Does the Market Overweight Imprecise Information?: Evidence from Customer Earnings Announcements

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This Version: October 2013

We thank Scott Richardson (editor), an anonymous reviewer, Hsihui Chang, Peng Guo, Shuo Li, J.C. Lin, Ken Reichelt, Jared Soileau, Avanidhar Subra and Tony Zhang, workshop participants at the 2012 AAA Midwest meeting and all workshop participants at Louisiana State University and Hong Kong Polytechnic University. All errors that remain are our own.

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Abstract: We examine the stock price movements of supplier firms in response to the earnings announcements of these firms' major customers. We find that the stock price movements of suppliers during the earnings announcements of their customers are negatively related to the stock price movements of those same suppliers during their own subsequent earnings announcements. That is, the market appears to overreact to customer earnings news and this overreaction is later corrected when the supplier announces its own earnings. Additional analyses reveal that the overreaction is greater the more noise in the fundamental economic relationship between the supplier and the customer These results are consistent with the *Moderated Confidence Hypothesis*, which predicts that the market overreacts to imprecise information.

Keywords: Mispricing; Price Discovery; Information Transfers; Supply Chain.

Data Availability: All data are available from public sources quoted in the text.

JEL Classifications: G14; D80; M41.

1 Introduction

An information transfer occurs when information about one firm affects the valuation of another firm because information about one firm helps investors forecast the future cash flows of other firms (Foster 1981). Information transfers between firms are more likely to occur when the two firms have related operations. Prior literature documents information transfers between firms in the same industry (Firth 1976, Foster 1981, Freeman and Tse 1992, Firth 1996, Ramnath 2002, Thomas and Zhang 2008). Due to the increasing emphasis on the importance of supply chain management (Schloetzer 2012), there is a growing stream of literature examining the market's use of a given firm's earnings to value that firm's suppliers (e.g., Hertzel et al. 2008, Pandit et al. 2011). This literature does show that the market responds to customers' earnings announcement in a non-trivial way, however, it does not show if the market response is efficient, an important issue worth attention. We add to this literature by investigating if supplier firms' stock price movements overreact or underreact to earnings news released by the suppliers' customers.

The earnings of a supplier firm's major customers can be viewed as an imprecise/unreliable signal about the supplier firm's future cash flows.[1] Good earnings news for a supplier firm's customer is not always indicative of good news for its suppliers; for example, the customer's earnings are driven by increased sales of an operating segment unrelated to some of its suppliers. Alternatively, bad news for a customer may not necessarily have an adverse effect on its suppliers; for example, the customer may have bad earnings news driven by increasing operating expenses due to customer's own economic situation.[2] Thus, it is plausible

[1] Following Ramalingegowda et al. (2011), the precision of a signal can be thought of as the inverse of the variance of the signal.

[2] Note that our definition of imprecision of customer' news is with respect to the *supplier's* future cash flows. The imprecision can be referred to both (i.) noise in the relation between the fundamentals of the customer and the

to assume that the earnings of a firm's customer is a relatively imprecise signal of the supplier firm's earnings, which, under the *Moderated Confidence Hypothesis* (MCH) of Griffin and Tversky (1992), should result in a market overreaction to customer news.

The MCH begins with the assumption that investors use signals to update their beliefs about a firm's value in a Bayesian fashion. If investors were true Bayesians, they would place a weight on each signal proportional to the signal's precision, or reliability. The MCH posits that humans have difficulty judging the precision of a signal and will systematically bias their estimate of the signal's precision toward the unconditional mean, resulting in an underweighting of precise signals and an overweighting of imprecise signals. When investors underweight precise signals, such as the firm's own earnings, we should observe an underreaction.[3] When investors overweight imprecise/unreliable signals, such as the earnings of a firm's customer, we should observe an overreaction. Therefore, we predict an overreaction to customer earnings announcements.[4]

We utilize the disclosure requirements of Regulation S-K of the Securities and Exchange Commission, which requires a firm to disclose the identity of any customer accounting for 10 percent or more of the firm's sales, to construct a sample of suppliers and their major customers. The sample includes 45,319 supplier-customer-quarter observations, where an observation is a pair of earnings announcements, one for the customer, and one for the supplier. We use two

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fundaments of the supplier and (ii.) noise in the customer's own earnings. The latter will necessarily create noise in the mapping of the customer's earnings to the supplier's future cash flows, making the customer's earnings a more imprecise signal.

[3] Note that the MCH is consistent with the post-earnings announcement drift, i.e., firms' stock prices underreact to the firm's own earnings (Bernard and Thomas 1989, 1990). This is because a firm's own earnings information is a relatively more precise signal of future cash flows for itself, compared with industry peer or supply-chain partner earnings.

[4] Our motivation for the study of the MCH stems from Fama (1998), who points out that the behavioral finance literature finds both over and underreactions. There exist many behavioral models which can explain underreactions (e.g., Zhang 2006; Cohen and Lou 2012; Hirshleifer et al. 2009; DellaVigna and Pollet 2009) and other behavioral models which predict overreactions (e.g., Loughran and Ritter 1995; Thomas and Zhang 2008). The MCH is appealing because it has the potential to explain both overreactions and underreactions.

methods to test the relation between the supplier's announcement return and the supplier's returns when its customer makes earnings announcement. Our first test is a portfolio test. Each quarter, we partition the sample into five portfolios based on the supplier's stock price reaction to the customer's earnings announcement. We then observe the suppliers' returns during their own subsequent earnings announcements. We find a nearly monotonic relationship; the higher is the supplier's stock price reaction to the customer's earnings announcement, the lower is the supplier's stock return during its own subsequent earnings announcement. This finding is consistent with the notion that the market overreacts to customer earnings information and the overreaction is later corrected when the supplier announces its own earnings. To test this more formally, we estimate a multivariate model which controls for supplier's unexpected earnings and other known predictors of short-window stock returns, including firm size, the book-to-market ratio, total accruals, past 6-month stock return, prior-month stock returns, prior-month customer firm stock returns, and the prior earnings-announcement stock returns (Lakonishok et al. 1994, Sloan 1996, Jegadeesh and Titman 1993, Jegadeesh 1990, Cohen and Frazzini 2008, Bernard and Thomas 1990). We find a reliable negative association between the supplier's stock price reaction to the customer's earnings announcement and the supplier's stock return during its own subsequent earnings announcement. These results are consistent with customer earnings being an imprecise or unreliable signal of the supplier firm's future cash flows and the market overreacting to this information, as predicted by the MCH.

To further test if our findings can be explained by the MCH, we perform additional tests by allowing the reliability of the customer firms' earnings in predicting the supplier firms' future prospective to vary. If the MCH is actually at play in our setting, we expect the overreaction to be greater when the customer's earnings are more imprecise. We use the economic link between

the two firms to measure the reliability (or precision) of the customer's news in predicting the supplier's performance. The earnings of a customer who accounts for high percentage of the supplier firm's sales should provide a more reliable signal about the supplier's future cash flows than the earnings of a customer who accounts for low percentage of the supplier firm's sales. Therefore, we hypothesize that the strength of the overreaction should depend on the importance of the customer relative to the supplier. We realize that using customer importance to measure the reliability of the customer's earnings in predicting the supplier's future cash flows contains measurement error; we use an indicator variable approach as our main analyses.[5] We use two measures to measure the economic link. That is, we assume that if the supplier's percentage sales relative to supplier's total sales (or relative to customer's cost of goods sold) are greater than the median for the calendar quarter, the customer's earnings is likely to be of high reliability in estimating supplier's performance; otherwise we consider the customer's earnings to be of low reliability. We find that the overreaction is much higher in customer earnings announcements in which the customer's earnings are of low reliability regardless of which measure we use. This finding is consistent with investors overweighting an imprecise signal, namely, the earnings of a relatively unimportant customer.

As with any anomaly, there are competing explanations for the return predictability. In particular, there is a possibility that very short-term price reversals are caused by market microstructure effects (Lehmann 1990, Subrahmanyam 2005). For example, there may be a bias in the way we measure stock returns because they are quoted at the bid or ask prices (i.e., the bid-ask bounce).[6] It is also possible that the price reversals we document here are a result of

[5] Collins and Kothari (1989) state that the primary motivation for using dummy variables instead of continuous variables is that continuous variables are likely to be measured with error.

[6] The bid-ask bounce is the short-term price reversal caused by stocks which are not traded. A stock which has not been traded has an equal likelihood of opening the next day at the bid or the ask price. The stock price fluctuating

shocks to liquidity (Avramov et al. 2006). The results of our robustness checks support the notion that the return predictability documented here is not due to either of these two market microstructure effects. The overreaction is not limited to microcap stocks and does not appear to be driven by the bid-ask bounce.

Our study is related to concurrent work by Thomas and Zhang (2008), Ramalingegowda et al. (2011) and Cohen and Frazzini (2008). Thomas and Zhang (2008) find that firms' stock prices overreact to earnings announcements of their industry peers. Ramalingegowda et al. predict and find evidence consistent with investors overreacting to the earnings announcements of a firm's blockholders. The authors also show that the blockholder firms' stock price underreacts to earnings announcements of the firm that the blockholder has an investment in. Ramalingegowda et al. attribute both of these findings to the moderated confidence hypothesis. While both our study and Ramalingegowda et al. examine the moderated confidence hypothesis in the context of a related firm announcing earnings, this paper is distinct from Ramalingegowda et al. (2011) in that we examine customer earnings announcements. In additional analyses, we show that the overreaction we document here is distinct from the blockholder overreaction of Ramalingegowda et al. (2011) and the intra-industry overreaction of Thomas and Zhang (2008).

