Cross-firm information in analyst reports

Abstract

This study explores the informational significance of cross-firm information in analyst reports. When financial analysts release reports on a particular stock (highlighted stock), they also refer to other economically linked (related) stocks that may be impacted by the report's subject matter and analysis. The analyses reveal that when an analyst positively (negatively) revises target prices while mentioning the related stock, the analyst adjusts the target prices of the related stock with a 2-10 day lag. Furthermore, revisions to target prices of the highlighted stock are positively associated with the subsequent stock returns of the related firms. Lastly, the return predictability of the related stock is attributed to the above-mentioned delayed adjustment of the analysts' target prices. These results support the informational value of cross-firm information and its gradual incorporation into analysts' and investors' expectations for related stocks.

1. Introduction

Analysts' research reports are important sources of stock market information. Along with company fundamentals, financial analysts research macro- and microeconomic conditions to predict company performance (especially earnings). Eventually, they

estimate a fair price—the target price—based on the stock's outlook. They recommend buying or selling the company's stock by comparing the target price with the current price. Several studies report that analyst outputs contain economically significant information. Specifically, revisions in target prices (Brav and Lehavy, 2003; Asquith et al., 2005), stock recommendations (Stickel, 1995; Womack, 1996; Altinkiliç and Hansen, 2009; Ivković and Jegadeesh, 2004), and earnings forecasts (Givoly and Lakonishok, 1979; Francis and Soffer, 1997; Altınkılıç et al., 2013) have informational significance for the valuation of a highlighted stock (the stock on which the analyst report is issued).

Additionally, financial analysts mention not only the highlighted stock but also some related stocks in their reports, particularly when the performance and events of the highlighted stock are expected to impact the performance of the related firms. Such cross-firm information could contain additional information regarding related firms' performance and intrinsic value. Nonetheless, only a few extant studies focused on the value of such cross-firm information.

Specifically, because analysts cannot simultaneously update the estimates of all the stocks they cover, it is possible that this cross-firm information is not fully incorporated into their forecasts for related firms. Thus, analysts —who mention the related stock—could subsequently incorporate cross-firm information into their estimates for related firms. Furthermore, the delayed incorporation of cross-firm information could result in return predictability for related stocks. Miwa & Ueda (2014) and Miwa (2022) demonstrate that gradual (nonsynchronous) updates of analysts' estimates induce return predictability. In addition, as the estimated impact on the related firms' performance and valuation is not explicitly shown in the report, it

takes longer to assess the impact of cross-firm information on the related firm's valuation. Hence, this study analyzes whether and how this cross-firm information is gradually incorporated into analysts' estimates about company performance and stock valuation and consequently affects the related firm's stock prices.

This study's analysis will provide more convincing evidence of gradual information diffusion among economically linked firms. Previous studies assessed the diffusion and gradual incorporation of cross-form information by analyzing the lead-lag effect in cross-sectional returns. According to Lo and MacKinlay (1990), large firms can be leaders, and small firms can be followers. Prior studies (e.g., Lo and MacKinlay, 1990; Chordia and Swaminathan, 2000; Anderson et al., 2012) illustrated that only a small fraction of nonsynchronous trading or time-varying expected returns could explain such lead-lag relations. In addition, there is considerable evidence (e.g., Brennan et al., 1993; Badrinath et al., 1995; Chordia and Swaminathan, 2000; Hameed et al., 2015) of the lead-lag effect from stocks that are highly exposed to investor or analyst attention proxies (e.g., analyst coverage and trading volume) to those that are not.

While these studies do not specify the path of the gradual incorporation of information, some identify the link and provide more robust evidence for the gradual incorporation of information between economically linked firms. Scherbina and Schlusche (2015) identified links using historical return associations and showed that the identified leaders could reliably predict their followers' returns, suggesting the gradual incorporation of cross-firm information. Cohen and Frazzini (2008) and Cao et al. (2016) identified the link using customer-supplier and strategic alliance data. These studies identified the gradual incorporation of information by showing a solid lead-lag

effect on stock prices through these links.

However, these identification methods could contain large estimation errors and may not capture various cross-firm information. For instance, as Scherbina and Schlusche (2015) identified links through historical prices, the estimation of these links may contain substantial estimation errors and fail to capture temporal (dynamic) cross-firm information. Frazzini (2008) and Cao et al. (2016) considered only cross-firm information propagated through customer-supplier networks and strategic alliances.

By contrast, this study uses cross-firm information on economically linked firms, as mentioned by professional analysts. These analysts carefully identify cross-firm information through detailed fundamental analyses, enabling the cross-firm information to capture various dynamic and directional links with minimal identification errors. Additionally, the gradual incorporation of cross-firm information on economically linked firms can more directly be identified by observing the same analysts' target prices and earnings forecasts for the highlighted and related firms.[1] This methodology is expected to provide a direct and robust assessment of the gradual propagation of cross-firm information through economic links.

Revisions in the target prices for highlighted firms may reflect the significance of cross-firm information. Hence, this study examines whether revisions in the earnings forecasts and target prices of highlighted stocks (by analysts who mention related stocks) induce subsequent revisions in their earnings forecasts and related

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[1] The association of changes in target prices and earnings forecasts with changes in the different analysts' estimates (about the related firms) could be attributed to the difference in analysts' coverage and their ability or incentive to respond to news.

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stocks' target prices.[2]

To this end, the highlighted stocks and their related stocks (economically linked stocks) are identified in each report. I focus on target prices and earnings forecasts of analysts who mention these economic links. The magnitude of the revisions is closely related to the extent of cross-firm information for both the highlighted stock and the related stocks. Thus, the study first analyzes whether the magnitude of revisions in analysts' estimates, specifically their target prices and earnings forecasts, for the highlighted stock prompts subsequent updates of their estimates for related stocks. The result shows that there is a robust lead-lag relationship in analysts' target prices, indicating that changes in the valuation of the highlighted stock induce subsequent revisions in the same analyst's target prices for related firms.

Next, I analyze whether the positive or negative lead-lag relationship is dominant. A positive lead-lag relationship might be observed. For instance, industry shocks can simultaneously impact multiple firms, leading them in the same direction. Additionally, the negative shock caused by questionable practices in one firm may cause investors to lose faith in the related firms. By contrast, in a mature market, a loss in a specific firm's market share can increase a competitor's market share. In such a case, a negative lead-lag relationship could be observed. Scherbina and Schlusche (2015) showed that positive leadership (lead-lag relationship) is long-lasting, whereas negative leadership is short-lived. Consistent with their findings, this study finds a dominant positive lead-lag relationship. Positive (negative) revisions in analysts' target prices induce subsequent positive (negative) revisions in the target prices of related

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[2] Due to the possibility of reversal causality from revisions of the related firm to those of the highlighted firm, the study analyzes the lagged relationship, that is, the association of revisions of the related firm with the lagged revisions of the highlighted firm.

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firms. The positive relationship is robust even after controlling for serial correlation in target price revisions and the influence of other analysts' target prices.

Furthermore, the results reveal that revisions in target prices of the related stock do not induce subsequent revisions in the same analyst's target prices for highlighted firms. There is no significant information flow from the related stock to the highlighted stock; in short, the informational flow is unidirectional. Consistent with my view, it indicates that the cross-firm information is predominantly propagated from the highlighted stock to the corresponding related stock.

Subsequently, the study examines whether the gradual incorporation of cross-firm information results in the return predictability of related firms. First, it is observed that revisions to target prices for the highlighted stocks by analysts mentioning cross-firm information are associated with subsequent returns on the related stock. This indicates that positive (negative) cross-firm information, as identified by positive (negative) revisions in target prices for the highlighted firms, induces subsequent positive (negative) returns for the related firms. Furthermore, mediation analysis reveals that return predictability is at least partially attributable to the gradual incorporation of cross-firm information into the target prices of related stocks. This result supports the view that the gradual incorporation of cross-firm information causes return predictability for related stocks.

Additional analyses reveal that this lead-lag relationship and its price impact on the related stock are stronger when more analysts cover the highlighted firm and a star (prestigious) analyst writes the report. More extensive analyst coverage of the highlighted stocks may indicate a greater difference in analysts' attention and priority. Thus, in such cases, the time lag in incorporating cross-firm information between

highlighted and related stocks may be more significant. Moreover, because star analysts could be more informed than others, their cross-firm information could have more value. Hence, such cross-form information could induce substantial lead-lag relationships in target prices and impact related stock prices.

In summary, the result supports the view that cross-firm information mentioned in analysts' reports is slowly incorporated into their estimates of economically linked stocks, resulting in the return predictability of related firms.

This study contributes to the literature in two ways. First, it presents new informational content in analyst reports. Since analysts clearly mention related firms expected to be affected by the report's content, their reports could contain additional information regarding stock valuation and company performance of the related stocks. Previous studies rarely focused on the informational value of such cross-firm information. This study presents evidence of their informational value for the first time.

Second, this study presents compelling evidence of slow information diffusion across stocks. As the economic links (and cross-firm information) mentioned in analyst reports are based on careful fundamental analyses, they hold greater credibility than those used in previous studies. Consequently, they offer more substantial evidence for directional information diffusion through economic links. Furthermore, since the related stocks are less prioritized than the highlighted stock in each report, my findings strongly support the view that the difference in market participants' priorities among stocks induces slow information diffusion across stocks.

The paper proceeds as follows. Section 2 of the present study documents the gradual incorporation of cross-firm information into analysts' stock estimates. Section 3 provides evidence that the gradual incorporation of cross-firm information results in

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return predictability for related stocks. Section 4 reports the period when the gradual incorporation of cross-firm information and its price impact is especially pronounced. Finally, Section 5 concludes the study.

2. Lead-lag relationship in analysts' reports

2.1. Association with analysts' expectations update

This study assesses whether cross-firm information mentioned in analysts' reports induces revisions in their estimates regarding performance and stock valuation of related firms. Highlighted and related firms are identified, and analyst estimates for these firms are assessed using FactSet Research Connect. This global database provides electronic access to reports from hundreds of market research firms and rating agencies. For instance, if an analyst issues a company report for stock j (on day t) and mentions stock i as a related stock, it is assumed that there is an economic link (and some information flow) from stock j (the highlighted stock) to stock i on day t.[3] If multiple financial analysts mention the link from stock j to i on day t, the samples are merged. $D\_link_{i,j,t}$ is defined as a dummy variable that takes a value of one if there is an economic link (and some information flow) from stock j to stock i on day t ($D\_link_{i,j,t} = 0$ means there is no economic link).[4] The study identifies 153,852 links, which are derived from analyst reports released between 2008 and 2021. It examines

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[3] It is also possible that there is an economic link from stock i (related stock) to stock j (highlighted stock). However, because this study is interested in examining whether the information contained in the analyst report for stock j (highlighted stock) is incorporated into the valuation of stock i, only the link from stock j to stock i is considered.

[4] If in an analyst report for stock a (the highlighted stock), multiple stocks (e.g., stocks b and c) are mentioned as related stocks, it is supposed that there are multiple links (a link from stock a to stock b, and from a to c).

the incorporation of cross-firm information from the reports for stock j (highlighted stock) into analysts' estimates and prices of stock i (the related stock) around the publication of the report (day t) across all links $\{i, j, t | D\_link_{i,j,t} = 1\}$.

The time lag in the incorporation of cross-firm information within the same analysts' or brokers' estimations across firms is scrutinized.[5] The significance of the cross-firm information is identified by how much analysts who mention the link revise their earnings forecasts and target prices for stock j (highlighted stock).[6,7] Therefore, I investigate whether revisions in estimates (target prices and earnings forecasts) by an analyst who mentions the economic link induce subsequent revisions in their target prices and earnings forecasts of related firms.[8]

To analyze the gradual incorporation of cross-firm information into analysts' estimates for the related stock (stock i), the study examines whether updates in estimates (e.g., target prices and earnings forecasts) for stock i (the related firm) by analysts who mention the economic link are affected by the magnitude of lagged revisions in their estimations for the highlighted stocks (stock j). To this end, a logistic regression model for all links from stocks j to i $\{i, j, t | D\_Link_{i,j,t} = 1\}$ is estimated.

$$D\_FwdRev_{i,t} = \alpha_0 + \beta_1 ABS\_Rev\_TGT_{j,t} + \beta_2 ABS\_Rev\_EPS_{j,t} + (Controls) \quad (1)$$

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[5] This study also analyzes the information propagation across different analysts, provided they are both employed by the same brokerage house, because cross-firm information will likely be shared between analysts from the same brokerage house.

[6] Stock recommendations are revised due to fundamental changes and price changes. Furthermore, as recommendations are limited to a few categories (strong buy, buy, sell, and hold), the frequency of their revisions is fewer than that of earnings forecasts and target prices. Thus, revisions in stock recommendations are considered a noisier and naïve proxy for fundamental news flow. Although results using revision in stock recommendation support this study's hypotheses, their statistical significance is weaker.

[7] Suppose multiple financial analysts mention the same link. In that scenario, the study calculates the average of revisions in estimates (i.e., target prices, earnings forecasts, and stock recommendations) of analysts who mention the economic link as a proxy for the merged cross-firm information.

[8] The study does not analyze the contemporaneous association due to the possibility of reversal causality from analysts' revisions for the related stock to those for the highlighted stock.

