicator equals 1 if Spec(peer) == 1 & Spec(announcing) == 1. |
| Investment-both | Indicator equals 1 if Spec(peer) == 0 & Spec(announcing) == 0. |
| Announcing-Invest-Peer-Spec | Indicator equals 1 if Spec(announcing) == 0 & Spec(peer) == 1. |
| | |
| *News partition dummies* | |
| Spread_news_decr_big | Indicator equals 1 if Spread_news < 0 and Spread_news < median. |
| Earnings_news_incr_big | Indicator equals 1 if Earnings_news > 0 and Earnings_news > median. |
| Spread_news_incr_big | Indicator equals 1 if Spread_news > 0 and Spread_news > median. |
| Earnings_news_decr_big | Indicator equals 1 if Earnings_news < 0 and Earnings_news < median. |
| Spread_news_incr_small | Indicator equals 1 if Spread_news > 0 and Spread_news < median. |
| Earnings_news_decr_small | Indicator equals 1 if Earnings_news and Earnings_news > median. |

# Table 1

Panel A - Sample selection

| Sample selection | No. of firms |
|---|---|
| Markit database | 4,284 |
| of which identified as US | 1,757 |
| Merged with COMPUSTAT | 1,237 |
| With sufficient data (DocClause=MR, Tier=SNRFOR, CDS spread less than 100%, nonmissing Fama-French-sector) | 1,020 |
| | |
| No. of announcing firms | |
| No-Overlap Sample | 933 |
| Later Sample | 644 |
| | |
| No. of announcing firm-quarters | |
| No-Overlap Sample | 14,370 |
| Later Sample | 5,263 |

# Table 1

This table reports summary statistics. Sectors are based on the Fama-French 30 industry classification. The sample comprises US-domiciled issuers with CDS contracts in USD, Tier SNRFOR and DocClause MR.

Panel B - Sample composition by industry

| Sector (FF30) | NO-OVERLAP | | LATER | |
|---|---|---|---|---|
| | N (announcing firm-quarters) | N (peer firm-quarters) | N (announcing firm-quarters) | N (peer firm-quarters) |
| Food Products | 498 | 9,370 | 217 | 4,453 |
| Beer & Liquor | 125 | 463 | 54 | 216 |
| Tobacco Products | 46 | 88 | 18 | 40 |
| Recreation | 183 | 2,271 | 58 | 971 |
| Printing and Publishing | 213 | 2,034 | 121 | 864 |
| Consumer Goods | 247 | 2,764 | 108 | 1,201 |
| Apparel | 205 | 1,380 | 131 | 604 |
| Healthcare, Medical Equipment, Pharmaceutical Products | 862 | 30,722 | 63 | 13,331 |
| Chemicals | 460 | 10,814 | 153 | 5,337 |
| Textiles | 20 | 46 | 10 | 21 |
| Construction and Construction Materials | 493 | 11,028 | 156 | 4,791 |
| Steel Works Etc | 238 | 1,559 | 28 | 716 |
| Fabricated Products and Machinery | 455 | 6,590 | 274 | 3,046 |
| Electrical Equipment | 170 | 860 | 55 | 423 |
| Automobiles | 181 | 1,610 | 99 | 713 |
| Aircraft, ships, and railroad equipment | 145 | 1,300 | 65 | 579 |
| Precious Metals, Non-Metallic, and Industrial Metal Mining | 62 | 234 | 43 | 127 |
| Coal | 12 | 65 | 9 | 40 |
| Petroleum and Natural Gas | 587 | 25,516 | 152 | 11,020 |
| Utilities | 1,787 | 159,416 | 542 | 74,118 |
| Communication | 913 | 34,982 | 175 | 13,407 |

| | | | | |
|---|---|---|---|---|
| Personal and Business Services | 662 | 20,449 | 293 | 8,618 |
| Business Equipment | 752 | 26,243 | 112 | 11,703 |
| Business Supplies and Shipping Containers | 317 | 7,792 | 131 | 3,845 |
| Transportation | 367 | 6,782 | 22 | 3,265 |
| Wholesale | 290 | 4,288 | 82 | 1,877 |
| Retail | 1,060 | 34,453 | 590 | 15,543 |
| Restaurants, Hotels, Motels | 204 | 2,527 | 117 | 1,031 |
| Banking, Insurance, Real Estate, Trading | 2,728 | 331,440 | 1,333 | 147,107 |
| Everything Else | 88 | 466 | 52 | 236 |
| Total | 14,370 | 737,552 | 5,263 | 329,243 |

