**The impact of Regulation FD on the information environment: Evidence from the stock market response to stock split announcements**

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**Abstract**

This paper examines the information environment effects of Regulation Fair Disclosure (Reg FD). We investigate the stock market response to stock splits in the pre- and post-regulation periods. We find that abnormal returns around split announcement are positive in both periods, but the magnitude of the returns is smaller in the post-FD period relative to the pre-FD period. The difference between the pre- and post-FD period abnormal returns persists even after we control for factors that may affect split announcement returns. We also find that the magnitude of the association between announcement returns and the unexpected portion of the split factor has increased post-regulation. Our analysis of performance trends for split firms reveals that patterns of profitability and changes in profitability in the years around stock splits are similar in the pre- and post-FD periods. However, we find that announcement returns are associated with lagged profitability changes in the pre-FD period, but with future profitability changes in the post-FD period. Collectively, our results imply that Reg FD has reduced information asymmetry and improved price efficiency.

**Keywords:** Regulation Fair Disclosure; stock splits; abnormal returns; information asymmetry; price efficiency

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**1. Introduction**

This paper presents evidence on the information environment effects of Regulation Fair Disclosure (hereafter Reg FD) by investigating how the stock market’s response to an important category of corporate events – stock splits – differs in the pre- and post-regulation periods. Prior research (e.g., Atiase 1985) documents that the information environment influences the market reaction to various market events. Reg FD, which was adopted on October 23, 2000, prohibits firms from selectively providing information to investment professional and analysts before disclosing it to the public. The regulation thus significantly impacts the mechanism through which information is transmitted to the market. The regulators’ objective was to eliminate the informational advantage available to a select few which allowed them to profit at the expense of others. However, practitioners complained that the regulation reduced information flow to the markets, resulting in less accurate expectations and more noise in trading, thus making the market more inefficient.

Most of the literature on the effect of Reg FD focuses either on earnings announcements or on various informational characteristics of analysts’ forecasts. For example, Eleswarapu et al. (2004) find a decline in information asymmetry after the regulation; this decrease is more pronounced for small and less liquid stocks. Heflin et al. (2003) find that average abnormal return volatility around earnings announcement is relatively low in the post-Reg FD period. They conclude that the regulation did not adversely affect the pre-earnings announcement information available to investors.

We extend this literature by comparing stock price reactions to stock split announcements before and after Reg FD. We believe that stock splits are an attractive setting to examine information environment effects for the following reasons. Numerous studies have documented abnormal stock returns around stock split announcements (Titman 2002). This evidence demonstrates that stock splits are informative. However, a split, per se, does not affect the cash flows or wealth of the firm. Thus stock splits are a better setting to analyze information environment changes than are earnings announcements or dividend changes, since cash flow effects do not need to be measured and controlled for. Finally, Byun and Rozeff (2003) find that the stock market responds relatively efficiently to stock splits; this evidence also supports our adoption of split announcements as the investigative setting.

In order to analyze post-Reg FD changes in the information environment, we perform the following analyses. First, we compare split announcement abnormal returns in the pre- and post-Reg FD periods (pre- and post-FD periods hereafter) for firms which split their stocks in both periods. This comparison effectively uses a firm as its own control, and reduces the possibility that our results are attributable to some unobserved firm-specific characteristics unrelated to Reg FD. We find that abnormal returns around split announcement are positive in both periods; however, the magnitude of the returns is smaller in the post-FD period relative to the pre-FD period. This difference between the pre- and post-FD period abnormal returns persists even after we control for several factors that may affect split announcement returns. Finally, since differences in abnormal returns could indicate differences in information content, we also compare profitability and changes in profitability for sample firms in the pre- and post-FD periods. We find similar patterns of operating profitability and changes in profitability both before and after stock splits in both test periods. Collectively, our results indicate that Reg FD has reduced information asymmetry and improved price efficiency.

This remainder of this paper is organized as follows. Section 2 presents a brief review of the literatures on Reg FD and stock splits. Section 3 describes the hypothesis. Section 4 describes the data and our sample screening procedures. The results are described in section 5, and section 6 concludes the paper.

**2. Related literature**

In this section, we review prior studies in two streams of research relevant to our study: the impact of Reg FD on the information environment and the stock market response to stock split announcements.