The dependent variable ($D\_FwdRev_{i,t}$) is either $D\_FwdRev\_TGT_{i,t}$ or $D\_FwdRev\_EPS_{i,t}$, where $D\_FwdRev\_TGT_{i,t}$ is a dummy variable that takes a value one if there are any revisions in the target prices of the related stock i (by analysts who mention the link) for days t+2 through t+10 (t denotes the publication date of their report). $D\_FwdRev\_EPS_{i,t}$ is a dummy variable that equals one if there are any revisions in their earnings forecast of the related stock i for days t+2 through t+10. Meanwhile, $ABS\_Rev\_TGT_{j,t}$ is the absolute value of the change ratio of analysts' target prices for stock j (the highlighted stock in their report); $ABS\_Rev\_EPS_{j,t}$ is the absolute value of the change in their earnings per share (EPS) for stock j deflated by its price.

The regression model includes the following control variables. First, updates of analysts' estimations for stock i (the related stock) could be induced by revisions in their estimations for stock j (the highlighted stock), as well as revisions in other analysts' (who do not mention the economic link) estimations for stock j. Thus, the study defines other analysts' consensus target prices and EPS forecasts (for stock j) as averages of target prices and EPS forecasts made by analysts who do not mention the link from stock j to stock i, respectively. Subsequently, the magnitude of lagged revisions in other analysts' consensus target prices and earnings forecasts for stock j (the highlighted stock), denoted as $ABS\_Rev\_ConTGT_{j,t}$ and $ABS\_Rev\_ConEPS_{j,t}$, respectively, is included. Specifically, $ABS\_Rev\_ConTGT_{j,t}$ is defined as the absolute value of the change ratio of other analysts' consensus target prices for stock j for days t through t+1, and $ABS\_Rev\_ConEPS_{j,t}$ is defined as the absolute value of the change in other analysts' consensus EPS for days t through t+1, deflated by the (stock j) price.

The inclusion of these variables is also expected to control for the direct impact of fundamental news around report publication because the effect is not limited to analysts who mention the economic link.[9]

Furthermore, the magnitude of lagged revisions in target prices and EPS forecasts for the related stock (stock *i*) is included. Analysts can gradually incorporate common factor shocks (e.g., macro shocks) affecting a wide range of stocks (including highlighted and related ones). In such a case, the association between revisions in analysts' estimations for the related stock (stock *i*) and lagged revisions in their estimations for the highlighted stock (stock *j*) does not always indicate the gradual incorporation of cross-firm information into stock *i*. To mitigate this possibility, the study includes the magnitude of a revision in target prices and earnings forecasts by analysts who mention the link, for stock *i* for day *t* through *t*+1 (denoted as $ABS\_Rev\_TGT_{i,t}$ and $ABS\_Rev\_EPS_{i,t}$, respectively). Additionally, it considers the magnitude of revisions in other analysts' consensus target prices and earnings forecasts for stock *i* during the same period (denoted as $ABS\_Rev\_ConTGT_{i,t}$ and $ABS\_Rev\_ConEPS_{i,t}$, respectively).

Changes in stock recommendations are naïve indicators of fundamental information flows. However, stock recommendation variables are also included because they may affect subsequent updates of analysts' target prices and earnings forecasts. Specifically, the magnitude of revisions in analysts' recommendations for highlighted and related stocks ($ABS\_Rev\_REC_{j,t}$ and $ABS\_Rev\_REC_{i,t}$) and revisions in other analysts' consensus recommendations ($ABS\_Rev\_ConREC_{j,t}$ and

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$ABS\_Rev\_ConREC_{i,t}$) are included. In addition, as the level of recommendations might also affect the frequency of updating their estimates, their recommendations for the highlighted and related stocks ($REC_{j,t}$ and $REC_{i,t}$) and other analysts' consensus forecasts ($ConREC_{j,t}$ and $ConREC_{i,t}$) are included.

As analysts may piggyback on recent news or events (Li et al., 2015), the regression model includes the absolute value of the abnormal returns of stock *i* (the related stock) for day *t*-10 through day *t*-1 ($ABS\_PRET_{i,t}$). Abnormal returns are calculated using the Fama-French three-factor model with the Carhart momentum factor (Carhart four-factor model). In addition, to control for the direct information flow from earnings announcements, the degree of earnings surprise measures for the highlighted and corresponding related stocks is added. The surprise measure for the related stock ($SUE_{i,t}$) is first measured as the difference between the consensus forecasts for the most recently reported quarterly EPS and the corresponding reported (actual) EPS, denominated by the corresponding stock price. This calculation is performed if there is an earnings announcement from day *t*-1 through *t*+1; otherwise, it is recorded as zero. Subsequently, the magnitude of the earnings surprises for the highlighted and related stocks ($ABS\_SUE_{j,t}$ and $ABS\_SUE_{i,t}$, respectively) are measured as the absolute values of $SUE_{j,t}$ and $SUE_{i,t}$, respectively, and then included in the regression model (1).

To control for analyst reactions to characteristics of the related firm, the regression model includes firm size ($SIZE_{i,t}$)—measured as the logarithm of market capitalization—and book-to-market ratio ($BM_{i,t}$)—measured as the equity book value divided by the equity market value. Detailed definitions of the explanatory variables

are provided in the Appendix.

Descriptive statistics and correlations between explanatory variables are shown in Table 1. Table 1(a) (rows D_Fwd_Rev_EPS [Related] and D_Fwd_Rev_TGT [Related]) shows that 24.6% and 15.2% of earnings forecasts and target prices for the related stocks (i.e., $D\_FwdRev\_TGT_{i,t}$ and $D\_FwdRev\_EPS_{i,t}$, respectively) are revised (non-zero) for days $t+2$ through $t+10$. Furthermore, rows ABS_Rev_EPS (Highlighted) and ABS_Rev_TGT (Highlighted) show that 21.3% and 13.2% of the earnings forecasts and target prices for the highlighted stock, respectively, are revised for days t through $t+1$. The ratio of revisions is lower for the target prices than for the earnings forecasts. The study's sample includes reports in which the target prices (for the highlighted stocks) are reiterated (non-revised samples) for the following reason. Investors' and analysts' reactions to the revisions reflect not only the actual impact of the revisions but also the impact of the update of the estimates (the impact of issuing analysts' reports). Chen et al. (2017) show that reiterating analysts' recommendations provides investors with information. Thus, zero revision samples are included in this study to control for the price impacts attributed to these updates.

Other analysts' consensus earnings forecasts and target prices are revised more frequently. According to the ABS_Rev_ConEPS (Related) and ABS_Rev_ConTGT (Related) rows, 38.6% and 30.6% of other analysts' consensus earnings forecasts and target prices (for the related stocks), respectively, are revised for days t through $t+1$. The ABS_Rev_ConEPS (Highlighted) and ABS_Rev_ConTGT (Highlighted) rows show that 55.5% and 50.7% of other analysts' consensus earnings forecasts and target

prices for highlighted stocks, respectively, are revised for days t through $t+1$.[10]

Table 1(b) shows that the degree of the revision in target prices for the highlighted stock (ABS_Rev_TGT [highlighted] in Table 1[b]) is associated with the revision in other analysts' target prices (ABS_Rev_ConTGT [highlighted]) and the degree of the revision in earnings forecast for the highlighted stock (ABS_Rev_EPS [highlighted]) is associated with the revision in other analysts' earnings forecasts (ABS_Rev_ConEPS [highlighted]). As there is a significant correlation between revisions in analysts' target prices and earnings forecasts for a specific stock, the lead-lag relationship could be attributed to the information conveyed by other analysts' estimates; thus, controlling for these variables when analyzing the lead-lag relationship is necessary.

As shown in the ABS_Rev_REC (Highlighted) row in Table 1(a), only 1.3% of the stock recommendations for highlighted stocks are revised; this ratio is significantly smaller than the ratios of revisions in target prices and earnings forecasts (21.3% and 13.2%, respectively).[11] These results suggest that revisions in stock recommendations rarely capture the information flow from highlighted stocks. Therefore, the lead-lag relationship between analysts' target prices and earnings forecasts was analyzed in this study. [12]The magnitude of recommendation revisions is associated with revisions in target prices and earnings forecasts. For instance, $ABS\_Rev\_REC_{j,t}$ (ABS_Rev_REC [highlighted] in Table 1[b]) is positively associated with $ABS\_Rev\_TGT_{j,t}$, and $ABS\_Rev\_EPS_{j,t}$ (ABS_Rev_TGT [highlighted] and ABS_Rev_EPS [highlighted] in

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[10] The result is evident because revisions in consensus forecast or target prices could be non-zero when at least one of the analysts revises their estimates.

[11] The reason could be that recommendations are limited to a few categories.

[12] It is worth mentioning that revisions in recommendations are not included as a dependent variable.

Table 1[b]). Thus, the stock recommendation variables (i.e., $ABS\_Rev\_REC_{j,t}$, $ABS\_Rev\_REC_{i,t}$, $ABS\_Rev\_ConREC_{j,t}$, and $ABS\_Rev\_ConREC_{j,t}$) for the two economically linked stocks are added as control variables in the regression model (1).

[Table 1]

The regression results are presented in Table 2. The ABS_Rev_TGT (Related) and ABS_Rev_EPS (Related) rows indicate that the probability of updating analysts' target prices and earnings forecasts for the related firm is negatively associated with the magnitude of the lagged revisions in target prices for the related firm ($ABS\_Rev\_TGT_{i,t}$) and earnings forecasts ($ABS\_Rev\_EPS_{i,t}$). This is evident because significant revisions in analysts' target prices and earnings forecasts lower the probability of revisions in their estimates for the same stock in subsequent periods. The results also reveal that the probability of updating analysts' target prices and earnings forecasts for the related firm is positively associated with the magnitude of lagged revisions in the target prices and earnings forecasts of the related firm ($ABS\_Rev\_ConTGT_{i,t}$ and $ABS\_Rev\_ConEPS_{i,t}$), respectively. This suggests that a revision in one analyst's target price and earnings forecast is significantly induced by other analysts' revisions for the same stock. These results indicate information propagation among analysts.

Regarding the gradual incorporation of cross-firm information, the indicators for updating the target price and earnings forecasts for related stock i ($D\_FwdRev\_EPS_{i,t}$ and $D\_FwdRev\_TGT_{i,t}$) are positively associated with the magnitude of lagged revisions in the target price and earnings forecasts for highlighted stock j ($ABS\_Rev\_TGT_{j,t}$ and $ABS\_Rev\_EPS_{j,t}$), respectively. In particular, the

association is substantially significant for analysts' target prices (1.7890; t=6.22) rather than analysts' earnings forecasts. As earnings forecasts are merely supplemental (and partial) information regarding target prices (Miwa, 2023), cross-firm information identified by changes in target prices can convey more information regarding firm valuation than that identified by changes in earnings forecasts. In sum, finding the lead-lag relationship in analysts' target prices across stocks suggests that cross-firm information that has enough impact on analysts' fair value estimation for the highlighted stocks is gradually incorporated into the same analysts' fair value estimation of related firms.

[Table 2]

2.2. Direction of the lead-lag relationship

To assess the direction of the lead-lag relationship discussed above, the study examines whether positive (negative) revisions in analysts' target prices for the highlighted firm induce subsequent positive (negative) revisions in their target prices for related firms. The following regression model is estimated with the firm fixed effect for all links from stock j to stock i $\{i, j, t \mid D\_Link_{i,j,t} = 1\}$:

$$FwdRev\_TGT_{i,t} = \alpha_0 + \beta_1 Rev\_TGT_{j,t} + (Controls) \qquad (2)$$

The dependent variable ($FwdRev\_TGT_{i,t}$) is the revision of the target prices for related stock i (by analysts mentioning cross-firm information) for days t+2 through t+10. $Rev\_TGT_{j,t}$ is the change ratio of their estimation of target prices for the highlighted stock for days t to t+1. In addition, $Rev\_EPS_{j,t}$ and $Rev\_REC_{j,t}$ are included as control variables. Here, $Rev\_EPS_{j,t}$ is defined as the change in their EPS forecasts for the highlighted stock for days t through t+1 deflated by its stock price,

and $Rev\_REC_{j,t}$ is defined as the change in their recommendation for the highlighted stock for days t through $t+1$.

The regression analysis includes the following control variables. The study aims to control for the influence of revisions in other analysts' estimates of the highlighted stock j. To achieve this, the analysis incorporated revisions in other analysts' consensus target prices (denoted as $Rev\_ConTGT_{j,t}$), earnings forecasts, (denoted as $Rev\_ConEPS_{j,t}$), and stock recommendations (denoted as $Rev\_ConREC_{j,t}$) for stock j. $Rev\_ConTGT_{j,t}$ is defined as the change ratio of other analysts' consensus target prices for the highlighted stock j for days t through $t+1$. $Rev\_ConEPS_{j,t}$ is defined as the change in other analysts' consensus EPS forecast for days t through $t+1$, denominated by its stock price. Lastly, $Rev\_ConREC_{j,t}$ is defined as the change in other analysts' consensus recommendations for days t through $t+1$. Including these variables is expected to control for the direct impact of fundamental news regarding the highlighted stock around the publication of the analysts' report (day t) as this news affects other analysts' estimates.

