

# How did Regulation Fair Disclosure Affect the US Capital Market? A Review of the Evidence

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## 1. Introduction

Between 2000 and 2003, two significant new regulations, Regulation Fair Disclosure and the Global Settlement, were adopted in the US to improve the quantity and quality of information available to investors. This paper's primary purpose is to review prior research on the effects of the first of these changes, Regulation Fair Disclosure (Reg FD). However, it also briefly discusses and provides preliminary evidence on the impact of the Global Settlement on sell-side equity research.

Reg FD was approved by the U.S. Securities and Exchange Commission (SEC) on August 10, 2000. Under the new rules, which became effective on October 23, 2000, firms were prohibited from providing private disclosure of material information to particular analysts or investors. If management unintentionally provided such information, it was required to publicly disclose the information within 24 hours.

The rule was motivated by SEC concern about potential loss of investor confidence in the integrity of capital markets resulting from management selectively providing valuable information on future earnings and business fundamentals to favored Wall Street analysts and large investors. The SEC argued that selective disclosure enabled some investors to "make a profit or avoid a loss at the expense of those kept in the dark."<sup>1</sup> As a result, "investors who see a security's price change dramatically and only later are given access to the information responsible for that move rightly question whether they are on a level playing field with market insiders."<sup>2</sup>

In addition to increasing investor confidence, the SEC contended that the new rules would limit managers' ability to use access to private information as a way of

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<sup>1</sup> SEC (2003), p. 1.

<sup>2</sup> Ibid

rewarding analysts who recommended their stock or made favorable earnings forecasts, and of penalizing analysts who were critical of the company. Finally, the SEC noted that technological advances facilitated broader dissemination of information than previously possible. “Whereas issuers once may have had to rely on analysts to serve as information intermediaries, issuers now can use a variety of methods to communicate directly with the market. In addition to press releases, these methods include, among others, Internet webcasting and teleconferencing. ... Technological limitations no longer provide an excuse for abiding the threats to market integrity that selective disclosure represents.”<sup>3</sup>

Opponents of the new rule, which included the Securities Industry Association and the Association for Investment Management and Research argued that it “would have a chilling effect on the disclosure of information by issuers.” Their concern focused on the difficulty in determining when a disclosure would be “material” (and therefore subject to the regulation). As a result of this ambiguity, opponents predicted that the new rule would lead managers to stop *any* informal communications with the outside world altogether and that this gap would not be filled by increased public disclosure of comparable information.

To investigate the competing hypotheses about the effects of Reg FD, studies have examined management and (to a lesser extent) analyst responses to the new regulation. Studies of management responses investigated whether public access to information increased following Reg FD via forecasts of earnings and more open access to conference calls. In addition, many studies have examined the regulation’s impact on trading volume and liquidity, the capital market’s processing of earnings information, and the performance of financial analysts.

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<sup>3</sup> Ibid

As discussed in section 2, researchers face three challenges in assessing the impact of Reg FD. First, they must develop hypotheses on the expected impact of the new regulations and identify dependent variables to test the hypotheses. Second, the post-FD period was a particularly turbulent one in US capital markets, making it difficult for researchers to infer whether findings can be attributed to Reg FD per se, or to other concurrent events. Finally, since it is difficult to identify which particular firms provided selective disclosure and which analysts benefitted from the practice, researchers typically estimate the average impact on all firms and analysts, reducing the power of their tests.

Section 3 summarizes the findings of Reg FD research. Studies of manager responses to the new rules find an increase in managers' voluntary disclosure post-FD. Expanded disclosure arises from manager decisions to make closed conference calls, previously available only to select analysts and investors, open to all investors. There is also evidence of an increase in the frequency of management earnings forecasts, but it is more difficult to interpret these results because they do not control for potentially confounding events.

The increased access to conference calls by retail investors is accompanied by a modest increase in retail investor trading activity at the time of the call. Finally, financial analysts' earnings forecasts and stock recommendations appear to be less newsworthy post-FD, consistent with there being a decline in their access to private information.

There is no consistent evidence that Reg FD was accompanied by a change in analysts' earnings forecast accuracy or forecast dispersion, suggesting that there was no change in information available to analysts post-FD. This is perhaps not surprising given the observed increase in public disclosure by management to offset the decline in private

disclosure. Finally, aside from the modest increase in retail trading volume during conference calls, there is no consistent evidence of a change in market liquidity or efficiency.

Overall, the findings suggest that Reg FD was accompanied by an increase in public disclosure by managers and a decline in the value of sell-side analyst information. However, there was little discernible change in investor behavior. The findings therefore suggest that regulator concerns about weakened investor confidence from selective management disclosure and critics concerns about the impact of the new rules on market information were both over-stated.

As noted above, Reg FD was not the only new regulation that affected the quantity and quality of information provided to US investors early in the 21<sup>st</sup> century. In 2003-4, twelve of the largest investment banks agreed to a settlement with regulators following an investigation of the effect of investment banking practices on equity research. The Global Settlement sought to improve the reliability of analyst research by regulating the use of investment banking to support sell-side research, and by requiring banks to provide independent research to clients to supplement their own reports. Preliminary evidence on the Settlement's effects on equity research, reported in Section 4, suggests that it was accompanied by a decline in sell-side research funding and sell-side analyst employment, particularly at the punished banks. Prior evidence indicates that research quality at these banks was actually higher than at less renowned investment banks, brokerage firms, and buy-side firms where fired sell-side analysts were likely to find new employment, raising questions for future research about whether the Settlement improved the quality of equity research in US capital markets.

