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Market adaptation to Regulation Fair Disclosure: The use of industry information to enhance the informational environment

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ABSTRACT

Our fundamental research interest is in exploring the ways in which the financial markets have adapted to Reg FD, and our particular focus is on how market participants use industry information embedded in firms' earnings announcements. We find that announcements of quarterly earnings made by companies that are the first in their industry to report in a given quarter have significant effects on the stock returns of other firms in the same industry as well as on their own stock returns. We then test the implications of these findings for their effects on the information environment. Overall, our empirical findings support the conclusion that the implementation of Reg FD has led to increased use of industry information that is revealed in earnings announcements. This is one way, among others, in which analysts and other market participants have adapted to the requirements of Reg FD. In this case, they have made the adaptation by developing new uses of public information to enhance the informational environment.

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Regulation Fair Disclosure (Reg FD) was implemented by the Securities and Exchange Commission (SEC) in 2000 with the aim of increasing fairness in the stock market. It requires corporations to disclose material information publicly to provide a more level playing field, but also allows firms to disclose non-material information privately, recognizing that some analysts may be able use this information in conjunction with other information to form a more complete view of the firm's prospects. When the SEC sought public comment on the proposed rule, there was both strong support and considerable concern. The investing public supported it with the expectation that material information would no longer be selectively released to professional analysts, thereby levelling the informational playing field. On the other hand, many investment professionals expressed concern that Reg FD would have a chilling effect if it resulted in less information being released. Since Reg FD became effective, a key research objective has been to determine whether it has successfully achieved its fundamental goals of increasing transparency and fairness, and whether and how market participants have modified their behavior as a result of it.

Among the research findings on the effects of Reg FD, several empirical studies conclude that analysts have less access to selective information and have been led to work harder to analyze firms. Reviewed more fully below, these include Mohanram and Sunder (2006), Janakiraman, Radhakrishnan, and Szwejkowski (2007), Mensah and Yang (2008), and Kross and Suk (2012). Additional studies show how analysts have attempted to replace lost information or have identified ways

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in which firms have changed the means through which they convey information. Among others, these include Jorion and Zhang (2007), Heflin, Subramanyam, and Zhang (2003), Agapova, Madura, and Mailibayeva (2012), and Bushee, Matsumoto, and Miller (2004)

Overall, the body of research supports the conclusion that Reg FD has successfully led to reduced selective information releases to analysts and favored investors, and to fairer markets in general. Despite that, there are some concerns that managers and analysts have been able to develop ways in which they communicate and receive privileged information on a selective basis. On the more positive side, the implementation of Reg FD has encouraged analysts and other market participants to utilize new types of information to replace information no longer available from firms. This provides the underlying motivation of our analysis of industry-wide effects of firm-specific information.

In this paper we test one particular way in which market participants may seek to utilize a source of information that enhances the informational environment within which stock prices are determined. Specifically, we examine the effects of earnings surprises on the stock returns of the reporting firms and, in addition, their industry rivals. We test whether potential industry effects are stronger or weaker after the implementation of Reg FD. If stronger, it suggests that under Reg FD, industry information is more useful and has greater value to market participants. It also indicates one way in which investors have developed a new source of information as a result of Reg FD, and lends additional support to prior findings that analysts work harder as a result of Reg FD.

Our empirical analysis begins with an examination of industry effects based on the stock price reactions of rival firms after one firm in the same industry announces its earnings. We hypothesize that if information regarding earnings prospects or the competitive nature of an industry is conveyed in earnings reports by its member companies, it is the first report among all that should have the best chance to inform the market as investors modify their valuation on all stocks in the industry. We thus examine news releases of quarterly earnings made by companies that are the first in their industry to report earnings in a given quarter.

We find that earnings surprises have industry-wide effects that are on average in the same direction as those of the first firm to report. For example, if the first to report announces earnings that are significantly higher than expected, there is not only a positive response in its own stock price, but also a positive response in those of other firms in the same industry.

We next compare the abnormal returns around earnings announcements before and after the implementation of Reg FD. We find that after implementation, the 2-day abnormal returns around earnings announcements are larger than prior to the announcement. This applies to both the reporting firms and their competitors. We interpret this as consistent with analysts having less private information before and at the time of the announcement. This is also consistent with prior research findings that Reg FD has been successful in helping to level the informational playing field.

Finally, we examine the impact of Reg FD on the stock price reactions of both reporting and rival firms in a multivariate setting. Our key empirical finding is that earnings surprises of the first-to-report firms have more significant effects on the returns of the industry rivals after Reg FD was implemented than before. We conclude that the implementation of Reg FD is associated with greater use of industry information by analysts and other market participants in the price discovery process.

Our empirical findings provide a new and unique perspective of the complex effects of Reg FD on the nature of the information provided in corporate earnings announcements. Our contribution is that we identify a way in which the market appears to have adapted to the implementation of Reg FD by mining a new source of information. In the case of industry spillover effects, the information may always have existed, but its value has been enhanced as a result of Reg FD.

The rest of this paper proceeds as follows. In Section 1 we review prior research on the effects of Reg FD and industry effects. In Section 2 we develop testable hypotheses. We then describe our data and empirical methodology. Empirical results and implications are presented next. Section 9 summarizes our findings and conclusions.

1. Related research

Our research draws on several streams of prior research: the effects of Reg FD, industry-wide effects of corporate announcements, and earnings surprises.

In a comprehensive review and synthesis of academic studies of the effects of Reg FD, Koch, Lefanowicz, and Robinson (2013) identify several distinct threads of research. The first is analyses of stock returns and trading volume to test how Reg FD has affected the financial markets. Another examines measures of information asymmetry, such as bid/ask spreads and the adverse selection component of transactional costs. The third deals with the effects of Reg FD on analysts, and the last is on changes in corporate communications, especially with reference to a firm's ability to disclose information via private meetings with investors and analysts.

In evaluating the effects of Reg FD, many researchers use event study methodology to compare market reactions to similar information issued before and after the regulation became effective. For example, Jackson and Madura (2007) compare effects of profit warnings issued by companies before and after the implementation of Reg FD to determine whether it alters how the market processes the information. They find a diminishing negative effect of profit warnings after the implementation of Reg FD and interpret this as a sign that investors rely less on profit warning announcements after Reg FD came into effect. They conclude that the implementation of Reg FD has effectively prevented the flow of material information to analysts before other market participants.