Cohen and Frazzini (2008) show that the market reacts to information contained in a firm's major customers' monthly stock returns with a delay. The authors provide evidence that the underreaction is due to limited investor attention (Hirshleifer and Teoh 2003). Our study is distinct from Cohen and Frazzini (2008) in that we focus on suppliers' stock price response to the *earnings announcements* of customers. In additional analyses, we find that Cohen and Frazzini's finding of underreaction to customer returns does not apply to earnings

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between the bid price on one day and the ask price on the following day creates the illusion of stock return reversals. This is often called the bid-ask bounce (see Brown and Warner (1985)).

announcements. Unlike a customer's monthly stock return, a customer's earnings announcement is a salient and less complex piece of information. Hirshleifer and Teoh (2003) state "In our model, owing to limits to investor attention, information that is presented in salient, easily processed form is assumed to be absorbed more easily than information that is less salient, or that is only implicit in the public information set" (page 339). Few will disagree that the customer's 'return' information is less salient than the customer's 'earnings' information, as the former is affected by many additional factors.[7] Our study offers at least two contributions to the existing literature. First, we contribute to the growing body of literature on information transfers between supply chain partners (Olsen and Dietrich 1985, Hertzel et al. 2008, Pandit et al. 2011). This literature has consistently found that news about a firm is value-relevant for its suppliers. Yet, to our knowledge, we are the first to find that the market overweighs the importance of customer firm earnings news. Second, we contribute to the larger goal of understanding the behavioral forces which affect the way the market processes earnings information. The evidence in this paper suggests that investors overweight imprecise information when valuing firms, especially when the market pays attention to information. This implies that the previously documented overreaction to intra-industry information transfers (Thomas and Zhang 2008) is likely to be explained by investor overreaction to imprecise news.

The rest of the paper is organized as follows. Section 2 contains a literature review and our hypothesis development, section 3 describes the sample selection procedure and research design, section 4 contains descriptive statistics, and section 5 has the empirical results. Section 6 contains additional analysis, and section 7 concludes.

2 Literature Review and Hypothesis

[7] We reconcile our findings with those of Cohen and Frazzini (2008) in section 6.3.2. We find that, while the market underreacts to customer return information, the market does not underreact to customer earnings news.

2.1 Literature Review

2.1.1 Information Transfers

An information transfer occurs when information about a firm affects the valuation of related firms (Foster 1981). The literature sometimes refers to this as an "information externality" or an "information spillover". We follow Foster and use the term "information transfer" throughout. Information from a firm's industry peer firms and its supply chain partners is potentially value-relevant for the firm because it helps investors forecast the firm's future cash flows and/or reduces uncertainty about those future cash flows (Pandit et al. 2011).

The early information transfer literature studies information transfers between two firms in the same industry. Firth (1976) finds that the stock prices of firms react to the earnings announcements of related firms. Subsequent research finds that the market reaction to another firm's earnings news depends on the degree of co-movement between the two firms' earnings (Foster 1981; Freeman and Tse 1992). For example, in a growth industry, firms' earnings typically exhibit high co-variation. Sales growth for one firm signals increasing demand for the entire industry, thus, other firms are expected to have positive stock price reactions, ceteris paribus. On the other hand, in a no-growth industry, the only way to increase sales is to take market share away from your industry peers. Thus, positive news for one firm could signal negative news for other firms, i.e., a negative information transfer. There is evidence that information transfers occur between two firms in different countries (Firth 1996). There is also considerable research which shows that the management forecasts of one firm affect the stock price of other firms in the same industry (Baginski 1987, Han et al. 1989, Pyo and Lustgarten 1990, Kim et al. 2008). Finally, Gleason et al. (2008) find that accounting restatements are associated with negative stock price reactions among other non-restating firms in the same

industry. Thus, the literature provides a wealth of evidence that investors use information from industry peers to value other firms in the same industry.

2.1.2 Supply Chain Information Transfers

An early study by Olsen and Dietrich (1985) finds that suppliers' stock prices react to the monthly sales announcements of their major customers. Pandit et al. (2011) extend this research by documenting that suppliers' stock prices react to their customer's quarterly earnings announcements. Hertzel et al. (2008) examine how a bankruptcy announcement of one firm negatively affects the valuation of both that firm's customers and its suppliers. Chang et al. (2009) provide evidence consistent with financial analysts using both customer and supplier earnings information in making forecast revisions. The main conclusion from all of the studies is that investors do use supply-chain partner information to help predict the future cash flows of other firms along the supply-chain.

2.1.3 Overreactions and the Moderated Confidence Hypothesis

All of the literature discussed above does not examine whether the market reaction to related firm news is efficient, or whether the market over or under reacts to it. A notable exception is Thomas and Zhang (2008), who find that the market overreacts to the earnings announcements of a firm's industry peers.[8] Despite numerous tests, the authors are unable to offer an explanation for this phenomenon.[9] An overreaction to news about a related firm can make sense when viewed through the lens of the moderated confidence hypothesis from the behavioral literature (Griffin and Tversky 1992). The moderated confidence hypothesis begins with the assumption that investors update their beliefs about a firm's value in a Bayesian fashion

[8] In a related study, Ramnath (2002) finds that investors underreact to the first earnings announcement of the quarter in a given industry.

[9] Thomas and Zhang (2008) state: "Our review of the behavioral finance literature suggests that while different theories can explain different aspects of our results, it is difficult to combine those theories in a meaningful way." (page 938).

when receiving new signals. A rational investor will place a weight on each signal proportional to the precision/reliability of that signal. More precise signals should be given greater weight, causing greater price revisions. However, the moderated confidence hypothesis says that investors tend to ignore the precision/reliability of a signal. The hypothesis predicts that investors will place too much weight on imprecise signals and too little weight on precise signals. In other words, investors' view of the precision of a given signal is biased toward the unconditional mean precision for all signals. This bias results in investors being overconfident in imprecise signals and under confident in precise signals.

The validity of the moderated confidence hypothesis has been examined in laboratory settings. An example from the psychology literature is Tversky and Kahneman (1971), who find that humans tend to put too much weight on small sample evidence, which is, of course, of low reliability. Additional evidence can be found in Kahneman and Tversky (1972), who show that humans do not sufficiently consider the size of a sample from which a piece of information came from. For example, subjects in their study focus on statistics such as the mean age of a group of students, without considering the sample size from which this mean was calculated from. Finally, Bloomfield et al. (2000) conduct experiments in a capital market setting where participants buy and sell coins, much like stocks in the stock market. In the experiment, the value of each coin depends on how often that coin will land on tails. Participants are given two pieces of information about each coin: (1) the number of times it was flipped, and (2) the proportion of times it landed on tails.[10] Then, each participant must value each coin. Bloomfield et al. find that participants consistently overvalue coins which had a strong signal (a high

[10] Unlike real coins, these coins do not have a 50 percent chance of landing on tails. Some coins have a greater likelihood of landing on tails than other coins. Participants in the experiment do not know which coins have the higher likelihood of landing on tails; they must use the information they are given to estimate which coins will do better than others.

percentage of tails) but a low sample size from which this signal was drawn from (i.e., the coin was only flipped a few times). Despite the experimental evidence, we currently have little empirical evidence which suggests that the moderated confidence hypothesis can explain investor behavior. A notable exception is Ramalingegowda et al. (2011), who adopt the *Moderated Confidence Hypothesis* and use a single setting involving firms and their blockholders to explain the market responses to each other's earlier earnings announcement. They suggest that the MCH supports their findings that the stock prices of a firm's blockholder (a firm) underreact (overreact) to the firm's (the firm's blockholder's) earnings news because of the precision (imprecision) of the information transferring to the firm's (the firm's blockholder's) own future performance. [11]

2.2 Hypothesis Development

Our hypothesis is built on two streams of literature. First, the supply-chain literature finds that the market uses supply chain partner earnings information in setting stock prices (Dietrich and Olsen 1985, Pandit et al. 2011). Thus, we have evidence that investors trade on supply-chain partner earnings news. Second, the behavioral literature offers a theory which predicts that investors will overreact to imprecise/unreliable signals (Griffin and Tversky 1992; Bloomfield et al. 2000). Viewing the earnings of a firm's customer's as an imprecise signal of firm value, we test whether the market will overreact to supply-chain information transfers occurring during earnings announcements. We focus on the quarterly earnings announcements of a firm's *customers*, as the evidence on information transfers from customers to suppliers is plentiful (Olsen and Dietrich 1985; Pandit et al. 2011) and there is little evidence on information

[11] This is because the earnings announcement of the firm provides *precise* information to the market regarding the blockholder's profitability, so the stock prices of the blockholder underreact. On the other hand, the earnings information of the blockholders only has vague (imprecise) implications to the firm's profitability; according the MCH, the stock prices of the firm overreact to the blockholder's earnings announcement.

transfers from suppliers to their customers (see Hertzel et al. 2008). We predict the market will overreact to customer firm earnings announcements, as they provide an imprecise signal of firm value. Good news (bad news) for a customer does not always imply good news (bad news) for its supplier. Decreasing profits arising from higher operating expenses is bad news for a customer firm, but it is likely unrelated to the firm's suppliers (Pandit et al. 2011). As well, a customer firm may have great earnings which are driven by a business segment which is completely unrelated to one of its suppliers. Thus, good earnings news for the customer does not reliability predict good earnings news for its suppliers. If the market does not fully understand the imprecision of this signal, we should observe supplier firms' stock prices overreacting to their customer's earnings announcements. If suppliers' stock prices do overreact, this overreaction should be corrected when the suppliers announce their own earnings. Therefore, we test for a significantly negative relationship between the supplier firm's stock return during the customer firm's earnings announcement and that same supplier firm's stock return during its own subsequent earnings announcement.

> ***Hypothesis****: There is a negative correlation between the returns of supplier firms during their customer's earnings announcements and the returns of supplier firms during their own subsequent earnings announcements. The negative correlation is stronger (weaker) when the reliability of customer's earnings in predicting supplier's future cash flow is low (high).*

If the suppliers' stock price reaction to their customers' earnings announcements is efficient, we should observe no correlation between the suppliers' stock returns at these two times. However, if the market is overreacting to customer firm earnings, we will observe a negative correlation. Studies have shown that the limited attention hypothesis predicts an underreaction. It is likely that the market does not pay attention at all to the customer's earnings announcement when the market believes ex ante that there is no relation between the customer

and the supplier. In this way, there will be no overreaction and even underreaction. Cohen and Frazzini has shown existence of underreaction. . We focus on the possibility of overreaction surrounding the earnings announcement times. We will first test if the overreaction exits and if the overreaction is affected by the customer-supplier economic link. In a later analysis, we will also test if the overreaction is attenuated when the market has limited attention.