## **2. Challenges in Testing the Impact of Regulation Fair Disclosure**

Researchers face several challenges in assessing the impact of Reg FD. First, they have to develop hypotheses on the regulation's likely impact and to identify appropriate dependent variables to test those hypotheses. Second, because Reg FD was adopted at a single calendar date, researchers need to control for potential confounding events. Finally, ideally they need to identify a treatment sample of firms or analysts that are expected to be affected by the new ruling, increasing the power of the tests.

### Hypothesis Development

Reg FD potentially affected a variety of private management communications with analysts and institutional investors, including closed conference calls, private meetings, and feedback on analysts' financial models. In the late 1990s, top management began using conference call presentations to analysts and key investors to communicate information on earnings releases or other key events. Under Reg FD, managers of companies that restricted access to these calls could choose to make their calls open to all investors, continue using closed calls provided there was no intention to disclose any material new information in the call, or cease making calls altogether.

Reg FD also potentially affected information that could be communicated at private meetings between management, analysts and institutional investors and in private management advice to analysts on their forecast and valuation models. Under the new requirements, managers could continue using these forms of communication provided they not provide material new information to attending analysts and institutional investors. If they unintentionally disclosed new information in the meeting, it had to be

released publicly within 24 hours. Alternatively, managers could decide that these forms of communication are no longer cost effective and cease offering them. They would then have to decide whether to fill the information void created by this decision by expanding other public forms of communication.

The new regulations were also likely to affect financial analysts' behavior and performance. By limiting analyst access to private management information, they changed the ways that analysts could compete. In the pre-Reg FD environment, analysts competed aggressively to build a relationship with managers of the firms they covered. This relationship provided successful analysts with access to private information, opportunities to broker meetings between management and their clients, and standing in the analyst community. Post-Reg FD, however, analysts who wanted to have an information advantage could do so only through their own private search. For example, they could develop new sources of superior information on companies they covered by building relations with their customers, suppliers, and competitors.

Given the uncertainty of how managers and analysts will respond to Reg FD, it has proven difficult for researchers to make precise predictions about Reg FD's impact on capital markets and financial analyst performance. If managers choose to *publicly* disclose the same information that had been communicated privately in the pre-Reg FD environment, information asymmetry is likely to decline. Alternatively, if managers provide less information after the new rules, there will be a new information gap in the market. Could financial analysts bridge this gap through their own information search efforts? If they are successful, any reduction in information asymmetry is likely to be modest.

The implications for analyst performance are also difficult to predict. If managers provide public disclosure post-Reg FD to offset the decline in private disclosure, analysts' consensus forecasts could become more accurate and dispersion decline. Alternatively, if managers elect not to increase public disclosure, consensus forecasts are likely to become less accurate and uncertainty increase, leading to higher forecast dispersion. Of course, this assumes that analysts do not respond to the new information environment by increasing their own information search to create a competitive edge. To the extent that increased analyst private search creates new information asymmetries that offset the 'level playing field' effects of Reg FD, forecast accuracy and dispersion could actually be unaffected by the regulatory change.

In summary, Reg FD's effects on capital markets depend critically on manager and analyst responses to the new disclosure rules.

#### Confounding Events.

Studies of Reg FD have typically used an event study design to test whether there is a change in the time series behavior of dependent variables of interest in the period following the new regulation. One limitation of this approach is that because Reg FD was adopted on a single calendar date, the effects of other contemporaneous factors that also influenced the dependent variables are unlikely to be randomized away.

Controlling for contemporaneous events is likely to be an important research consideration for Reg FD research since the two years following the regulation were particularly turbulent ones for US financial markets. They included a sharp devaluation of internet sector stocks (reflected in a 40% drop in the NASDAQ Composite Index between August 2000 and March 2001), disclosures of financial difficulties and fraud at

Enron (beginning in October 2001), Worldcom (mid-2002) and a variety of other US companies, and fallout from 9/11. These events almost surely increased market uncertainty and influenced many of the dependent variables examined in the studies of Reg FD's impact. In addition, in January 2001, the NYSE and AMEX "decimalized" stock trading by reducing tick sizes to one cent. The NASDAQ followed in April 2001. Prior research (Ronen and Weaver 2001) finds that reducing tick size is accompanied by lower return volatility.

### Identifying Affected Firms and Analysts

A third challenge for Reg FD research is identifying which firms or analysts were most affected by the regulation. By identifying a treatment sample, researchers are able to increase the power of their tests. The alternative, to estimate the average impact of the new regulation across all firms and analysts, may lead researchers to conclude that the new regulation had minimal effect. Even worse, if the regulation had positive effects for some firms/analysts and negative effects for others, examining average effects may lead researchers to incorrectly conclude that there was no impact.

Identifying firms and analysts most effected by the new regulation also permits researchers to control for the effect of confounding events discussed above, since firms/analysts that are expected to be unaffected by the legislation can be used as a control sample in the tests.

In the case of Reg FD, many researchers have examined average effects for all firms and analysts. Only a limited number of studies have identified firms that are likely to be adversely affected by the new ruling. For example, Bushee, Matsumoto and Miller (2005) examined differential effects for firms with open and closed conference calls prior

to the new rule. Francis, Nanda, and Wang (2006) compare effects for US firms directly affected by the new rules and non-US ADRs for whom the rules did not apply.