# Table 2

Panel A - Summary statistics for No-overlap sample

| NO-OVERLAP | mean | p25 | p50 | p75 | sd | N |
|---|---|---|---|---|---|---|
| *Spread changes around QEA* | | | | | | |
| Spread_news | 0.4% | -3.4% | 0.0% | 2.0% | 12.0% | 14,370 |
| Change in CDS spread for peer firms | 0.9% | -2.7% | 0.0% | 1.7% | 15.0% | 737,552 |
| Change in CDS index | 0.1% | -2.5% | -0.3% | 2.2% | 4.9% | 14,370 |
| Change in CDS index by rating class | 0.3% | -2.4% | -0.5% | 1.9% | 6.2% | 14,370 |
| Earnings_news | 0.0% | -0.4% | 0.0% | 0.4% | 2.2% | 14,370 |
| *Announcing firm characteristics - Quarterly BS and IS items (USD millions)* | | | | | | |
| Total assets | 42,987 | 4,131 | 8,874 | 22,632 | 156,123 | 14,370 |
| Sales | 3,237 | 621 | 1,459 | 3,317 | 6,157 | 14,370 |
| Leverage | 29.0% | 15.0% | 26.0% | 39.0% | 20.0% | 14,365 |
| ROA | 2.1% | 1.0% | 1.8% | 3.0% | 2.4% | 14,370 |
| *Peer firm characteristics - Quarterly BS and IS items (USD millions)* | | | | | | |
| Total assets | 76,609 | 5,343 | 12,310 | 36,078 | 227,525 | 737,552 |
| Sales | 3,300 | 477 | 1,349 | 3,245 | 6,506 | 737,552 |
| Leverage | 30.0% | 13.0% | 28.0% | 44.0% | 21.0% | 737,404 |
| ROA | 1.6% | 0.8% | 1.4% | 2.3% | 2.1% | 737,552 |
| *CDS spreads (bps)* | | | | | | |
| Announcement firms | 180.00 | 38.00 | 77.00 | 200.00 | 320.00 | 14,334 |
| Peer firms | 170.00 | 35.00 | 66.00 | 170.00 | 310.00 | 735,534 |
| *Loans and covenants of peer firms* | | | | | | |
| Loan | 0.77 | 1.00 | 1.00 | 1.00 | 0.42 | 737,552 |
| Covenant_or_pp | 0.55 | 0.00 | 1.00 | 1.00 | 0.50 | 737,552 |
| Violation | 0.02 | 0.00 | 0.00 | 0.00 | 0.14 | 215,649 |

