
Regulation Fair Disclosure and the Determinants of Analyst Coverage

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Abstract: Using a sample of 49,956 firm-years from the United States of American, this study documents that analysts place significant less weight on firm size, return volatility, and more weight on trading volume in deciding which firms to issue earnings forecasts after the passage of Regulation Fair Disclosure (Reg FD) in 2000. The evidence of this study suggests that Reg FD leveled playing field among analysts, lowering the costs of covering smaller and risky firms for analysts.

Keywords: Reg FD, Analyst Coverage, Determinants of Analyst Coverage, Regulation, Competitive Advantage

1. Introduction

Financial analysts from brokerage houses, independent research services, and banks play an important role in capital market. As noted by Merton (1987), in a market with incomplete information, the more information known about a firm, the more potential buyers for its securities. Analysts who collect and analyze company financial information and produce earnings forecast and stock recommendations serve as important information facilitators in the capital market.

Bhushan (1989) suggests that to maximize their private benefits, analysts are expected to issue earnings forecasts on firms for which there is high demand for and low costs for such services and the extent of analyst coverage on a firm is determined competitively. However, the competition for providing superior earnings forecasts among analysts is not likely to be perfect because of the information advantage some analysts may have. For example, firms with which existing analysts have close relation are less likely to attract new analysts to follow although these “outsider” analysts might perceive there is potential profitable opportunity from conducting research on these firms. In another word, the comparative information advantage for a group of privileged analysts could prevent other analysts from initiating coverage on the same firm. However, whether this conjecture is true is not empirically examined. In this paper, we investigate whether the implementation of Regulation Fair Disclosure (Reg FD) in the United States caused a change in the determinants of analyst coverage.

On Oct 23, 2000, Security Exchange Commission (SEC) of the United States of America enacted Regulation of Fair Disclosure (Reg FD) that prohibits firms’ selective disclosure of material information to selected capital market participants including financial analysts. The intention of Reg FD was to level the playing field for investors, by requiring public disclosure of material private information to all market participants. We argue that the reduction of information flow through the preferential link between analysts and firms influences analysts’ cost and benefit analysis when analysts determine which firm to follow such that analysts’ information advantage to access private information in analyzing difficult to analyze firms (i.e., risky and smaller firms) is reduced and therefore these firms attract a greater analyst coverage after the passage of Reg FD.

We use a sample of 49,956 firm-years in 1996-2004 to test this conjecture. We find that in the post-Reg FD periods analysts are more likely to follow smaller and risky firms as compared to the pre Reg FD period. This study contributes to the existing literature in several dimensions. First, it provides evidence on how imperfect competition affects analysts’ coverage decision. The practice of selective disclosure prevented analysts from choosing firms which may generate the greatest benefit. After Reg FD, to the extent that the comparative information advantage held by privileged analysts is removed, analysts are more freely to make their coverage decisions by weighting the costs and benefits. Second, many opponents to Reg FD argue that Reg FD significantly reduces analyst coverage on small firms or risky firms, which has made it difficult for small firms to raise

capital. However, the evidence in this study suggests that smaller firms and risky firms did not suffer from reduced following after Reg FD. In contrast, these firms receive greater attention because the reduced preferential treatment allows analysts who have concerns over information disparity to increase their coverage.

2. Literature Review and Hypotheses Development

2.1. Regulation Fair Disclosure

Adopted in October 2000, Reg FD was intended to restrict selective disclosure of so-called “material or market moving information” to small groups of analysts or large investors. After the passage of this act, there are mixed reactions in the investment community. Supporters believe that this regulation creates a leveled playing field for all investors and increases transparency of capital market. Opponents argue that Reg FD would increase volatility of stock market and reduce the quality and quantity of the information conveyed to the market, and make it difficult for small firms to raise capital. For example, the association for Investment Management and Research (now the CFA Institute) argues, “Corporations will almost certainly curtail the information flow to the market to avoid having to decide on the spot whether certain information will be deemed to be material ...” (AMIR, 2000). After the implementation of Reg FD, accounting researchers have conducted extensive study to investigate the implications of Reg FD. Heflin *et al.* (2003) find that there is a significant increase in the quality and quantity of information, contrary to the concern on the reduction of the information quality and quantity. Mohanram and Sunder (2006) find that the common information precision does not change significantly, but idiosyncratic information precision¹ increases because analysts extend more efforts on each firm that they are following. To separating the effect of Reg FD from other concurrent events, Francis *et al.* (2004) use size-matched foreign listed firms (ADRs) which are not subject to Reg FD as the controlled group and find that Reg FD has little effect on forecast dispersion or accuracy. To investigate why there is no reduction in the information quality and information quantity, Mohanram and Sunder (2006) find that the average number of firms followed by analysts decreases after Reg FD, indicating that analysts are extending more efforts in idiosyncratic information discovery.