3 Sample and Research Design

In order to identify a firm's principal customers, we use the Compustat Segment file for the 1976-2009 time period. In accordance with Regulation S-K, a firm must report the identity of any customer who accounts for 10 percent or more of its sales.[12] From this file, we manually match each customer's name as it appears in the segment file with firm names on the Compustat industrial file. This is similar to the procedure used in prior literature (e.g., Fee and Thomas 2004; Pandit et al. 2011; Eshleman and Guo 2013). This results in a loss of observations due to cases where the firm chooses not to disclose its customers (e.g., Ellis et al. 2012) and cases where the customer name is too vague to be matched to a firm in the Compustat industrial file. The sample is further reduced by a lack of quarterly earnings announcement data on the Compustat Fundamentals Quarterly file and a lack of stock return data on the CRSP daily file.

In testing whether the market overreacts or underreacts to customer firm information when setting supplier firms' stock prices, we exclude observations where the supplier firm's earnings announcement occurs before the customer's earnings announcement, pre-empting the information transfer. We also exclude observations where the supplier's earnings announcement occurs within four trading days of the customer's earnings announcement. This mitigates

[12] Although the FASB rules do not require the disclosure of the identity of a firm's major customer(s), Regulation S-K (17 CFR 229.101(c)(1)(vii)) of the Securities and Exchange Commission does require the disclosure of the customers' names.

concerns of overlapping return windows.[13] Finally, we exclude observations where the supplier's earnings announcement occurs more than four weeks after the customer's earnings announcement. The rationale for this is as follows. All else equal, any market under or overreaction occurring at the customer's earnings announcement should be corrected as the market receives more information. If the gap between the two announcement days is sufficiently long, we expect that the mispricing will have already been corrected.[14] The final sample consists of 45,319 observations, where an observation is a pair of earnings announcements (one for the supplier, one for the customer) occurring in the same calendar quarter. Table 1 outlines the sample procedure.

< Insert Table 1 >

To test whether the market efficiently uses customer firm information, we estimate the following linear regression separately for each year using the Fama and MacBeth (1973) approach[15]:

$$SRET_{S-EA} = \alpha_0 + \beta_0 SRET_{C-EA} + \beta_1 CRET_{C-EA} + \beta_2 UE + \beta_3 logMV + \beta_4 logBM + \beta_5 TACC + \beta_6 SRET6 + \beta_7 SRET1 + \beta_8 CRET1 + \beta_9 SRETQEA1 + \beta_{10} SRETQEA4 + Industry\ Fixed\ Effects + \varepsilon \quad (1)$$

See the appendix for variable definitions. The variable of interest is the supplier's initial stock price reaction to the customer's earnings news ($SRET_{C-EA}$). If investors overreact to the earnings of firms' customers, we should observe a significantly negative coefficient on $SRET_{C-EA}$. The model controls for other variables known to predict stock returns in the short-

[13] There may still be cases of overlapping return windows in the case of a weekend and a national holiday occurring in between the two earnings announcements. We have tried requiring the two announcements to be five, six, seven, or eight days apart. The results are qualitatively similar.

[14] In untabulated analyses, we find that, consistent with our expectations, the overreaction is weaker (albeit still significant at the 5% level) when retaining these observations.

[15] We estimate the model separately for each year rather than separately for each quarter in order to obtain a reasonable number of observations for each cross-section. We require at least 100 observations each year. Results are robust to estimating the model using panel data with year fixed effects and standard errors clustered by firm and year.

run. Specifically, we control for the firm's prior-month stock return ($SRET1$) as Jegadeesh (1990) shows that stocks exhibit a one-month reversal effect, with the best performers exhibiting the worst returns in the following month, and vice versa. We also control for the past 6-month stock return ($SRET6$) to control for the momentum effect of Jegadeesh and Titman (1993). In addition, we control for the prior-month stock return of the customer firm ($CRET1$) to control for the customer momentum anomaly of Cohen and Frazzini (2008). We also include the firm's stock return during its last quarterly earnings announcement ($SRETQEA1$) and its quarterly earnings announcement from the prior year ($SRETQEA4$) to control for the post-earnings-announcement drift of Bernard and Thomas (1990). For robustness, we also control for other known determinants of stock returns, including the book-to-market ratio ($logBM$), the market value of equity ($logMV$), and total accruals ($TACC$) (Lakonishok et al. 1994, Sloan 1996). Finally, the model includes industry and year fixed effects, where industries are defined using the Fama and French (1997) 48 industry classification scheme. All independent variables are winsorized at the 1st and 99th percentiles to reduce the influence of outliers.[16]

An alternative research design would be to use the firm's average stock return during each of its major customer's earnings announcements in place of $SRET_{C-EA}$, similar to the method used in Thomas and Zhang (2008). This would mean that each observation is a supplier-quarter. While the results are robust to using this approach[17], we prefer to use each customer-supplier-quarter as an observation, as it allows us to partition the observations on the basis of particular customer characteristics in section 5.

4 Descriptive Statistics

[16] All results are qualitatively similar if we do not winsorize any variables.
[17] This method reduces the sample to 35,666 supplier-quarter observations. The results are stronger using this approach (untabulated).

Table 2 displays descriptive statistics for supplier and customer firms using the most recent year of data. Customer firms are, on average, larger than supplier firms. Customers have average sales of $10,661M and a market value of $8,064M compared with sales of $744M and market value of $804M for suppliers ('M' indicates millions of dollars). Customer firms are also more profitable than their suppliers, having higher average return on assets and a lower frequency of losses.

< Insert Table 2 >

Table 3 displays Pearson and Spearman correlations of relevant variables used in the regression analyses. Since the correlations are similar, we will only discuss the Pearson correlations. Consistent with prior literature, the stock returns of customer and supplier firms are positively correlated during the customer's earnings announcement window (0.077). The significant correlations between $SRET_{S-EA}$ and $CRET_{C-EA}$, $TACC$, $RET6$, $CRET1$, and $SRETQEA1$ highlight the importance of including these control variables in the regression analysis. The correlation coefficient of -0.018 between $SRET_{S-EA}$ and $SRET_{C-EA}$ lends support to our hypothesis. However, we caution against putting too much weight on this correlation, as it does not control for other correlated omitted variables. None of the control variables exhibit correlation high enough to cause concerns of multicollinearity.

< Insert Table 3 >

5 Empirical Results

5.1 Univariate Analysis

In this section, we test whether the market overreacts to customer firm earnings announcements. Each quarter, we sort firms into five quintiles based on the value of the supplier's stock return during its customer's earnings announcement window ($SRET_{C-EA}$). We require each quintile to contain at least ten firms. Quintile 1 contains supplier firms with the

lowest stock price reaction during the customer's earnings announcement, quintile 5 has the firms with the highest stock price reactions. Table 4 reports the basic result. As can be seen from Table 4, the observations in the lowest quintile are supplier firms with an average market-adjusted return of -7.51 percent during their customer's earnings announcement. Those in the highest quintile have an average return of 8.38 percent. The next column displays the average market-adjusted return for each portfolio during the supplier's subsequent earnings announcement. The pattern across quintiles is nearly monotonic. The stronger the market reacts to the customer firm's news, the worse the subsequent stock return when the supplier announces its own earnings. The difference between the return of the firms in the lowest quintile (Q1) and the return of the firms in the highest quintile (Q5) is 0.61 percent and is significant at the 1 percent level. This is consistent with investors overreacting to customer earnings announcements.[18]

< Insert Table 4 >

< Insert Figure 1 >

Figure 1 provides more detail on the suppliers' stock price reversal by plotting the mean supplier abnormal stock return across time. The first thing to note is that the reaction is not symmetric. The magnitude of the supplier firms' stock price reaction to customer earnings news is greater for positive news (0.043 for positive news compared to -0.038 for negative news). The correction is similarly asymmetric. Following good customer earnings, the supplier firms' stock prices continue to drift upward all the way to the midpoint between the customer and supplier

[18] This overreaction is smaller in magnitude than the overreaction to industry peers documented by Thomas and Zhang (2008, Table 2). However, this weaker overreaction is consistent with the information transfer literature in that the strength of the information transfer between industry peers is generally greater than the strength of information transfer between supply-chain partners. For example, Han and Wild (1997, Table 3) find that the correlation between the stock return of a firm during its own earnings announcement and the return of its industry peer is, on average, 0.73. In contrast, Pandit et al. (2011, Table 4) find that the correlation between the stock return of a customer during its own earnings announcement and the stock return of its supplier is a mere 0.0663.

earnings announcements. The correction which takes place at the supplier's earnings announcement is quite severe. In contrast, after a customer announces bad news, the suppliers' stock price corrects for the overreaction by the midpoint between the two firms' earnings announcements. Therefore, the reversal begins long before the supplier's earnings announcement in cases where the initial reaction to customer news is negative.[19]

5.2 Multivariate Analysis

To investigate the overreaction in more depth, we regress $SRET_{S-EA}$ on $SRET_{C-EA}$ in the presence of other known determinants of announcement-window stock returns. Model 1 of Table 5 reports the basic result. Consistent with the previous table, the market appears to be overreacting to customer earnings news. The coefficient of -0.040 on $SRET_{C-EA}$ is significant at the 1 percent level. Note that the number of observations (45,299) is slightly less than the number of observations in the full sample (45,319) as we require at least 100 observations per year to estimate the model using a Fama and MacBeth (1973) style regression. Model 2 augments the basic model with additional control variables.[20] Consistent with prior literature, firms with higher $logBM$, $SRET6$, and UE earn higher returns. Consistent with the accruals anomaly literature, firms with higher $TACC$ earn lower returns. The coefficient of -0.063 on $SRET_{C-EA}$ is significant at the 1 percent level. It appears this overreaction is incremental to other known determinants of announcement-window returns. We therefore reject the null hypothesis and conclude that the market overreacts to customer earnings.