2. 1. Impact of Reg FD on the information environment

Prior research has examined how Reg FD impacts various aspects of the information environment. For example, Eleswarapu et al. (2004) document a decline in information asymmetry as measured by trading costs at the time of earnings announcements, but find that overall information flow is unchanged when both mandatory and voluntary disclosures are considered. Heflin et al. (2003) also find a reduction in information asymmetry, as measured by absolute abnormal returns around earnings announcements, and an increase in the quantity of voluntary forward looking disclosures. Bailey et al. (2003) find that trading volume increased after the regulation, and conclude that Reg FD increased the quantity of voluntary disclosures of current quarter’s earnings information available to the public. Lee et al. (2004) find that the number of conference calls and the number of firms hosting such calls increase after Reg FD and conclude that the regulation affected the information environment by altering how firms disseminate information to investors.

Several Reg FD studies investigate analyst’ forecast attributes such as accuracy and forecast dispersion as measures of changes in the information environment. Agrawal et al. (2002) find that analyst forecasts are less accurate post Reg FD. Other studies find no evidence of deterioration in forecast accuracy after Reg FD and conclude that analysts have, following the regulation, enhanced their efforts to gather firm specific information (Shane et al. 2001; Heflin et al. 2003; Mohanram and Sunder 2006). However, Iran and Karamanou (2003) document an increase in forecast dispersion following Reg FD, consistent with deterioration in the information environment. Mohanram and Sunder (2006) find that the increase in forecast dispersion does not apply to all-star analysts.

2.2. Stock market reaction to stock split announcements

An extensive body of research (e.g., Fama et al. 1969) documents that the stock market responds positively to stock split announcements. Researchers have proposed two hypotheses to explain this stock price behavior. The signaling hypothesis posits that managers use stock splits to signal improvements in future performance. Thus stock splits play a role in communicating managers’ private information indirectly to the market. The signaling explanation is consistent with increases in earnings and/or dividends subsequent to the split. Studies have also argued that the costs associated with stock splits deter managers from splitting stocks absent any knowledge of future performance improvements (e.g., Brennan and Copeland 1988; Grinblatt et al. 1984; Brennan and Hughes 1991)

Another cited motivation for stock splits is the optimal price range hypothesis, or the liquidity hypothesis. According to the liquidity hypothesis, firms split stock in an effort to bring the stock price to a lower level that is attractive to new investors whose trading might improve the stock’s liquidity (Lakonishok and Lev 1987; McNichols and Dravid 1990; Muscarella and Vetsuypens 1996). Empirical investigations of the liquidity hypothesis provide mixed results. For example, Copeland (1979) and Conroy and Harris (1999) observe a drop in split adjusted volume and conclude that liquidity actually declines after the split. However, when liquidity is measured using stock return volatility and bid-ask spreads, some studies (Copeland 1979; Lamoureux and Poon 1987; Conroy and Harris 1999; Dubofsky 1991) document a significant increase in liquidity. Baker and Gallagher (1980) and Baker and Powell (1993) survey results suggest that liquidity and optimal trading range are important motivations behind stock splits. Easley, et al. (2002) and Easley and O’Hara (2004) show that the number of uninformed trades and trading costs to uninformed traders both increase, consistent with a deterioration in liquidity.

A few researchers have combined the signaling and liquidity hypotheses into a single “self-selection” hypothesis (e.g., Ikenberry et al. 1996). The self-selection hypothesis suggests that managers split stocks to move share prices to an optimal trading range and increase liquidity when they are optimistic about the firm’s future performance. Eisemann and Moses (1978) show that managers undertake stock distributions to express their confidence in their firms and to simultaneously increase the number of investors. Likewise, Elgers and Murray (1985) find that managers split stocks and issue stock dividends to signal optimistic expectations about their firms, but that the optimal trading range hypothesis holds only for large distributions. McNichols and Dravid (1990) conclude that managers take split factors into consideration when deciding whether to split their stocks.

**3. Hypothesis**

Reg FD reduces selective disclosure; as a result, stock prices are less likely to be influenced by private information. Consequently, information asymmetry among market participants is expected to decrease in the post-FD period.[[1]](#footnote-1) Empirical and theoretical evidence suggests that a decrease in information asymmetry among investors reduces the advantage enjoyed by informed investors, and therefore the premium enjoyed by uninformed investors.