Many other studies in this area also find that Reg FD is associated with a reduction in the availability of non-public information to analysts. Examples are Agrawal, Chen, and Chadha (2006), who find that analysts' earnings forecasts are

less accurate and more disperse after Reg FD; Bhojraj, Cho, and Yehuda (2012), who find reductions in performance of mutual funds in large fund families; Sidhu, Smith, Whaley, and Willis (2008), who find higher adverse selection costs; and Li, Saunders, and Shao (2015), who find an increased level of information asymmetry in the credit markets.

Of greatest relevance to our study are papers that deal with the degree of analyst efforts. Mohanram and Sunder (2006), for example, document that on average analysts follow fewer firms after Reg FD was implemented, suggesting that they need to devote more effort to each firm. They also find that many analysts have shifted their coverage to firms that have fewer competing analysts. Janakiraman et al. (2007) find that analysts tend to publish their first earnings forecasts later in the quarter after implementation, consistent with the expectation that it takes longer for them to gather and process information available, as well as with the problem of having less private information to work with. Mensah and Yang (2008) find that after implementation, analysts tend to exhibit less herding behavior, in which they tend to publish similar estimates. This supports the conclusion that analysts are working harder to develop their own forecasts, as opposed to more easily following the consensus of others following the same stocks. Finally, Kross and Suk (2012) find that analysts revise their forecasts more quickly after public firm announcements after implementation. Together, these studies support the conclusion that Reg FD has led to greater effort on the part of analysts, who must find new sources of information and work harder to differentiate their recommendations and forecasts from others.

Additional research has focused on alternate disclosure channels, such as information available to credit-rating agencies Jorion and Zhang (2007), increased use of earnings guidance Heflin et al. (2003), and Agapova, Madura, and Mailibayeva (2012), and changing previously closed conference calls to open calls (Bushee et al., 2004). Pursuing this line of inquiry more deeply, much recent research attempts to infer ways in which managers are still able to provide selective access to analysts. Bushee et al. (2013), for example, find evidence that some CEO presentations at invitation-only investor conferences are followed by profitable trades, and that there are "off-line" meeting times at many of these conferences. Green, Jame, Markov, and Subasi (2014) examine corporate flight logs to money centers, and find that institutional investors in those areas increase their trades and holdings of the stocks of those firms.

The general conclusion supported by this body of research is that the degree of selective information releases to analysts and favored investors is lower after the implementation of Reg FD. Although some managers and analysts may have been able to communicate and receive privileged information on a selective basis,[1] Reg FD has also led to efforts to utilize new types of information to replace information no longer directly available.

Lang and Stulz (1992) are among the earlier researchers to study the industry effects of corporate announcements. They argue that these effects may consist of two separate effects: contagion and competitive effects. The contagion effect dominates when the ability to generate earnings or cash flows is similar among industry competitors, and the competitive effect dominates if weakness in earnings of the reporting firm implies opportunities for its competitors.

Their empirical tests are on industry information revealed by one firm's announcement of bankruptcy. Overall, they find that bankruptcy announcements of one firm may have a positive or negative effect on competitors in the same industry, depending on whether the competitor is perceived as suffering from the same problems or whether it may be able to benefit competitively. In the case of highly leveraged industries and industries where stock prices of industry members are highly correlated, competitor firms tend to exhibit more negative (contagion) effects from individual company's bankruptcy news. By contrast, industries with high concentration and low debt-to-asset ratios are more likely to show positive (competitive) effects on non-bankrupt firms of the same industry in the event of a member firm's bankruptcy.

In a study of industry effects of information in the banking sector, Prokopczuk (2010) uses negative earnings surprises to demonstrate how the stock price impact of negative firm-specific information can spread to competitors. After finding significant contagion effects of negative earnings surprise news in the banking sector (but not non-banking sectors), he suggests that effective banking regulation should be directed at the level of banking networks instead of individual banks.

Akhigbe, Madura, and Newman (2006) examine the industry effects of revisions of buy and sell recommendations on a firm's industry rivals. They find that on average the effects are consistent with contagion, although there is evidence of a competitive effect in some cases. Their sample covers revisions in the years 1997–2002, although they do not test explicitly for the effect of Reg FD.

These streams of research form the background for our study. We test whether the implementation of Reg FD is associated with enhanced industry effects of corporate earnings announcements.

2. Testable hypotheses relating to the effects of Reg FD

Our first hypothesis deals with the question of whether the earnings surprise of one firm has effects on the stock returns of another firm in the same industry. We expect that there are significant industry effects, and this is the basis for our analysis of the effects of Reg FD. Expressed in null form:

H1. Given that earnings surprise news is firm-specific rather than industry-wide, earnings surprises by the first reporting firm of an industry in a given quarter should result in no abnormal returns for competitor companies' stock prices.

[1] Loh and Stulz (2011) test for the influence of analysts and find that influential analyst recommendation changes are actually somewhat more likely after Reg FD came into effect than before.

Jackson and Madura (2007) argue that the stock price reaction to earnings announcements should be more pronounced after Reg FD was implemented because under the regulation, the preferential flow of material information to analysts and large investors of a company is impeded. This leads to the following hypothesis, also in null form:

H2. Earnings surprises by a company should not be associated with larger stock price reactions than similar news announced prior to Reg FD.

Our key expectation is that industry effects should be stronger after Reg FD was implemented because of the reduction in preferential information prior to earnings announcements. If on average the type of information revealed by the first earnings announcement is likely to apply in a similar manner to other firms in the same industry, the stock price responses of other firms should be in the same direction. This would represent the case for contagion. If on the other hand, the fate of one firm in the industry indicates its unusually strong (weak) condition, then the stock price response of the other firms would tend to be in the opposite direction. This would represent the competitive response. Whether the competitive or the contagion case proves dominant, our third hypothesis, also in null form, is:

H3. Earnings surprises by a company should not be associated with larger stock price reactions for its industry rivals after Reg FD than similar news announced prior to Reg FD.

3. Data and definition of variables

Our sample is based on the companies in the S&P 500 Index. For industry membership, we use the S&P Industry Sector Code from COMPUSTAT database, developed by the Standard & Poor's (S&P). The S&P Industry Sector Code consists of 128 industries as of 2013, an increase of 37 industries from just 91 in 1980. To examine the intra-industry effect of earnings surprise news, we only include industries with at least four companies in S&P 500 index.

We use the Institutional Brokers' Estimate System (I/B/E/S) for these data: actual earnings per share (EPS), analysts' average EPS forecasts, the standard deviation of analyst forecasts, and companies' earnings report dates.