< Insert Table 5 >

5.3 Additional Test: The Role of Signal Reliability

[19] This observation is consistent with managers of the supplier firms correcting undervaluation before their own earnings announcement via voluntary disclosure but not correcting for overvaluation.

[20] There are significantly fewer observations for this model because we require the statement of cash flows to calculate $TACC$. The statement of cash flows was not available before 1988.

This section explores the explanation of the result in Table 5. The MCH suggests that the market is overweighting customer earnings news because it is an unreliable or imprecise signal of the supplier's earnings, resulting in an overreaction. To provide evidence on whether this is the case, we examine how the overreaction to customer earnings varies with the precision of the customer's earnings.

We measure the reliability of customer's earnings news in predicting supplier's performance by the strength of the economic link between the customer and supplier. If the market is overweighting customer firm earnings news, we expect the overweighting to be greater for weaker supply-chain economic link. Our first proxy based on the importance of supplier's sales to its customer on the supplier's total sales. The earnings news of a customer who only accounts for, say, 10 percent of a firm's sales is not as reliable an indicator of the future cash flows of the supplier firm in question as, say, the earnings news of a customer who accounts for 50 percent of the supplier firm's sales.

To conduct our first test, we partition the sample into two groups based on the importance of the customer firm to the supplier. Supplier-customer-quarter observations where the customer accounts for a low percentage of the supplier's sales (lower than the median for the quarter) are classified as being low precision; others are classified as being high precision. We use last fiscal year's sales information to perform the partition to ensure that the market had access to this information before the quarterly earnings announcements. If the firm does not report the amount of sales to the customer, we exclude it from this analysis. We then estimate the following model to allow the strength of the overreaction to depend on the precision of the customer's earnings:

$$SRET_{S-EA} = \tau_0 + \tau_1 SRET_{C-EA} + \tau_2 LOW\_PCT\_SALE + \tau_3 SRET_{C-EA} \times LOW\_PCT\_SALE + \sum CONTROLS + Industry\ Fixed\ Effects + \varepsilon \quad (2)$$

Where,

LOW_PCT_SALE = 1 if the supplier firm's sales to the customer as a percentage of the supplier firm's total sales are less than the median for the quarter, zero otherwise.

The model includes all controls variables listed in Table 5 as well as the interaction of those control variables with LOW_PCT_SALE. If investors are overreacting to customer earnings because the earnings signal is an imprecise indicator of the supplier's future cash flows, we should observe that the overreaction is stronger when the customer is less important to the supplier. We therefore predict a negative coefficient on $SRET_{C-EA} \times LOW\_PCT\_SALE$.

Our second proxy for the economic link between the customer and the supplier is the customer's economic dependence on the supplier. This variable is calculated as the supplier's sales to the customer divided by the customer's cost of goods sold. In the extreme, if a customer purchases all of its inputs from one supplier, that customer's cost of goods sold will equal the supplier's sales to the customer. Therefore, the higher is the customer's economic dependence on the supplier, the more precise is the earnings signal from the customer with respect to the supplier's future cash flows.

To conduct this test, each quarter we partition the sample into two groups based on the customer's economic dependence on the supplier. Supplier-customer-quarter observations where the supplier accounts for a low percentage of the customer's cost of goods sold (lower than the median for the quarter) are classified as being low precision; others are classified as being high precision. We use last fiscal year's sales and cost of goods sold information to perform the partition to ensure that the market had access to this information before the quarterly earnings announcements. We then estimate the following model to allow the strength of the overreaction to depend on the precision of the customer's earnings:

$$SRET_{S-EA} = \gamma_0 + \gamma_1 SRET_{C-EA} + \gamma_2 LOW\_DEPENDENCE + \gamma_3 SRET_{C-EA} \times LOW\_DEPENDENCE + \sum CONTROLS + Industry\ Fixed\ Effects + \varepsilon \quad (3)$$

Where,

$LOW\_DEPENDENCE$ = 1 if the supplier firm's sales to the customer as a percentage of the customer firm's cost of goods sold is less than the median for the quarter, zero otherwise.

The model includes all controls variables listed in Table 5 as well as the interaction of those control variables with $LOW\_DEPENDENCE$. If investors are overreacting to customer earnings because the earnings signal is an imprecise indicator of the supplier's future cash flows, we should observe that the overreaction is stronger when the supplier is less important to the customer. We therefore predict a significantly negative coefficient on $SRET_{C-EA} \times LOW\_DEPENDENCE$.

< Insert Table 6 >

Model 1 of Table 6 has the results for estimating Equation (2). To get a sense of how different the observations in the low precision group are from the observations in the high precision group, we note that the median percentage of sales to the customer for observations classified as being low precision (i.e., when $LOW\_PCT\_SALE = 1$) is a mere 11.6 percent, compared with 40 percent for observations which are classified as high precision (i.e., when $LOW\_PCT\_SALE = 0$). The coefficient on $SRET_{C-EA}$ is a significant -0.032 when $LOW\_PCT\_SALE = 0$ compared to a significant -0.081 when $LOW\_PCT\_SALE = 1$. Therefore, the overreaction is stronger when the customer accounts for a lower percentage of the supplier's total sales. The evidence is consistent with the notion that investors are placing too much weight on the earnings of relatively unimportant customers.

Model 2 of Table 6 reports the results when the precision proxy is the customer's economic dependence on the supplier. When the customer's economic dependence on the supplier is high (i.e., when $LOW\_DEPENDENCE = 0$), the coefficient on $SRET_{C-EA}$ is negative but not significant (coef. = -0.022). However, when the strength of the economic link between the two firms is weaker (i.e., when $LOW\_DEPENDENCE = 1$), the coefficient on $SRET_{C-EA}$ is -0.084 and is significant at the 1 percent level. Therefore, the overreaction appears to be stronger for weaker supply-chain relationships. Taken together, the evidence in Table 6 suggests that the overreaction is stronger when the customer's earnings are a less precise signal of the supplier's future cash flows.

6 Additional Analysis

6.1 Can Market Microstructure Effects Explain the Overreaction?

6.1.1 Liquidity

In this section, we provide evidence on the extent to which this mispricing can be explained by market microstructure effects, such as shocks to liquidity and the bid-ask bounce. First, we consider whether the results can be explained by liquidity shocks. Avramov et al. (2006) show that short-term stock price reversals can be explained by share turnover and liquidity. These price reversals are likely caused by price pressure caused by non-informational trade demand. In our setting, we are arguing that the price reversals observed here are caused by a certain information event, namely, the earnings announcements of a firm's customers. If the price reversals are only observed in stocks with low liquidity and high trading costs, this casts doubt on our argument.

To test whether this is the case, we perform a portfolio test on a sample of firms with stock price above $5 per share, as is done in Cohen and Frazzini (2008) and Patatoukas (2012).[21] We restrict the sample in this way because firms with low stock prices tend to have worse liquidity.[22]

< Insert Table 7 >

Table 7 reports the results. Using the smaller sample of firms with stock prices above $5, we find that the difference in abnormal returns from quintile 1 and quintile 5 is 0.42% and is significant at the 5 percent level. To summarize, the evidence in Table 7 suggests that liquidity shocks are unlikely to explain the results documented in the previous tables.

6.1.2 Is the Overreaction caused by the Bid-Ask Bounce?

Another possibility is that the bid-ask bounce is causing the negative correlation between the supplier's stock returns during these two windows. It is possible that closing prices induce a negative correlation between stock returns during the customer's announcement window and stock returns during the supplier's own announcement window. Specifically, a stock which is not traded has an equal likelihood of opening the next day at the bid price or the ask price. If a stock fluctuates between the bid and the ask price, this would induce a negative correlation between short-term stock returns (i.e., the bid-ask bounce). While this seems an unlikely possibility (the median number of days between the two earnings announcements is 13), we perform a robustness test following Thomas and Zhang (2008). We construct a hypothetical "pseudo-event window" by moving the earnings announcement days of the customer and supplier firm back by four weeks. We shift by four weeks rather than one month to ensure that each pseudo-event date occurs on the same day of the week as the original event day. This

[21] Results are similar if we instead perform a regression analysis and include all control variables listed in Table 5.
[22] We obtain similar results if we instead restrict the sample to firms with stock prices above $10.

controls for any day of the week effects. We then re-calculate $SRET_{C-EA}$ and $SRET_{S-EA}$ on the pseudo-event dates and replicate the quintile analysis reported in Table 4. If the negative correlation documented here is caused by the bid-ask bounce, we should observe the same pattern during this Pseudo-Event.

< Insert Table 8 >

Panel A of Table 8 reports the results. The ranking of stock returns produces a similar pattern, with the market-adjusted return of the lowest (highest) quintile averaging -7.72 percent (8.58 percent). However, the 3rd column says that there is no discernible pattern of stock returns on the Psuedo-Supplier-Announcement dates across the quintiles. The hedge return of 0.22 percent is not statistically significant.[23] This suggests that the overreaction documented here is not caused by market microstructure effects.

Finally, we perform an additional robustness check to ensure our results are not driven by market microstructure effects. We calculate an alternate measure of a firm's stock return which is not as susceptible to the bid-ask bounce. This alternate daily return is calculated as $(p_t + d_t - p_{t-1})/p_{t-1}$, where p is the average of the closing bid and ask price and d is the dividend (see Thomas and Zhang 2008). Prices and dividends are adjusted for stock splits. Since closing bid and ask prices are only available beginning on December 28th, 1992, this limits the sample size for this test. If the overreaction we document here is caused by the bid-ask bounce, we should not observe it when using this alternate return measure.