### **3. Reg FD Research Findings**

Below I summarize the key findings of the Reg FD research and comment on how the studies have dealt with the research challenges discussed above. I first discuss studies of manager and analyst responses, and then summarize research findings on Reg FD's impact on stock market behavior and analyst performance.

#### **Manager and Analyst Responses to Reg FD**

##### Manager Responses

Studies of management responses to Reg FD have examined whether managers increased the frequency of earnings forecasts and/or opened formerly closed conference calls following the new regulation. The results of both tests indicate that there was an increase in voluntary disclosure post-FD.

Bailey, Li, Mao and Zhong (2003) and Heflin, Subramanyam, & Zhang (2003) compare the frequency of management earnings forecasts per firm for the three quarters following Reg FD. Bailey et. al. find that for the first three post-FD quarters, the frequency increased by 51%, 55% and 21% respectively relative to the third quarter of 2000 (pre-FD). Heflin et. al. use the three pre-FD quarters as their benchmark and detect an even larger increase in mean forecasts per firm-quarter for the same three post-FD quarters. Average forecast frequency per firm grew from 22.9% in the pre-FD period to 58.8% post-FD, a 157% increase. The increase in management forecasts persisted even after controlling for other firm factors potentially associated with voluntary disclosure,

including proxies for company news, market uncertainty, company demand for capital, and litigation risk.

However, neither paper controls for any economy-wide changes in disclosure that are unrelated to Reg FD. For example, technology innovations, such as the internet and conference calls, have lowered the cost of management disclosure and are likely to increase the amount of voluntary disclosure even prior to Reg FD. Consistent with this hypothesis, Bailey et. al. show that earnings forecasts increased by 38% during the three quarters prior to Reg FD. As a result, it is unclear whether the increase in management forecast frequency can be attributable solely to Reg FD.

In addition, the earnings forecast tests do not control for managers' incentives to increase voluntary disclosure during the test period in response to non-FD factors, such as increased uncertainty accompanying the drop in internet sector stock valuations, disclosures of financial difficulties and fraud at Enron, and 9/11. Once again, this makes it difficult to interpret whether the observed increase in management disclosure was caused by Reg FD or by these other contemporaneous events.

To control for these potentially confounding events, Bushee, Matsumoto and Miller examine conference call disclosure pre- and post-FD. Their test sample comprises firms that restricted access to conference calls pre-FD. Post-FD such firms could discontinue conference calls altogether, open them to all investors, or continue with the current closed format taking care not to disclose material new information. By benchmarking the test firms against firms that provided open access to calls pre-FD, Bushee et. al. are able to control for the effect of potentially confounding factors. They find that 96.4% of the test firms continued hosting calls post-FD compared to 98.2% for

the control sample. Assuming most of the test firms' post-FD calls are open access, this evidence suggests that managers of firms most affected by FD chose to increase public disclosure following the regulation. Finally, Bushee et. al. find that there was no discernible change in the information content of conference calls by either the test or control firms post-FD, suggesting that managers of the test firms did not reduce the amount of information they disclosed in their calls.<sup>4</sup>

### Financial Analyst Responses

Few studies have examined whether financial analysts responded to Reg FD by increasing their own private information search. Mohanram and Sunder (2006) analyze changes in the type of information used by analysts in making earnings forecasts: information common to all analysts and information that is specific to individual analysts. They find that analysts' forecasts reflect a greater weighting towards idiosyncratic information post-FD. They also examine whether analysts changed the types of firms they covered following the regulation and found a decline in coverage of firms that had been closely-followed pre- FD and an increase in coverage of less covered firms. They interpret this evidence as indicating that financial analysts responded to Reg FD by increasing their investment in private information search and targeting firms where that task was likely to generate individual payoff. However, once again, these findings should be interpreted with caution given the lack of control for potentially confounding events.

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<sup>4</sup> Lee, Rosenthal and Gleason (2004) also examine stock volatility on conference call days pre- and post-FD and find little evidence of a change in return volatility on call days, even for firms that switched from closed call prior to the regulation to open calls after.

Overall, the evidence of Reg FD's effect on management disclosure and on analyst behavior suggests that it increased management voluntary disclosure, and may have increased analyst incentives for private information search.

## **Capital Market and Analyst Performance Following Reg FD**

### Market Liquidity and Volume

Researchers examined whether by leveling the playing field Reg FD enhanced investor confidence in equity markets, reflected in increased market liquidity and trading volume.

#### *Market Liquidity*

Market liquidity tests examined changes in bid-ask spreads around information events such as earnings announcements and conference calls. If managers provide additional public information post-FD, bid-ask spreads (and particularly the adverse selection component) are expected to decline. Alternatively, if managers do not expand public disclosure post-FD to compensate for the decline in selective disclosure, information asymmetry and spreads may actually increase.

Evidence on changes in bid-ask spreads is mixed. Chiyachantana, Jiang, Taechapiroontong and Wood (2004) find a decline in both the adjusted total spread and the adjusted adverse selection component of the spread before and after earnings announcements. Adjusted spreads, used to control for confounding events, are average spreads during the two days before and after an earnings announcement net of spreads for the same firm fourteen days prior to the announcement.

Lee, Rosenthal and Gleason (2004) provide an even more direct test of the impact of Reg FD on spreads by examining changes in spreads on conference call days for a sample of firms that switched from closed to open calls. The findings indicate that there was no change in total spreads or the adverse selection component post-FD. The study misses an opportunity to control for potentially confounding events by comparing changes in spreads for the test firms to those of firms that had open access before and after the regulation. However, implementing this control does not appear to change their conclusions.