2.2. Determinants of Analyst Coverage

In modeling analysts’ motivation to issue earnings forecasts on a firm, Bhushan (1989) proposes to use the total number of analysts covering a firm as a proxy for the total expenditure spent on research about the firm’s investment opportunities. Analysts weight the costs and benefits of conducting research

on a firm and make coverage decision. The equilibrium of supply and demand determines the number of analyst following a firm. Bhushan (1989)’s model predicts that size, volatility, and the number of lines of business are positively associated with analyst coverage. *Ceteris paribus*, the bigger the company size, the more demand for the information about the firm. This is because the profits from trading on the stocks of a large firm are likely to be larger. The aggregate supply of analyst services is also an increase function of firm size because large companies are widely held with a larger number of investors. On the other hand, the costs of analyzing larger firms are smaller because there is more information about smaller firms. Return variability also affects the aggregate demand for analyst services. Bhushan(1989)’s model predicts that analysts are attracted to firms with more volatile securities because more volatile stock return represents more potential benefits for analysts to follow those firms. However, the costs of follow firms with volatile stock are not negligible and analysts need to weight the costs and benefits from covering more volatile firms. Therefore, *ceteris paribus*, as return variability increases, analysts could be less willing to cover such firms because of increased costs in doing so. Bhushan (1989) and O’Brien and Bhushan (1990) find evidence that analyst coverage is negatively associated with stock return volatility. The number of business segments increases the costs of analyst coverage, and O’Brien and Bhushan (1990) documents that the number of business segments is negatively associated with the number of analyst issuing forecasts on a firm.

Barth *et al.* (2001) document a positive association between analyst following and R&D intensity. They argue that the degree of information asymmetry embedded in the unrecognized intangible assets (including R&D expenses) presents a potential profitable opportunity for analysts to cover a firm. They examine the relation between analyst coverage and information asymmetry in a simultaneous model of analyst following and analyst efforts, as a function of R&D intensity and other control variables. They find that analyst following is positively associated with information asymmetry and negatively associated with analyst efforts. Examining the effects of closure of brokerage houses, Fortin and Roth (2007) document that following the major downsizing in the brokerage industry occurred in 2001, analysts’ decision to cover larger firms, firms with higher trading volume are not affected, but there were no more likely to cover growth stocks. Shon and Young (2011) show that less experienced analysts are likely to place more weight on firm risk and decrease in liquidity when making coverage dropping decision. Young and Peng (2013) show that accounting frauds expedite analysts’ decision to drop coverage of the firms that are sanctioned by SEC for committing to accounting frauds.

2.3. Hypothesis Development

As discussed above, analysts’ decision to cover a firm hinges on the costs and benefits analysis and risky firms and smaller firms are less likely to be covered because costs of covering those firms are greater than the benefits from doing

¹ Common information is defined as information potentially available to all investors. Idiosyncratic information is defined as information specific to an individual analyst.

so. One of the costs arisen from initiating coverage on smaller or risky firms is the information advantage some analysts have through their continuous access to private information before Reg FD, which could deter other analysts' to issue forecasts on the same firm. In the Pre-reg FD period, the practice of selective disclosure is considered as one of the sources for volatility. As noted by the former SEC Chairman Arthur Levitt that company stock price movements are as large as 25 percent (Blomberg News 1999) right after the invitation-only meeting between analysts and companies. Other analysts (who are not invited or are unable to develop close relation with firms) tend to avoid following firms with volatile stock because of the unequal access to inside information. If Reg FD potentially reduces the information advantage of existing analysts and provides a leveled playing field for all analysts, we would expect analysts are more likely to initiate coverage on small or risky firms. Accordingly, we posit the prediction as the following

H1: The importance of firm size and in analyst following decision decreases after Reg FD.