Panel B of Table 8 reports the results, which suggest that the overreaction is not attributable to market microstructure effects. Although the distribution of returns is not monotonic using this alternate measure of returns, the difference in abnormal returns between

[23] We obtain similar results estimating a regression using pseudo-announcement returns and pseudo-announcement control variables, similar in spirit to the full model on Table 5.

quintile 1 and quintile 5 is a significant 0.91 percent. We are able to obtain similar results when estimating a regression using the alternate return measure which includes all of the control variables listed in Table 5.

6.2 Is Overreaction Distinct from other Overreactions?

Prior literature finds that firms' stock prices overreact to industry peer news and to blockholder news (Thomas and Zhang 2008; Ramalingegowda et al. 2011). This leads to two concerns: (a.) the customer and supplier pairs in our sample are members of the same industry or (b.) the customers are blockholders of the supplier firms. If either of these two statements is true, the results we document here may simply be a manifestation of the overreaction to industry peer news (Thomas and Zhang 2008) or the overreaction to blockholder news (Ramalingegowda et al. 2011). In order to alleviate these concerns, we delete supplier-customer-quarters in which the two firms operate in the same industry or cases in which the customer is a blockholder of the supplier.[24] We then re-estimate the full model (Equation 1) on this reduced sample of 7,929 observations during the period 1996-2001. If the overreaction we document here is nothing more than a manifestation of the intra-industry overreaction of Thomas and Zhang (2008) or the blockholder overreaction of Ramlingegowda et al. (2011), the coefficient on $SRET_{C-EA}$ will not be significantly different from zero.

< Insert Table 9 >

Table 9 reports the results. The coefficient on $SRET_{C-EA}$ is -0.052 and is significant at the 5 percent level. This suggests that the overreaction we document here is distinct from the

[24] Blockholder data is obtained from WRDS, which contains standardized data for blockholders of 1,913 companies for the period 1996-2001. The data cleaning procedure is explained in detail by Dlugosz, Fahlenbrach, Gompers, and Metrick (2006). Accordingly, we restrict this analysis to the period from 1996 to 2001. Industries are defined using the Fama and French (1997) 48 industry classification scheme. We also measure industry using 2-digit SIC codes and we continue to find similar results.

intra-industry overreaction of Thomas and Zhang (2008) and the blockholder overreaction of Ramalingegowda et al. (2011). We also analyze the whole sample by adding a dummy variable if the supplier and the customer are in the same industry and a dummy variable if the customer is not a blockholder of the supplier. We interact these dummie with $SRET_{C-EA}$. We find the coefficient on $SRET_{C-EA}$ does not change much.

6.3 Limited Attention Hypothesis and Reconciliation with Cohen and Frazzini (2008)

6.3.1 Limited Attention Hypothesis

The limited attention hypothesis of Hirshleifer and Teoh (2003) posits that investors have limited information processing capabilities and will underreact to news when either (i.) the news is less salient (e.g., Cohen and Frazzini 2008; Cohen and Lou 2012) or (ii.) investors are distracted (e.g., DellaVigna and Pollet 2009; Hirshleifer et al. 2009). Therefore, although the MCH predicts an overreaction to customer earnings, one could argue that investors are just as likely to underreact or not to react to customer earnings, as it is a less salient piece of information.

We argue that the limited attention hypothesis is not a competing hypothesis in our setting. If customer earnings are ignored by investors, we would observe an underreaction to customer earnings announcements. However, the extant literature provides evidence that investors do react to customer earnings news (Olsen and Dietrich 1985). In fact, the literature shows that investors are cognizant of the sign and magnitude of the customer earnings news, as well as the strength of the relationship between the customer and supplier (Pandit et al. 2011). Therefore, given this evidence, it is difficult to argue that investors are not paying attention to customer earnings announcements.

To test whether both the MCH and the limited attention hypothesis are simultaneously at play in capital markets, in our setting, we follow a recent finding by DellaVigna and Pollet

(2009), who show that investors underreact to earnings announcements on Fridays. The authors argue that investors are distracted by the upcoming weekend and this causes the underreaction. Therefore, although we find an overreaction to customer earnings announcements, the findings of DellaVigna and Pollet suggest that this overreaction will be weaker if the customer announces earnings on a Friday. To test this, we estimate the following model:

$$SRET_{S-EA} = \beta_0 + \beta_1 SRET_{C-EA} + \beta_2 Friday + \beta_3 SRET_{C-EA} \times Friday + \sum CONTROLS + Industry\ Fixed\ Effects + \varepsilon \quad (4)$$

The indicator variable $Friday$ is equal to 1 if the customer's earnings announcement occurs on a Friday, 0 otherwise. If the limited attention hypothesis is still at play in our setting, we should observe a significantly positive β_3 in the regression above.

< Insert Table 10 >

Table 10 reports the results. As predicted, the coefficient on the interaction term $SRET_{C-EA} \times Friday$ is positive (coef. = 0.042, p-value = 0.061) and marginally significant, consistent with the overreaction being dampened when investors are distracted at the time of the customer's earnings announcement. An F-test of the sum of the coefficients on $SRET_{C-EA}$ and $SRET_{C-EA} \times Friday$ indicates that the sum of these two coefficients is significantly negative. This suggests that, although the overreaction is weaker when the customer announces its earnings on a Friday, the market nevertheless overreacts to Friday customer earnings announcements.

6.3.2 Reconciliation with Cohen and Frazzini (2008)

We next reconcile our findings with those of Cohen and Frazzini (2008). Cohen and Frazzini find a positive relation between the customers' monthly stock return in month t and suppliers' monthly stock return in month t+1, implying an underreaction to customer information. The

authors attribute this underreaction to investors' limited attention. In our setting, we examine an overreaction to customer earnings announcements. To test overreaction, we have to examine the reversal of the supplier's own returns.-[25] We also argue that a customer's monthly stock return contains much more information, and is thus much more difficult to process than that same customer's earnings announcement. In order to provide support for our conjecture, we estimate the following two models:

$$SMRET1_{t+1} = \theta_0 + \theta_1 CMRET1_t + \varepsilon \quad (5)$$

$$SMRET1_{t+1} = \theta_0 + \theta_1 CRET_{C-EA,t} + \theta_2 CMRET1_{NONANNC,t} + \varepsilon \quad (6)$$

Subscripts t denote the month. In Equation (5) the supplier's monthly stock return in month t+1 ($SMRET1_{t+1}$) is regressed on the customer's monthly stock return in month t ($CMRET1_t$) as in Cohen and Frazzini (2008). In Eq. (6), the customer's monthly stock return in month t ($CMRET1_t$) is dissected into (i.) the customer's stock return during the 3-day window surrounding its earnings announcement in month t ($CRET_{C-EA,t}$) and (ii.) the customer's stock return during the other days of the month ($CMRET1_{NONANNC,t}$).

< Insert Table 11 >

Table 11 reports the results. Model 1 is a full replication of Cohen and Frazzini (2008) using all available supplier-customer-monthly observations during the 1976-2009 time period. The coefficient on $CMRET1$ is significantly positive, consistent with Cohen and Frazzini. Model 2 is a replication of Cohen and Frazzini using only observations in which the customer had an earnings announcement in month t.[26] Again, the coefficient on $CMRET1$ is significantly positive, suggesting that the monthly underreaction effect holds when using this reduced sample.

[25] Refer to Ramalingegowda et al. (2011) Figure 1 on page 8. Also, our overreaction design is consistent with De Bondt and Thaler (1985) and Jegadeesh and Titman (2001).

[26] Note that this sample is reduced considerably, as we require there to be a month between the customer's earnings announcement and the supplier's earnings announcement, consistent with Cohen and Frazzini's (2008) 1-month gap.

Model 3 has the results of estimating Eq. (6). Here we find that while the coefficient on $CMRET1_{NONANNC}$ is significantly positive (coef. = 0.116, p-value = 0.002), the coefficient on $CRET_{C-EA}$ is not significantly different from zero. This suggests that the underreaction is attributable to an underreaction to information contained in the customer's stock return during non-announcement days. The insignificant coefficient on $CRET_{C-EA}$ suggests that, during announcement days, the market appears to pay attention to the customer's earnings, consistent with the empirical evidence in Pandit et al. (2011).

6.4 Can Risk Explain the Overreaction?

Finally, it is possible that the excess returns documented in this paper are nothing more than compensation for higher risk. There are at least three reasons why this is unlikely to be the case. First, the results are robust to the inclusion of risk factors such as size, the book-to-market ratio, momentum, and the post-earnings-announcement drift. Second, the excess returns are measured over a very short window (three days), meaning that the risk levels necessary to explain the results would be huge. As Fama (1998) points out, the expected return is approximately zero for short-windows, meaning that the choice of expected return model makes little difference in short-window studies. Finally, any explanation that attributes the overreaction to risk must also be able to explain why the overreaction is concentrated in observations where the economic link between the two firms is weak, as documented in Table 6.

6.5 Suppliers with Multiple Major Customers

To control for suppliers with multiple major customers, we first combine the supplier's stock return during each customer's earnings announcement window into one variable, which we call $SRET_{ALLCUST-EA}$.[27] We then reduce our sample by eliminating duplicate supplier-quarter

[27] This is similar to the procedure used in Thomas and Zhang (2008) who use the average stock price response to an industry peer as their main variable of interest.

observations, since the value of $SRET_{ALLCUST-EA}$ will be identical for the duplicates and we do not wish to double-count our observations. We then estimate the following model:

$$SRET_{S-EA} = \beta_0 + \beta_1 SRET_{ALLCUST-EA} + \sum CONTROLS + Industry\ Fixed\ Effects + \varepsilon \quad (7)$$

Where,

$SRET_{ALLCUST-EA}$ = The supplier's cumulative abnormal return during each of its customer's earnings announcement windows. Announcement windows are three day windows centered on the earnings announcement date. Abnormal returns are calculated as the supplier's raw stock return less CRSP's value-weighted market return.