Easley and O’Hara (2004) explain how information differences across investors affect security returns using three stages of the capital market. At the first stage, they consider a market with the arbitrary belief, where investors believe that assets are mispriced and they will get compensated for whatever they believe as optimal portfolios. In the next stage, they consider a market where investors have common priors and are sophisticated enough to interpret the information given to them, but they end up with differing beliefs because not all information is equally shared among investors. Consequently, investors with private information have better beliefs and end up having better portfolios than uninformed investors. This generates higher expected excess returns for informed investors. The pre-Reg FD market environment can be classified as of this type. In the third stage, Easley and O’Hara (2004) consider a market where private information is shared equally by all investors. As a result, investors hold common portfolios which are less risky and yield smaller excess returns. The post-Reg FD market environment falls in this third category, assuming successful implementation of the regulation.

The literature on stock splits also documents relatively large split announcement returns for firms classified as having high levels of information asymmetry, proxied by firm size (Grinblatt et al. 1984; Ikenberry et al. 1996). If Reg FD reduces the level of information asymmetry in the market, abnormal returns around the split announcements are expected to be smaller in the post-FD period than the pre-FD period. Our hypothesis is formally stated (in an alternative form) as follows:

*Hypothesis: Abnormal returns surrounding the split announcement are higher in the pre-FD period than in the post-FD period.*

**4. Sample and Data**

We obtain stock split distributions for shares listed on NYSE/AMEX/NASDAQ for the period 1995 to 2006 from CRSP (CRSP distribution code=5523). We identify 4,246 splits announced by 3,121 firms for the pre-FD period and 2,262 splits announced by 1,755 firms during the post-FD period. We delete stock distributions with a split factor of less than or equal to .25 (that is, a split of less than 5:4) following Grinblatt et al. (1984).[[2]](#footnote-2) Since Reg FD came into effect on October 23, 2000, we use this date to categorize the observations as pre- and post-FD. To avoid the general market confusion induced by the new regulation (e.g., Sikora 2000), we exclude splits occurring during the third and fourth quarters of 2000. We restrict the sample to firms that announce splits in both pre- and post-FD periods. This criterion enhances comparability between pre- and post-FD observations, and also helps control for extraneous factors such as idiosyncratic risk. We retain multiple splits by the same firm to maximize the sample size. Splits are often announced in conjunction with earnings or dividend change announcements. Since these other events could confound our results, we delete split announcements that coincide with earnings or dividend change announcements. The final sample consists of 438 splits from the pre-FD period, and 425 splits from the post-FD period. Financial data for sample observations are obtained from Compustat; this reduces the sample size for certain tests as indicated in the next section.

**5. Empirical Analysis**

5.1. Descriptive statistics

Table 1 presents descriptive statistics for our final sample of 863 split announcements. Most of our sample firms (over 90 percent) have a split factor of 0.5 (3 to 2 split) or 1 (2 for 1 split). Specifically, 170 (180) and 212 (191) observations from the pre-FD period and the post-FD period, respectively, have a split factor of 0.5 (1). The rest of the sample has split factors in the 0.25 to 4 range. The split factor variable is not statistically different between periods. The mean (median) pre-split stock price is $57.96 ($45.19) in the pre-FD period and $53.64 ($49.74) in the post-FD period and the differences between pre- and post- FD periods are not statistically significant. The mean (median) market capitalization is $4,845 million ($565 million), and $7,574 million ($1,782 million) for the pre FD and post-FD period sample firms, respectively. This indicates that the market value of equity during the post-FD period is almost twice that during the pre-FD period. The larger mean relative to median market capitalization indicates that that firm size is skewed to the right. Since the sample is composed of firms that announce splits in both periods, this result provides evidence that firms that announce splits tend to grow.

The *Leakage* variable, measured as the stock return from 7 days before through 3 days before the split announcement, is mostly negative except for the mean for the post-FD period. Since stock splits are favorable news, the negative value of *Leakage* indicates that there may be little or no anticipation in the market about many of the stock splits included in our sample. The difference in mean *Leakage* variable between pre- and post-FD periods is not statistically significant. *Runup* is the proportional price change from 120 days before the split to 8 days prior to the split announcement The mean (median) *Runup* for the pre-FD period is 23.8% (24.50%) and 21.00% (19.06%) for the post-FD period. This is consistent with the prior findings that a stock split announcement is preceded by significant stock price increases (Grinblatt et al. 1984; Ikenberry et al. 1996). The difference in median *Runup* between periods is statistically significant at the 0.01 level. The mean (median) market returns *(Mret*) measured as CRSP value weighted index return is 0.22% (0.26%) and 0.06% (0.14%) for the pre- and post-FD period, respectively. The pre- and post period market returns are significantly different at the 0.05 level, suggesting that the overall market returns have declined after the regulation. The mean (median) dividend per share is $0.35 ($0.15) and $0.33 ($0.22) in the pre- and post- FD period, respectively; however, the differences between the two periods are not statistically significant.