# Table 2

Panel B - Summary statistics for Later sample

| LATER | mean | p25 | p50 | p75 | sd | N |
|---|---|---|---|---|---|---|
| *Spread changes around QEA* | | | | | | |
| Spread_news | -0.2% | -3.9% | 0.0% | 1.5% | 12.0% | 5,263 |
| Change in CDS spread for peer firms | 0.5% | -2.9% | 0.0% | 1.5% | 14.0% | 329,243 |
| Change in CDS index | -0.4% | -2.9% | -0.8% | 1.5% | 4.7% | 5,263 |
| Change in CDS index by rating class | -0.3% | -2.7% | -0.8% | 1.3% | 5.6% | 5,263 |
| Earnings_news | 0.0% | -0.4% | 0.0% | 0.4% | 1.9% | 5,263 |
| *Announcing firm characteristics - Quarterly BS and IS items (USD millions)* | | | | | | |
| Total assets | 60,032 | 4,489 | 10,420 | 29,157 | 205,266 | 5,263 |
| Sales | 3,786 | 829 | 1,760 | 3,885 | 6,493 | 5,263 |
| Leverage | 26.0% | 13.0% | 22.0% | 35.0% | 17.0% | 5,259 |
| ROA | 2.2% | 1.0% | 1.9% | 3.1% | 2.1% | 5,263 |
| *Peer firm characteristics - Quarterly BS and IS items (USD millions)* | | | | | | |
| Total assets | 87,937 | 6,251 | 14,902 | 44,568 | 262,776 | 329,243 |
| Sales | 3,742 | 638 | 1,610 | 3,596 | 7,039 | 329,243 |
| Leverage | 27.0% | 12.0% | 25.0% | 39.0% | 19.0% | 329,137 |
| ROA | 1.7% | 0.8% | 1.4% | 2.4% | 1.8% | 329,243 |
| *CDS spreads (bps)* | | | | | | |
| Announcement firms | 150.00 | 34.00 | 63.00 | 150.00 | 260.00 | 5,248 |
| Peer firms | 190.00 | 38.00 | 76.00 | 210.00 | 330.00 | 328,320 |
| *Loans and covenants of peer firms* | | | | | | |
| Loan | 0.79 | 1.00 | 1.00 | 1.00 | 0.40 | 329,243 |
| Covenant_or_pp | 0.59 | 0.00 | 1.00 | 1.00 | 0.49 | 329,243 |
| Violation | 0.03 | 0.00 | 0.00 | 0.00 | 0.16 | 89,743 |

# Table 2

Panel C - Rating distribution

| | | NO-OVERLAP | | LATER | |
|---|---|---|---|---|---|
| Letter Rating | Rating class | N | % | N | % |
| *Investment grade* | | | | | |
| AAA, AA | 1 | 63,959 | 8.7 | 23,623 | 7.2 |
| A | 2 | 203,432 | 27.6 | 76,789 | 23.3 |
| BBB | 3 | 302,056 | 41.0 | 145,196 | 44.1 |
| *Speculative grade* | | | | | |
| BB | 4 | 93,311 | 12.7 | 44,132 | 13.4 |
| CCC | 5 | 63,235 | 8.6 | 32,824 | 10.0 |
| D and missing | . | 11,559 | 1.6 | 6,679 | 2.0 |
| Total | | 737,552 | 100.0 | 329,243 | 100.0 |

# Table 3

This table reports the pairwise Pearson correlation coefficients between announcement news and peer firm's characteristics. * denotes significance at the 5% level. The unit is firm-quarter-peerfirm.

| *No-Overlap sample* | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spread_news | 1 | 1.0000 | | | | | | | | | |
| Spread_reaction | 2 | 0.1874* | 1.0000 | | | | | | | | |
| Change in CDS index | 3 | 0.3616* | 0.3085* | 1.0000 | | | | | | | |
| Earnings_news | 4 | -0.0412* | -0.0161* | -0.0343* | 1.0000 | | | | | | |
| Total assets (peer) | 5 | 0.0029* | 0.0209* | -0.0020* | -0.0028* | 1.0000 | | | | | |
| Leverage (peer) | 6 | 0.0016* | -0.0088* | -0.0036* | 0.0028* | -0.1603* | 1.0000 | | | | |
| Loan (peer) | 7 | -0.0042* | 0.0008 | -0.0046* | -0.0016* | -0.0111* | 0.0322* | 1.0000 | | | |
| Covenant_or_pp (peer) | 8 | -0.0012* | -0.0036* | 0.0008* | -0.0012* | -0.2724* | 0.0529* | 0.6039* | 1.0000 | | |
| Violation (peer) | 9 | 0.0019* | -0.0028* | -0.0036* | 0.0004 | -0.0128* | 0.0199* | 0.0285* | 0.0582* | 1.0000 | |
| Rating (peer) | 10 | -0.0081* | -0.0168* | -0.0008 | 0.0045* | -0.3547* | 0.2558* | 0.1011* | 0.3196* | 0.0903* | 1.0000 |
| Spec (peer) | 11 | -0.0091* | -0.0060* | -0.0022* | 0.0050* | -0.1349* | 0.2284* | 0.0219* | 0.1410* | 0.1007* | 0.7642* |