### *Trading Volume*

Researchers have also examined the impact of Reg FD on trading volume around information events such as earnings announcements and conference calls. If managers expand public disclosure post-FD, trading volume is expected to increase, particularly for retail investors who now have more confidence in the market. Alternatively, if managers do not increase public disclosure post-FD to compensate for the decline in selective disclosure, volume may actually decrease.

The most compelling evidence of an increase in trading volume is provided by Bushee, Matsumoto and Miller (2004), who examine retail investor trading volume during conference calls. Reg FD led many firms that had previously restricted access to calls to select analysts and investors to open calls to all investors. Bushee et. al. find that this change was accompanied by an increase in the frequency of small trades presumably made by retail investors. This increase does not appear to be attributable to confounding effects, since a control sample of firms that had provided open access to calls pre- and post-FD showed no change in small trade frequency.

Other studies have focused on trading volume before and after earnings announcements. The new rules are likely to have eliminated any management warnings of good or bad earnings news to select analysts as well as post-announcement closed conference calls, reducing information asymmetry and increasing investor confidence. However, the findings are inconsistent across studies.

Bailey, Li, Mao and Zhong (2003) examine abnormal trading volume for the three days surrounding earnings announcements pre- and post-FD. They conclude that volume generally increased in the post-FD period. However, their findings are sensitive to which particular quarters are used to capture pre-FD volume. Multivariate tests that control for firm size, return volatility, forecast dispersion, and the impact of decimalization, show that the new rule was accompanied by two offsetting volume effects for the three post-FD quarters: an *increase* in the level of trading volume and a *decrease* in the volume-return volatility elasticity.

Francis, Nanda and Wang (2006) compare abnormal trading volume effects for US firms affected by Reg FD with those of non-US ADRs that were not subject to the regulation. Without this control they find an increase in the level of trading volume at post-FD earnings announcements comparable to that reported by Bailey et. al. However, after benchmarking against non-US ADRs, abnormal trading volume for the test firms is eliminated, leading Francis et. al. to conclude that the earlier findings are not caused by Reg FD but by other contemporaneous factors.

To test whether retail and institutional investor trading volume is differentially affected by Reg FD, Chiyachantana et. al. examine retail and institutional adjusted trading volume at earnings announcements. To control for the effect of confounding

events, they examine adjusted volume for two days before and after an earnings announcement. Adjusted volume is event day volume net of volume for the same firm fourteen days prior to the announcement. They find that adjusted volume before and after earnings announcements actually declined post-FD. For institutional investors, the decline was concentrated in the pre-earnings announcement period, whereas for retail investors adjusted trading volume declined before earnings announcements and increased after. The authors interpret the increase in retail investor volume post-earnings announcements as evidence of a post-FD decline in information asymmetry.

In summary, post-FD there appears to be a modest increase in trading volume for retail investors at conference calls that had previously been only open to select analysts. There is no consistent evidence of a change in spreads or trading volume at earnings announcements.

### Market Processing of Information

Critics of Reg FD argue that earnings guidance provided by managers' to leading analysts enabled the market to develop precise and timely forecasts of future earnings performance. Post-FD, the critics argued, companies would be reluctant to publicly disclose the same guidance information due to concerns about litigation risks and competitive pressures, leading to a decline in the precision of market earnings forecasts and greater return volatility at earnings announcements.

However, if managers publicly disclose earnings guidance post-FD and/or financial analysts engage in information search to compensate for any decline in private guidance, the precision of the market's post-FD expectations of future earnings and return volatility at earnings announcement are likely to be unchanged.

To distinguish between these views, Bailey et. al., 2003, Heflin et. al., 2003, and Francis et. al., 2006 examine changes in stock volatility leading up to and at earnings announcements pre- and post-FD. The results are generally consistent across the three papers. Univariate tests indicate that post-FD there is a significant decline in return volatility in the one month leading up to earnings announcements and at earnings announcements. However, once controls are included for potentially confounding events, this effect disappears. Bailey et. al. note that their findings are sensitive to controls for the change in decimalization. Francis et. al. show that after benchmarking results for their test firms against those for ADRs not subject to Reg FD, there does not appear to be any post-FD change in earnings announcement return volatility. These findings are consistent with evidence from other studies that management increased public disclosure post-FD to compensate for the decline in private information disclosure.

#### Financial Analyst Forecast Performance

Much of the literature on Reg FD has focused on three measures of analyst forecast performance: the stock price impact of forecast updates, earnings forecast accuracy, and earnings forecast dispersion. One challenge in examining differences in analyst forecast performance is that since analysts' earnings forecasts and recommendations are themselves public information, analysts with less private information can quickly mimic the output of those who are more informed. More informed analysts' competitive advantage may then be reflected in prompter forecast or recommendation updates, or in private information shared with clients. But it may be difficult to discern in published forecasts and/or recommendations.

### *Stock Price Impact of Analyst Forecasts/Recommendations*

If Reg FD reduces the information advantage of select financial analysts, the newsworthiness of their earnings forecasts and recommendations is expected to decline post-FD. To test this hypothesis, Gintchel and Markov (2004) and Francis et. al. (2006) examine stock volatility at analyst forecast and recommendation announcements in the year prior and the year following Reg FD.<sup>5</sup> Gintchel and Markov find that post-FD there is a 28% decline in stock volatility at these announcements. In addition, they report that the decline is more pronounced for firms with high price-to-book multiples, for analysts at highly-ranked brokerage firms, and for analysts who had been most optimistic pre-FD. They interpret these findings as indicating that Reg FD was effective in reducing the information advantage for analysts covering difficult to value stocks, for analysts at the leading brokerage firms, and for optimistic analysts, all of whom were likely to benefit from early access to management information pre-FD.