[Insert Table 1 Here]

5.2. Univariate Analysis (Event study)

Event dates are spread out in calendar time for our sample; thus we can assume the market effects average out over periods. Accordingly, we follow standard event study practice to generate returns residuals. Defining the split announcement date as day 0, abnormal returns are the residuals from a one-factor market model estimated over the period day -250 through day -100. The CRSP value-weighted index return is used to proxy for market return. The distribution event date (day 0) is the declaration date of the event on the CRSP.

ARi,t = Ri,t  - (αi +βi Rm,t)

where, Ri,t is the daily return for the firm i for day t and Rm,t is the returns on the CRSP value weighted index for day t. α and β are the parameters of the market model, estimated from day

-250 to day -100 prior to the split announcements.

Table 2, Panel A shows the mean abnormal returns from day -2 to day +2 for both periods. The abnormal returns on day 0 are positive and statistically significant; however, abnormal returns during the pre-FD period are greater than those in the post-FD period (Pre-FD period: 0.93%; post-FD period: 0.26%). This suggests that either a stock split brings less new information to the market in the post-FD period, or information asymmetry has reduced in the post-FD period. Interestingly, the mean abnormal return in the post-FD period is positive and significant only on day 0, but the positive return is reversed one day after the split announcement. Conversely, the abnormal returns for short run event windows continue to be positive and the reversal of these positive returns is relatively small in the pre-FD period.

The last two columns of Table 2 present the differences in the mean abnormal returns between pre- and post- FD periods. The mean difference is positive, indicating that the average abnormal returns of the post-FD period are lower than those of the pre-FD period. These results are consistent with our expectation that abnormal returns associated with stock split announcements are lower in the post-FD period than in the pre-FD period, suggesting that information asymmetry has declined after the regulation.

Panel B of Table 2 reports the mean cumulative abnormal returns (CARs) for several event windows, including two days (-1 to 0), three days (-1 to +1), and five days (-2 to +2) around the split announcement, one month before (-20 to -3), and one month after (+3 to +20). In the pre-FD period, the mean and median five-day and three-day CARs are significantly positive while most of the mean CARs are insignificant (except the two-day CAR, which is marginally significant at the 10 % level) and the median CARs turn out to be negative in the post-FD period. The differences for the short even windows are all significant, suggesting that the market reaction to the split announcements is significantly different between pre- and post- FD periods. In longer event windows, CARs accumulated over one month prior to the split announcement are not significant for both periods, while CARs accumulated over one month subsequent to the split announcement are significantly negative for both periods. The one-month negative returns suggest that the market initially overreacts to the split announcement, but the overreaction is partially corrected within a month (or less) in both periods. Notably, this adjustment takes place more rapidly in the post-FD period as early as one day after the split announcement. Also, in the post-FD period, the magnitude of the CAR reversal is much larger (mean of -1.62 %) than the announcement returns (0.26%), more than canceling out the short-term positive returns. On the other hand, in the pre-FD period, the amount of return reversal is not large enough to cancel out the positive market reaction during the announcement periods. None of the longer event window CARs are significantly different across periods.

[Insert Table 2 Here]

In sum, the results show that the market reacts significantly differently to the split announcement after Reg FD, with a significantly lower positive market reaction in the post-FD period. However, some caution is warranted in interpreting this result, since the different market reaction might be due to the change in information content associated with a split, rather than the change in the information environment. We explore this possibility in section 5.4.

5.3. Cross sectional regression

In this section, we employ linear regression analysis to control for factors that may affect the magnitude of announcement returns. Our dependent variable is the three-day CAR, which measures the information content of the split announcements. The three-day CAR is regressed on several explanatory variables to control for factors that may influence split announcement returns. The regression is as follows:

*CAR = 1 + 2FDdummyi +3Splitfactori + 4Prepricei + 5Leakagei +6Runupi+*

*7Sizei + 8Divdendi +9ΔDivdendi +εi  (1)*

where, *CAR* is the three-day cumulative abnormal return centered on the split announcement day, *FDdummy* is an indicator variable that is set to 1 for splits that are announced during the post-FD period, and 0 for splits that are announced during the pre-FD period, *Splitfactori* is firm i’s split factor, *Preprice*i is the firm i’s stock price 7 days prior to the split, *Leakage*i is the proportional increase in stock price from day -7 to day -3, *Runupi* is the proportional increase in stock price from day -120 to day -8, *Sizei* is the natural log of firm i’s market capitalization 10 days prior to the split, *Dividend* is dividends per share divided by split-adjusted earnings per share at the end of the year prior to the split, and *ΔDivdend* is the change in dividends from the year prior to the split to the split announcement year divided by split-adjusted earnings per share at the end of the year prior to the split.