# Table 4

The dependent variable is spread_reaction. Year fixed effects are included. Standard errors clustered by announcing firm. Robust t-statistics in brackets. + denotes significant at 10%; * denotes significant at 5%; ** denotes significant at 1%.

| Model | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Peer announcement | NOOVERLAP | LATER | NOOVERLAP | LATER | NOOVERLAP | LATER | NOOVERLAP | LATER |
| Spread_news | 0.089** | 0.086** | 0.057** | 0.058** | | | | |
| | [8.90] | [9.58] | [6.18] | [7.97] | | | | |
| Earnings_news | | | | | -0.047* | -0.092** | -0.052** | -0.094** |
| | | | | | [2.01] | [2.84] | [2.66] | [3.06] |
| Change in CDS index | 0.826** | 0.690** | | | 0.915** | 0.771** | | |
| | [23.23] | [31.27] | | | [26.92] | [38.15] | | |
| Change in CDS index by rating class | | | 0.656** | 0.603** | | | 0.707** | 0.652** |
| | | | [20.58] | [25.42] | | | [24.41] | [29.96] |
| Constant | -0.004+ | -0.011** | 0.004+ | 0.00 | -0.005+ | -0.012** | 0.00 | 0.00 |
| | [1.69] | [3.98] | [1.71] | [0.40] | [1.83] | [4.16] | [1.64] | [0.33] |
| Observations | 737,552 | 329,243 | 737,552 | 329,243 | 737,552 | 329,243 | 737,552 | 329,243 |
| R-squared | 0.11 | 0.08 | 0.11 | 0.09 | 0.10 | 0.08 | 0.11 | 0.09 |

# Table 5

The dependent variable is spread_reaction. Year fixed effects are included. Standard errors clustered by announcing firm. Robust t-statistics in brackets. + denotes significant at 10%; * denotes significant at 5%; ** denotes significant at 1%.

| Model | 1 | 2 |
|---|---|---|
| Peer announcement | LATER | LATER |
| Spread_news | 0.233** | 0.287** |
| | [5.43] | [4.00] |
| Spread_news_incr_big | 0.005** | 0.004+ |
| | [3.23] | [1.78] |
| Spread_news_incr_small | | 0.00 |
| | | [1.33] |
| Spread_news_decr_big | -0.004* | -0.006* |
| | [2.35] | [2.43] |
| Spread_news*Spread_news_incr_big | -0.160** | -0.215** |
| | [3.69] | [2.97] |
| Spread_news*Spread_news_incr_small | | 0.10 |
| | | [0.51] |
| Spread_news*Spread_news_decr_big | -0.169** | -0.224** |
| | [3.62] | [3.01] |
| Change in CDS index | 0.681** | 0.681** |
| | [30.96] | [30.96] |
| Constant | -0.011** | -0.009** |
| | [3.96] | [2.91] |
| Observations | 329,243 | 329,243 |
| R-squared | 0.08 | 0.08 |

| Model | 3 | 4 |
|---|---|---|
| Peer announcement | LATER | LATER |
| Earnings_news | -0.809** | -1.559* |
| | [2.67] | [2.21] |
| Earnings_news_decr_big | 0.00 | 0.00 |
| | [0.78] | [0.42] |
| Earnings_news_decr_small | | -0.004+ |
| | | [1.72] |
| Earnings_news_incr_big | 0.00 | -0.004+ |
| | [1.53] | [1.96] |
| Earnings_news*Earnings_news_decr_big | 0.827** | 1.576* |
| | [2.65] | [2.22] |
| Earnings_news*Earnings_news_decr_small | | -0.02 |
| | | [0.02] |
| Earnings_news*Earnings_news_incr_big | 0.693* | 1.442* |
| | [2.25] | [2.03] |
| Change in CDS index | 0.771** | 0.771** |
| | [38.12] | [38.15] |
| Constant | -0.012** | -0.010** |
| | [3.97] | [2.93] |
| Observations | 329,243 | 329,243 |
| R-squared | 0.08 | 0.08 |

# Table 6

The dependent variable is spread_reaction. Year fixed effects are included. Standard errors clustered by announcing firm. Robust t-statistics in brackets. + denotes significant at 10%; * denotes significant at 5%; ** denotes significant at 1%.