Firm and time subscripts are omitted for ease of exposition. The model is estimated using the Fama and MacBeth (1973) approach with industry fixed effects. The results are tabulated below.

< Insert Table 12>

Table 12 reports the results. Using this approach, the magnitude and statistical significance of the overreaction are similar to what is reported in the main paper. We have also tried estimating the main model (Eq. 1 of the paper) on a subsample of supplier firms which have only 1 customer earnings announcement prior to their earnings announcement. The sample for this regression is 16,501 observations. Using this sample, we find that the coefficient on $SRET_{C-EA}$ is -0.073 and is significant at the 1 percent level.

6.6 Vary the Distance Between Announcement Dates Between Suppliers and Customers

We require the distances of 4 and 28 days respectively, and this choice is ad hoc. To avoid overlapping of the return windows, a minimum of two-trading-day gap is necessary. This is because we use -1 and +1 day surrounding the announcement to measure the announcement

return. This minimum requirement converts to a minimum of 4-calendar-day gap. For example, a customer could announce earnings on a Friday, to avoid the overlapping, the earliest announcement data from the supplier should be Wednesday (four days apart). Of course, we can require a minimum distance to be longer (e.g. 5 days); however, the minimum requirement will keep more observation. For robustness, we analyze the restriction of 5, 6, 7 and 8 days, our results remain similar.

In regards to the requirement that the two firms' earnings announcements should be less than four weeks apart, this is indeed an ad-hoc choice. We were concerned that when the distance form supplier's earnings announcement and the customer's earnings announcement is too long, the reversal will be less or gone due to other information. For robustness, we relax the four-week requirement. Below we tabulate the results of estimating the main model (Eq. 1 of the manuscript).

< Insert Table 13>

Table 13 reports the results of re-estimating our main model after including those observations in which the customer and supplier earnings announcements are more than four weeks apart. Even with all of the control variables included in Model 2, the coefficient on $SRET_{C-EA}$ is significantly negative (coef. = -0.049, p-value = 0.000).

Our main finding is robust to including these observations. As predicted, their inclusion weakens the overreaction. To show this, we re-estimate the main model on a short distance sample (i.e., the distance between the two earnings announcements is less than or equal to 28

days) and a long distance sample (i.e., distance between the two earnings announcements is greater than 28 days). The results of both regressions are tabulated below.

< Insert Table 14>

Panel A reports the results when using the sample of short-distance observations. The coefficient on $SRET_{C-EA}$ is -0.061 and is highly significant (t value = -5.73), suggesting that the overreaction is stronger than when using the full sample (i.e., stronger than in Table E1). Panel B reports the results of estimating the same model on the sample of long-distance observations. When using this sample, the coefficient on $SRET_{C-EA}$ is not significantly different from zero. Taken together, the results support the notion that, given a long enough time horizon, the market is able to efficiently process the customer's earnings news.

6.7 Additional Robustness Analyses

We have conducted numerous robustness analyses. We use different abnormal return measures including industry-adjusted returns (Fama and French definition as well as 2-digit SIC code), Fama-French 3-factor and 4-factor adjusted return and two-days event window, our results do not change. We find that our overreaction is not driven by any particular industry. We also use different measures of our variables, for example, using both the raw value and log value of B/M. We do not find differences if the supplier is a loss or profit firm. We also relax our restriction of the two earnings announcements to be four weeks apart or less, our main conclusion remain.[28] For our portfolio analysis, we also analyze the Sharp ratio. Our original conclusions are robust to all these analyses.[29]

[28] We also analyze the differences between firms that provide earnings announcements far apart (i.e. greater than 4 weeks) with our sample firms. We do not find apparent differences between these two groups of firms.
[29] Results are available upon request.

7 Conclusion

In this study we investigate whether the market is efficient in processing the earnings news of supply chain partners. We focus on testing the supplier firms' stock price reaction to customer firm earnings news because prior literature suggests that upstream news is value-relevant. Controlling for other risk factors and anomalies, we find that the stock prices of supplier firms overreact to customer earnings announcements. This overreaction is then corrected when the supplier firm subsequently announces its own earnings. Further analyses support the claim that this phenomenon is due to investors overestimating the implications of customer earnings for supplier firms. The overreaction is concentrated in observations where the customer-supplier economic link is weaker, which implies that the customer's earnings are a less reliable indicator of the supplier's earnings. In subsequent tests we show that the overreaction is not likely attributable to market microstructure effects. The findings in this paper extend research on supply-chain information transfers. This research also complements the intra-industry information transfer literature, which shows that the market does not react efficiently to industry peer earnings news. Further, this research helps us understand behavioral biases which affect the way investors process accounting information. By demonstrating that the market predictably overreacts to customer earnings, this paper offers clues which may help solve the overreaction to intra-industry information transfers puzzle (Thomas and Zhang 2008). In other words, it may be the case that the overreaction to intra-industry information transfers is also attributable to the moderated confidence hypothesis. Future research can build upon our finding.

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APPENDIX: VARIABLE DEFINITIONS

This section contains variable definitions with Compustat and CRSP mnemonics. The definitions are listed in alphabetical order.

$CRET_{C-EA}$ = The market-adjusted stock return of the customer firm during its own 3-day earnings announcement window. The market adjusted return is the raw return less the return on CRSP's value-weighted index ($ret - vwretd$).[30]

$CRET1$ = the 1-month stock return of the customer firm ending 1 week prior the supplier's earnings announcement (excluding the 3-day window of the customer's earnings announcement).

$LOW\_DEPENDENCE$ = 1 if the supplier's sales to the customer divided by the customer's cost of goods sold is lower than the median for the quarter, zero otherwise.

LOW_PCT_SALE = 1 if the supplier's sales to the customer divided by the supplier's total sales is lower than the median for the quarter, zero otherwise.

$logBM$ = The natural logarithm of the book-to-market ratio. Book value is defined as common equity (ceq), set equal to missing if negative. Market value is defined as price times shares outstanding ($|prc| \times shrout$). Book value is measured at the previous fiscal-year end, while market value is measured as of the month prior to the customer's earnings announcement.

$logMV$ = The natural logarithm of the market value of equity. Market value is prices times shares outstanding ($|prc| \times shrout$), measured one month prior to the month of the customer's earnings announcement.

$SRET1$ = The 1-month stock return of the supplier firm ending 1 week prior to the supplier's earnings announcement (excluding the 3-day window of the customer's earnings announcement).

$SRET6$ = The 6-month stock return of the supplier firm ending 1 week prior to the supplier's earnings announcement. This controls for the momentum effect of Jegadeesh and Titman (1993).

$SRET_{C-EA}$ = The market-adjusted stock return of the supplier firm during the three-day window surrounding its customer's quarterly earnings announcement.

[30] The three-day return window covers days -1, 0, and +1, where day 0 is the earnings announcement day. As discussed in Fama (1998) and Kothari (2001), the choice of the expected return model is less important in short-window studies because the expected daily return is approximately zero. Nevertheless, we have tried using industry-adjusted stock returns as well as size-adjusted stock returns and the results are similar.

$SRET_{S-EA}$ = The market-adjusted stock return of the supplier firm during the three-day window surrounding its own firm's quarterly earnings announcement, occurring after its customer's earnings announcement.

$SRETQEA1$ = The supplier's 3-day market-adjusted stock return during its last quarterly earnings-announcement window. The market adjusted return is the raw return less the return on CRSP's value-weighted index ($ret - vwretd$).

$SRETQEA4$ = The supplier's 3-day market-adjusted stock return during its quarterly earnings-announcement window occurring four quarters prior to the current quarter. The market adjusted return is the raw return less the return on CRSP's value-weighted index ($ret - vwretd$).

$TACC$ = Total accruals of the supplier firm. Total accruals equal net income (ni) less operating cash flows ($oancf$) scaled by average total assets. This variable is measured using annual data from the previous fiscal year to ensure the market had access to this information.

UE = The unexpected earnings of the supplier, defined as quarterly earnings (ibq) less earnings four quarters ago, all scaled by beginning of quarter market value of equity ($prccq \times cshoq$).

Figure 1

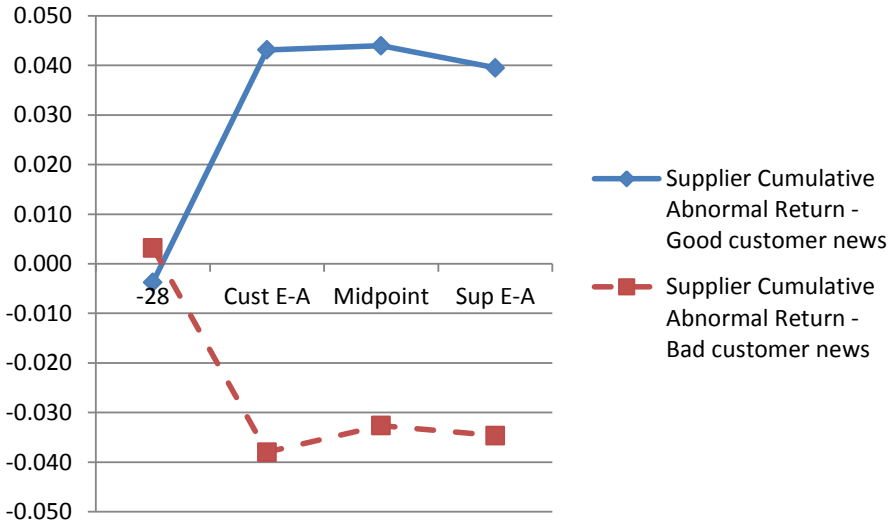

Figure 1 plots the average supplier abnormal stock return across time. Suppliers whose customers have positive earnings news are represented by the solid line, while those whose customers have negative earnings news are represented by the dashed line. There are four datapoints: (i.) 28 days before the customer's earnings announcement, (ii.) the customer's earnings announcement, (iii.) the midpoint between the customer's earnings announcement and the supplier's earnings announcement, and (iv.) the supplier's earnings announcement. Note that we use this midpoint because the distance between the supplier's earnings announcement and the customer's earnings announcements differs for each observation.