To test whether earnings surprise news conveys significant non-systematic information for reporting companies, we examine the abnormal returns of the stock prices of companies that are first (and in some cases, the second) in their industry to announce earnings of a given quarter. Significant non-zero abnormal returns would enable us to reject the null hypothesis that quarterly earnings surprises have no impact on the reporting firm's stock returns.

To measure the reaction of competitors in the same industry of a reporting company, we form an equally-weighted portfolio of all other S&P 500 member firms with the same S&P Industry Sector Code. This procedure follows the methodology of other studies, such as Jorion and Zhang (2007) and Prokopczuk (2010). In order to have similar number of observations and length of sample period in both the pre- and the post-Reg FD periods, our sample period spans the years 1988–2012.

We construct two models of normalized earnings surprises (ESURPs) from the I/B/E/S database. The first normalizes the difference of actual quarterly EPS from the forecasted EPS with the absolute value of the actual EPS, and the second normalizes the difference with the standard deviation of analyst forecasts of EPS. These methods are shown in Eqs. (1a) and (1b), respectively;

Model 1:

$$ESURP^{1}_{j,t} = (AQ_{j,t} - FQ_{j,t})/|AQ_{j,t}| \tag{1a}$$

Model 2:

$$ESURP^{2}_{j,t} = (AQ_{j,t} - FQ_{j,t})/\sigma[FQ]_{j,t} \tag{1b}$$

Where

$AQ_{j,t}$ = company j's actual EPS for quarter t

$FQ_{j,t}$ = most recent average analyst forecasted EPS for company j's EPS of quarter t before actual EPS is announced

$\sigma[FQ]_{j,t}$ = standard deviation of all analyst forecasts used in computing the average analyst forecasted EPS for company j's EPS of quarter t

In our empirical analysis we use mainly earnings surprises defined by the first model in our reports because the standard deviation of all analyst forecasts can be very small when just a few analysts follow a stock. Reports based on the second model are available from authors upon request.

As stock prices may respond in an asymmetric fashion to positive or negative earnings announcements, many studies examine positive and negative earnings surprises separately. While merely the sign of deviation of actual EPS from the forecasted EPS is sufficient for some studies, the exact magnitude or size of the earnings surprise is critical in testing the hypothesis that stock prices respond more strongly to larger earnings surprise announcements than smaller ones.

Daily abnormal returns (ARs) and cumulative abnormal returns (CARs) are adjusted for market risk using CRSP Value Index Portfolio as a proxy for the market. The intercept and slope coefficients of the market model are estimated over a pre-announcement period of 250–50 days before the earnings announcement dates. Since most earnings announcements are made after trading hours, it is customary to measure the full announcement effect in the two-day period including both the announcement day ($t = 0$) and the next trading day after that ($t = 1$). The average cumulative abnormal returns are then compared and tested for statistical significance.

4. Multivariate methodologies and tests

The abnormal returns analyses described above provide a first look at the evidence on cumulative abnormal returns at earnings announcements. Our key research question is to explore whether and how Reg FD affects the relation between the earnings surprises and the responses of the stocks. To do this, we employ cross-sectional tests of stock price reactions to earnings surprise news. This regression structure enables us to introduce and test the significance of several additional factors of interest jointly.

We begin with a regression of the two-day cumulative abnormal returns (CAR_j) of reporting companies against two variables: the size of the earnings surprise ($ESURP_j$) and a control variable based on firm size, measured by the log of the market value of equities ($ln(MV_j)$), of reporting firm j in Eq. (2).

$$CAR_j = \alpha + \beta_1 \times ESURP_j^{1or2} + \beta_2 \times \ln(MV_j) + \varepsilon_j \tag{2a}$$

Larger deviations from analysts' forecasts may cause the market to respond more significantly to the news. Market size is included as a control variable because larger companies tend to attract more analysts than smaller companies, and it is more difficult to surprise the market as a whole with their regular quarterly earnings announcements.

We modify this structure to test for the existence of industry effects of earnings surprises. The dependent variable is restated as the cumulative average abnormal return of the *other* firms in the reporting firm's industry, and the subscript p denotes variables defined by industry.

$$CAR_p = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \varepsilon_P \tag{2b}$$

We introduce control variables based on industry concentration and leverage. Lang and Stulz (1992) and Laux, Starks, and Yoon (1998) use the Herfindahl Index (H_p) of an industry as a proxy for the degree of imperfect competition. This index is calculated as the sum of squared market shares of individual companies of the industry. Industries with nearly perfect competition are believed to have more dominant industry contagion effects than competitive effects following earnings news of individual companies. Lang and Stulz (1992) also argue that in industries where firms have high debt-to-asset ratios (D/A), its member firms' financing ability to improve their competitive position is limited. (Also see Jorion and Zhang (2007).) Building on Eqs. (2a) and (2b), this results in a structure that enables us to test for industry effects of the reporting firm's earnings surprise:

$$CAR_j = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \beta_5 \times H_p + \beta_6 \times (D/A)_p + \varepsilon_j \tag{3a}$$

$$CAR_p = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \beta_5 \times H_p + \beta_6 \times (D/A)_p + \varepsilon_P \tag{3b}$$

The three control variables are the size of the reporting firm, degree of industry concentration, and industry leverage.

Our main test is whether Reg FD affects the price impact of earnings surprises by reporting companies on their industry rivals. We define a dummy variable *Reg.FD* with a value of 1 for earnings surprise news announced after the regulation took effect, and a value of 0 otherwise. If the estimated coefficient of this dummy variable is significant, it would support the hypothesis that this legislation has a significant effect. Following Jackson and Madura (2007), we add an interaction term (*Reg.FD*ESURP*), a product of the dummy variable *Reg.FD* and the magnitude of the earnings surprise *ESURP*, to capture the possibility that investors may interpret earnings surprise news differently in the post-Reg FD era. The basic cross-sectional model for the reporting firms is as follows:

$$\begin{aligned} &\mathrm{CAR}_j = \alpha + \beta_1 \times \mathrm{ESURP}_j + \beta_2 \times \ln(\mathrm{MV}_j) + \\ &\beta_7 \times Reg.FD + \beta_8 \times Reg.FD * \mathrm{ESURP}_j + \varepsilon_j \end{aligned} \tag{4a}$$

Supplemented with the industry concentration and leverage variables, the model is as follows:

$$\begin{aligned} &\mathrm{CAR}_j = \alpha + \beta_1 \times \mathrm{ESURP}_j + \beta_2 \times \ln(\mathrm{MV}_j) + \beta_5 \times H_p + \beta_6 \times (D/A)_p \\ &\beta_7 \times Reg.FD + \beta_8 \times Reg.FD * \mathrm{ESURP}_j + \varepsilon_P \end{aligned} \tag{5a}$$

Both equations are written for the reporting firms, for convenience. Eqs. (4b) and (5b) for the industry rival firms are the same except that the dependent variable is the cumulative abnormal return for the other firms in the industry, $\mathrm{CAR_p}$ rather than for the reporting firm, $\mathrm{CAR_j}$.