Francis et. al. conducted a similar analysis but attempted to control for the effect of contemporaneous events by comparing the post-FD change in stock volatility at analyst report announcements for US firms to that of non-US ADRs that were unaffected by the new regulation. Their findings are consistent with those of Gintchel and Markov and lend strong support to the view that Reg FD reduced the newsworthiness of analysts' reports.<sup>6</sup>

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<sup>5</sup> To ensure that the stock volatility is primarily related to analyst report announcements, Gintchel and Markov exclude those report announcements that coincide with firm earnings announcements.

<sup>6</sup> Ferreira and Smith (2006) also examine stock price reactions to changes in analysts' stock recommendations pre- and post-FD. Unlike Gintchel and Markov, and Francis et. al. they disaggregate rating changes in different degrees of upgrades and downgrades and find little change in stock price reactions post-FD. One explanation for this conflicting result is that by disaggregating recommendation changes Ferreira and Smith's lower the power of their tests.

Finally, Cornett, Tehranian and Yalcun (2007) examined changes in the market reaction to recommendation downgrades made by analysts from affiliated and unaffiliated banks. They find that pre-FD there was a larger stock decline at announcements of affiliated analyst downgrades than at those made by unaffiliated analysts. This difference was eliminated post-FD, leading the authors to conclude that the new rules reduced selective management disclosure to favored analysts.

#### *Earnings Forecast Accuracy*

Results of tests of analysts' forecast accuracy pre- and post-FD are mixed. Univariate tests typically conclude that forecast accuracy decreased following Reg FD (Bailey et. al. (2003), Heflin, Subramanyam, & Zhang (2003), Francis et. al. (2006), and Agrawal, Chadha and Chen (2006)). However, this effect may be due to changes in economic conditions post-FD that made it more difficult for analysts to forecast earnings. To allow for this possibility, several studies estimated multivariate tests that included control variables such as time series model forecast accuracy, loss quarters, GDP changes, and firm restructurings (Heflin, Subramanyam, & Zhang (2003), Francis et. al. (2006), and Agrawal, Chadha and Chen (2006)). The multivariate findings differ depending on the time period covered. Heflin et. al. and Francis et. al., who compare forecast accuracy for the six quarters surrounding Reg FD, conclude that forecast accuracy is unchanged post-FD, whereas Agrawal et.al. use a longer test period, from March 1995 to June 2004, and find that analyst accuracy declines in the post-FD period.

Several other studies conclude that analyst forecast precision actually increased post-FD (see Shane, Soderstrom and Yoon (2001) and Irani (2004)) since the new regulations increased disclosure to analysts who had previously not been excluded from

private conference calls and access to management. Shane et. al. examined changes in forecast accuracy before and after Reg FD, but did not control for potentially confounding events. Irani examined changes in the accuracy of analyst forecast updates of next quarter's earnings at current earnings announcements for two types of firms, those that hosted conference calls at the earnings announcement and those with no calls. The findings indicate that post-FD conference call firms showed improved forecast update accuracy vis-à-vis firms with no calls. However, Irani does not distinguish between open and closed conference calls. Firms with open calls pre-FD should not show any improvement in accuracy from forecast updates post-FD since there should be no change in analyst access to call information. As a result, there remain questions about whether the findings reflect the impact of Reg FD, or confounding events that differentially affect conference call and no-call firms.

Finally, as noted above, Mohanram and Sunder (2006) partition analyst forecast accuracy into two components pre- and post-FD. The first component is precision attributable to common information for all analysts (reflected in analysts' consensus forecast error), and the second is attributable to analysts' idiosyncratic information (reflected in forecast dispersion). The findings show that there is an increase in idiosyncratic forecast precision following Reg FD even after controlling for macro and firm effects. In contrast, consistent with other studies, multivariate tests indicate no change in forecast precision from common information changes post-FD.

### *Forecast Dispersion*

Research studies on analyst forecast dispersion are also mixed. Univariate tests tend to indicate that dispersion increased post-FD (see Bailey et. al., 2003, Agrawal et.

al., 2006, Francis et. al., 2006, and Irani & Karamanou, 2003). For example, Bailey et. al report that mean (median) dispersion increased by 21% (12%) post-FD. Heflin et. al (2003) find an 18% (16%) increase in mean (median) forecast dispersion.

However, after controlling for the effect of increased economic uncertainty in the post-FD environment, the increase in forecast dispersion appears to disappear. For example, Heflin et. al. show that after controlling for macro- and firm-factors associated with forecast uncertainty, there is no change in dispersion post-FD.<sup>7</sup> Francis et. al. show that during the post-FD quarters, non-US ADRs that are unaffected by Reg FD have a comparable increase in analyst forecast dispersion to US firms.

Finally, there is some evidence that post-FD forecast dispersion declines around earnings announcements and conference calls. Bailey et. al. find post-FD that there is greater resolution in analyst uncertainty about future earnings following earnings announcements. Irani (2004) documents a similar increase in uncertainty resolution for firm-quarters with conference calls post-FD, suggesting that the new regulation created a level playing field for all analysts.