The dependent variable is the stock market reaction to the split announcement, measured by the three-day *CAR*.[[3]](#footnote-3) Since our primary objective is to determine whether the announcement effects are different for the post-FD period than the pre-FD period, our main focus is the coefficient sign for the *FDdummy* variable. A negative sign indicates that the abnormal return in the post-FD period is smaller than that in the pre-FD period after controlling for various factors that are likely to affect the market reaction for a particular stock. A negative sign for the *FDdummy* indicates a reduced level of information asymmetry after Reg FD.

To account for the anticipation of a stock split in the market, we include the *Leakage* variable (Desai and Jain 1997; Ikenberry et al.1996). The *Leakage* variable is measured as the abnormal returns cumulated over seven days before to three days before the split announcement. We also control for the stock price runup to account for other information released to the market that my preempt the split announcement (Grinblatt et al. 1984). The *Runup* variable is measured as the increase in stock price over days -120 to -8 relative to the split announcement. Prior studies find that firms that experienced positive runup of the stock price in the past are more likely to make split announcements. Thus, the coefficient on *Runup* is expected to be positive. The CRSP value weighted market index (*Mret*) is used to control for the overall market return[[4]](#footnote-4). Consistent with prior studies, we control for firm size, proxied by the market value of the equity. This variable controls for size-related differences in preannouncement information asymmetry. Since information asymmetry is likely to be more severe for small firms than large firms we expect *Size* to be negatively related to the announcement returns. During our sample selection process, we exclude all firms that concurrently announce dividends. However, dividend news could still affect split announcement returns if investors reassess dividend news following the split.[[5]](#footnote-5) To account for this possibility, we control for the change in dividends from the year prior to the split to the split announcement year.

Table 3 reports the results of regression analysis where the three-day *CAR* is regressed on its potential determinants. Consistent with the event study results, the coefficient on *FDdummy* is negative in all models. Since stock prices quickly and correctly reflect all value-relevant information in an efficient market, the smaller market reaction at the announcement date in the post-FD period relative to the pre-FD period indicates that the market has superior pre-announcement information regarding the firms announcing stock splits in the post-FD period. *Size* and announcement returns are inversely related as predicted. This indicates that the split convey more information for smaller firms, perhaps because small firms use the split more often to convey private information of managers due to their high levels of information asymmetry. Pre-split stock price and announcement returns are also negatively related. Both *Runup* and *Leakage* variables show the predicted signs but are not significant. Excluding these variables does not alter our findings. Market returns are positively related to the announcement returns, but the coefficient is not statistically significant. The dividend dummy is not statistically significant, suggesting that the split announcement of dividend paying firms is not perceived differently from that of non-dividend payers by the investors. In all the regression models, *Splitfactor* is consistently positively related to the announcement returns. This is consistent with findings from prior research (McNichols and Dravid, 1990; Nayak and Prabhala, 2001) that the size of split factor is indicative of the strength of the signaling value attached to the split.

[Insert Table 3 Here]

5.4. Additional analysis

5.4.1. Split factor model

To further explore the signaling value of the split, we extract the information content of the split factor following McNichols and Dravid (1990) and Nayak and Prabhala (2001). McNicholds and Dravid (1990) contend that the (unexpected) size of the split factor is a measure of the strength of the signal in the split. Accordingly, we use the following regression model to extract this signal:

*Splitfactori = α0+α1Prepricei +α2Sizei +α3Runupi+ Signali (2)*

where *Splitfactor*i is the magnitude of the split factor, *Preprice*i  is firm’s share price five trading days before the split, *Sizei* is the natural logarithm of the market value of the firm five trading days before the split, *Runup*i is the proportional share price change over trading days -120 to -8 relative to the split announcement date, and *SIGNAL*i is the residual of the regression model.

The explanatory variables in equation (2) are proxies for the market’s anticipation of the stock split. A stock split allows a firm to realign the share price to a lower range; thus firms that have high pre-split share prices tend to split more often. The *Size* variable accounts for the different level of information asymmetry facing large versus small firms. The *Runup* variable controls for the possibility that firms experiencing large price increases tend to split more often. After controlling for these determinants of the split, the residual from the regression can be interpreted as a measure of the unexpected information, and thus the signal, in the split.