5. Empirical evidence on the existence of industry effects

We first test whether the earnings surprises of the first-to-report companies are associated with responses among their industry rivals. Significant abnormal returns or cumulative abnormal returns of rival firms in windows surrounding earnings announcement dates would enable us to reject the null hypothesis that earnings surprise news has no impact on rival firms' stock prices. Daily abnormal returns are defined as the residuals from the market model, $R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is stock i's return on day t, and R_m is the market return. Coefficients are estimated in the window [t-250, t-50] relative to

Table 1
Stock Price Responses to Quarterly Earnings Announcements: First-to-report versus Industry Competitors.

Event Period	Positive Earnings Surprises			Negative Earnings Surprises		
	Average Abnormal Return (%)	Proportion Positive (%)	z-value	Average Abnormal Return (%)	Proportion Positive (%)	z-value
Panel A: Reporting Firms, 1988-2012 (Positive N = 5,357, Negative N = 2,843)						
[0,0]	0.62	56.6	12.742	−0.76	41.0	−10.495
[0,+1]	0.92	57.0	12.733	−1.24	39.7	−11.962
[-11, −1]	0.43	51.4	5.237	−0.70	43.3	−5.636
Panel B: Industry Competitor Firms, 1988-2012 (Positive N = 5,357, Negative N = 2,843)						
[0,0]	0.10	50.6	4.266	−0.09	45.9	−2.636
[0,+1]	0.11	50.4	3.075	−0.10	46.4	−1.967
[−11, −1]	0.00	48.5	−0.042	−0.17	46.5	−1.577

Earnings surprises are defined as the difference between the actual quarterly earnings-per-share (EPS) and analysts' consensus EPS estimate, scaled by the absolute value of the actual EPS. Abnormal returns (ARs) are calculated as residuals of the market-adjusted model, where coefficients are estimated in the window [*t*-250, *t*-50] relative to announcement date *t*. Cumulative ARs (CARs) are calculated over three event windows. Average ARs and CARs are tested for significance using a 2-tailed z-test.

earnings announcement day *t*. Cumulative abnormal returns over three windows, [−11, −1], [0,0], and [0,+1], are calculated and reported. Cross-sectional average ARs and CARs are tested for significance using a 2-tailed z-test.

Earnings surprises are expressed as the difference between the actual quarterly earnings-per-share (EPS) and analysts' consensus EPS estimate, scaled by the absolute value of the actual quarterly EPS. We analyze positive and negative earnings surprises separately to allow for different effects of announcements on stock prices.

Table 1 summarizes the cross-sectional average daily ARs and CARs over three windows of earnings reporting firms around their earnings announcement days. There are 5357 positive surprises and 2843 negative surprises in the entire sample period, 1988–2012. As shown in Panel A, companies whose quarterly earnings beat analysts' estimates experience a significant 0.62% [z = 12.742] daily average AR on the announcement day, and another significant 0.30% [z = 5.726] on the following day, for a total of 0.92% [z = 12.733] on the two days, [0,+1]. (The positive AR stops at day 2 after the announcement day with a significant 0.06% [z = 2.245], not shown). In addition, investors' expectations also lead to significantly positive average daily ARs in the pre-announcement period, as the CAR for window [−11, −1] is 0.43% [z = 5.237], especially for the four-day window [−4, −1] before announcement days.

Companies whose quarterly earnings are lower than analysts' estimates experience a significant −0.76% [z = −10.495] daily average AR on the announcement day and another significant −0.47% [z = −6.737] on the following day, for a total of -1.24% [z = −11.962] on days [0,+1]. There is no other significant negative AR after *t + 1*. The CAR for window [−11, −1] is −0.70% [z = −5.636].

Overall, earnings surprises appear to be valid signals of information previously unknown to the market because they are associated with significant abnormal returns. Also, CARs over the [−11, −1] pre-announcement window appear to predict the direction of earnings surprises well for both positive and negative surprises.

We next turn to the industry rivals. The empirical estimates of average daily ARs and CARs for these firms are summarized in Table 1, Panel B. These firms experience a significant 0.10% [z = 4.266] daily average AR on the announcement day but an insignificant 0.01% [z = 0.293] on the following day. No significant CARs are found in the pre-announcement period for rival firms' stocks, as the CAR for window [−11, −1] is 0.00% [z = −0.042]. There is also significant negative −0.09% AR [z = −2.636] on the announcement day for rival firms' stock prices. Other ARs and CARs in both the pre- and post-announcement periods are not significant. Overall, positive earnings surprises lead to significant abnormal returns for rival firms' stocks on the announcement days and some other days in the preceding 11 days. Similarly, negative news by the announcing firms has a negative impact on their industry rivals' stocks.

In summary, the earnings surprises show significant stock return effects upon announcement for the reporting firms, and significant, although smaller, effects for their rivals. This enables us to reject H1, that the information released in earnings announcements is firm-specific, with no industry implications. Thus, earnings surprises do appear to have informational value about other firms in the same industry.

6. Univariate empirical analysis of Reg FD's effects

For a first view of the effects of Reg FD, we split the entire sample period into two sub-periods, 1988–1999 and 2001–2012, based on its adoption in October, 2000. Results for the reporting firms based on the pre-Reg FD period are presented in Table 2, Panel A, and results based on the post-Reg FD period are presented in Panel B. Due to an increase in the number of industries, there are significantly more observations in the post-Reg FD than in the pre-Reg FD period. There are 1909 (1551) cases of positive (negative) earnings surprises in 1988–1999, and 3263 (1210) cases of positive (negative) earnings surprises in 2001–2012. (The total numbers of surprises are slightly lower than shown in Table 1 because the year of Reg FD's implementation, 2000, is excluded from this part of the analysis.)

Table 2
Stock Price Responses to Quarterly Earnings Announcements: Before and After Implementation of Reg FD.