#### **4. Subsequent Events**

As noted above, Reg FD was followed by a turbulent period in US capital markets. The collapse of internet and telecommunications businesses and stock valuations, the financial scandals at Enron, Worldcom and a host of other well-known

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<sup>7</sup> Agrawal et. al. (2006) continue to find an increase in forecast dispersion post-FD using multivariate tests. Agrawal et. al. examine dispersion for the period January 2001 to June 2004, whereas other studies focused on a narrower event window, the first two or three quarters following Reg FD. One concern from using this wider window is that it increases the likelihood of confounding events affecting the findings.

companies, and the demise of Arthur Andersen led to a call for further regulation of capital market participants, including financial analysts.

On April 28, 2003 ten of the largest investment banks agreed to a settlement with the Securities and Exchange Commission (SEC), the New York State Attorney General, the New York Stock Exchange (NYSE), the North American Securities Administrators Association (NASA), the North American Securities Dealers (NASD) and state securities regulators.<sup>8</sup> The Global Settlement, as it came to be known, arose from an investigation of investment banking practices following allegations that banking incentives had inappropriately influenced equity research. The investigation uncovered evidence that analysts at the banks had issued research reports that were either fraudulent, not made in good faith, or for which payments had been received but had not been disclosed. In addition, several firms were accused of spinning hot IPO allocations in violation of SEC rules.

The Settlement required the banks to pay \$875 million in penalties and disgorgement. In addition, they were required to outlay \$432.5 million to fund independent research, and \$80 million for investor education. To ensure that analysts' future stock recommendations would not be inappropriately influenced by investment banking relationships, the firms were required to physically separate their equity research and investment banking departments. Research budgets were required to be set without any input from investment banking and could not be based on investment banking revenues. Analysts were barred from soliciting investment banking business, from being

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<sup>8</sup> The ten banks were Bear, Stearns & Co. Inc., Credit Suisse First Boston LLC, Goldman, Sachs & Co., Lehman Brothers Inc., J.P. Morgan Securities Inc., Merrill Lynch, Pierce, Fenner & Smith Inc., Morgan Stanley & Co. Inc., Citigroup Global Markets Inc., UBS Warburg LLC, and U.S. Bancorp Piper Jaffray Inc. In 2004, two additional banks, Thomas Weisel and , also agreed to the settlement.

involved in making investment banking “pitches” or from receiving compensation for providing investment banking support. And investment bankers were to have no influence in research coverage decisions.

To increase access to independent research, the Settlement required that the twelve banks use the \$432.5 million set aside for independent research to purchase and distribute no fewer than three independent reports to their clients along with their own reports for the succeeding five years. In addition, the banks agreed to increase research transparency by disclosing historical recommendations and price targets for their analysts. Finally, the banks agreed to restrict the allocation of shares in hot IPOs to executives and directors of key clients, a process known as “spinning.”

By creating additional funding for research at brokerage houses and research firms, and reducing the synergies and opportunity to fund equity research through investment banking, the Global Settlement is likely to change the supply and demand for equity research. The funding of non-investment bank research is likely to lead to an increase in the number of analysts hired at brokerage and pure research firms. In contrast, for punished investment banks, the Settlement restrictions on using of analysts to help sell investment banking is likely to lead to reductions in equity research budgets and analysts employed.

It is beyond the scope of this paper to formally examine the impact of the Global Settlement on equity research. However, a preliminary analysis raises several questions. Table 1 reports aggregate analyst employment (collected from I/B/E/S) at eleven of the punished banks, as well as at non-punished banks and non-investment banks from 1999

to 2005.<sup>9</sup> Unfortunately, the source of the data (I/B/E/S) arbitrarily drops and adds firms to its database in a given year, generating errors in the estimates of aggregate employment. To assess how these database changes affect inferences, analyst data for non-punished banks and non-investment banks are reported for all available firms each year and for firms covered consistently from 1996 to 2005.

In 2003, the year of the Settlement, employment at the eleven punished banks declined by 12%, versus an 8% decline for non-punished banks, and an increase of 12% for non-investment banks. Of course, other factors, notably changes in brokerage and investment banking demand, may also explain changes in equity research employment during these periods. Table 1 shows NYSE trading volume and the dollar value of investment banking deals by year. Investment banking business declined 32% in 2002 and NYSE trading volume declined by 3% in 2003. These effects could certainly lead to the observed cuts in research analyst funding for the leading banks in 2003. It could also explain the decline in non-banking research analysts in 2004.

However, it is also noteworthy that in subsequent years, when trading volume exceeds the 2002 level and investment banking business returns to the levels of 1999-2000, analyst employment continues to lag, particularly for punished banks. Relative to 2002 employment levels, the peak for the industry, 2006 employment declined by 25% for punished banks, 13% for non-punished banks, and 4% for non-investment banks. These declines are consistent with the Global Settlement permanently reducing equity research funding at bulge investment banks and reallocating sell-side research to brokerage and research firms who benefited directly from the Settlement provisions.

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<sup>9</sup> Non-investment banks include (i) syndicate firms that distribute new security issues to their clients and provide them with research and trade execution, (ii) brokerage firms that provide only research and trade execution, and (iii) pure research firms that provide research but not trade execution.

Undoubtedly, regulators anticipated that this type of reallocation would improve the quality of equity research since analysts at research and brokerage firms do not face banking conflicts of interest. However, evidence on differences in analyst performance for investment banks and brokerage firms points out that brokerage analysts also face conflicts of interest that are unaffected by the Settlement. Cowen, Groysberg and Healy (2004) find that analyst forecast optimism and absolute forecast errors are actually lower for analysts at bulge banks than for their peers at lower ranked banks and brokerage firms. They attribute this finding to the highly focused incentives of brokerage analysts to issue optimistic forecasts and recommendations to encourage their clients (who were predominantly long-only portfolio managers) to acquire stocks and generate trading commissions. In contrast, analysts at leading banks served multiple clients, long- and short-institutional clients, as well as issuer firm managers, making it their incentives more complex.