Table 1: Sample Selection	
Supplier-Customer-Quarter observations with nonmissing GVKEY and PERMNO:	140,022
Less: Observations with missing stock return data	(9,947)
Less: Observations where supplier announces before customer	(55,451)
Less: Observations where supplier announces within four days of customer:	(9,313)
Less: Observations where supplier announces more than four weeks after customer:	(19,992)
Final Sample:	45,319

Table 2: Descriptive Statistics

Panel A: Suppliers (N = 3,992)

Variable	**Mean**	**Median**	**Standard Deviation**
Assets (in millions)	959	91	5,708
Sales (in millions)	744	83	3,739
MV (in millions)	804	91	4,551
BM	0.98	0.56	1.69
ROA	-0.08	0.015	0.28
TACC	-0.09	-0.06	0.26
Loss	0.44	0.00	0.50
PCT_SALE	0.28	0.17	0.28

Panel B: Customers (N = 1,513)

Variable	**Mean**	**Median**	**Standard Deviation**
Assets (in millions)	24,478	1,959	129,842
Sales (in millions)	10,661	1,814	30,619
MV (in millions)	8,064	1,478	21,541
BM	1.41	0.48	4.38
ROA	0.02	0.04	0.13
TACC	-0.07	-0.05	0.16
Loss	0.24	0.00	0.43

This table displays the mean, median, and standard deviation of the following firm characteristics for the latest available year of data for the firms.

Variable Definitions:

$Assets$ = Total assets, in millions of dollars.

$Sales$ = Total annual sales, in millions of dollars.

MV = Market value of equity, in millions of dollars.

BM = The ratio of book equity to market value of equity.

ROA = Return on assets, calculated as income before extraordinary items scaled by average total assets.

$TACC$ = Total accruals, calculated as net income less operating cash flows, all scaled by average total assets.

$Loss$ = 1 if the firm reported negative net income for the year, zero otherwise.

PCT_SALE = The sales from the supplier firm to the customer firm divided by the total sales of the supplier firm.

Table 3: Pearson and Spearman Correlations

Variable	$SRET_{S-EA}$	$SRET_{C-EA}$	$CRET_{C-EA}$	UE	MV	BM	$TACC$	$SRET6$	$SRET1$	$CRET1$	$SRETQEA1$	$SRETQEA4$
$SRET_{S-EA}$		**-0.018**	**0.010**	**0.105**	0.003	-0.002	**-0.030**	**0.018**	0.000	**0.016**	**0.024**	-0.005
$SRET_{C-EA}$	**-0.016**		**0.076**	**0.013**	0.005	0.007	0.002	**0.091**	**0.251**	**0.065**	-0.001	0.003
$CRET_{C-EA}$	0.008	**0.065**		-0.008	-0.002	-0.002	0.002	-0.002	**0.019**	**0.340**	0.007	0.001
UE	**0.182**	**0.027**	-0.003		0.003	**-0.015**	**-0.190**	**0.157**	**0.059**	**-0.019**	**0.095**	**-0.039**
MV	**0.023**	**0.032**	**-0.012**	**0.031**		**-0.034**	**0.012**	**0.044**	0.006	0.007	**0.032**	**0.024**
BM	**0.022**	**-0.019**	0.001	**-0.164**	**-0.355**		**-0.014**	**-0.038**	-0.009	-0.002	-0.004	-0.011
$TACC$	**-0.016**	0.007	0.003	**-0.110**	**0.015**	**-0.033**		**-0.032**	**-0.025**	0.002	**-0.012**	**0.042**
$SRET6$	**0.026**	**0.093**	-0.003	**0.243**	**0.188**	**-0.261**	**-0.011**		**0.362**	**0.058**	**0.248**	**0.014**
$RET1$	0.003	**0.226**	0.007	**0.083**	**0.068**	**-0.074**	-0.009	**0.380**		**0.239**	**0.046**	0.008
$CRET1$	**0.014**	**0.049**	**0.348**	**-0.014**	**-0.012**	-0.003	0.009	**0.077**	**0.247**		-0.001	**0.016**
$SRETQEA1$	**0.026**	0.003	0.009	**0.133**	**0.074**	**-0.071**	-0.006	**0.236**	**0.047**	0.001		0.001
$SRETQEA4$	0.003	**0.012**	0.005	**-0.026**	**0.064**	**-0.058**	**0.033**	**0.023**	**0.017**	**0.013**	**0.010**	

This table displays Pearson (Spearman) correlation coefficients above (below) the diagonal. Coefficients significant at the 5% level are bolded, those at the 10% level are underlined, all others are insignificant. All variables except $SRET_{S-EA}$ are winsorized at the 1st and 99th percentiles. The sample spans 1976-2009 and includes 45,319 supplier-customer-calendar-quarter observations. See appendix for variable definitions.

Table 4: Portfolio Test: Sorting on $SRET_{C-EA}$

Portfolio	$SRET_{C-EA}$	$SRET_{S-EA}$	*p-value*
Q1 (Lowest)	-7.51%	0.28% *	0.056
Q2	-2.41%	0.14%	0.246
Q3	-0.27%	0.17%	0.222
Q4	1.97%	-0.12%	0.298
Q5 (Highest)	8.38%	-0.33% **	0.033
Low minus High (1-5)		0.61% ***	0.004

Each quarter we sort firms into 5 portfolios based on $SRET_{C-EA}$ and calculate the mean abnormal return for each quintile. The number reported in the 2nd column is the average abnormal return of the firms in the portfolio during the customer's earnings announcement window ($SRET_{C-EA}$). The number reported in each cell of the 3rd column is the average abnormal return occurring at the supplier's own subsequent earnings announcement ($SRET_{S-EA}$). Announcement windows are three days (-1, 0, +1), with day 0 being the day of the announcement.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on on two-tailed tests.

Table 5: Does the Market Overreact to Customer Earnings News?
(Dependent Variable = $SRET_{S-EA}$)

		Model 1		*Model 2*	
Variables	Predicted Sign	**estimate**	**p-val.**	**estimate**	**p-val.**
$Intercept$	?	-0.006	0.303	-0.005	0.589
$SRET_{C-EA}$	-	-0.040***	0.002	-0.063***	0.000
$CRET_{C-EA}$	+			0.020**	0.015
UE	+			0.179***	0.000
$logMV$	-			0.000	0.413
$logBM$	+			0.006***	0.000
$TACC$	-			-0.009	0.121
$SRET6$	+			0.001	0.298
$SRET1$	-			-0.029***	0.000
$CRET1$	+			-0.008	0.198
$SRETQEA1$	+			-0.002	0.456
$SRETQEA4$	-			0.003	0.378
$Industry\ Fixed\ Effects$		Yes		Yes	
N		45,299		27,487	
$Adj.R^2$		0.025		0.084	

This table displays coefficients from estimating a linear regression using the Fama and MacBeth (1973) approach where the dependent variable is the supplier firm's market-adjusted stock return during its own earnings announcement window, $SRET_{S-EA}$. The model includes industry indicator variables, where industries are defined using the Fama and French (1997) 48 industry classification system. All continuous independent variables are winsorized at the 1st and 99th percentiles. See appendix for variable definitions.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 6: Is the Overreaction Stronger for Less Precise Signals?
(Dependent Variable = $SRET_{S-EA}$)

		Model 1		*Model 2*	
Variables	Prediction	**estimate**	**p-val.**	**estimate**	**p-val.**
$Intercept$	?	-0.008	0.412	-0.004	0.764
$SRET_{C-EA}$	-	-0.032**	0.039	-0.022	0.159
LOW_PCT_SALE	?	0.004	0.548		
$SRET_{C-EA} \times LOW\_PCT\_SALE$	-	-0.050*	0.066		
$\boldsymbol{F\ Test}: SRET_{C-EA} + SRET_{C-EA} \times LOW\_PCT\_SALE$	-	-0.081***	0.000		
$LOW\_DEPENDENCE$	?			0.006	0.347
$SRET_{C-EA} \times LOW\_DEPENDENCE$	-			-0.062**	0.028
$\boldsymbol{F\ Test}: SRET_{C-EA} + SRET_{C-EA} \times LOW\_DEPENDENCE$	-			-0.084***	0.000
$Controls$		Yes		Yes	
$Industry\ Fixed\ Effects$		Yes		Yes	
N		18,118		21,252	
$Adj.R^2$		0.099		0.086	

This table examines the role of the precision of the customer's earnings in explaining the market overreaction. Both models are estimated using the Fama and MacBeth (1973) approach. Both models include all control variables listed in Table 5, as well as industry fixed effects, where industries are defined using the Fama and French (1997) 48 industry classification system. All continuous independent variables are winsorized at the 1st and 99th percentiles. See appendix for variable definitions.
***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 7: Portfolio Test Excluding Stocks with Price below $5

Portfolio	$SRET_{C-EA}$	$SRET_{S-EA}$	*p-value*
Q1 (Lowest)	-6.50%	-0.02%	0.897
Q2	-2.19%	0.02%	0.873
Q3	-0.20%	0.00%	0.992
Q4	1.80%	-0.21% **	0.038
Q5 (Highest)	7.24%	-0.44% ***	0.005
Low minus High (1-5)		0.42% **	0.048

This table displays the results of conducting a hedge portfolio test on a sample of supplier firms with stock prices above $5 per share. Each quarter we sort firms into 5 portfolios based on $SRET_{C-EA}$ and calculate the mean abnormal return for each quintile. The number reported in the 2nd column is the average abnormal return of the firms in the portfolio during the customer's earnings announcement window ($SRET_{C-EA}$). The number reported in each cell of the 3rd column is the average abnormal return occurring at the supplier's own subsequent earnings announcement ($SRET_{S-EA}$). Announcement windows are three days (-1, 0, +1), with day 0 being the day of the announcement.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on on two-tailed tests.