H2: The importance of firm risk and in analyst following decision decreases after Reg FD

Analyst coverage decision is also hinged on the benefits of issuing forecasts. Barth et al. (2001) suggest that firms with higher trading volume are more attractive to analysts. As a result, analysts are more likely to issue forecasts on firms with greater trading volume due to higher perceived benefits. However, this benefit can also be diminished if the preferential communication exists between firms and existing analysts, which deter outside analysts to issue forecasts. The passage of Reg FD is likely to alter the relationship between trading volume and analyst coverage, making firms with higher trading volume more attractive for analysts. Therefore, we predict the following:

H3: The importance of potential benefits in initiating analyst coverage increases after Reg FD.

3. Research Design

Analysts following data have two distinguish features: discrete and left-hand censored. Most prior studies on the determinants of analyst coverage (e.g. Bhushan, 1989; O'Brien and Bhushan, 1990; Lang and Lundholm, 1996; Barth et al., 2001) examine only companies with positive analyst following. Because a large percentage of firms are not followed by analysts (35% in our sample), excluding firms without analyst following or treating the data generation process of zero analyst following the same as the positive number of analyst following is inappropriate. Second, analyst following is defined as the number of estimates issued by analysts for a firm. One earnings forecasts issued by an analyst for a firm is identified as one count of analyst following. This incidence of analyst forecasts is a latent decision process for factors that affect analysts' decision to conduct research on the firm. Therefore, using Ordinary Least Square (OLS) and treating analyst following data as continuous variable violate OLS assumption. According to Cameron and Trivedi (1990),

to analyze discrete and left-hand censored data, Negative Binomial is the appropriate model.²

Since most prior literature uses OLS, we use OLS as a benchmark to compare the estimates obtained by OLS and Negative Binomial model. Specifically, we use OLS and Negative binominal Model to estimate the following equation:

$$\text{Analyst Coverage} = F(\text{Reg FD, Vlt, Size, Volume, RD, Logbusseg, Size*Reg, Vlt*Reg, Volume*Reg, RD*Reg, Equity_Issue, Debt_Issue, AD, Sale_G, Year_trend, Industry Fixed Effects}). \quad (1)$$

Analyst coverage is the number of analysts issuing earnings forecasts on a firm within 30 days before the earnings announcement date. *Reg FD* is an indicator variable that equals 1 if the firm-year is in 2001- 2004 and 0 for firm-years in 1995 – 2000. *Vlt* is the monthly stock return volatility calculated over a fiscal year. *Size* is the natural logarithm of market value of equity. Bhushan (1989), O'Brien and Bhushan (1990), and Brennan and Hughes (1991) show that analyst coverage is negatively associated with return volatility and positively associated with firm size. *Volume* is the natural logarithm of the average stock trading volume during a fiscal year. We interact *Size*, *Vlt*, and *Volume*, with Reg FD, respectively and examine whether Reg FD has changed the importance of firm risk, size, and trading volume on analyst following decision. We expect the coefficients on *Size*Reg* and *Vlt*Reg* to be positive, suggesting that size or risk play a significant less important role in analysts' decision to issue forecasts on firms, or small firms and risky firms are more likely to be covered by analysts in the post Reg FD period. We expect the coefficient on *Volume*Reg* to be positive because once the information advantage of some analyst is removed, analysts are more responsive for the benefits of analyzing firms with higher trading volume.

We also control for several other determinants of analyst coverage. *Logbusseg* is the natural logarithm of the number of business segments a firm has. Bhushan (1989) finds a negative association between analyst coverage and the number of business segments. *RD* is the total research and development expenditure divided by operating expenses. *AD* is the total advertising expenditure divided by operating expenses. *Equity_Issue* is an indicator variable that equals 1 if a firm issues equity during the fiscal year and 0 otherwise. *Debt_Issue* is an indicator variable that equals 1 if firm issue debt during the fiscal year and 0 otherwise. *Sales_G* is sales growth from year t-4 to year t-1. Barth et al. (2001) show that firms issuing equity or debt and firms with higher sales growth, RD, or AD have more analysts issuing earnings forecasts. *Year_Trend* is a year trend variable to control for the trend in analyst coverage on firms as brokerage houses experienced industry-wide downsize during the sample period. We also

² Poisson regression can also be used to estimate a model with discreet data. However, as noted by Cameron and Trivedi (1990), a condition for using Poisson model is to have the mean and variance equal and unreported analysis shows that our data does not satisfy the requirement for the equality of mean and variance. In this case, the Poisson assumption is no longer satisfied and negative Binomial model is more appropriate Cameron and Trivedi (1986).

control for industry fixed effects based on two-digit SIC industry code and cluster standard error at the firm level.