Table 4, Panel A reports the regression estimates of Equation (2). Consistent with prior studies, the coefficient on *Preprice* is positive, suggesting that firms with high prices tend to split more often. The coefficient on *Size* is negative, implying that small firms are more likely to split than large firms. The coefficient on *Runup* is positive but not statistically significant.

Using the extracted residual from Equation (2) as a measure of the unexpected (private) information contained in the split, we run the following regression to compare the difference in the market response to this signal between pre- and post-FD periods:

*CARi = α0 + α1 FDdummy + α2 SIGNALi + α3 FDdummy\* SIGNALi  (3)*

where, *CAR* is the three day cumulative abnormal return over days -1 to +1 relative to the split announcement date, *SIGNAL* is the residual from the Equation (2), and *FDdummy* is an indicator variable that is set to 1 when the split occurs before Reg FD, and 0 otherwise.

If the information contained in the split is more accurate in the post-FD period than in the pre-FD period, the announcement returns and the split signal should be more positively correlated in the post-FD period. Thus we expect a positive coefficient on the interaction term *FDdummy\*SIGNAL*.

The results are reported in Table 4, Panel B. The coefficient on *SIGNAL* is insignificant, while the coefficient on the interaction term, *FDdummy\* SIGNAL* is significantly positive as predicted. This indicates that the association between the implicit signal of the split and the announcement returns is more pronounced after Reg FD, supporting our hypothesis that the stock price incorporates the value-relevant information measured by *SIGNAL* more accurately in the post-FD period than in the pre-FD period.

[Insert Table 4 Here]

5.4.2. Post-Split Earnings performance

While the decreased market reaction to the split announcement in the post-FD period could be due to improved price efficiency, it could also result from a post-FD reduction in the magnitude of the private information implicit in the split. The results reported in Table 4 suggest that this is not the case. We complement our Table 4 results by comparing the post-split profitability for our sample firms during the pre- and post-FD periods. We do offer one caveat: prior studies offer mixed results on the future profitability implications of stock splits (e.g., Grinblatt et al. 1984; Asquith et al. 1989; Huang et al. 2006).

Table 5, Panel A reports mean and median operating return on assets (both raw and industry adjusted) over a period of nine years around the split announcement. The results reveal that the operating performance of splitting firms is generally better than the operating performance of their median non-splitting industry peer. Panel B of Table 5 shows mean and median profitability changes for the sample in years -3 to +3.[[6]](#footnote-6) The results are consistent with prior findings (Lakonishok and Lev 1987; Huang et al. 2009). Firm performance improves over the two years preceding the split, peaks during the split announcement year, and declines subsequently. Notably, the evidence in Table 5 indicates that the pattern of post-split profitability and change in profitability is strikingly similar pre- and post-FD. This suggests that if managers use splits to communicate their private information about the firms’ performance, the magnitude of this information has not changed after Reg FD.

[Insert Table 5 Here]

We next examine the relation between split announcement returns and ROA changes before and after the split. Table 6, Panel A reports regression estimates for the pre-FD period. During the pre-FD period, changes in pre-split ROA explain the announcement CAR more (the R2 is 4.41%) than changes in post-split ROA (the R2 is 0.35%), contrary to the prediction of the signaling hypothesis. Moreover, earnings changes in years 0 and +1 are negatively related to the announcement returns. Other coefficients are insignificant. In contrast, Table 6, Panel B shows that the post-FD period results are consistent with the signaling hypothesis. While changes in pre-split operating performance are moderately related with announcement returns (the R2 equals 0.78%), the addition of post-split profitability changes to the model substantially enhances the explanatory power (the R2 increases to 2.39%). Also, post-split changes in operating performance are positively associated with announcement returns, suggesting that investors appropriately assess the profitability implications of the split. Easley and O’Hara (2004) contend that the more widely private information is shared, the more accurately the information is reflected in prices. Accordingly, our results indicate that Reg FD has reduced information asymmetry and improved price efficiency.