The study includes lagged revisions in analysts' estimates of related stocks to control for gradual information propagation within the same stock. Specifically, it includes revisions in target prices, EPS forecasts, and analysts' stock recommendations that mention the link for days t through $t+1$ (denoted as $Rev\_TGT_{i,t}$, $Rev\_EPS_{i,t}$, and $Rev\_REC_{i,t}$, respectively). It also includes revisions to other analysts' consensus ($Rev\_ConTGT_{i,t}$, $Rev\_ConEPS_{i,t}$, and $Rev\_ConREC_{i,t}$), their recommendations for the two economically linked stocks ($REC_{i,t}$ and $REC_{j,t}$), and their consensus recommendations for those stocks ($ConREC_{i,t}$ and $ConREC_{j,t}$).

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Furthermore, to reduce the influence of analysts' piggybacking on recent news or events, the model includes nine prior trading day abnormal returns of related stock i ($PRET_{i,t}$).[13] These are calculated using the Fama-French three-factor model with the Carhart momentum factor. $SUE_{i,t}$ and $SUE_{j,t}$ (i.e., earnings surprise measures for related and highlighted stocks, respectively) are included as control variables in the regression model to control for the direct information flow from the earnings announcements of the two economically linked stocks (2). The regression model also includes firm size ($SIZE$) and book-to-market ratio (BM). Detailed definitions of the explanatory variables used in this study are provided in the Appendix.

Descriptive statistics and correlations between explanatory variables are shown in Table 3. Row Fwd_Rev_TGT (Related) in Table 3(a) shows that 9.7% (5.5%) of the target prices for related stocks are revised upward (downward) in a subsequent period (from $t+2$ through $t+10$), and the $Fwd\_Rev\_TGT_{i,t}$ average is slightly positive. In addition, row Rev_TGT (Highlighted) shows that 8.9% (4.3%) of the target prices for the highlighted stocks are revised upward (downward), and its average is also slightly positive. The target prices in the study's sample tend to be upgraded rather than downgraded.

In terms of correlation, revisions in the target prices for the highlighted stock (Rev_TGT [highlighted] in Table 3[b]) are significantly associated with revisions in earnings forecasts and stock recommendations for the highlighted stock (Rev_EPS [highlighted] and Rev_REC [highlighted]). This indicates the need to control for

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[13] Even if the model includes nine prior trading day abnormal returns of highlighted stock, the result holds. This result denies the possibility that my result is subsumed by momentum spillover effects through shared analyst coverage that is reported by Ali & Hirshleifer (2020).

revisions in earnings forecasts and stock recommendations. Additionally, Rev_TGT (Highlighted) is significantly associated with revisions in other analysts' target prices and earnings forecasts for the highlighted stocks (Rev_ConTGT [highlighted] and Rev_ConEPS [highlighted]), indicating the need to control for contemporaneous revisions in other analysts' estimates.

[Table 3]

Table 4 shows that revisions in analysts' target prices for the related stock are negatively associated with lagged revisions in their target prices for the related stock (Rev_TGT [Related]) and earnings forecasts (Rev_EPS [Related]). Significant positive (or negative) revisions in analysts' target prices and earnings forecasts can lower the probability of further positive (negative) revisions in their estimates in subsequent periods. The results reveal that revisions in analysts' target prices (for the related stock) are positively associated with lagged revisions in the (Rev_ConTGT [Related] in the table), suggesting that a positive (negative) revision in an analyst's target price is significantly induced by other analysts' positive (negative) revisions for the same stock.

In terms of the gradual incorporation of cross-firm information, I find that revisions in analysts' target prices for the related stock are positively associated with lagged revisions in their target prices for the highlighted stock (as shown in Rev_TGT [highlighted] in Table 4). Positive (negative) revisions in analysts' target prices induce positive (negative) revisions in the target prices of the related firms. $Fwd\_Rev\_TGT_{i,t}$ (revisions in analysts' target prices for the related stock) is also positively associated with $Rev\_ConTGT_{j,t}$ (as highlighted in Rev_ConTGT [highlighted]). Positive (negative) revisions in the target prices of related stocks are also induced by positive

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(negative) lagged revisions in other analysts' target prices (highlighted stocks). However, the results also indicate that even after controlling for the influence of revisions in other analysts' target prices, the gradual incorporation of cross-firm information between the same analyst's estimations of target prices can be observed.

The results show a positive lead-lag relationship in target prices across stocks. This indicates that positive (negative) cross-firm information identified by positive (negative) revisions in target prices for the highlighted stock is gradually incorporated into the same analyst's expectation for the corresponding related stock.

[Table 4]

2.3. Information flow in the inverse direction

In this study, I show that revisions in target prices induce revisions in target prices for the related stocks as evidence for the gradual incorporation of cross-firm information in analysts' reports into their estimates for the related stock. However, this lead-lag relation might be attributed to economic links between highlighted and related stocks. In this case, even if the report does not contain any additional information regarding the related stock, such a lead-lag relation could be observed because the performance of the related firm is closely related to that of the highlighted firm. However, if this is the case, we could observe information flow from the related stocks to the highlighted stocks (the information flow would be bidirectional). Hence, the revisions in target prices for the related stocks would induce subsequent revisions in target prices for the highlighted stocks.

In contrast, if the association is attributed to the gradual incorporation of cross-firm information into analysts' estimates regarding the related firms (the information flow is unidirectional), we would not observe the lead-lag relation in the inverse

direction. In other words, the revisions in target prices for the related stocks would not induce subsequent revisions for the highlighted stocks.

Therefore, I analyze the association of revisions in target prices for the related stocks with subsequent revisions in target prices for the highlighted stocks, by estimating the following models;

$$D\_FwdRev\_TGT_{j,t} = \alpha_0 + \beta_1 ABS\_Rev\_TGT_{i,t} + (Controls) \qquad (3)$$

$$FwdRev\_TGT_{j,t} = \alpha_0 + \beta_1 Rev\_TGT_{i,t} + (Controls) \qquad (4)$$

The dependent variable of Equation (3) ($D\_FwdRev\_TGT_{i,t}$) is a dummy variable that takes a value one if there are any revisions in the target prices of the highlighted stock j (by analysts who mention the link) for days $t+2$ through $t+10$. $ABS\_Rev\_TGT_{i,t}$ is the absolute value of the change ratio of analysts' target prices for stock i (the corresponding related stock).

The dependent variable of Equation (4) ($FwdRev\_TGT_{j,t}$) is the revision of the target prices for the highlighted stock j (by analysts mentioning cross-firm information) for days $t+2$ through $t+10$. $Rev\_TGT_{i,t}$ is the change ratio of their estimation of target prices for the related stock i for days t to $t+1$. The other control variables of Equations (3) and (4) are basically the same as those in Equations (1) and (2), respectively. [14]

The result is shown in Table 5. The estimated coefficient of $ABS\_Rev\_TGT_{i,t}$ in Equations (3) (shown in ABS_Rev_TGT [related] in Table 5[a]) is insignificant. This result indicates that $D\_FwdRev\_TGT_{j,t}$ is not significantly associated with

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[14] In Equation (3), we include the absolute value of the abnormal return of the highlighted stock, instead of that of the related stock. In Equation (4), we include the abnormal return of the highlighted stock, instead of that of the related stock.

$ABS\_Rev\_TGT_{i,t}$ supporting the view that revisions in target prices for related stocks do not induce subsequent updates in target prices for the highlighted stocks. The estimated coefficient of $Rev\_TGT_{i,t}$ in Equations (4) (shown in Rev_TGT [related] in Table 5[b]) reveals that revisions in target prices for related stocks are not significantly associated with subsequent revisions in target prices for highlighted stocks. There is little information flow from the related stocks to the highlighted stocks These results support the view that this lead-lag relation in the revisions in target prices is attributed to the gradual incorporation of the cross-firm information into analysts' estimates for the related stocks.

[Table 5]

3. The price impact of the lead-lag relation

3.1. Association with stock returns

The previous section shows that positive (negative) revisions in analysts' target prices for highlighted stocks induce subsequent positive (negative) revisions in their target prices for related stocks. As revisions in target prices have a significant price impact, this lead-lag relationship in target prices could result in return predictability of the related stocks. This means that these positive (negative) revisions for the highlighted stock could be accompanied by subsequent positive (negative) abnormal returns for the related stocks.

To test this prediction, all links from stock j (the highlighted stock) to i (the related stock) are tested by regressing the model with the firm fixed effect:

$$FwdRet_{i,t} = \alpha_0 + \beta_1 Rev\_TGT_{j,t} + (Controls). \tag{5}$$

$FwdRet_{i,t}$ is the abnormal return of related stock i for days t+2 through t+10. Here, an abnormal return is based on the Fama-French three-factor model with the Carhart momentum factor, and $Rev\_TGT_{j,t}$ is analysts' revision in target prices for stock j (the highlighted stock) for days t through t+1. The control variables are the same as those in Equation (2). If the revision in analysts' target prices induced by the lead-lag relationship has a significant price impact, the coefficient of $Rev\_TGT_{j,t}$ should be significantly positive.

Table 6 (the rows Rev_TGT [Related], Rev_EPS [Related], and Rev_REC [Related]) shows that $FwdRet_{i,t}$ (an abnormal return of the related stock for days t+2 through t+10) is not significantly associated with the lagged revision in target prices, EPS forecast, and recommendations (by an analyst who mentions the economic link) for the highlighted stock. Furthermore, the rows "Rev_ConTGT (Related)," "Rev_ConEPS (Related)," and "Rev_ConREC (Related)" reveal that $FwdRet_{i,t}$ is slightly associated with lagged revisions in other analysts' consensus recommendations but not associated with revisions in consensus target prices and EPS forecasts for the related stock. Moreover, the rows "Rev_ConTGT (Highlighted)," "Rev_ConEPS (Highlighted)," and "Rev_ConREC (Highlighted)" show that $FwdRet_{i,t}$ is not significantly associated with revisions in these consensus estimates for the highlighted stocks. As shown in Subsection 2.2., revisions in analysts' target prices for the related stocks ($FwdRev\_TGT_{i,t}$) are significantly associated with lagged revisions in their and other analysts' estimates for the related stocks (specifically, $Rev\_TGT_{i,t}$, $Rev\_EPS_{i,t}$, $Rev\_REC_{i,t}$, $Rev\_ConTGT_{i,t}$, and $Rev\_ConEPS_{i,t}$) and revisions in other analysts' estimates for the highlighted stocks (specifically,

$Rev\_ConTGT_{j,t}$). However, these associations do not result in return predictability as information indicated by these revisions is immediately reflected in stock prices.

By contrast, the results (row "Rev_TGT [Highlighted]") show that the stock returns of the related stocks are significantly associated with the lagged revisions in their target prices for the highlighted stock. This indicates that positive (negative) revisions in target price for the highlighted stocks induce higher (lower) subsequent stock returns for the corresponding related firms. The results suggest that the related stock prices slowly incorporate cross-firm information identified by revisions to the target prices of the highlighted firms. In other words, the gradual propagation (incorporation) of cross-firm information from the same analyst induces return predictability for related stocks.

[Table 6]

3.2. Mediation by the lead-lag relation

The study explores whether return predictability associated with cross-firm information is mediated by the lead-lag relationship in the target prices of analysts who mention the economic link. Specifically, it focuses on the association of revisions in target prices for the related stock ($FwdRev\_TGT_{i,t}$) with lagged revisions in target prices for the highlighted stocks. To assess the mediation effect, the study adds contemporaneous revisions to target prices (revisions to target prices of analysts who mention the link for the related stock for days $t+2$ through $t+10$; $FwdRev\_TGT_{i,t}$) into the regression model (5). Subsequently, it is examined whether the coefficient of $FwdRev\_TGT_{i,t}$ is significantly positive, and whether the indirect effect is statistically significant. Finally, the study explores whether and to what extent the coefficient of

$Rev\_TGT_{j,t}$—the lagged revision in analysts' target price of the highlighted firm—is reduced by adding contemporaneous revisions ($FwdRev\_TGT_{i,t}$). To this end, the following regression model with the firm fixed effect for all links from stock j to stock i $\{i, j, t | D\_Link_{i,j,t} = 1\}$ is estimated.

$$FwdRet_{i,t} = \alpha_0 + \beta_1 Rev\_TGT_{j,t} + \beta_2 FwdRev\_TGT_{i,t} + (Controls) \qquad (6)$$

The other control variables are the same as those in Equation (2). The regression results in Table 7 indicate that the coefficient of $FwdRev\_TGT_{i,t}$ is significantly positive. The comparison in the row labeled "Rev_TGT (highlighted)" reveals that the coefficient of the lagged revisions in target prices for the highlighted stock ($Rev\_TGT_{j,t}$) decreases by approximately 22% (from 0.0436 to 0.0340) when contemporaneous revisions ($FwdRev\_TGT_{i,t}$) are added to the regression model (5). The indirect effect of $Rev\_TGT_{j,t}$ to $FwdRet_{i,t}$ is approximately 0.0098 (0.0269 × 0.3622) and is statistically significant (t=5.17, where the test is based on the Sobel test). [15] These results confirm that the return predictability associated with lagged revisions in target prices for highlighted stocks is partially attributed to the delayed incorporation of cross-firm information into analysts' target prices.