The decline in sell-side research since 2003, particularly among punished firms, has at least been partially offset by increased research funding by buy-side firms. A 2006 review of equity research by Integrity Research Associates observed that buy-side research budgets had continued to grow since the Global Settlement, and that buy-side firms had hired many former sell-side analysts. How has this reallocation of research affected equity research in US capital markets?

Unfortunately, there is no readily available data on buy-side performance to examine this hypothesis. However, recent research by Groysberg, Healy, and Chapman (2008) provides some preliminary evidence. They examined the forecast optimism and accuracy of 27 analysts who moved from the sell-side to a top ten buy-side firm. Figures

1 and 2 reproduce the distributions of relative forecast bias and relative absolute error before and after the analysts relocated from the sell-side to the buy-side firm. The figures show that prior to being hired by the buy-side firm, these analysts had similar forecast optimism and absolute forecast errors to sell-side peers who covered the same stocks. However, after moving to the buy-side firm, the same analysts showed a marked increase in forecast optimism and absolute forecast error versus their sell-side peers.<sup>10</sup> The authors note that two factors partially explain their findings. First, the buy-side firm did not benchmark their analysts against their sell-side peers, and second, the firm was slower to remove poor-performing analysts than sell-side firms.

Of course, this evidence is for only a single firm. But it does raise several questions for regulators and industry observers. First, were concerns about sell-side conflicts of interest overblown? Cases of unprofessional and unethical behavior by a few powerful analysts have been well-documented. But overall, sell-side analysts have powerful incentives to add value for investors. Regular ratings by institutional investors, which are publicly available throughout the industry, drive their reputations and compensation (see Groysberg, Healy and Maber (2008)) and potentially explain their superior performance versus buy-side analysts who face no such obvious conflicts. Second, given the deteriorating performance of sell-side analysts in the study who relocated to the sample buy-side firm, any reallocation of research from sell-side to buy-side due to the Global Settlement may actually reduce overall research quality in the US market.

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<sup>10</sup> Groysberg, Healy, Shanthikumar and (2008) find that the same analysts also experienced a decline in annualized buy recommendation returns after joining the buy-side firm.

## 5. Conclusion

Research on the effects of Reg FD on management disclosure, analyst performance, and capital markets indicates that the new rules had the intended effect of increasing company public disclosure and reducing analysts' access to private information. Post-FD, managers who had previously permitted only select analysts and institutional investors to listen to conference calls, opened the calls to retail investors. Managers also increased forecasts of future period earnings following the adoption of the new rules. These increases in management disclosure were accompanied by a decline in the value of financial analyst earnings forecasts and stock recommendations, consistent with analysts having less access to private information.

Yet there is little evidence that these changes were accompanied by any change in market liquidity or trading volume (aside from a modest increase in retail trading volume during newly-opened conference calls). Neither was there any change in analysts' forecast accuracy or forecast dispersion, suggesting that public information available to analysts post-FD (along with any increased information search) was comparable to private information received prior to the regulation.

Overall, Reg FD appears to have been neither as onerous as its critics feared, nor as beneficial in increasing investor confidence as regulators anticipated. Managers appear to have been willing to increase voluntary disclosure to compensate for the drop in selective disclosure, implying that litigation and competitive concerns raised by critics were overblown. However, the increased public disclosure also appears to have had little impact on investor confidence. One explanation for this apparent contradiction is that selective disclosures by managers prior to Reg FD were *effectively* public disclosures

since they were made to multiple sell-side analysts whose reports and insights were available to many institutional clients and were quickly reflected in stock prices. Information asymmetries between selected analysts and their best clients, and other investors prior to Reg FD were therefore at best modest, consistent with the new disclosure requirements having little impact on measures of investor confidence.

Preliminary analysis and descriptive data on the subsequent Global Settlement indicates that it may have had a more significant effect on information. By restricting banks from using equity research to support banking, the new rules affected the model used by banks to fund research. This led to a reallocation of research in US equity markets from the punished banks to brokerage firms, research boutiques and buy-side firms. Prior research indicates that analysts at the punished banks provided less biased and higher quality research than analysts at these other types of firms, raising questions about whether the Settlement research reallocations will improve the overall quality of US equity research.