Event Period	Positive Earnings Surprises			Negative Earnings Surprises		
	Average Abnormal Return (%)	Proportion Positive (%)	z-value	Average Abnormal Return (%)	Proportion Positive (%)	z-value
Panel A: Reporting Firms, 1988-1999 (Positive N = 1909, Negative N = 1551)						
[0,0]	0.60	57.1	8.459	−0.55	43.1	−6.731
[0,+1]	0.84	56.9	8.261	−0.82	43.1	−6.825
[−11, −1]	0.45	50.1	3.158	−0.92	42.5	−5.836
Panel B: Reporting Firms, 2001-2012 (Positive N = 3263, Negative N = 1210)						
[0,0]	0.63	56.3	9.517	-1.09	37.6	-8.657
[0,+1]	0.96	57.0	9.677	-1.83	34.5	-10.258
[-11, −1]	0.37	51.7	3.758	-0.45	44.0	-2.213
Panel C: Industry Competitor Firms, 1988-1999 (Positive N = 1909, Negative N = 1551)						
[0,0]	0.03	47.3	0.830	−0.04	46.7	−1.086
[0,+1]	0.02	48.0	0.351	−0.05	46.6	−0.854
[−11, −1]	−0.11	46.5	−0.961	−0.30	45.9	−2.406
Panel D: Industry Competitor Firms, 2001-2012 (Positive N = 3263, Negative N = 1210)						
[0,0]	0.13	52.3	4.321	−0.17	44.6	−2.715
[0,+1]	0.15	51.5	3.104	−0.18	46.0	−1.975
[-11, −1]	-0.02	49.0	−0.266	−0.18	46.4	−1.001
Panel E: Differences between ARs and CARs of Reporting and Industry Competitor Firms, 1988–1999						
[0,0]	0.57		5.323	−0.51		−4.302
[0,+1]	0.82		5.168	−0.77		−4.309
[-11, −1]	0.56		2.179	−0.62		−2.196
Panel F: Differences between ARs and CARs of Reporting and Industry Competitor Firms, 2001–2012						
[0,0]	0.50		5.193	−0.92		−4.880
[0,+1]	0.81		5.490	−1.65		−6.122
[-11, −1]	0.39		2.246	−0.27		−0.705

Earnings surprises are defined as the difference between the actual quarterly earnings-per-share (EPS) and analysts' consensus EPS estimate, scaled by the absolute value of the actual EPS. Abnormal returns (ARs) are calculated as residuals of the market-adjusted model, where coefficients are estimated in the window [*t*-250, *t*-50] relative to announcement date *t*. Cumulative ARs (CARs) are calculated over three event windows. Average ARs and CARs are tested for significance using a 2-tailed *z*-test.

It appears that it becomes easier for firms to beat analysts' earnings estimates post-Reg FD. The average CAR over the two-day [0,+1] event window of firms reporting positive earnings surprises increases from 0.84% (z = 8.261) in Panel A to 0.96% (z = 9.677) in the post-Reg FD-period in Panel B. For firms reporting negative earnings surprises, it changes from −0.82% (z = −6.825) in Panel A to −1.83% (z = −10.258) in Panel B. Investors appear to react more strongly to earnings news in the post-Reg FD period than in the pre-Reg FD period.

As for the time leading up to the announcements, CARs are lower before the announcement. For example, the average CAR over the [−11, −1] window of firms reporting positive earnings surprises drops from 0.45% (z = 3.158) in Panel A to 0.37% (z = 3.758) in Panel B and moves from −0.92% (z = −5.836) to −0.45% (z = −2.213) for firms reporting negative earnings surprises.

We next examine the results of rival firms into the pre-Reg FD period (Panel C) and the post-Reg FD period (Panel D). The findings are similar to those of the reporting firms in that the adoption of the Reg FD in 2000 also leads to larger announcement-period CARs for industry rival firms. For example, the average CAR over the two-day [0,+1] event window of rival firms of firms reporting positive earnings surprises increases from 0.02% (z = 0.351) in Panel C to 0.15% (z = 3.104) in Panel D, and the average CAR over the two-day [0,+1] event window of rival firms of firms reporting negative earnings surprises changes from −0.05% (z = −0.854) to −0.18% (z = −1.975) in Panel D.

Panel E reports data on the differences between the CARs of the reporting and competitive firms before Reg FD took effect, and Panel F reports the equivalent after Reg FD. The differences are significant, and generally the same before and after Reg FD took effect for the positive earnings surprises. The differences are also significant for the negative surprises, but larger. On average the difference in event days [0,+1] for these negative surprises was larger after than before: −0.77 before, and −1.65 after. The post-Reg FD period includes the financial crisis, and bad news might have travelled faster in that challenging environment.

In summary, earnings announcement effects are somewhat stronger after the introduction of Reg FD than before for both the reporting firms and their rivals. This enables us to reject H2. We now turn to multivariate analysis of the earnings surprises and abnormal returns.

Table 3
Multivariate Analysis of Earnings Announcement Effects. Controlling for Industry Concentration and Leverage.

	(1) Announcing Firms Coefficient [*p*-value]	(2) Rival Firms Coefficient [*p*-value]	(3) Announcing Firms Coefficient [*p*-value]	(4) Rival Firms Coefficient [*p*-value]
Intercept	1.1235	0.0419	1.3800	0.0477
	[0.001]***	[0.792]	[0.000] ***	[0.793]
ESURP	2.1154	0.1917	2.1150	0.1916
	[0.000]***	[0.003]***	[0.000] ***	[0.003]***
ln(MV)	−0.1160	−0.0005	−0.1214	−0.0004
	[0.001]***	[0.978]	[0.001] ***	[0.982]
Herfindahl			−0.3568	0.0475
			[0.441]	[0.832]
D/A			−0.3619	−0.0445
			[0.229]	[0.759]
R^2	0.0065	0.0002	0.0067	0.0002
SE	4.7660	2.1438	4.7666	2.1442

Note: *, **, *** Significantly different from zero at the 0.10, 0.05, and 0.01 levels respectively, using as two-tailed test.
Ordinary least squares regression analyses are conducted using the 2-day [0,+1] event-window CAR as the dependent variable, and independent variables based on earnings surprises (ESURP), market value of the announcing firm (ln(MV)), the Herfindahl Index (Herfindahl), and industry Debt-Asset ratio (D/A). Estimated coefficients and their associated *p*-values are presented.