[Table 7]

4. Interaction effect

4.1. The delayed incorporation of cross-firm information

This section analyzes the circumstances in which the delayed incorporation of cross-

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[15] The indirect effect can be obtained by multiplying the coefficient of $Rev\_TGT_{j,t}$ for $FRev\_TGT_{i,t}$ (0.0269) by the coefficient of $FRev\_TGT_{i,t}$ for $Ret_{i,t}$ (0.3622).

firm information and the associated return predictability is pronounced.

First, the study examines whether the delayed incorporation of cross-firm information is relevant to the size of the highlighted and related firms. Lo and MacKinlay (1990) argued that small-cap stocks incorporate information more slowly than large-cap stocks. Thus, because these differences could induce a lead-lag relationship, the slow information transition could be more substantial when the market capitalization of the related firm is smaller than that of the highlighted firm. Hence, the study analyzes whether and how the market capitalization of two economically linked stocks affects the lead-lag relationship. To assess the interaction effect of firm size on the highlighted and related stocks, the interaction of these stocks' market capitalization ($SIZE_{i,t} * ABS\_Rev\_TGT_{j,t}$ and $SIZE_{j,t} * Rev\_TGT_{j,t}$) is added to models (1) and (2), respectively. When the difference in market capitalization between these economically linked firms is larger, there may be a greater delay in incorporating cross-information. Thus, the coefficient of $SIZE_{i,t} * Rev\_TGT_{j,t}$ is negative while $SIZE_{j,t} * Rev\_TGT_{j,t}$ is positive.

Second, the study attempted to examine whether the analyst coverage number of the two economically linked stocks affects the delayed incorporation of cross-firm information. Brennan et al. (1993) showed that market participants' responses are quicker for firms covered by more analysts. To assess the interaction effect of analyst coverage, $N\_Cov_{i,t}$ is defined as the log of the number of analysts covering stock i (related stock) plus one. Subsequently, the interaction of $N\_Cov_{i,t}$ with $ABS\_Rev\_TGT_{j,t}$ ($N\_Cov_{i,t} * ABS\_Rev\_TGT_{j,t}$) and $Rev\_TGT_{j,t}$ ($N\_Cov_{i,t} * Rev\_TGT_{j,t}$) is added to Models (1) and (2). When stock i (the related stock) is

covered by fewer analysts ($N\_Cov_{i,t}$ is smaller), the incorporation of the cross-firm information mentioned in analysts' reports of stock j into their expectations for stock i could be slower. This is because the incorporation of information may be slower for firms with less attention from analysts. Hence, the study analyzes whether the coefficient of interaction with $N\_Cov_{i,t}$ is significantly negative.

To assess the interaction effect of analysts' coverage of highlighted stock j, the $N\_Cov_{j,t}$ interactions are added to Models (1) and (2). When highlighted stock j is covered by more analysts ($N\_Cov_{j,t}$ is larger), the delay in the incorporation of cross-firm information could be more substantial. This is because higher analyst coverage of stock j (the highlighted stock) could result in a larger difference in analyst coverage (the speed of incorporating information) between the highlighted and related firms. Hence, the interactions of analysts' coverage of the highlighted stock ($N\_Cov_{j,t} * Rev\_TGT_{j,t}$) could be positive.

Third, the study investigates whether the number of analysts simultaneously mentioning cross-firm information affects the delayed incorporation of cross-firm information. To this end, $N\_Link_{i,j,t}$ is defined as the number of analysts who mention the economic link between stock j and stock i (the highlighted and related stocks, respectively) on day t. The interaction of $N\_Link_{i,j,t}$ with the absolute value of the revision in target prices for the highlighted stock ($ABS\_Rev\_TGT_{j,t}$) and with the revision in target prices ($Rev\_TGT_{j,t}$) is added to Models (1) and (2), respectively.

Fourth, the quality and quantity of cross-firm information could differ between star and non-star analysts. Therefore, the study analyzes whether the delayed incorporation of cross-firm information differs between the economic links mentioned

by star and non-star analysts. $D\_STAR_{i,j,t}$ is defined as a dummy variable that takes a value of one when the link from stock j to stock i is mentioned by a star analyst on day t. Subsequently, the interaction of $D\_STAR_{i,j,t}$ with $ABS\_Rev\_TGT_{j,t}$ ($D\_STAR_{i,j,t}$ * $ABS\_Rev\_TGT_{j,t}$) and with $Rev\_TGT_{j,t}$ ($D\_STAR_{i,j,t}$ * $Rev\_TGT_{j,t}$) is added to Models (1) and (2), respectively. As star analysts are expected to convey more influential cross-firm information, the coefficients of these interaction terms can be significantly positive.

Finally, the study analyzes whether earnings announcements affect the delayed incorporation of cross-firm information. When analysts issue research reports immediately after earnings announcements, they usually focus on providing supplemental information on the published earnings results. As such information is at least partially known to analysts and investors, a delay in information propagation is unlikely. To assess the influence of earnings announcements on the incorporation of cross-firm information, a dummy variable of an earnings announcement is defined for the related and highlighted stocks ($D\_EA_{i,t}$ and $D\_EA_{j,t}$, respectively). This dummy variable takes a value of one if there is an earnings announcement for stocks i and j from day t-1 through t+1. Subsequently, the interaction of $D\_EA_{j,t}$ (a dummy variable of an earnings announcement for the highlighted stock) with $ABS\_Rev\_TGT_{j,t}$ ($D\_EA_{j,t}$ * $ABS\_Rev\_TGT_{j,t}$) and with $Rev\_TGT_{j,t}$ ($D\_EA_{j,t}$ * $Rev\_TGT_{j,t}$) is examined in Models (1) and (2), respectively. Additionally, the interaction of $D\_EA_{i,t}$ (a dummy variable for an earnings announcement for the related stock) with $ABS\_Rev\_TGT_{j,t}$ and with $Rev\_TGT_{j,t}$ is added to Models (1) and (2), respectively.

Table 8 shows the regression results for the interaction effect of the association

between analysts' target price updates for related stocks and the magnitude of lagged revisions in target prices for the highlighted stocks. Columns "SIZE (Highlighted)," "Analyst Coverage (highlighted)," and "Star Analyst" reveal that (as shown in the row, "Interaction term") the coefficients of $SIZE_{j,t} * ABS\_Rev\_TGT_{j,t}$ (the interaction with the market capitalization of the highlighted firm), $N\_Cov_{j,t} * ABS\_Rev\_TGT_{j,t}$ (the interaction with analyst coverage of the highlighted firm), and $D\_STAR_{i,j,t} * ABS\_Rev\_TGT_{j,t}$ (the interaction with the star analyst status) are significantly positive; column "SIZE (related)" shows that the coefficients of $SIZE_{i,t} * ABS\_Rev\_TGT_{j,t}$ (the interaction with the market capitalization of the related firm) are significantly negative. These results indicate that revisions in their target prices for the highlighted stock induce analysts' target price updates for related stocks. This influence is particularly significant when the related stock is a smaller-cap stock, the highlighted stock is a larger-cap stock covered by more analysts, and star analysts mention the economic link. The direction of the coefficients is consistent with the predictions.

Table 9 shows the regression results for the interaction effect of the positive lead-lag relationship in analysts' target prices across economically linked stocks. The columns "SIZE (Related)," "Analyst coverage (Highlighted)," and "Star Analyst" reveal that the coefficients of $N\_COV_{j,t} * Rev\_TGT_{j,t}$ (the interaction with analyst coverage of the highlighted firm) and $D\_STAR_{i,j,t} * Rev\_TGT_{j,t}$ (the interaction with the star analyst status) are significantly positive; the coefficient of $SIZE_{i,t} * Rev\_TGT_{j,t}$ (the interaction with the market capitalization of the related firm) is significantly negative. A positive lead-lag relationship in target prices can be observed, especially when the related firm is small, more analysts cover the highlighted stock,

and the star analyst mentions the economic link. The directions of the coefficients are consistent with the predictions.

[Tables 7 and 8]

4.2. The return predictability

The study investigates whether the return predictability associated with cross-firm information is affected by several factors. These factors include firm size, analyst coverage, the number of analysts who mention the economic link, whether the link is mentioned by a star analyst, and earnings announcements. The interaction of $SIZE_{i,t}$ and $SIZE_{j,t}$ (log of market capitalizations of the related and highlighted stocks, respectively), $N\_Cov_{i,t}$ and $N\_Cov_{j,t}$ (analyst coverage of the two stocks), $D\_STAR_{i,j,t}$ (the dummy variable of star analysts), $N\_Link_{i,j,t}$ (the number of analysts who mention the link), and $D\_EA_{i,t}$, and $D\_EA_{j,t}$ (the earnings announcement indicators of the related and highlighted stocks) is included in Model (5).

Table 10 presents the regression results. The statistical significance of the regression result is weaker than for the positive lead-lag relationship in analysts' target prices (shown in Table 9). In Table 10, columns "Analyst coverage (Highlighted)" and "Star Analyst" show that the coefficients of $N\_Cov_{j,t} * Rev\_TGT_{j,t}$ (the interaction with analyst coverage of the highlighted firm) and $D\_STAR_{i,j,t} * Rev\_TGT_{j,t}$ (the interaction with the star analyst status) are significantly positive. Consistent with the study's predictions, return predictability induced by cross-firm information is pronounced when more analysts cover the highlighted stock and when star analysts mention the economic link.

The significant influence of analyst coverage is consistent with Hameed et al.

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(2015), who show information propagation from firms with high analyst coverage to their industry peers with low analyst coverage.[16] As discussed in Subsection 4.1., the positive lead-lag relationship in analysts' target prices is also pronounced under these conditions. The interaction effect among star analysts could indicate that higher-quality cross-firm information strengthens its influence, which could result in more significant return predictability. Hence, the results regarding the interaction effect are consistent with information diffusion theory.

[Table 10]

4.3 The lead-lag relationship for the same analyst

This study analyzes the gradual information propagation within the same analyst and across different analysts, provided they are both employed by the same brokerage house. This is because cross-firm information will likely be shared between analysts from the same brokerage house. Approximately 18% of the samples (economic links) are among different analysts.

However, in such s case, the speed of the cross-firm information's gradual incorporation (information sharing) differs. To test this possibility, the study examines the difference in the speed between the two cases. To this end, the study separates economic links based on whether the analyst who mentions the economic link covers related stocks. $D\_Link\_Diff_{i,j,t}$ is denoted, which takes a value of one if the two economically linked stocks (stocks i and j) are covered by different analysts (the analyst who mentions the economic link only covers the highlighted stock j). Subsequently, the interaction of $D\_Link\_Diff_{i,j,t}$ with

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[16] Hameed et al. (2015) demonstrated that revisions in consensus earnings forecasts for highly followed stocks have a significant price impact on their industry peers. This result could be considered indirect evidence regarding the information diffusion across stocks.

$ABS\_Rev\_TGT_{j,t}$ $(D\_Link\_Diff_{i,j,t} * ABS\_Rev\_TGT_{j,t})$ is added to regression model

(1) to test whether the influence of cross-firm information on updating target prices

differs between the two cases. Furthermore, the interaction of $D\_Link\_Diff_{i,j,t}$ with

$Rev\_TGT_{j,t}$ is added in regression models (2) and (5) to analyze their influence on the

positive lead-lag relationship in analysts' target prices and the impact on stock prices.

If the coefficients of the interaction terms are significantly positive (negative), the

lead-lag relationship in the target prices and its price impact is stronger (weaker) if the

analyst who mentions the economic link only covers the highlighted stock.

The results in Table 11 indicate that the coefficients of $D\_Link\_Diff_{i,j,t} *$

$ABS\_Rev\_TGT_{j,t}$ and $D\_Link\_Diff_{i,j,t} * Rev\_TGT_{j,t}$ are not significantly associated

with $D\_FwdRev\_TGT_{i,t}$ or $FwdRev\_TGT_{i,t}$, respectively. These insignificant

interaction effects indicate that the lead-lag relationship in analysts' target prices is

substantial, even if the analyst who mentions the economic link only covers the

highlighted stock. Furthermore, $D\_Link\_Diff_{i,j,t} * Rev\_TGT_{j,t}$ is not significantly

associated with $FwdRet_{i,t}$, indicating that return predictability associated with cross-

firm information can be observed in such cases.

[Table 11]

5. Conclusion

This study empirically analyzes the informational value of cross-firm information in

analysts' reports. The related stocks mentioned in analyst reports are utilized to

identify cross-firm information because analysts carefully identify these stocks

through detailed fundamental analyses. Moreover, to probe the gradual incorporation

of cross-firm information into analysts' and investors' estimations about the related stocks, the study first analyzes whether analysts who mention related firms incorporate cross-firm information into their estimates of related firms with a lag. Subsequently, it is investigated whether this delayed incorporation results in the return predictability of economically linked (related) stocks.

The study finds that when analysts revise their target prices (for the highlighted stocks) while mentioning their related stocks, they revise their estimation about target prices for those related stocks with a 2-10 day lag. In contrast, revisions in their target prices for the related stocks do not induce subsequent revisions in tager prices for the highlighted stocks. Specifically, positive (negative) revisions in the target prices of highlighted firms induce subsequent positive (negative) revisions in their target prices of related firms. As revisions in target prices for the highlighted firms could reflect the significance of cross-firm information, the results can be considered evidence of the gradual incorporation of cross-firm information into expectations about the related firm.