Panel A

| Model | 1 | 2 | 3 |
|---|---|---|---|
| Peer announcement | LATER | LATER | LATER |
| Spread_news | 0.090** | 0.098** | 0.040** |
| | [9.00] | [8.82] | [3.24] |
| Speculative_announce | -0.003** | | |
| | [3.35] | | |
| Spread_news*Speculative_announce | -0.033* | | |
| | [2.11] | | |
| Speculative_peer | | 0.00 | |
| | | [0.06] | |
| Spread_news*Speculative_peer | | -0.044** | |
| | | [3.89] | |
| Investment-both | | | 0.002* |
| | | | [2.05] |
| Speculative-both | | | 0.00 |
| | | | [1.50] |
| Announcing-Invest-Peer-Spec | | | 0.003** |
| | | | [2.94] |
| Spread_news*Investment-both | | | 0.062** |
| | | | [3.81] |
| Spread_news*Speculative-both | | | 0.01 |
| | | | [0.39] |
| Spread_news*Announcing-Invest-Peer-Spec | | | 0.02 |
| | | | [1.14] |
| Change in CDS index | 0.691** | 0.700** | 0.692** |
| | [31.33] | [31.05] | [31.29] |
| Constant | -0.010** | -0.011** | -0.012** |
| | [3.72] | [3.98] | [4.34] |
| Observations | 329,243 | 322,564 | 329,243 |
| R-squared | 0.08 | 0.08 | 0.08 |

# Table 6

The dependent variable is spread_reaction. Year fixed effects are included. Standard errors clustered by announcing firm. Robust t-statistics in brackets. + denotes significant at 10%; * denotes significant at 5%; ** denotes significant at 1%.

Panel B

| Model | 1 | 2 | 3 |
|---|---|---|---|
| Peer announcement | LATER | LATER | LATER |
| Earnings_news | -0.147** | -0.130** | 0.02 |
| | [3.59] | [3.15] | [0.41] |
| Speculative_announce | -0.003** | | |
| | [3.50] | | |
| Earnings_news*Speculative_announce | 0.144** | | |
| | [2.75] | | |
| Speculative_peer | | 0.00 | |
| | | [0.17] | |
| Earnings_news*Speculative_peer | | 0.100* | |
| | | [2.38] | |
| Investment-both | | | 0.002* |
| | | | [2.17] |
| Speculative-both | | | -0.002+ |
| | | | [1.67] |
| Announcing-Invest-Peer-Spec | | | 0.003** |
| | | | [2.94] |
| Earnings_news*Investment-both | | | -0.217** |
| | | | [3.36] |
| Earnings_news*Speculative-both | | | -0.03 |
| | | | [0.50] |
| Earnings_news*Announcing-Invest-Peer-Spec | | | -0.07 |
| | | | [1.18] |
| Change in CDS index | 0.771** | 0.782** | 0.771** |
| | [38.26] | [37.80] | [38.23] |
| Constant | -0.011** | -0.012** | -0.014** |
| | [3.94] | [4.15] | [4.53] |
| Observations | 329,243 | 322,564 | 329,243 |
| R-squared | 0.08 | 0.08 | 0.08 |

# Table 7

The dependent variable is spread_reaction. Year fixed effects are included. Standard errors clustered by announcing firm. Robust t-statistics in brackets. + denotes significant at 10%; * denotes significant at 5%; ** denotes significant at 1%.