7. Multivariate empirical analysis of Reg FD's effects

Table 3 presents the results of the ordinary least squares regression analysis based on Eqs. (2a) and (2b) and Eqs. (3a) and (3b) for the 2-day CARs of the announcing and rival firms. We first examine the relationship between CARs and earnings surprises while controlling for size of the announcing firms using Eqs. (2a) and (2b). For the announcing firms, all three estimated coefficients are significantly different from zero at the 1% confidence level, as seen in Table 3, Column 1. The positive 1.1235% intercept suggests that on average, the first firm in the industry to report its quarterly earnings gains a positive 2-day CAR relative to the other firms in its industry. The coefficient of the *ESURP* variable confirms that the 2-day CARs are positively correlated with the magnitude of the surprises. The negative −0.1150 coefficient of the *ln(MV)* suggests that smaller announcing firms tend to do better than announcing firms with relatively larger market capitalizations in this 2-day window. As shown in Table 3, Column 2, the 2-day CARs of the rival firms are positively associated with the earnings surprises of the announcing firms. Otherwise, they are on average zero, as evidenced by the fact that the intercept term is not significantly different from zero.

Following Eqs. (2a) and (2b), we add two additional factors, the Herfindahl Index (H) and the industry debt-to-asset ratio *(D/A)*. However, due to their corresponding insignificant *p*-values, we conclude that neither of these industry variables provides any additional explanatory power for the CARs. (See Table 3, Columns 3 and 4.) Therefore, industry concentration and leverage do not contribute any explanatory power to the 2-day event-window CARs for either the reporting firms or their rivals.

Our key analysis is to examine the relation between returns and earnings surprises before and after Reg FD. We define the dummy variable *Reg.FD* with a value of one if earnings announcements in question are made after its implementation in October, 2000, and zero otherwise. We also define the interaction variable *Reg.FD * ESURP*, as in Eqs. (4a) and (4b), and Eqs. (5a) and (5b). The regression results are summarized in Table 4.

For the reporting firms, the intercept and the estimated coefficients of *ESURP* and *ln(MV)* and their *p*-values in Columns 1 and 3 are qualitatively similar to those of their counterparts in Table 3. The significant coefficients of *Reg.FD*, −0.1941 in Column 1 and −0.1818 in Column 3, indicate the 2-day event-window CARs are lower after the adoption of Reg FD. The significant coefficients of *Reg.FD * ESURP*, 1.7751 in Column 1 and 1.7732 in Column 3, indicate that the market rewards positive surprises more in the post-Reg RD era than before. This suggests that the adoption of Reg FD is associated with better rewards for stronger-than-expected earnings, and stronger punishment for weaker-than-expected earnings.

The adoption of Reg FD also results in a change of the single significant coefficient for rival firms' 2-day CARs from variable *ESURP* to the interaction variable *Reg.FD * ESURP*, as seen in Table 4, Columns 2 and 4. This is important because it indicates that the industry effects are more significant after Reg FD was imposed than before. It enables us to reject H3, and is the basis for our conclusion that even if there was industry-relevant information in firms' earnings surprises before Reg FD was implemented, market participants didn't make use of it until Reg FD made other sources of information unavailable.

8. Robustness and related tests

We supplement our basic findings with three related empirical robustness tests. We first test whether the second earnings announcement in an industry in a given quarter contains additional information over and above that revealed by the first announcement. To test for this, we define a dummy variable, $SECOND_j$, with a value of one when the earnings announcement is the second in the industry in a given quarter, and zero otherwise. We also define an interaction term, defined as the product

Table 4
Multivariate Analysis of Earnings Announcement Effects to Test for Effects of the Implementation of Reg FD.

	(1) Announcing Firms Coefficient [*p*-value]	(2) Rival Firms Coefficient [*p*-value]	(3) Announcing Firms Coefficient [*p*-value]	(4) Rival Firms Coefficient [*p*-value]
Intercept	0.8995	−0.0038	1.1349	−0.0050
	[0.008]***	[0.981]	[0.003]***	[0.979]
ESURP	1.4139	0.0904	1.4133	0.0900
	[0.000]***	[0.281]	[0.000]***	[0.283]
ln(MV)	−0.0844	0.0065	−0.0907	0.0067
	[0.030]**	[0.728]	[0.021]**	[0.723]
Herfindahl			-0.2878	0.0612
			[0.533]	[0.784]
D/A			-0.3373	−0.0368
			[0.263]	[0.801]
Reg.FD	−0.1941	−0.0460	−0.1818	−0.0457
	[0.070]*	[0.375]	[0.091]*	[0.381]
Reg.FD*ESURP	1.7751	0.2600	1.7732	0.2606
	[0.000]***	[0.049]**	[0.000]***	[0.049]**
R^2	0.0086	0.0002	0.0087	0.0003
SE	4.7619	2.1442	4.7627	2.1446

Note: *, **, *** Significantly different from zero at the 0.10, 0.05, and 0.01 levels respectively, using as two-tailed test.
Ordinary least squares regression analyses are conducted using the 2-day [0,+1] event-window CARs as the dependent variables. Independent variables include earnings surprises (ESURP), market value of the announcing firm (ln(MV)), the Herfindahl Index (Herfindahl), the industry Debt-Asset ratio (D/A). An indicator variable for the implementation of Reg FD in October, 2000, has a value of zero for earnings announcements before 2000, and a value of 1 for announcements after 2000. Also included is an interaction term for earnings surprises and Reg.FD. Estimated coefficients and their associated *p*-values are presented.

Table 5
Test of Significance of Industry Information Revealed in the First vs. the Second Earnings Announcements in an Industry in a Given Quarter.

	(1) Announcing Firms Coefficient [p-value]	(2) Rival Firms Coefficient [p-value]
Intercept	0.6784	0.1173
	[0.004]***	[0.287]
ESURP	0.1135	0.1512
	[0.000]***	[0.001]***
ln(MV)	−0.0619	−0.0135
	[0.015]**	[0.261]
SECOND	+0.0112	−0.0403
	[0.876]	[0.226]
SECOND*ESURP	−0.0647	+0.0009
	[0.105]	[0.951]
R^2	0.0032	0.0003
SE	4.8677	2.1467

Note: *, **, *** Significantly different from zero at the 0.10, 0.05, and 0.01 levels respectively, using as two-tailed test.
Ordinary least squares regression analyses are conducted using Eqs. (6a) and (6b). The dependent variable is the 2-day [0,+1] event-window CAR of the reporting firm. The independent variables include the earnings surprise ESURP of the reporting firm, its market value (ln(MV)), and a dummy variable SECOND indicating whether it is the first (value is zero) or the second (value is one) in the industry to report its earnings. Estimated coefficients and their associated *p*-values are presented.

of the dummy variable $SECOND_j$ and the magnitude of the earnings surprise $ESURP_j$. Adding these to Eqs. (2a) and (2b) yields Eqs. (6a) and (6b).

$$CAR_j = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \beta_3 \times SECOND_j + \beta_4 \times SECOND_j * ESURP_j + \varepsilon_j \quad (6a)$$

$$CAR_p = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \beta_3 \times SECOND_j + \beta_4 \times SECOND_j * ESURP_j + \varepsilon_P \quad (6b)$$

If the estimated coefficient on *SECOND* or its interaction with earnings surprises *ESURP* is significant, that would indicate that the second announcement has informational value. If these coefficients are not significant, it appears that the second announcement does not reveal more industry information, and we can focus on only the first earnings announcement.