Additionally, it is observed that positive (negative) revisions in target prices induce higher (lower) subsequent returns on related stocks. The mediation analysis reveals that this return predictability can be attributed to the delayed incorporation of cross-firm information. In summary, the findings show that cross-firm information in analyst reports is gradually being incorporated into estimates and stock prices of related firms.

Although analysts provide information about highlighted stocks and related stocks, prior studies have rarely focused on the latter category. This study provides evidence for the informational value of the latter category. The study also provides

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robust evidence of slow information diffusion across stocks. Previous studies have analyzed information diffusion without considering economic links or specifying the path of the gradual incorporation of information. By contrast, this study utilizes the economic links identified by professional analysts through fundamental analysis. Thus, the evidence of slow information propagation through a more convincing link provides stronger evidence of slow information diffusion across stocks.

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Table 1

Descriptive statistics and correlations: variables in the regression model (1)

Panels (a) and (b) report the descriptive statistics and correlations for regression model (1). The "Mean" row shows the average values. "Std. Dev." indicates standard deviation. "Median" shows the median values. "1st," "5th," "25th," "75th," "95th," and "99th" show 1st, 5th, 25th, 75th, 95th, and 99th percentiles, respectively. "Ratio(>0)," and "Ratio(=0)" show the ratio that the value is greater than zero, zero, respectively. Panel (b) shows the Pearson correlations between variables.

(a) Descriptive statistics

	Mean	Std. Dev.	Median	1st	5th	25th	75th	95th	99th	Pr(>0)	Pr(=0)
D_Fwd_Rev_EPS(Related)	0.246	0.431	0.000	0.000	0.000	0.000	0.000	1.000	1.000	0.246	0.754
D_Fwd_Rev_TGT(Related)	0.152	0.359	0.000	0.000	0.000	0.000	0.000	1.000	1.000	0.152	0.848
ABS_Rev_EPS(Related)	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.004	0.080	0.920
ABS_Rev_TGT(Related)	0.003	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.108	0.047	0.953
ABS_Rev_REC(Related)	0.003	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.996
ABS_Rev_EPS (Highlighted)	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.004	0.013	0.213	0.787
ABS_Rev_TGT (Highlighted)	0.011	0.036	0.000	0.000	0.000	0.000	0.000	0.094	0.207	0.132	0.868
ABS_Rev_REC (Highlighted)	0.013	0.114	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.013	0.987
ABS_Rev_ConEPS(Related)	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.005	0.386	0.614
ABS_Rev_ConTGT(Related)	0.004	0.010	0.000	0.000	0.000	0.000	0.002	0.023	0.060	0.306	0.694
ABS_Rev_ConREC(Related)	0.005	0.014	0.000	0.000	0.000	0.000	0.000	0.040	0.069	0.150	0.850
ABS_Rev_ConEPS (Highlighted)	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.004	0.011	0.555	0.445
ABS_Rev_ConTGT (Highlighted)	0.010	0.023	0.000	0.000	0.000	0.000	0.009	0.064	0.121	0.507	0.493
ABS_Rev_ConREC (Highlighted)	0.009	0.021	0.000	0.000	0.000	0.000	0.000	0.059	0.102	0.235	0.765
REC(Related)	0.447	0.617	1.000	-1.000	-1.000	0.000	1.000	1.000	1.000	-	-
ConREC(Related)	0.471	0.277	0.500	-0.250	0.000	0.289	0.676	0.875	1.000	-	-
ABS_PRet(Related)	0.066	0.082	0.045	0.001	0.004	0.021	0.085	0.194	0.367	-	-
SIZE(Related)	9.232	1.905	9.244	4.765	6.143	7.881	10.576	12.311	13.340	-	-
BP(Related)	0.410	0.287	0.336	0.017	0.056	0.184	0.575	1.000	1.000	-	-
ABS_SUE(Related)	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.001	0.007	0.087	0.913
ABS_SUE(Highlighted)	0.002	0.072	0.000	0.000	0.000	0.000	0.000	0.004	0.016	0.302	0.698

(b) Correlation

	ABS_Rev_TGT(Related)	ABS_Rev_EPS(Related)	ABS_Rev_TGT(Related)	ABS_Rev_REC(Related)	REC(Related)	ABS_Rev_EPS (Highlighted)	ABS_Rev_TGT (Highlighted)	ABS_Rev_REC (Highlighted)	SIZE(Related)	BP(Related)	ABS_Rev_ConEPS (Related)	ABS_Rev_ConTGT(Related)	ABS_Rev_ConREC(Related)	ConREC(Related)	ABS_Rev_ConEPS (Highlighted)	ABS_Rev_ConTGT (Highlighted)	ABS_PRet(Related)
ABS_Rev_EPS(Related)	0.469	0.1	-0.006	0.087	0.047	0.015	-0.051	0.082	0.519	0.371	0.149	-0.017	0.075	0.039	0.016	0.154	0.012
ABS_Rev_TGT(Related)		0.215	-0.009	0.045	0.1	0.076	-0.022	0.003	0.259	0.416	0.146	-0.004	0.031	0.047	0.012	0.066	0
ABS_Rev_REC(Related)			-0.018	0.009	0.033	0.07	-0.009	0.006	0.041	0.062	0.093	-0.016	0.004	0.008	0.01	0.013	0
REC(Related)				-0.007	-0.005	-0.007	0.145	-0.114	-0.026	-0.015	-0.017	0.521	-0.009	-0.001	-0.022	-0.009	-0.006
ABS_Rev_EPS (Highlighted)					0.428	0.105	-0.043	0.033	0.076	0.035	0.009	0.008	0.628	0.375	0.048	0.026	0.041
ABS_Rev_TGT (Highlighted)						0.286	-0.023	-0.046	0.018	0.035	0.007	0.025	0.287	0.517	0.02	0.006	0.006
ABS_Rev_REC (Highlighted)							-0.007	-0.009	-0.002	0.005	0.008	0.007	0.034	0.051	-0.009	-0.004	-0.001
SIZE(Related)								-0.24	-0.112	-0.065	-0.009	0.169	-0.075	-0.058	-0.161	-0.052	-0.028
BP(Related)									0.168	0.035	0.034	-0.19	0.081	-0.035	0.064	0.054	0.028
ABS_Rev_ConEPS(Related)										0.495	0.231	-0.043	0.134	0.053	0.107	0.205	0.017
ABS_Rev_ConTGT(Related)											0.362	-0.022	0.055	0.082	0.107	0.106	0.002
ABS_Rev_ConREC(Related)												-0.048	0.017	0.026	0.042	0.046	-0.003
ConREC(Related)													-0.006	0.012	-0.014	-0.019	-0.013
ABS_Rev_ConEPS (Highlighted)														0.485	0.079	0.043	0.067
ABS_Rev_ConTGT (Highlighted)															0.06	0.02	0.022
ABS_PRet(Related)																0.036	0.023
ABS_SUE(Related)																	0.009

Table 2

Influence on updates of analysts' estimates.

The table shows the estimation results of Equation (1): $D\_FwdRev_{i,t} = \alpha_0 + \beta_1 ABS\_Rev\_TGT_{j,t} + \beta_2 ABS\_Rev\_EPS_{j,t} + (Controls)$, for all economic links from stock j to stock i. The rows of "ABS_Rev_EPS (Highlighted)", "ABS_Rev_TGT (Highlighted)", "ABS_Rev_REC (Highlighted)" indicates coefficients of $ABS\_Rev\_EPS_{j,t}$, $ABS\_Rev\_TGT_{j,t}$, and $ABS\_Rev\_REC_{j,t}$, respectively. Similarly, the rows of "ABS_Rev_ConEPS (Highlighted)", "ABS_Rev_ConTGT (Highlighted)", "ABS_Rev_ConREC (Highlighted)" indicates coefficients of $ABS\_Rev\_ConEPS_{j,t}$, $ABS\_Rev\_ConTGT_{j,t}$, and $ABS\_Rev\_ConREC_{j,t}$, respectively; the rows of "REC (Highlighted)", "ConREC (Highlighted)", and "ABS_SUE(Highlighted)", indicate that of $REC_{i,t}$, $ConREC_{i,t}$, and $ABS\_SUE_{j,t}$, respectively. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	D_Fwd_Rev_TGT(Related)		D_Fwd_Rev_EPS(Related)	
ABS_Rev_EPS (Highlighted)	1.9560	(0.34)	12.1000 *	(2.53)
ABS_Rev_TGT (Highlighted)	1.7890 ***	(6.22)	0.4605	(1.82)
ABS_Rev_REC (Highlighted)	-0.2355 **	(2.74)	-0.2404 **	(3.28)
ABS_Rev_EPS(Related)	-306.3000 ***	(12.73)	-213.2000 ***	(12.31)
ABS_Rev_TGT(Related)	-8.8640 ***	(9.02)	-6.5160 ***	(8.55)
ABS_Rev_REC(Related)	-0.4612	(1.89)	-0.0076	(0.05)
ABS_Rev_ConEPS(Related)	37.8000 *	(2.24)	91.4400 ***	(6.48)
ABS_Rev_ConTGT(Related)	11.7100 ***	(10.32)	2.1930 *	(2.15)
ABS_Rev_ConREC(Related)	-1.4480 *	(2.06)	-1.8370 **	(3.08)
ABS_Rev_ConEPS (Highlighted)	-4.6080	(0.69)	4.5390	(0.81)
ABS_Rev_ConTGT (Highlighted)	1.9190 ***	(3.91)	1.0020 *	(2.34)
ABS_Rev_ConREC (Highlighted)	0.5142	(1.16)	0.3991	(1.06)
ConREC(Related)	0.0915 *	(2.27)	0.1629 ***	(4.81)
REC(Related)	-0.0032	(0.19)	0.0245	(1.69)
REC (Highlighted)	-0.0222	(1.29)	-0.0291 *	(2.01)
ConREC (Highlighted)	-0.1080 **	(2.73)	-0.0075	(0.23)
ABS_PRet(Related)	0.6512 ***	(5.50)	-0.1852	(1.71)
SIZE(Related)	-0.0121 *	(2.31)	0.0249 ***	(5.66)
BP(Related)	-0.0767 *	(2.27)	0.3758 ***	(13.55)
ABS_SUE(Related)	4.9440 **	(2.98)	5.1150 **	(3.02)
ABS_SUE(Highlighted)	-0.1606	(0.72)	-0.2482	(1.22)

Table 3

Descriptive statistics and correlations: variables in the regression model (2) and (5)

Panels (a) and (b) report the descriptive statistics and correlations of regression models (2) and (5), respectively. The "Mean" row shows the average values. "Std" shows the standard deviation. "Median" shows the median values. "1st," "5th," "25th," "75th," "95th," and "99th" show 1st, 5th, 25th, 75th, 95th, and 99th percentiles, respectively. "Ratio(>0)," and "Ratio(<0)" show the ratio that the value is greater and less than zero, respectively. Panel (b) shows the Pearson correlations between variables.

(a) Descriptive statistics

	Mean	Std. Dev.	Median	1st	5th	25th	75th	95th	99th	Pr(>0)	Pr(<0)
Fwd_Ret(Related)	0.003	0.096	0.002	-0.258	-0.131	-0.039	0.043	0.141	0.289	0.515	0.485
Fwd_Rev_TGT(Related)	0.004	0.041	0.000	-0.162	-0.017	0.000	0.000	0.070	0.221	0.097	0.055
Rev_EPS(Related)	0.000	0.001	0.000	-0.004	0.000	0.000	0.000	0.000	0.004	0.044	0.036
Rev_TGT(Related)	0.002	0.015	0.000	-0.047	0.000	0.000	0.000	0.000	0.108	0.032	0.015
Rev_REC(Related)	0.000	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002
Rev_EPS (Highlighted)	0.000	0.002	0.000	-0.013	-0.001	0.000	0.000	0.002	0.011	0.126	0.087
Rev_TGT (Highlighted)	0.004	0.038	0.000	-0.154	0.000	0.000	0.000	0.062	0.207	0.089	0.043
Rev_REC (Highlighted)	0.000	0.115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.007
Rev_ConEPS(Related)	0.000	0.001	0.000	-0.005	0.000	0.000	0.000	0.000	0.003	0.197	0.190
Rev_ConTGT(Related)	0.001	0.010	0.000	-0.040	-0.008	0.000	0.000	0.015	0.060	0.191	0.115
Rev_ConREC(Related)	0.000	0.015	0.000	-0.069	-0.020	0.000	0.000	0.019	0.065	0.074	0.075
Rev_ConEPS (Highlighted)	0.000	0.002	0.000	-0.011	-0.002	0.000	0.000	0.002	0.008	0.299	0.256
Rev_ConTGT (Highlighted)	0.003	0.025	0.000	-0.095	-0.021	0.000	0.003	0.044	0.121	0.324	0.183
Rev_ConREC (Highlighted)	0.000	0.023	0.000	-0.102	-0.036	0.000	0.000	0.036	0.088	0.118	0.117
REC(Related)	0.447	0.617	1.000	-1.000	-1.000	0.000	1.000	1.000	1.000	0.527	0.074
ConREC(Related)	0.471	0.277	0.500	-0.250	0.000	0.289	0.676	0.875	1.000	0.932	0.045
REC (Highlighted)	0.505	0.608	1.000	-1.000	-1.000	0.000	1.000	1.000	1.000	0.578	0.067
ConREC (Highlighted)	0.507	0.280	0.534	-0.233	0.000	0.333	0.712	0.938	1.000	0.945	0.040
SUE(Related)	0.000	0.010	0.000	-0.002	0.000	0.000	0.000	0.000	0.004	0.062	0.025
SUE(Highlighted)	-0.001	0.072	0.000	-0.008	-0.001	0.000	0.000	0.003	0.008	0.225	0.077