| Model | 1 | 2 | 3 |
|---|---|---|---|
| Rating Category (peer) | High IG | Low IG | Spec |
| Peer announcement | LATER | LATER | LATER |
| Spread_news | 0.01 | 0.038** | 0.053** |
| | [0.83] | [3.58] | [3.65] |
| Loan | 0.004** | 0.00 | 0.00 |
| | [4.16] | [0.69] | [0.16] |
| Spread_news*LOAN | 0.168** | 0.035** | 0.02 |
| | [6.30] | [4.14] | [1.26] |
| Change in CDS index | 0.920** | 0.592** | 0.638** |
| | [19.46] | [28.38] | [29.94] |
| Constant | -0.017** | -0.010** | -0.007* |
| | [4.06] | [2.98] | [2.13] |
| Observations | 100,412 | 145,196 | 76,956 |
| R-squared | 0.13 | 0.06 | 0.08 |

| Model | 4 | 5 | 6 |
|---|---|---|---|
| Rating Category (peer) | High IG | Low IG | Spec |
| Peer announcement | LATER | LATER | LATER |
| Earnings_news | -0.07 | -0.05 | -0.09 |
| | [0.61] | [0.32] | [1.17] |
| Loan | 0.004** | 0.00 | 0.00 |
| | [4.10] | [0.77] | [0.22] |
| Earnings_news*LOAN | -0.192* | -0.04 | 0.06 |
| | [2.20] | [0.29] | [0.80] |
| Change in CDS index | 1.035** | 0.660** | 0.705** |
| | [22.47] | [36.10] | [36.30] |
| Constant | -0.019** | -0.012** | -0.008* |
| | [4.09] | [3.31] | [2.29] |
| Observations | 100,412 | 145,196 | 76,956 |
| R-squared | 0.12 | 0.06 | 0.08 |

# Table 8

The dependent variable is spread_reaction. Year fixed effects are included. Standard errors clustered by announcing firm. Robust t-statistics in brackets. + denotes significant at 10%; * denotes significant at 5%; ** denotes significant at 1%.

| Model | 1 | 2 | 3 |
|---|---|---|---|
| Rating Category (peer) | Spec | Spec | Spec |
| Peer announcement | LATER | LATER | LATER |
| Spread_news | 0.085** | 0.084** | 0.086** |
| | [6.53] | [6.45] | [6.54] |
| Violation | 0.00 | | |
| | [0.50] | | |
| Spread_news*Violation | 0.153** | | |
| | [3.53] | | |
| Violation-next-quarter | | 0.00 | |
| | | [0.58] | |
| Spread_news*Violation-next-quarter | | 0.153** | |
| | | [3.22] | |
| Violation-in-2-quarters | | | 0.00 |
| | | | [1.60] |
| Spread_news*Violation-in-2-quarters | | | 0.110* |
| | | | [2.46] |
| Change in CDS index | 0.577** | 0.576** | 0.577** |
| | [21.84] | [21.83] | [21.84] |
| Constant | 0.032** | 0.032** | 0.033** |
| | [6.06] | [6.02] | [6.03] |
| Observations | 45,317 | 45,317 | 45,317 |
| R-squared | 0.10 | 0.10 | 0.10 |

| Model | 4 | 5 | 6 |
|---|---|---|---|
| Rating Category (peer) | Spec | Spec | Spec |
| Peer announcement | LATER | LATER | LATER |
| Earnings_news | -0.09 | -0.098+ | -0.092+ |
| | [1.61] | [1.78] | [1.67] |
| Violation | 0.00 | | |
| | [0.32] | | |
| Earnings_news*Violation | 0.32 | | |
| | [1.35] | | |
| Violation-next-quarter | | 0.00 | |
| | | [0.44] | |
| Earnings_news*Violation-next-quarter | | 0.556** | |
| | | [2.89] | |
| Violation-in-2-quarters | | | 0.00 |
| | | | [1.38] |
| Earnings_news*Violation-in-2-quarters | | | 0.402** |
| | | | [2.64] |
| Change in CDS index | 0.651** | 0.651** | 0.651** |
| | [26.68] | [26.69] | [26.67] |
| Constant | 0.034** | 0.034** | 0.034** |
| | [6.28] | [6.24] | [6.27] |
| Observations | 45,317 | 45,317 | 45,317 |
| R-squared | 0.09 | 0.09 | 0.09 |