Table 5 presents the results of the ordinary least squares regression analysis based on Eqs. (6a) and (6b). Based on their low *p*-values in this regression, the second earnings news in the industry (*SECOND*) and the interaction term (*SECOND*ESURP*) relative to the first earnings news in the industry do not appear to provide any clear additional explanatory power of the CARs. In our empirical analysis we therefore use only the first earnings announcement of a firm in a given industry each quarter.

Table 6
Multivariate Analysis of Earnings Announcement Effects Controlling for Consistency between Earnings and Sales Announcements.

	(1) Announcing Firms Coefficient [*p*-value]	(2) Rival Firms Coefficient [*p*-value]	(3) Announcing Firms Coefficient [*p*-value]	(4) Rival Firms Coefficient [*p*-value]
Intercept	1.4187	0.1639	1.5026	0.2006
	[0.017]**	[0.548]	[0.025]**	[0.513]
ESURP	3.0753	0.2850	3.0744	0.2848
	[0.000]***	[0.011]**	[0.000]***	[0.011]**
ln(MV)	−0.1353	−0.0104	−0.1389	−0.0111
	[0.028]**	[0.711]	[0.025]**	[0.697]
Herfindahl			−0.3685	−0.0038
			[0.608]	[0.991]
D/A			0.0698	−0.0796
			[0.883]	[0.714]
OPSS	−0.4080	−0.0632	−0.4065	−0.0623
	[0.009]***	[0.376]	[0.009]***	[0.384]
OPSS*ESURP	0.0440	0.0536	0.0427	0.0537
	[0.637]	[0.209]	[0.647]	[0.209]
R^2	0.0070	0.0008	0.0086	0.0013
SE	5.3725	2.3322	5.3585	2.3381

Note: *, **, *** Significantly different from zero at the 0.10, 0.05, and 0.01 levels respectively, using as two-tailed test.
Ordinary least squares regression analyses are conducted using the 2-day [0,+1] event-window CARs as the dependent variable. Independent variables include earnings surprises (ESURP), market value of the announcing firm (ln(MV)), the Herfindahl Index (Herfindahl), the industry Debt-Asset ratio (D/A). An indicator variable for consistency between earnings and sales announcements, OPSS, is also included. It has a value of zero for if the direction of the earnings and sales surprises are the same, and a value of one otherwise. Also included is an interaction term for consistency and the amount of earnings surprise. Estimated coefficients and their associated *p*-values are presented.

Next, it frequently happens that a company's earnings surprise news is contradicted by its sales surprise news from the same quarterly report. Thus it is of interest to examine whether a contradictory sales surprise impacts the effect of an earnings surprise news and the sensitivity of the stock price response to the size of *ESURP*. Therefore, a dummy variable *OPSS* (opposite sales surprise) and an interaction term *OPSS*ESURP* are added. The variable *OPSS* has a value of one if two types of news contradict each other, and zero otherwise. Due to its shorter history in the I/B/E/S database, the following two models are tested only for the 2001–2012 period.

$$CAR_j = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \beta_9 \times OPSS_j + \beta_{10} \times OPSS_j * ESURP_j + \varepsilon_j \quad (7a)$$

$$CAR_j = \alpha + \beta_1 \times ESURP_j + \beta_2 \times \ln(MV_j) + \beta_5 \times H_p + \beta_6 \times (D/A)_p + \beta_9 \times OPSS_j + \beta_{10} \times OPSS_j * ESURP_j + \varepsilon_P \quad (8a)$$

As earlier, we also define Eqs. (7b) and (8b), which are the same as Eqs. (7a) and (8a), except that the dependent variable is the CAR for the industry rivals, CAR_p, rather than for the reporting firm, CAR_j.

The intercept and estimated coefficients of *ESURP* and *ln(MV)* and their *p*-values in Columns 1 and 3 of Table 6 are economically similar to those of their counterparts in Table 4. The significant coefficients of *OPSS*, −0.4080 in Column 1 and −0.4065 in Column 3, indicate the smaller 2-day event-window CARs received by the leading announcing firms if the earnings and sales surprises are in opposite directions. No significant coefficients of *OPSS * ESURP* are found.

Our third robustness test focusses on the potentially confounding effects from other events that took place close to the time of Reg FD's implementation. The Sarbanes/Oxley legislation to strengthen corporate governance became effective in mid-2002. The Global Analyst Settlement became effective in April, 2003. Of these two events, the one more likely to affect earnings announcement effects on stock prices and returns is Sarbanes/Oxley because it should be associated with cleaner and more accurate earnings disclosures. The Global Settlement deals most specifically with IPO pricing and analyst recommendations, is therefore less likely to affect stock responses to earnings surprises. To test for the effect of Sarbanes/Oxley, we add a dummy variable to Eqs. (4a) and (5a). The results for the reporting firms are summarized in Table 7. The SOX dummy variable is not significant, suggesting that the effects of earnings announcement on other firms in the industry may be attributed to the implementation of Reg FD rather than to Sarbanes/Oxley.

9. Summary and conclusions

When S&P 500 companies lead their industry rivals in surprising the market with earnings better (worse) than analysts' forecasts, their stock prices are rewarded (punished) with significant positive (negative) cumulative abnormal returns in a 2-day window. The significant positive (negative) daily abnormal returns seldom extend beyond the second day after announcement day ($t+2$). Rival firms also experience significant positive CARs in the 2-day window following positive earnings news by the announcing firms, although the magnitude of the response is smaller.

Table 7
Estimate of Potential Confounding Effects of Sarbanes/Oxley.