**6. Conclusion**

In this paper, we compare the stock market response to stock splits announced by the same firms before and after Reg FD to assess the impact of the regulation on information asymmetry. Reg FD became effective in October 2000 and banned public companies from privately disclosing material information to selected analysts or investors. If firms unintentionally provided such information, they had to publicly disclose the information within twenty-four hours. Proponents of Reg FD have argued that the regulation improves the quantity as well as quality of corporate disclosure, thereby making the market more efficient; opponents to the regulation discount this argument and claim the opposite. Prior research on Reg FD is **limited to studies that investigate earnings announcements or attributes of analysts’ forecasts.**

In this study, we find that the (positive) market reaction to stock split announcements is lower in the post-FD period than in the pre-FD period. This result is indicative of a smaller information gap between investors, and thus reduced levels of information asymmetry, after the regulation. Also, the positive market reaction reverses rapidly in the post-FD period, suggesting that stock prices impound relevant information much more quickly after the regulation. Although the magnitude of the positive market reaction is smaller after the regulation, we find that the market more accurately prices the signal contained in the split factor.

We also find that our results are not attributable to pre- and post-FD differences in the profitability patterns of splitting firms. Our analysis of the relation between announcement returns and profitability changes suggests that the average positive market reaction to splits is driven by firms that experience post-split improvements in performance only in the post-FD period. Conversely, in the pre-FD period, a positive market reaction does not necessarily lead to improvements in post-split performance. This indicates that in the post-FD period, stock prices more accurately reflect the prospective performance implications of stock splits, relative to the pre-FD period. Collectively, our evidence implies that **Reg FD has made the stock market more informationally efficient.**

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Table 1

Descriptive statistics of sample firms



\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

*Splitfactor* is the number of outstanding shares of stock after the stock split divided by the number of shares before the stock split. A dummy variable, *FDdummy*, equals 1 for split event after Reg FD adoption, 0 for split event before Reg FD adoption. *Marketcap* is market value of equity of the firm 10 trading days prior to the split. *Size* is the natural logarithm of the market value of the firm 10 trading days before the split. *Preprice* is share price 7 trading days before the split. *Leakage* is the proportional price change from 7 days before the split to 3 days prior to the split announcement. *Runup* is the proportional price change from 120 days before the split to 8 days prior to the split announcement. *Mret* is the market return estimated by the CRSP value-weighted return index. *Dividends per share* are the dollar value of the dividends declared in the year prior to the split announcement (Data 26).

Table 2

Univariate analysis of abnormal stock returns around split announcements



\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

This table shows the average abnormal returns on the announcement day and average cumulative abnormal returns in various intervals. Defining the split announcement date as day 0, abnormal returns are calculated using one-factor market model residuals estimated from day -250 to day -100.

The CRSP value-weighted index return is used to proxy for market return. Mean abnormal returns and average CARs for the total sample of 438 splits for the pre FD period and 425 splits for the post FD period. Announcement date is determined using the CRSP. Abnormal return is calculated by subtracting daily return of individual firm from CRSP value weighted market index return. T-statistics are calculated for both individual days (Panel A) and event windows (Panel B).

Table 3

Cross sectional regressions to explain abnormal announcement returns



*CAR = 1 + 2FDdummyi +3Splitfactori + 4Prepricei + 5Leakagei +6Runupi+ 7Sizei + 8Divdendi +9ΔDivdendi +εi  (1)*

\*\*\*, \*\*, and \* denote significant at the 1%, 5%, and 10 % levels, respectively.

*CAR* (cumulative abnormal returns) over a 3-day window (days -1,0,and 1) are regressed on explanatory variables.

A dummy variable, *FDdummy*, equals 1 for split event after Reg FD adoption, 0 for split event before Reg FD adoption.

*Splitfactor* is the number of outstanding shares of stock after the stock split divided by the number of shares before the stock split.

*Size* is the natural logarithm of market value of the firm 10 trading days prior to the split.

*Preprice* is pre split share price 7 trading days before the split.

*Leakage* is the proportional price change from 7 days before the split to 3 days prior to the split announcement.

*Runup* is the proportional price change from 120 days before the split to 8 days prior to the split announcement.

*Mret* is the market return estimated by the CRSP value-weighted return index.

*Dividend* is dividends per share adjusted for stock splits and dividends (Compustat data26) at the split announcement year divided by split-adjusted earnings per share (Compustat data58/data27).

*ΔDividend* is the change in dividends from the year prior to the split to the split announcement year divided by split-adjusted earnings per share at the end of the year prior to the split.