(b) Correlation

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	ABS_Rev_TGT(Related)	ABS_Rev_REC(Related)	REC(Related)	ABS_Rev_EPS (Highlighted)	ABS_Rev_TGT (Highlighted)	ABS_Rev_REC (Highlighted)	SIZE(Related)	BP(Related)	ABS_Rev_ConEPS(Related)	ABS_Rev_ConTGT(Related)	ABS_Rev_ConREC(Related)	ConREC(Related)	ABS_Rev_ConEPS (Highlighted)	ABS_Rev_ConTGT (Highlighted)	ABS_PRet(Related)	ABS_SUE(Related)	SUE(Highlighted)
ABS_Rev_EPS(Related)	0.469	0.1	-0.006	0.087	0.047	0.015	-0.051	0.082	0.519	0.371	0.149	-0.017	0.075	0.039	0.016	0.154	0.012
ABS_Rev_TGT(Related)		0.215	-0.009	0.045	0.1	0.076	-0.022	0.003	0.259	0.416	0.146	-0.004	0.031	0.047	0.012	0.066	0
ABS_Rev_REC(Related)			-0.018	0.009	0.033	0.07	-0.009	0.006	0.041	0.062	0.093	-0.016	0.004	0.008	0.01	0.013	0
REC(Related)				-0.007	-0.005	-0.007	0.145	-0.114	-0.026	-0.015	-0.017	0.521	-0.009	-0.001	-0.022	-0.009	-0.006
ABS_Rev_EPS (Highlighted)					0.428	0.105	-0.043	0.033	0.076	0.035	0.009	0.008	0.628	0.375	0.048	0.026	0.041
ABS_Rev_TGT (Highlighted)						0.286	-0.023	-0.046	0.018	0.035	0.007	0.025	0.287	0.517	0.02	0.006	0.006
ABS_Rev_REC (Highlighted)							-0.007	-0.009	-0.002	0.005	0.008	0.007	0.034	0.051	-0.009	-0.004	-0.001
SIZE(Related)								-0.24	-0.112	-0.065	-0.009	0.169	-0.075	-0.058	-0.161	-0.052	-0.028
BP(Related)									0.168	0.035	0.034	-0.19	0.081	-0.035	0.064	0.054	0.028
ABS_Rev_ConEPS(Related)										0.495	0.231	-0.043	0.134	0.053	0.107	0.205	0.017
ABS_Rev_ConTGT(Related)											0.362	-0.022	0.055	0.082	0.107	0.106	0.002
ABS_Rev_ConREC(Related)												-0.048	0.017	0.026	0.042	0.046	-0.003
ConREC(Related)													-0.006	0.012	-0.014	-0.019	-0.013
ABS_Rev_ConEPS (Highlighted)														0.485	0.079	0.043	0.067
ABS_Rev_ConTGT (Highlighted)															0.06	0.02	0.022
ABS_PRet(Related)																0.036	0.023
ABS_SUE(Related)																	0.009

Table 4

Direction of the lead-lag relationship

The table shows the estimation results of Equation (2): $FwdRev\_TGT_{i,t} = \alpha_0 + \beta_1 Rev\_TGT_{j,t} + (Controls)$, for all the economic links from stock j to stock i. The rows of "Rev_EPS (Highlighted)", "Rev_TGT (Highlighted)", and "Rev_REC (Highlighted)" indicate coefficients of $Rev\_EPS_{j,t}$, $Rev\_TGT_{j,t}$, and $Rev\_REC_{k,j,t}$, respectively. Similarly, the rows of "Rev_ConEPS (Highlighted)", "Rev_ConTGT (Highlighted)", and "Rev_ConREC (Highlighted)" indicates coefficients of $Rev\_ConEPS_{j,t}$, $Rev\_ConTGT_{j,t}$, and $Rev\_ConREC_{j,t}$, respectively; the row "SUE(Highlighted)" indicates the coefficient of $SUE_{k,j,t}$. Standard errors are estimated using the cluster control at the firm. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	Fwd_Rev_TGT(Related)	
Rev_EPS (Highlighted)	-0.0870	(1.06)
Rev_TGT (Highlighted)	0.0269 ***	(5.25)
Rev_REC (Highlighted)	-0.0006	(0.58)
Rev_EPS(Related)	-0.9046 ***	(4.46)
Rev_TGT(Related)	-0.1467 ***	(15.05)
Rev_REC(Related)	0.0048 ***	(3.30)
Rev_ConEPS(Related)	1.2542 ***	(4.24)
Rev_ConTGT(Related)	0.3548 ***	(15.94)
Rev_ConREC(Related)	-0.0116	(1.20)
Rev_ConEPS (Highlighted)	0.1218	(1.26)
Rev_ConTGT (Highlighted)	0.0682 ***	(7.62)
Rev_ConREC (Highlighted)	-0.0091	(1.41)
REC(Related)	-0.0014 ***	(3.70)
ConREC(Related)	-0.0042 ***	(3.65)
REC (Highlighted)	0.0007 *	(2.51)
ConREC (Highlighted)	-0.0016 *	(2.27)
PRet(Related)	0.0493 ***	(21.03)
SIZE(Related)	0.0029 ***	(5.92)
BP(Related)	0.0042 *	(2.28)
SUE(Related)	0.1428 *	(2.04)
SUE(Highlighted)	-0.0024	(1.03)
Controls for Firm Effects	Yes	
Adjusted R2	3.26%	

Table 5

Information flow in the inverse direction

The penal (a) and (b) show the estimation results of Equation (3) and (4), respectively. Standard errors are estimated using the cluster control at the firm. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

(a) Influence on updates of analysts' estimates

	D_Fwd_Rev_TGT(Highlighted)	
ABS_Rev_EPS (Highlighted)	-112.2000 ***	(11.01)
ABS_Rev_TGT (Highlighted)	-7.8860 ***	(14.14)
ABS_Rev_REC (Highlighted)	-0.2029	(1.32)
ABS_Rev_EPS(Related)	-37.1000	(1.62)
ABS_Rev_TGT(Related)	-0.5918	(0.61)
ABS_Rev_REC(Related)	0.0191	(0.09)
ABS_Rev_ConEPS(Related)	71.1000 ***	(3.54)
ABS_Rev_ConTGT(Related)	4.9030 ***	(3.50)
ABS_Rev_ConREC(Related)	-0.8813	(1.03)
ABS_Rev_ConEPS (Highlighted	41.5500 ***	(4.86)
ABS_Rev_ConTGT (Highlighted	3.4480 ***	(5.11)
ABS_Rev_ConREC (Highlighted	-1.1050	(1.85)
ConREC(Related)	-0.0473	(0.94)
REC(Related)	0.0457 *	(2.12)
REC (Highlighted)	-0.0231	(1.07)
ConREC (Highlighted)	0.1010 *	(2.03)
ABS_PRet(Highlighted)	-0.4194 *	(2.16)
SIZE(Related)	-0.0139 *	(2.14)
BP(Related)	-0.3481 ***	(8.11)
ABS_SUE(Related)	0.1114	(0.05)
ABS_SUE(Highlighted)	-0.7771	(1.06)

(b) Direction of the lead-lag relationship

	Fwd_Rev_TGT(Highlighted)	
Rev_EPS (Highlighted)	-0.1514 ***	(4.00)
Rev_TGT (Highlighted)	-0.0319 ***	(15.01)
Rev_REC (Highlighted)	0.0022 ***	(6.47)
Rev_EPS(Related)	-0.1455	(0.95)
Rev_TGT(Related)	0.0083	(1.26)
Rev_REC(Related)	-0.0017	(1.33)
Rev_ConEPS(Related)	0.1267	(0.81)
Rev_ConTGT(Related)	0.0645 ***	(6.61)
Rev_ConREC(Related)	-0.0119 *	(2.06)
Rev_ConEPS (Highlighted)	0.1762 **	(3.00)
Rev_ConTGT (Highlighted)	0.0886 ***	(16.79)
Rev_ConREC (Highlighted)	0.0012	(0.39)
REC(Related)	0.0004 *	(2.00)
ConREC(Related)	-0.0023 ***	(3.70)
REC (Highlighted)	-0.0004 *	(2.26)
ConREC (Highlighted)	0.0015 ***	(3.42)
PRet(Highlighted)	0.0161 ***	(11.95)
SIZE(Related)	0.0012 ***	(5.12)
BP(Related)	0.0043 ***	(5.23)
SUE(Related)	0.0187	(0.95)
SUE(Highlighted)	-0.0020 ***	(4.71)
Controls for Firm Effects	Yes	
Adjusted R2	1.27%	

Table 6

The price impact of the lead-lag relationship

The table shows the estimation results of Equation (5): $FwdRet_{i,t} = \alpha_0 + \beta_1 Rev\_TGT_{j,t} + (Controls)$, for all the economic links from stock j to stock i. Standard errors are estimated using the cluster control at the firm. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	Fwd_Ret(Related)	
Rev_EPS (Highlighted)	-0.6276 **	(3.28)
Rev_TGT (Highlighted)	0.0436 ***	(4.22)
Rev_REC (Highlighted)	-0.0025	(1.09)
Rev_EPS(Related)	-0.0521	(0.07)
Rev_TGT(Related)	0.0393	(1.52)
Rev_REC(Related)	0.0032	(0.68)
Rev_ConEPS(Related)	-0.4346	(0.55)
Rev_ConTGT(Related)	-0.0307	(0.67)
Rev_ConREC(Related)	0.0632 **	(2.87)
Rev_ConEPS (Highlighted)	-0.0690	(0.26)
Rev_ConTGT (Highlighted)	0.0256	(1.48)
Rev_ConREC (Highlighted)	-0.0110	(0.84)
REC(Related)	-0.0022 **	(2.83)
ConREC(Related)	0.0020	(0.64)
REC (Highlighted)	0.0004	(0.66)
ConREC (Highlighted)	0.0031	(1.90)
PRet(Related)	-0.0059	(0.90)
SIZE(Related)	-0.0165 ***	(10.18)
BP(Related)	0.0268 ***	(4.89)
SUE(Related)	0.2122	(0.75)
SUE(Highlighted)	0.0249 ***	(4.72)
Controls for Firm Effects	Yes	
Adjusted R2	1.50%	

Table 7

Mediation effects

The table shows the estimation results of Equation (6): $FwdRet_{i,t} = \alpha_0 + \beta_1 Rev\_TGT_{j,t} + \beta_2 FwdRev\_TGT_{i,t} + (Controls)$ for all economic links from stock j to stock i. Standard errors are estimated using the cluster control at the firm. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	Fwd_Ret(Related)	
Fwd_Rev_TGT(Related)	0.3622 ***	(25.11)
Rev_TGT (Highlighted)	0.0340 ***	(3.38)
Rev_EPS (Highlighted)	-0.6487 ***	(3.43)
Rev_REC (Highlighted)	-0.0020	(0.90)
Rev_EPS(Related)	0.3485	(0.48)
Rev_TGT(Related)	0.0913 ***	(3.49)
Rev_REC(Related)	0.0018	(0.39)
Rev_ConEPS(Related)	-0.9052	(1.13)
Rev_ConTGT(Related)	-0.1554 ***	(3.40)
Rev_ConREC(Related)	0.0661 **	(2.99)
Rev_ConEPS (Highlighted)	-0.1048	(0.39)
Rev_ConTGT (Highlighted)	0.0013	(0.07)
Rev_ConREC (Highlighted)	-0.0075	(0.58)
REC(Related)	-0.0016 *	(2.14)
ConREC(Related)	0.0027	(0.89)
REC (Highlighted)	0.0002	(0.36)
ConREC (Highlighted)	0.0038 *	(2.34)
PRet(Related)	-0.0234 ***	(3.70)
SIZE(Related)	-0.0178 ***	(10.81)
BP(Related)	0.0254 ***	(4.70)
SUE(Related)	0.1609	(0.61)
SUE(Highlighted)	0.0258 ***	(4.83)
Controls for Firm Effects	Yes	
Adjusted R2	4.28%	