4. Sample and Empirical Analysis

4.1. Sample Selection

Our sample includes all public-listed firms from 1996 to 2004. We collect accounting data from Standard and Poor's Compustat, stock price data from Center for Research in Security price (CRSP), and analyst following data from Institutional Brokers Estimate System (IBES). We use CUSIP number and PERMCO as unique identifiers across three different datasets to match firm's accounting, stock return, and analyst following information. The industry identification

code is Standard Industry Classification (SIC code) available from Compustat and CRSP.

4.2. Sample Statistics

Table 1 Panel A shows the number of firms in each sample year, indicating the number of firms is decreasing, consistent with the observation that the number of firms involved in merge and acquisitions is increasing. We present the statistics of the regression variables in Table 1 Panel B. The dependent variable, number of analysts, has a mean of 4.394 and median value of 2, suggesting the skewness of its distribution. About 35% of firm-years do not have any analysts issuing earnings forecasts.

Table 1. Descriptive statistics.

Panel A						
Year		Freq		%		
1996		5,713		11.44		
1997		5,928		11.87		
1998		5,856		11.72		
1999		5,823		11.66		
2000		5,854		11.72		
2001		5,519		11.05		
2002		5255		10.52		
2003		5019		10.05		
2004		4989		9.99		
Total		49,956		100		
Panel B						
Variable	N	mean	sd	p25	p50	p75
# of Analysts	49956	4.394	6.257	0	2	6
Vlt	49956	0.157	0.106	0.081	0.128	0.200
Size	49956	5.322	2.175	3.773	5.223	6.767
Volume	49956	57940.130	140883	2678	11167	43242.410
RD	49956	0.092	0.803	0	0	0.120
Logbusseg	49956	1.273	0.805	0.693	1.386	1.792
Equity_Issue	49956	0.701	0.458	0	1	1
Debt_Issue	49956	0.493	0.500	0	0	1
AD	49956	0.028	0.089	0	0	0.010
Sale_G	49956	0.225	0.676	0.010	0.106	0.255

This table presents sample distribution (Panel A) and the descriptive statistics of the regression variables (Panel B). Variable definitions can be found in table 2.

4.3. Multivariate Analysis

To examine the effect of *Reg FD* on the determinants of analyst following, we interact size, volatility, and trading volume with the *Reg FD* dummy. We present the results in Table 2. The coefficient on *Reg FD* is negative and insignificant in the OLS model. However, the coefficient on *Reg FD* is negative and statistically significant at the 1% level in the Negative Binominal model (*coefficient* = -0.385; *Z-statistics* = - 6.259), suggesting that count data is sensitive to the model selection and the results are more in line with the view that *Reg FD* reduces analyst coverage after control for time trend. The coefficients on *size*, *volatility*, *trading volume*, *equity issue*, *Logbusseg*, and sales growth are consistent with those documented in prior literature. The coefficients on *RD* and *AD* are positive but insignificant in both the OLS mode

and Negative Binominal model, probably because Barth et al. (2001) use firms from 1984 -1994 as their sample and our sample is from 1996 to 2004.

The coefficient on the interaction between *Size* and *Reg FD* is negative and statistically significant at the 1% level (OLS: *coefficient* = -0.037; *t-statistics* = -6.118; NB: *coefficient* = -0.50; *z-statistics* = -5.351), suggesting that analysts place less weight on size and are more willing to issue forecasts for smaller firms in the post *Reg FD* period. In another word, analysts are less likely to base their earnings forecasts decision on the size of the firm. Therefore, the concern that *Reg FD* significantly reduces analyst following on small firm is unwarranted and the increased cost of capital to small firm in the post-*Reg FD* period should not be attributed to *Reg FD*.