Table 8: Can the Bid-Ask Bounce Explain the Overreaction?

Panel A: Pseudo-Event Portfolio Test

Portfolio	$Pseudo\ SRET_{C-EA}$	$Pseudo\ SRET_{S-EA}$	*p-value*
Q1 (Low)	-7.72%	0.28% **	0.029
Q2	-2.40%	-0.01%	0.535
Q3	-0.26%	0.02%	0.749
Q4	1.89%	-0.05%	0.555
Q5 (High)	8.58%	0.06%	0.603
Low minus High (1-5)		0.22%	0.208

Panel B: Portfolio Test using Alternate Return Measure

Portfolio	$SRET_{C-EA}$	$SRET_{S-EA}$	*p-value*
Q1 (Low)	-7.59%	0.26%	0.190
Q2	-2.23%	-0.04%	0.795
Q3	-0.27%	0.08%	0.617
Q4	1.83%	-0.03%	0.834
Q5 (High)	8.43%	-0.65% ***	0.001
Low minus High (1-5)		0.91% ***	0.001

This table examines the role of market microstructure effects in explaining the apparent overreaction to customer earnings. Panel A does so by creating a "Pseudo-Event Window". The Psuedo-Event Window is created by shifting all customer and supplier earnings announcements back by exactly four weeks. Each quarter we then form five portfolios based on the supplier's stock return during the customer's Psuedo-Announcement-Window. The 2nd column reports the average abnormal stock return of the supplier firms during this window. The 3rd column reports the average abnormal return occurring during the supplier's Psuedo-Announcement-Window. Panel B replicates the results of Table 4 using a stock return measures which is less susceptible to market microstructure effects. The stock return in Panel B is calculated as $(p_t + d_t - p_{t-1})/p_{t-1}$, where p_t is the average of the closing bid and ask price and d_t is the dividend paid on day t. Announcement windows are three days (-1, 0, +1), with day 0 being the day of the announcement.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on on two-tailed tests.

Table 9: Is the Overreaction Incremental to Other Overreactions?

(Dependent Variable = $SRET_{S-EA}$)

Variable	Prediction	**estimate**	**p-val.**
$Intercept$	?	-0.005	0.780
$SRET_{C-EA}$	-	-0.052**	0.032
$CRET_{C-EA}$	?	0.004	0.695
UE	+	0.236***	0.003
$logMV$	-	-0.000	0.883
$logBM$	+	0.005**	0.030
$TACC$	-	-0.008	0.617
$SRET6$	+	0.005*	0.089
$SRET1$	-	-0.046**	0.012
$CRET1$	+	0.000	0.983
$SRETQEA1$	+	0.021	0.181
$SRETQEA4$	-	-0.004	0.810
$Industry\ Fixed\ Effects$		Yes	
N		7,929	

This table displays coefficients from estimating a linear regression using the Fama and MacBeth (1973) approach. The model includes industry indicator variables, where industries are defined using the Fama and French (1997) 48 industry classification system. All continuous independent variables are winsorized at the 1st and 99th percentiles. See appendix for variable definitions.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 10: The Effect of Limited Attention on the Overreaction
(Dependent Variable = $SRET_{S-EA}$)

Variable	**Prediction**	**estimate**	**p-val.**
$Intercept$	?	-0.005	0.295
$SRET_{C-EA}$	-	-0.074***	0.000
$Friday$	?	0.000	0.704
$SRET_{C-EA} \times Friday$	+	0.042*	0.061
$F\ Test: SRET_{C-EA} + SRET_{C-EA} \times Friday$	-	-0.032**	0.013
$Controls$		Yes	
$Industry\ Fixed\ Effects$		Yes	
N		27,487	
$Adj. R^2$		0.084	

This table contains estimated coefficients from a linear regression estimated using the Fama and MacBeth (1973) approach. The model includes industry fixed effects, where industries are defined using the Fama and French (1997) 48 industry classification system. All continuous independent variables are winsorized at the 1st and 99th percentiles. Variable definitions provided in the Appendix.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 11: Reconciliation with Cohen and Frazzini (2008)

Dependent Variable = $SMRET1_{t+1}$

		Model 1		***Model 2***		***Model 3***	
Variable	Prediction	**estimate**	**p-val.**	**estimate**	**p-val.**	**estimate**	**p-val.**
$Intercept$	?	0.013***	0.003	0.014**	0.016	0.014**	0.017
$CMRET1$	+	0.077***	0.000	0.105***	0.000		
$CRET_{C-EA}$	+					0.040	0.212
$CMRET1_{NONANNC}$	+					0.116***	0.002
N		59,514		14,854		14,854	
$Adj.R^2$		0.003		0.009		0.023	

This table reports the results of estimating linear regressions in which the dependent variable is the supplier's monthly stock return in month t+1. The regressions are estimated using the Fama and MacBeth (1973) approach.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 12: Estimating Regression on Supplier-Quarter-level

Dependent Variable = $SRET_{S-EA}$

Variable	Prediction	**estimate**	**p-val.**
$Intercept$	?	-0.006	0.497
$SRET_{ALLCUST-EA}$	-	-0.053***	0.000
$CRET_{ALLCUST-EA}$	?	0.023*	0.091
UE	+	0.171***	0.000
$logMV$	-	0.000	0.319
$logBM$	+	0.006***	0.000
$TACC$	-	-0.007	0.149
$SRET6$	+	0.002	0.209
$SRET1$	-	-0.030***	0.000
$CRET1$	+	0.001	0.460
$SRETQEA1$	+	0.001	0.464
$SRETQEA4$	-	0.004	0.334
$Industry\ Fixed\ Effects$		Yes	
N		21,183	
$Adj.R^2$		0.065	

This table reports the results of estimating a linear regression where the dependent variable ($SRET_{S-EA}$) is the supplier's abnormal stock return during its own earnings announcement. The model includes industry fixed effects, where industries are defined using the Fama and French (1997) 48 industry classification scheme. All continuous independent variables are winsorized at the 1st and 99th percentiles.

$SRET_{ALLCUST-EA}$ = The supplier's cumulative abnormal return during each of its customer's earnings announcement windows. Announcement windows are three day windows centered on the earnings announcement date. Abnormal returns are calculated as the supplier's raw stock return less CRSP's value-weighted market return.

$CRET_{ALLCUST-EA}$ = The average of all customer's abnormal announcement-window stock returns. Each customer's announcement window stock return is the 3-day abnormal return centered on that customer's earnings announcement date.

Other variable definitions provided in the Appendix to the manuscript.

***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 13: Replication of Main Result after Including Far Apart Earnings Announcements
Dependent Variable = $SRET_{S-EA}$

		Model 1		***Model 2***	
Variable	Prediction	**Estimate**	**p-val.**	**estimate**	**p-val.**
$Intercept$	?	-0.005	0.490	0.037**	0.011
$SRET_{C-EA}$	-	-0.028***	0.003	-0.049***	0.000
$CRET_{C-EA}$	+			0.008	0.169
UE	+			0.156***	0.000
$logMV$	-			0.000	0.399
$logBM$	+			0.006***	0.000
$TACC$	-			-0.009	0.152
$SRET6$	+			-0.005	0.166
$SRET1$	-			-0.037***	0.000
$CRET1$	+			0.006	0.251
$SRETQEA1$	+			-0.009	0.309
$SRETQEA4$	-			0.013	0.134
$Industry\ Fixed\ Effects$		Yes		Yes	
N		65,281		37,886	
$Adj.R^2$		0.021		0.059	

This table reports the results of estimating linear regressions in which the dependent variable ($SRET_{S-EA}$) is the supplier's abnormal stock return during its 3-day earnings announcement window. Both models are estimated using the Fama and MacBeth (1973) approach and include industry fixed effects, where industries are defined using the Fama and French (1997) 48 industry classification system. Variable definitions are provided in the appendix to the manuscript.
***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.

Table 14: Long Versus Short Distance Between Announcement Days

Panel A: Short Distance Sample (Less than or equal to 28 days apart)

Variable	Prediction	**estimate**	**p-val.**
$Intercept$	?	0.036**	0.026
$SRET_{C-EA}$	-	-0.061***	0.000
$CRET_{C-EA}$	?	0.020**	0.021
UE	+	0.158***	0.000
$logMV$	-	0.000	0.440
$logBM$	+	0.006***	0.000
$TACC$	-	-0.009	0.117
$SRET6$	+	0.001	0.284
$SRET1$	-	-0.030	0.000
$CRET1$	+	-0.007	0.233
$SRETQEA1$	+	-0.001	0.464
$SRETQEA4$	-	0.002	0.429
$Industry\ Fixed\ Effects$		Yes	
N		27,754	
$Adj.R^2$		0.082	

Panel B: Long Distance Sample (More than 28 days apart)

Variable	Prediction	**estimate**	**p-val.**
$Intercept$	?	0.061*	0.052
$SRET_{C-EA}$	-	0.007	0.359
$CRET_{C-EA}$	?	-0.024	0.161
UE	+	0.187***	0.000
$logMV$	-	-0.002**	0.022
$logBM$	+	0.006***	0.000
$TACC$	-	-0.009	0.288
$SRET6$	+	-0.006	0.127
$SRET1$	-	-0.048***	0.000
$CRET1$	+	0.051***	0.001
$SRETQEA1$	+	0.012	0.284
$SRETQEA4$	-	0.017	0.215
$Industry\ Fixed\ Effects$		Yes	
N		9,993	
$Adj.R^2$		0.086	

Panel A reports the results of estimating the main model (Equation 1 of the manuscript) on a sample of observations in which the number of days between the customer's earnings announcement and the supplier's earnings announcement is less than or equal to 28. Panel B reports the results of estimating the same model for a sample of observations in which the number of days between the two firms' earnings announcements is greater than 28. See appendix of manuscript for variable definitions. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values are based on one-tailed tests when a prediction is given; otherwise they are based on two-tailed tests.