Table 8

Interaction effect: Updates of analysts' estimates

The table shows the estimation results of Equation $D\_FwdRev_{i,t} = \alpha_0 + \beta_1(Interaction\ term) + \gamma_1 ABS\_Rev\_TGT_{j,t} + \gamma_2 ABS\_Rev\_EPS_{j,t} + (Controls)$ for all economic links from stock j to stock i. The columns of "SIZE (Highlighted)", "SIZE (Related)," "Analyst Coverage (Highlighted)", "Analyst Coverage (Related)," "Number of Reports," "Star Analyst, " Earnings Announcement (Related)," and "Earnings Announcement (Highlighted)" are regression results regarding the interaction with the firm sizes of stock j and stock i, the number of analyst following for stock j and stock i, the number of the report that mentions the link, whether the link is mentioned by star analysts, and whether there is an earnings announcement for stock j and stock i, respectively. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	SIZE (Highlighted)		SIZE(Related)		Analyst Coverage (Highlighted)		Analyst Coverage (Related)		Number of Reports		Star Analyst		Earnings Annoucement (Related)		Earnings Annoucement (Highlighted)	
Interaction term	0.71 ***	(5.70)	-0.42 ***	(3.58)	0.11 ***	(4.69)	-0.05	(1.96)	-0.05 *	(1.98)	1.45 ***	(3.45)	-0.80	(1.12)	-0.82	(1.59)
ABS_Rev_EPS(Related)	-305.10 ***	(12.68)	-307.40 ***	(12.78)	-306.50 ***	(12.73)	-306.40 ***	(12.74)	-307.50 ***	(12.77)	-304.80 ***	(12.68)	-303.80 ***	(12.60)	-305.30 ***	(12.70)
ABS_Rev_TGT(Related)	-9.07 ***	(9.23)	-8.87 ***	(9.02)	-8.96 ***	(9.11)	-8.88 ***	(9.03)	-8.81 ***	(8.95)	-8.98 ***	(9.13)	-8.80 ***	(8.94)	-8.93 ***	(9.08)
ABS_Rev_REC(Related)	-0.46	(1.88)	-0.46	(1.89)	-0.46	(1.87)	-0.46	(1.90)	-0.47	(1.91)	-0.46	(1.89)	-0.47	(1.91)	-0.46	(1.91)
ABS_Rev_EPS (Highlighted)	4.28	(0.75)	1.53	(0.27)	3.09	(0.54)	1.78	(0.31)	1.98	(0.35)	1.52	(0.27)	2.11	(0.37)	1.97	(0.34)
ABS_Rev_TGT (Highlighted)	-4.68 ***	(3.96)	5.69 ***	(5.07)	-0.03	(0.07)	2.62 ***	(5.15)	2.24 ***	(6.14)	0.99 **	(2.66)	1.87 ***	(6.32)	2.36 ***	(5.18)
ABS_Rev_REC (Highlighted)	-0.23 **	(2.65)	-0.23 **	(2.71)	-0.22 *	(2.53)	-0.24 **	(2.75)	-0.23 **	(2.68)	-0.23 **	(2.68)	-0.24 **	(2.77)	-0.27 **	(3.04)
ABS_Rev_ConEPS(Related)	35.84 *	(2.12)	38.51 *	(2.28)	36.24 *	(2.15)	38.32 *	(2.27)	37.91 *	(2.25)	37.07 *	(2.20)	38.37 *	(2.27)	37.58 *	(2.23)
ABS_Rev_ConTGT(Related)	11.76 ***	(10.37)	11.68 ***	(10.29)	11.75 ***	(10.35)	11.69 ***	(10.30)	11.68 ***	(10.29)	11.78 ***	(10.38)	11.85 ***	(10.38)	11.70 ***	(10.31)
ABS_Rev_ConREC(Related)	-1.43 *	(2.04)	-1.43 *	(2.04)	-1.44 *	(2.05)	-1.44 *	(2.05)	-1.45 *	(2.06)	-1.44 *	(2.05)	-1.46 *	(2.08)	-1.45 *	(2.07)
ABS_Rev_ConEPS (Highlighted)	-2.06	(0.31)	-4.80	(0.72)	-3.17	(0.48)	-4.66	(0.70)	-4.52	(0.68)	-4.99	(0.75)	-4.69	(0.71)	-4.27	(0.64)
ABS_Rev_ConTGT (Highlighted)	1.96 ***	(4.00)	1.88 ***	(3.81)	1.86 ***	(3.78)	1.93 ***	(3.93)	1.95 ***	(3.97)	2.05 ***	(4.16)	1.93 ***	(3.92)	2.12 ***	(4.19)
ABS_Rev_ConREC (Highlighted)	0.45	(1.02)	0.52	(1.18)	0.50	(1.12)	0.51	(1.16)	0.48	(1.07)	0.49	(1.09)	0.51	(1.15)	0.51	(1.15)
ConREC(Related)	0.10 *	(2.36)	0.09 *	(2.23)	0.10 *	(2.36)	0.09 *	(2.27)	0.09 *	(2.28)	0.09 *	(2.28)	0.09 *	(2.28)	0.09 *	(2.28)
REC(Related)	-0.00	(0.16)	-0.00	(0.14)	-0.00	(0.23)	-0.00	(0.14)	-0.00	(0.23)	-0.00	(0.12)	-0.00	(0.19)	-0.00	(0.18)
REC (Highlighted)	-0.02	(1.38)	-0.02	(1.31)	-0.02	(1.38)	-0.02	(1.28)	-0.02	(1.24)	-0.02	(1.23)	-0.02	(1.30)	-0.02	(1.31)
ConREC (Highlighted)	-0.12 **	(2.96)	-0.11 **	(2.71)	-0.11 **	(2.90)	-0.11 **	(2.74)	-0.11 **	(2.69)	-0.11 **	(2.78)	-0.11 **	(2.72)	-0.11 **	(2.68)
ABS_PRet(Related)	0.65 ***	(5.52)	0.65 ***	(5.49)	0.65 ***	(5.48)	0.65 ***	(5.52)	0.65 ***	(5.47)	0.65 ***	(5.52)	0.65 ***	(5.46)	0.64 ***	(5.43)
SIZE(Related)	-0.02 **	(2.88)	-0.01	(1.08)	-0.01 **	(2.63)	-0.01	(1.82)	-0.01 *	(2.38)	-0.01 *	(2.41)	-0.01 *	(2.31)	-0.01 *	(2.34)
BP(Related)	-0.08 *	(2.33)	-0.08 *	(2.26)	-0.08 *	(2.31)	-0.08 *	(2.26)	-0.08 *	(2.27)	-0.08 *	(2.36)	-0.08 *	(2.28)	-0.08 *	(2.29)
ABS_SUE(Related)	4.96 **	(2.99)	4.95 **	(2.98)	4.97 **	(3.00)	4.95 **	(2.98)	4.94 **	(2.98)	4.92 **	(2.97)	5.01 **	(3.02)	4.96 **	(2.99)
ABS_SUE(Highlighted)	-0.16	(0.74)	-0.16	(0.71)	-0.16	(0.72)	-0.16	(0.72)	-0.16	(0.73)	-0.16	(0.72)	-0.16	(0.72)	-0.16	(0.72)

Table 9

Interaction effect: Positive lead-lag relationship

The table shows the estimation results of Equation: $FwdRev_{k,i,t} = \alpha_0 + \beta_1(Interaction\ term) + \gamma_1 Rev\_TGT_{j,t} + (Controls)$ for all economic links from stock j to stock i. *, **, and *** indicate statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	SIZE (Highlighted)		SIZE (Related)		Analyst Coverage (Highlighted)		Analyst Coverage (Related)		Number of Reports		Star Analyst		Earnings Annoucement (Related)		Earnings Annoucement (Highlighted)	
Interaction term	0.01 *	(2.42)	-0.01 ***	(3.69)	0.00 **	(2.67)	-0.00	(1.61)	-0.00	(1.63)	0.04 ***	(4.30)	-0.03 *	(1.99)	-0.03 *	(2.55)
Rev_EPS(Related)	-0.90 ***	(4.43)	-0.90 ***	(4.45)	-0.90 ***	(4.45)	-0.91 ***	(4.50)	-0.90 ***	(4.44)	-0.89 ***	(4.42)	-0.90 ***	(4.43)	-0.89 ***	(4.41)
Rev_TGT(Related)	-0.15 ***	(15.18)	-0.15 ***	(15.05)	-0.15 ***	(15.13)	-0.15 ***	(14.96)	-0.15 ***	(14.97)	-0.15 ***	(15.21)	-0.15 ***	(14.88)	-0.15 ***	(15.11)
Rev_REC(Related)	0.00 ***	(3.36)	0.00 ***	(3.31)	0.00 ***	(3.37)	0.00 ***	(3.32)	0.00 ***	(3.33)	0.00 ***	(3.32)	0.00 **	(3.21)	0.00 **	(3.26)
Rev_EPS (Highlighted)	-0.09	(1.04)	-0.09	(1.03)	-0.09	(1.06)	-0.09	(1.06)	-0.09	(1.05)	-0.10	(1.25)	-0.08	(1.01)	-0.09	(1.04)
Rev_TGT (Highlighted)	-0.03	(1.23)	0.10 ***	(4.62)	0.00	(0.13)	0.03 ***	(4.94)	0.03 ***	(4.97)	0.01	(0.86)	0.03 ***	(5.57)	0.04 ***	(5.24)
Rev_REC (Highlighted)	-0.00	(0.64)	-0.00	(0.57)	-0.00	(0.53)	-0.00	(0.49)	-0.00	(0.51)	-0.00	(0.78)	-0.00	(0.65)	-0.00	(1.25)
Rev_ConEPS(Related)	1.24 ***	(4.21)	1.26 ***	(4.24)	1.25 ***	(4.23)	1.25 ***	(4.24)	1.24 ***	(4.18)	1.25 ***	(4.24)	1.25 ***	(4.22)	1.25 ***	(4.23)
Rev_ConTGT(Related)	0.36 ***	(15.96)	0.35 ***	(15.91)	0.35 ***	(15.94)	0.35 ***	(15.91)	0.36 ***	(15.96)	0.36 ***	(16.01)	0.36 ***	(16.04)	0.35 ***	(15.94)
Rev_ConREC(Related)	-0.01	(1.19)	-0.01	(1.20)	-0.01	(1.19)	-0.01	(1.20)	-0.01	(1.21)	-0.01	(1.19)	-0.01	(1.25)	-0.01	(1.21)
Rev_ConEPS (Highlighted)	0.13	(1.32)	0.12	(1.20)	0.13	(1.30)	0.12	(1.27)	0.12	(1.19)	0.12	(1.20)	0.12	(1.24)	0.13	(1.29)
Rev_ConTGT (Highlighted)	0.07 ***	(7.67)	0.07 ***	(7.53)	0.07 ***	(7.48)	0.07 ***	(7.64)	0.07 ***	(7.66)	0.07 ***	(7.97)	0.07 ***	(7.64)	0.07 ***	(8.07)
Rev_ConREC (Highlighted)	-0.01	(1.42)	-0.01	(1.38)	-0.01	(1.46)	-0.01	(1.44)	-0.01	(1.44)	-0.01	(1.46)	-0.01	(1.40)	-0.01	(1.50)
REC(Related)	-0.00 ***	(3.70)	-0.00 ***	(3.68)	-0.00 ***	(3.70)	-0.00 ***	(3.71)	-0.00 ***	(3.76)	-0.00 ***	(3.69)	-0.00 ***	(3.70)	-0.00 ***	(3.72)
ConREC(Related)	-0.00 ***	(3.63)	-0.00 ***	(3.64)	-0.00 ***	(3.64)	-0.00 ***	(3.66)	-0.00 ***	(3.83)	-0.00 ***	(3.65)	-0.00 ***	(3.64)	-0.00 ***	(3.63)
REC (Highlighted)	0.00 *	(2.48)	0.00 *	(2.49)	0.00 *	(2.47)	0.00 *	(2.56)	0.00 **	(2.59)	0.00 *	(2.53)	0.00 *	(2.50)	0.00 *	(2.45)
ConREC (Highlighted)	-0.00 *	(2.28)	-0.00 *	(2.24)	-0.00 *	(2.29)	-0.00 *	(2.27)	-0.00 *	(2.32)	-0.00 *	(2.35)	-0.00 *	(2.26)	-0.00 *	(2.24)
PRet(Related)	0.05 ***	(21.01)	0.05 ***	(21.05)	0.05 ***	(21.06)	0.05 ***	(21.02)	0.05 ***	(21.43)	0.05 ***	(21.00)	0.05 ***	(21.02)	0.05 ***	(20.97)
SIZE(Related)	0.00 ***	(5.88)	0.00 ***	(6.02)	0.00 ***	(5.91)	0.00 ***	(5.93)	0.00 ***	(5.66)	0.00 ***	(5.90)	0.00 ***	(5.90)	0.00 ***	(5.88)
BP(Related)	0.00 *	(2.31)	0.00 *	(2.29)	0.00 *	(2.29)	0.00 *	(2.28)	0.00	(1.38)	0.00 *	(2.28)	0.00 *	(2.27)	0.00 *	(2.29)
SUE(Related)	0.14 *	(2.04)	0.14 *	(2.03)	0.14 *	(2.05)	0.14 *	(2.04)	0.14 *	(2.05)	0.14 *	(2.03)	0.14 *	(2.06)	0.14 *	(2.05)
SUE(Highlighted)	-0.00	(1.00)	-0.00	(1.05)	-0.00	(0.99)	-0.00	(1.03)	-0.00	(1.03)	-0.00	(1.06)	-0.00	(1.03)	-0.00	(1.03)