The coefficient on the interaction term between *Vlt* and *Reg FD* is positive and statistically significant at the 1% level (OLS model: *coefficient* = 0.215, *t-statistics* = 2.577; NB model: *coefficient* = 0.809, *Z-statistics* = 5.960). The results suggest stock volatility plays a less important role in

determining analyst coverage in the post- Reg FD period and the negative association between volatility and analyst coverage is mitigated by 23% ($e^{0.22} = 1.23$). The coefficient on the interaction term between Volume and Reg FD is significantly positive (OLS: *coefficient* = 0.018; *t-statistics* = 2.8678; NB: *coefficient* = 0.042; *z-statistics* = 4.220), suggesting that in the Post- Reg FD periods, analysts are more likely to follow firms with higher trading volume, which is consistent with the prediction that analysts place more weight on the benefits arising from analyzing firms with higher trading volume.

In summary, the above results suggest that in the analyst service market with the practice of selective disclosure, analysts avoid engaging in idiosyncratic information discovery and are less likely to follow firms with volatile stocks and smaller firm. With the passage of Reg FD, analysts are less sensitive to firm return volatility and firm size, and are more likely to extend efforts on discovering idiosyncratic information, hence increasing the quantity of idiosyncratic information, supporting Mohanram and Sunder (2006)'s finding that there is an increase in idiosyncratic information following the Reg FD.

Table 2. Regression analysis.

VARIABLES	(1) Log (Analysts)	(2) # of Analyst
Reg	-0.043 [-1.110]	-0.385*** [-6.259]
Vlt	-1.467*** [-22.896]	-2.222*** [-23.784]
Size	0.165*** [32.201]	0.247*** [35.189]
Volume	0.235*** [37.694]	0.361*** [42.178]
Size*Reg	-0.037*** [-6.118]	-0.050*** [-5.351]
Vlt*Reg	0.215*** [2.577]	0.809*** [5.960]
Volume*Reg	0.018*** [2.867]	0.042*** [4.220]
Equity_Issue	0.002 [0.172]	0.130*** [6.642]
Debt_Issue	-0.009 [-0.864]	0.008 [0.596]
AD	0.211* [1.896]	0.011 [0.088]
Sale_G	0.003 [0.347]	0.056*** [3.910]
RD	0.107 [1.567]	0.099 [1.379]
Logbusseg	-0.019* [-1.812]	-0.026** [-2.231]
Year_trend	-0.027*** [-10.418]	-0.035*** [-10.664]
Constant	-1.726*** [-12.158]	-3.677*** [-17.740]
Industry fixed effects	Yes	Yes
Observations	49,956	49,956
Adjusted R-square	0.534	.

This table presents the results estimating the effects of Reg FD on the determinants of analyst coverage. The dependent variable is the natural logarithm of the number of analysts covering a firm in column (1) and the number of analysts covering a firm in column 2. Column (1) estimates the ordinary least square regression and column (2) estimates Negative Binomial regression. *Reg* is an indicator variable that equals 1 if a firm year is 2001- 2004 and 0 for firm years in 1996 - 2000. *Vlt* is the monthly stock return volatility over a fiscal year. *Size* is the natural logarithm of market value of equity. *Volume* is the natural logarithm of average yearly trading volume during a fiscal year. *RD* is research and development expenditure divided by operating expenses.

Logbusseg is the natural logarithm of the number of business segments. *Equity_Issue* is an indicator that equals 1 if a firm issued equity in the fiscal year and 0 otherwise. *Debt_Issue* is an indicator variable that equals 1 if a firm issued debt during a fiscal year and 0 otherwise. *AD* is advertising expense divided by operating expenses. *Sale_G* is sales growth calculated as $(\text{Salet}-1/\text{Salet}-4)^{(1/3)}-1$. *Year_trend* is a year trend variable that equals 1 for 1996, 2 for 1997,... and 9 for 2004. Standard errors are corrected for heteroskedasticity and clustered at the firm level. *, **, *** denote significance at the 10%, 5%, and 1% level respectively.

5. Conclusion

Reg FD prohibits nonpublic communications between firm managers and investors. Consequently, the regulation represents a significant change in the information communication process between firms and financial analysts. This change potentially affects the ways in which analysts to choose which firm to follow, specifically with respect to what attracts them to follow a specific firm after the passage of Reg FD. In this paper, we document how this regulation affected the determinants of analyst coverage. Using a sample of U.S. firms in 1996 – 2004, we find that firm size and return volatility play a less important role in analysts' decision to decide which firm to cover and trading volume plays a more important role. We also find Reg FD does not change the weight analysts place on research and development. This study provide evidence for the effect of Reg FD on analysts' decision to issue earnings forecasts. The findings of this study can also enhance our understanding of how analysts choose which firm to follow.

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