Table 4

Split signal and announcement returns

|  |  |  |  |
| --- | --- | --- | --- |
| Panel A: Regression analysis to extract split signal (following McNichols and Dravid 1990) | | | |
| Variable | Coefficient | t stat |  |
|  |  |  |  |
| Intercept | 0.824 | 5.71 | \*\*\* |
| Preprice | 0.004 | 12.94 | \*\*\* |
| Size | -0.013 | -1.75 | \* |
| Runup | 0.038 | 0.35 |  |
| N | 863 |  |  |
| R square | 19.01% |  |  |
| Adj. R square | 18.74% |  |  |

*Splitfactori = α0+α1Prepricei +α2Sizei +α3Runupi+SIGNALi, (2)*

This table reports the split factor model estimation results for Equation (2) using the entire sample of 863 observations. *Splitfactor* is regressed on *Preprice* (the share price 5 days prior to the split announcement), *Size* (market value of equity 10 days before the announcement), and *Runup* (price runup over the period -120 to -8 days). *SIGNAL* is the regression residual, which represents the unexpected amount of information contained in split announcement.



*CARi = α0 + α1FDdummy + α2 SIGNALi + α3FDdummy\* SIGNALi  (3)*

\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

*CAR* is the cumulative abnormal returns over days -1 to +1 relative to the split announcement date, *SIGNAL* is the residual from Equation (2), and *FDdummy* is the indicator variable that is set to 1 when the split is made before the Reg FD, and 0 otherwise. *FDdummy\*SIGNAL* is the *FDdummy* variable interacted with the *SIGNAL* variable, measuring the incremental signaling value in the post-FD period relative to the pre-FD period.

Table 5

Panel A: Descriptive statistics on levels and changes in profitability for years surrounding stock split announcements



Panel B : Changes in ROA



ROA is equal to operating income before depreciation (Data 13) deflated by the book value of firm's total asset (Data 6). Industry-adjusted ROA changes are defined as the difference between ROA changes for the split firm and the median ROA changes for other firms in the same industry (defined as firms sharing the same two-digit SIC code) in that year.

Table 6

Comparison of relation between announcement returns and the changes in operating performance, before and after Reg FD

Panel A: PRE FD



*CARi =α+β1ΔROAi,t-3+ β2ΔROAi,t-2+ β3ΔROAi,t-1+ β4ΔROAi,t+ β5ΔROAi,t+1 + β6ΔROAi,t+2+β7ΔROAi,t+3 (4)*

\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

*CAR* is the three-day cumulative abnormal returns surrounding the split announcement, and *ΔROAi,t*  is the change in industry-adjusted return on asset in year t. *ROA* is calculated as operating income before depreciation(Data13) scaled by the book value of total assets (Data 6). Industry-adjusted ROA changes are defined as the difference between ROA changes for the split firm and the median ROA changes for other firms in the same industry (defined as firms sharing the same two-digit SIC code) in that year.

1. In an earnings announcement context, Freeman (1987) argues that superior pre-announcement information implies that the market better anticipates earnings news and moves the stock price closer to its full information level before the announcement. Thus, the information gap between pre-and post-announcement is expected to be smaller when the overall market has superior information about the upcoming earnings announcements beforehand. [↑](#footnote-ref-1)
2. Grinblatt et al. (1984) adopt a classification scheme that identifies all stock distribution with more or equal to 25% as stock splits following the GAAP treatment. Other studies also use similar criteria. See Brennan and Copeland (1988), McNichols and Dravid (1990), Brennan and Hughes (1991) for additional information. For stock distribution of 25% or more, the accounting standards leave firms free to choose to classify the distribution as stock splits or stock dividends. CRSP classifies almost all stock distribution of 25% or greater as stock splits. [↑](#footnote-ref-2)
3. Using two-day CAR or five-day CAR instead does not qualitatively alter the results. [↑](#footnote-ref-3)
4. CRSP Equally weighted market index is also tested for the robustness check. The change in market index does not alter the conclusion. [↑](#footnote-ref-4)
5. For example, Fama et al. (1969) find that about two-thirds of the split announcements accompany a dividend increase. Asquith et al. (1989) report the evidence that dividend initiation and increases are not informational substitutes in the context of stock split. Grinblatt et al. (1984) also document that split announcement effect is higher for non dividend paying firms. Desai and Jain (1997), using partitioned sample based on whether firms announce dividend increases along with stock split announcement or not, finds larger abnormal returns for the dividend increase sample. Nayak and Prabhala (2001) find that dividend paying firms’ splits are likely to accompany increase in dividends. [↑](#footnote-ref-5)
6. Using ROE instead of ROA as a performance measure provides similar results. [↑](#footnote-ref-6)