Table 10

Interaction effect: The price impact

The table shows the estimation results of Equation: $FwdRet_{i,t} = \alpha_0 + \beta_1(Interaction\ term) + \gamma_1 Rev\_TGT_{j,t} + (Controls)$ for all economic links from stock j to stock i. *, **, and *** indicate statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

	SIZE (Highlighted)		SIZE(Related)		Analyst Coverage (Highlighted)		Analyst Coverage (Related)		Number of Reports		Star Analyst		Earnings Annoucement (Related)		Earnings Annoucement (Highlighted)	
Interaction term	0.01	(1.21)	-0.01	(1.71)	0.00 **	(2.96)	0.00 *	(2.22)	0.00	(1.36)	0.04 **	(2.75)	0.03	(0.97)	0.03	(1.66)
Rev_EPS(Related)	-0.05	(0.06)	-0.05	(0.07)	-0.05	(0.06)	-0.05	(0.07)	-0.04	(0.06)	-0.04	(0.06)	-0.06	(0.08)	-0.07	(0.09)
Rev_TGT(Related)	0.04	(1.48)	0.04	(1.52)	0.04	(1.46)	0.04	(1.52)	0.04	(1.49)	0.04	(1.45)	0.04	(1.47)	0.04	(1.60)
Rev_REC(Related)	0.00	(0.69)	0.00	(0.68)	0.00	(0.72)	0.00	(0.68)	0.00	(0.67)	0.00	(0.68)	0.00	(0.71)	0.00	(0.69)
Rev_EPS (Highlighted)	-0.63 **	(3.28)	-0.63 **	(3.27)	-0.63 **	(3.29)	-0.63 ***	(3.30)	-0.63 **	(3.28)	-0.64 ***	(3.36)	-0.63 ***	(3.30)	-0.63 **	(3.29)
Rev_TGT (Highlighted)	-0.01	(0.19)	0.13 *	(2.33)	-0.01	(0.41)	0.00	(0.12)	0.03 **	(2.60)	0.02	(1.55)	0.04 ***	(4.07)	0.02	(1.59)
Rev_REC (Highlighted)	-0.00	(1.11)	-0.00	(1.08)	-0.00	(1.04)	-0.00	(1.02)	-0.00	(1.15)	-0.00	(1.19)	-0.00	(1.06)	-0.00	(0.67)
Rev_ConEPS(Related)	-0.44	(0.56)	-0.43	(0.55)	-0.44	(0.56)	-0.44	(0.55)	-0.43	(0.55)	-0.44	(0.55)	-0.43	(0.54)	-0.43	(0.54)
Rev_ConTGT(Related)	-0.03	(0.66)	-0.03	(0.68)	-0.03	(0.66)	-0.03	(0.66)	-0.03	(0.65)	-0.03	(0.65)	-0.03	(0.73)	-0.03	(0.67)
Rev_ConREC(Related)	0.06 **	(2.87)	0.06 **	(2.87)	0.06 **	(2.88)	0.06 **	(2.87)	0.06 **	(2.86)	0.06 **	(2.88)	0.06 **	(2.89)	0.06 **	(2.87)
Rev_ConEPS (Highlighted)	-0.06	(0.24)	-0.08	(0.28)	-0.06	(0.23)	-0.07	(0.26)	-0.07	(0.27)	-0.08	(0.29)	-0.07	(0.26)	-0.07	(0.28)
Rev_ConTGT (Highlighted)	0.03	(1.51)	0.02	(1.41)	0.02	(1.39)	0.03	(1.47)	0.03	(1.46)	0.03	(1.67)	0.03	(1.46)	0.02	(1.05)
Rev_ConREC (Highlighted)	-0.01	(0.85)	-0.01	(0.83)	-0.01	(0.89)	-0.01	(0.85)	-0.01	(0.82)	-0.01	(0.87)	-0.01	(0.85)	-0.01	(0.79)
REC(Related)	-0.00 **	(2.83)	-0.00 **	(2.82)	-0.00 **	(2.83)	-0.00 **	(2.84)	-0.00 **	(2.83)	-0.00 **	(2.83)	-0.00 **	(2.83)	-0.00 **	(2.82)
ConREC(Related)	0.00	(0.64)	0.00	(0.64)	0.00	(0.64)	0.00	(0.62)	0.00	(0.64)	0.00	(0.64)	0.00	(0.63)	0.00	(0.62)
REC (Highlighted)	0.00	(0.65)	0.00	(0.65)	0.00	(0.62)	0.00	(0.68)	0.00	(0.62)	0.00	(0.67)	0.00	(0.67)	0.00	(0.70)
ConREC (Highlighted)	0.00	(1.89)	0.00	(1.91)	0.00	(1.87)	0.00	(1.89)	0.00	(1.90)	0.00	(1.86)	0.00	(1.89)	0.00	(1.88)
PRet(Related)	-0.01	(0.90)	-0.01	(0.91)	-0.01	(0.91)	-0.01	(0.90)	-0.01	(0.88)	-0.01	(0.92)	-0.01	(0.90)	-0.01	(0.88)
SIZE(Related)	-0.02 ***	(10.18)	-0.02 ***	(10.13)	-0.02 ***	(10.18)	-0.02 ***	(10.20)	-0.02 ***	(10.18)	-0.02 ***	(10.20)	-0.02 ***	(10.17)	-0.02 ***	(10.17)
BP(Related)	0.03 ***	(4.90)	0.03 ***	(4.89)	0.03 ***	(4.89)	0.03 ***	(4.88)	0.03 ***	(4.89)	0.03 ***	(4.89)	0.03 ***	(4.89)	0.03 ***	(4.89)
SUE(Related)	0.21	(0.75)	0.21	(0.75)	0.21	(0.75)	0.21	(0.75)	0.21	(0.75)	0.21	(0.75)	0.21	(0.75)	0.21	(0.75)
SUE(Highlighted)	0.03 ***	(4.73)	0.02 ***	(4.70)	0.03 ***	(4.75)	0.03 ***	(4.73)	0.02 ***	(4.72)	0.02 ***	(4.70)	0.02 ***	(4.72)	0.02 ***	(4.72)

Table 11

The link between different analysts

Panel (a) shows the estimation results for the update of analysts' estimates. Panel (b) shows the estimation results for the positive lead-lag relationship and its price impact. *, **, and *** indicate the statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.

(a) Update of analysts' estimates

	D_Fwd_Rev_TGT(Related)	
Interaction term	-0.8153	(1.52)
D_Link_Diff	-0.0656 **	(2.94)
ABS_Rev_TGT (Highlighted)	1.9470 ***	(6.29)
ABS_Rev_EPS(Related)	-305.9000 ***	(12.71)
ABS_Rev_TGT(Related)	-8.9200 ***	(9.07)
ABS_Rev_REC(Related)	-0.4575	(1.88)
ABS_Rev_EPS (Highlighted)	1.9260	(0.34)
ABS_Rev_REC (Highlighted)	-0.2296 **	(2.67)
ABS_Rev_ConEPS(Related)	38.6200 *	(2.29)
ABS_Rev_ConTGT(Related)	11.7600 ***	(10.37)
ABS_Rev_ConREC(Related)	-1.4610 *	(2.08)
ABS_Rev_ConEPS (Highlighted)	-4.4070	(0.66)
ABS_Rev_ConTGT (Highlighted)	1.9150 ***	(3.90)
ABS_Rev_ConREC (Highlighted)	0.4998	(1.13)
ConREC(Related)	0.0948 *	(2.34)
REC(Related)	-0.0025	(0.14)
REC (Highlighted)	-0.0210	(1.22)
ConREC (Highlighted)	-0.1060 **	(2.68)
ABS_PRet(Related)	0.6585 ***	(5.56)
SIZE(Related)	-0.0093	(1.75)
BP(Related)	-0.0758 *	(2.24)
ABS_SUE(Related)	4.9770 **	(3.00)
ABS_SUE(Highlighted)	-0.1636	(0.73)

(b) Positive lead-lag relationship and its positive price impacts

	Fwd_Rev(Related)		Fwd_Ret(Related)	
Interaction term	0.0175	(0.98)	-0.0052	(0.47)
Rev_TGT (Highlighted)	0.0396 ***	(3.47)	0.0280 ***	(5.05)
D_Link_Diff	0.0000	(0.01)	-0.0006	(1.69)
Rev_EPS(Related)	-0.0558	(0.08)	-0.9053 ***	(4.47)
Rev_TGT(Related)	0.0397	(1.54)	-0.1469 ***	(15.07)
Rev_REC(Related)	0.0031	(0.66)	0.0048 ***	(3.31)
Rev_EPS (Highlighted)	-0.6287 **	(3.29)	-0.0885	(1.07)
Rev_REC (Highlighted)	-0.0025	(1.08)	-0.0006	(0.58)
Rev_ConEPS(Related)	-0.4361	(0.55)	1.2543 ***	(4.24)
Rev_ConTGT(Related)	-0.0306	(0.67)	0.3549 ***	(15.94)
Rev_ConREC(Related)	0.0631 **	(2.87)	-0.0116	(1.21)
Rev_ConEPS (Highlighted)	-0.0715	(0.27)	0.1219	(1.26)
Rev_ConTGT (Highlighted)	0.0258	(1.49)	0.0682 ***	(7.62)
Rev_ConREC (Highlighted)	-0.0110	(0.84)	-0.0091	(1.41)
REC(Related)	-0.0022 **	(2.83)	-0.0014 ***	(3.71)
ConREC(Related)	0.0020	(0.63)	-0.0042 ***	(3.64)
REC (Highlighted)	0.0004	(0.66)	0.0007 *	(2.53)
ConREC (Highlighted)	0.0032	(1.90)	-0.0016 *	(2.24)
PRet(Related)	-0.0058	(0.90)	0.0492 ***	(21.03)
SIZE(Related)	-0.0165 ***	(10.19)	0.0029 ***	(5.96)
BP(Related)	0.0268 ***	(4.89)	0.0042 *	(2.29)
Controls for Firm Effects	Yes		Yes	
Adjusted R2	3.26%		1.50%	

Appendix: Control Variable Definitions

Variables	Definition
$D\_FwdRev\_TGT_{i,t}$	A dummy variable that equals one if analysts who mention the economic link revise their target price for stock i for days $t+2$ through $t+10$
$D\_FwdRev\_EPS_{i,t}$	A dummy variable that equals one if analysts who mention the economic link revise their earnings forecast (FY1) for stock i for days $t+2$ through $t+10$
$FwdRev\_TGT_{j,t}$	Change ratio of target prices (of analysts who mention the economic link) for stock i for days $t+2$ through $t+10$
$Rev\_TGT_{i,t}$	Change ratio of analysts' target prices (of analysts who mention the economic link) for stock i for days t through $t+1$
$Rev\_EPS_{i,t}$	A change in analysts' earnings per share (of analysts who mention the economic link) for stock i deflated by stock i's price (as of t) for days t through $t+1$
$Rev\_REC_{i,t}$	A change in analysts' stock recommendation (of analysts who mention the economic link) for stock i for days t through $t+1$, where the recommendation is coded as: Strong buy = 2, Buy = 1, Hold = 0, Sell = -1, Strong sell = -2.
$ABS\_Rev\_TGT_{i,t}$	Absolute value of $Rev\_TGT_{i,t}$
$ABS\_Rev\_EPS_{i,t}$	Absolute value of $Rev\_EPS_{i,t}$
$ABS\_Rev\_REC_{i,t}$	Absolute value of $Rev\_REC_{i,t}$
$Rev\_ConTGT_{i,t}$	Change ratio of analysts' average target prices (except for analysts that mention the link) for stock i for days t through $t+1$
$Rev\_ConEPS_{i,t}$	A change in analysts' average EPS (except for analysts that mention the link) for stock i deflated by stock i's price (as of t) for days t through $t+1$
$Rev\_ConREC_{i,t}$	A change in analysts' average recommendations (except for analysts that mention the link) for stock i for days t through $t+1$
$ABS\_Rev\_ConTGT_{i,t}$	Absolute value of $Rev\_ConTGT_{i,t}$
$ABS\_Rev\_ConEPS_{i,t}$	Absolute value of $Rev\_ConEPS_{i,t}$
$ABS\_Rev\_ConREC_{i,t}$	Absolute value of $Rev\_ConREC_{i,t}$
$REC_{i,t}$	Analysts' stock recommendation (of analysts who mention the economic link) for stock i at days t, coded as Strong buy =2, Buy=1, Hold=0, Sell=-1, Strong sell=-2.
$ConREC_{i,t}$	Analysts' average recommendations (except for analysts that mention the link) for stock i at days t
$PRET_{i,t}$	An abnormal return for day t-10 through day t-1, where abnormal returns are calculated based on the Carhart four-factor model.
$ABS\_PRET_{i,t}$	Absolute value of $PRET_{i,t}$

$SUE_{i,t}$	A difference between consensus forecasts for the most recent reported quarterly EPS for stock i and the corresponding reported (actual) EPS denominated by a stock price if there is an earnings announcement from day t-1 through t+1 (otherwise zero).
$ABS\_SUE_{i,t}$	Absolute value of $SUE_{i,t}$
$SIZE_{i,t}$	Log of the market value of equity of stock i at day t
$BM_{i,t}$	Book-to-market ratio (book value of equity/market value of equity) of stock i at day t