	(1) Announcing Firms Coefficient [*p*-value]	(2) Announcing Firms Coefficient [*p*-value]
Intercept	0.9591	0.8665
	0.031**	0.073*
ESURP	0.3320	0.3320
	0.000***	0.000***
ln(MV)	−0.0793	−0.0807
	0.127	0.121
Herfindahl		0.2470
		0.724
D/A		0.1689
		0.676
Reg.FD	−0.3844	−0.3895
	0.195	0.190
Reg.FD*ESURP	0.3261	0.3246
	0.100*	0.101
SOX	0.0227	0.0261
	0.939	0.930
R^2	0.0079	0.0080
SE	4.8008	4.8016

Note: *, **, *** Significantly different from zero at the 0.10, 0.05, and 0.01 levels respectively, using as two-tailed test.
Ordinary least squares regression analyses are conducted using the 2-day [0,+1] event-window CARs as the dependent variable. Independent variables include earnings surprises (ESURP), market value of the announcing firm (ln(MV)), the Herfindahl Index (Herfindahl), and the industry Debt-Asset ratio (D/A). An indicator variable for the implementation of Reg FD in October 2000 is included. It has a value of zero for earnings announcements before 2000, and a value of 1 for announcements after 2000. Also included is an interaction term for earnings surprises and Reg.FD. An indicator variable for the implementation of the Sarbanes/Oxley legislation is also included, SOX. It has a value of zero for earnings announcements on or before Q2 2002, and values of one for earnings announcements on or after Q3 2002. Estimated coefficients and their associated *p*-values are presented.

In regard to the implementation of Reg FD in 2000, the CARs in the pre-announcement [−11, −1] window are lower after adoption than in the pre-Reg FD period, suggesting that there is less anticipation in advance of the announcements. Since the CARs in the announcement [0,+1] window are higher than in the pre-Reg FD period, investors appear to react more strongly to earnings news in the post-Reg FD period.

We also break down the results of rival firms into pre-Reg FD period and post-Reg FD period, and the comparisons are similar to those of the reporting firms. We find less anticipation of future earnings announcements and that the 2-day abnormal returns around earnings announcements are larger after Reg FD was implemented. We interpret this as consistent with analysts having less private information at the time of the announcements, consistent with the fundamental aim of Reg FD to help level the informational playing field.

The adoption of Reg FD is associated with smaller 2-day announcement period CARs for earnings announcing firms, but a significant positive coefficient for the interaction variable *Reg.FD * ESURP*. This suggests a stronger association between the magnitude of the earnings surprises and the 2-day announcement period CARs for announcing firms. The results for rival firms are similar, and are significant at the 0.049 level of confidence.

Overall, our results support the hypothesis that earnings announcement surprises have significant contagion effects on the returns other firms in the industry and provide new evidence of the effects of Reg FD. More fundamentally, we conclude that one way in which Reg FD has impacted the informational environment is to cause market participants to utilize industry information more intensively than previously. This reflects one way in which analysts and other investors have sought new sources of information to supplement or replace information previously available to them.

References

Agapova, Anna, Madura, Jeff, & Mailibayeva, Zhanel. (2012). Does regulation fair disclosure reduce the information quality of managerial guidance? *The Financial Review*, *47*(2), 273–277.

Agrawal, Anup, Chen, Mark A., & Chadha, Sahiba. (2006). Who is afraid of Reg FD? The behavior and performance of sell-side analysts following the SEC's fair disclosure rules. *Journal of Business*, *79*(6), 2811–2834.

Akhigbe, Aigbe, Madura, Jeff, & Newman, Melinda L. (2006). Industry effects of analyst stock revisions. *Journal of Financial Research*, *29*(2), 181–198.

Bhojraj, Sanjeev, Cho, Young Jun, & Yehuda, Nir. (2012). Mutual fund size, fund family size and mutual fund performance: The role of selective disclosure and regulation FD. *Journal of Accounting Research*, *50*(3), 647–684.

Bushee, B., Matsumoto, D., & Miller, G. (2004). Managerial and investor responses to disclosure regulation: The case of FD and conference calls. *The Accounting Review*, *79*, 617–643.

Bushee, Brian J., Jung, Michael J., & Miller, Gregory S. (2013). *Do investors benefit from selective access to management?* Available at SSRN: http://ssrn.com/abstract=1880149

Green, T., Clifton, Jame, Russell, E., Markov, Stanimir, & Subasi, Musa. (2014). Access to management and the informativeness of analyst research. *Journal of Financial Economics (JFE)*, *109*(3), 813–834.

Heflin, F., Subramanyam, K. R., & Zhang, Y. (2003). Regulation FD and the financial information environment: Early evidence. *The Accounting Review*, *78*, 1–37.

Jackson, Dave, & Jeff, Madura. (2007). Impact of regulation fair disclosure on the information flow associated with profit warnings. *Journal of Economics and Finance*, *31*(1), 59–74.

Janakiraman, S., Radhakrishnan, S., & Szwejkowski, R. (2007). Regulation fair disclosure and analysts' first-forecast horizon. *Journal of Accounting, Auditing and Finance*, *22*, 339–378.
Jorion, Philippe, & Zhang, Gaiyan. (2007). Good and bad credit contagion: Evidence from credit default swaps. *Journal of Financial Economics*, *84*, 860–883.
Koch, Adam S., Lefanowicz, Craig E., & Robinson, John R. (2013). Regulation FD: A review and synthesis of the academic literature. *Accounting Horizons*, *27*(3), 619–646.
Kross, W., & Suk, I. (2012). Does regulation FD work? Evidence from analysts' reliance on public disclosure. *Journal of Accounting and Economics*, *53*, 225–248.
Lang, Larry H. P., & Stulz, Rene M. (1992). Contagion and competitive intra-industry effects of bankruptcy announcements. *Journal of Financial Economics*, *32*, 45–60.
Laux, P., Starks, L. T., & Yoon, P. S. (1998). The relative importance of competition and contagion in intra-industry information transfers: an investigation of dividend announcements. *Financial Management*, *27*(3), 5–16.
Li, Yutao, Saunders, Anthony, & Shao, Pei. (2015). Did regulation fair disclosure affect credit markets? *Journal of Banking and Finance*, *54*, 46–59.
Loh, Roger, & Stulz, Rene M. (2011). When are analyst recommendation changes influential? *Review of Financial Studies*, *24*(2), 593–627.
Mensah, Y., & Yang, R. (2008). An empirical evaluation of analysts' herding behavior following regulation fair disclosure. *Journal of Accounting & Public Policy*, *27*, 317–338.
Mohanram, P., & Sunder, S. (2006). How has regulation fair disclosure affected the functioning of financial analysts. *Contemporary Accounting Research*, *23*, 555–564.
Prokopczuk, Marcel. (2010). Intra-industry contagion effects of earnings surprises in the banking sector. *Applied Financial Economics*, *20*, 1601–1613.
Sidhu, Baljit, Smith, Tom, Whaley, Robert E., & Willis, Richard H. (2008). Regulation fair disclosure and the cost of adverse selection. *Journal of Accounting Research*, *46*(3), 697–728.