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Table 1

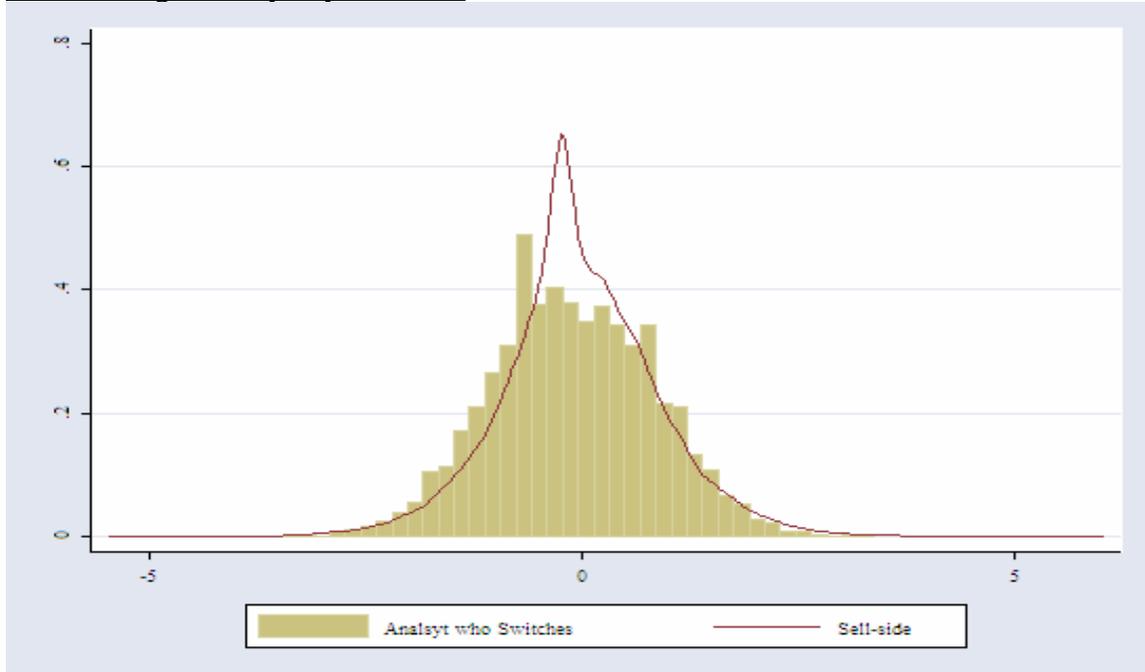
Senior analysts hired by punished and non-punished investment banks, and non-investment banks, as well as NYSE trading volume and new issue business during the period 1998 to 2006

Year	Eleven punished investment banks		Non-punished investment banks All firms		Non- investment banks		NYSE share turnover		Value of new of issues	
	Number of analyst	Percent change	Number of analyst	Percent change	Number of analyst	Percent change	Billions of shares	Percent change	\$billions	Percent change
1998	1,455	9.2%	1,944	7.7%	1,119	18.5%	167.6	26.6%	139.2	-13.8%
1999	1,518	4.3%	2,071	6.5%	1,066	-4.7%	203.4	21.3%	189.7	36.3%
2000	1,533	1.0%	2,123	2.5%	1,019	-4.4%	260.3	27.9%	224.0	18.1%
2001	1,560	1.8%	1,852	-12.8%	1,008	-1.1%	302.0	16.0%	240.8	7.5%
2002	1,840	17.9%	1,681	-9.2%	940	-6.7%	354.7	17.4%	163.7	-32.0%
2003	1,613	-12.3%	1,547	-8.0%	1,053	12.0%	343.5	-3.2%	187.8	14.7%
2004	1,478	-8.4%	1,485	-4.0%	928	-11.9%	358.2	4.3%	194.9	3.8%
2005	1,416	-4.2%	1,529	3.0%	886	-4.5%	389.4	8.7%	181.5	-6.8%
2006	1,374	-3.0%	1,456	-4.8%	902	1.8%	402.1	3.3%	219.3	20.8%

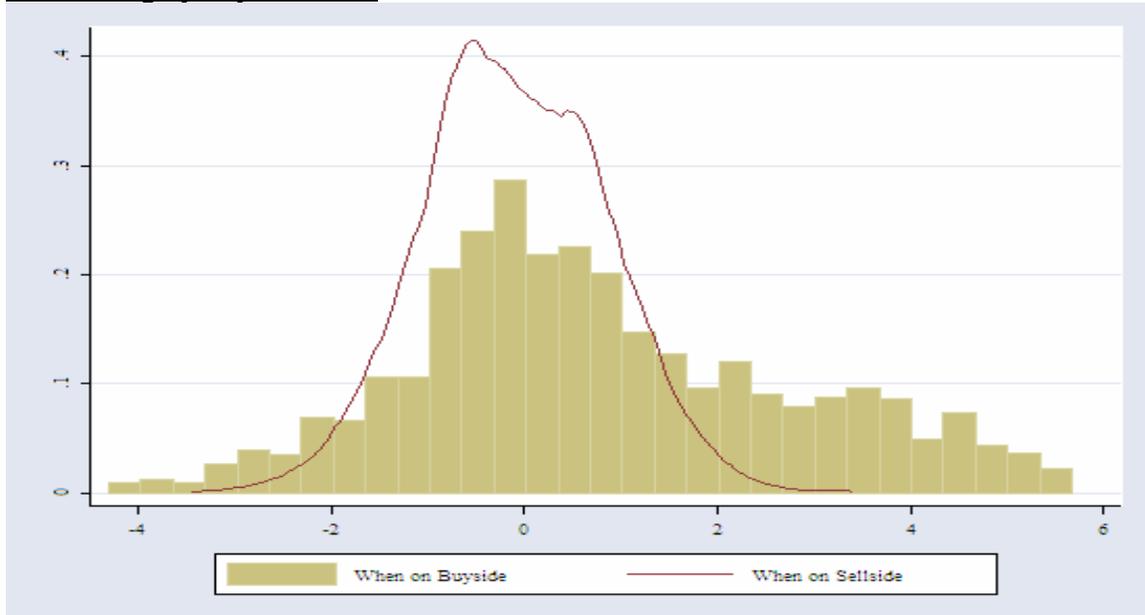
Figure 1

Distribution of relative earnings forecast optimism for buy-side analysts hired from the sell-side (before and after hiring). The sample period is January 1984 to December 2004<sup>a</sup>

Before being hired by buy-side firm



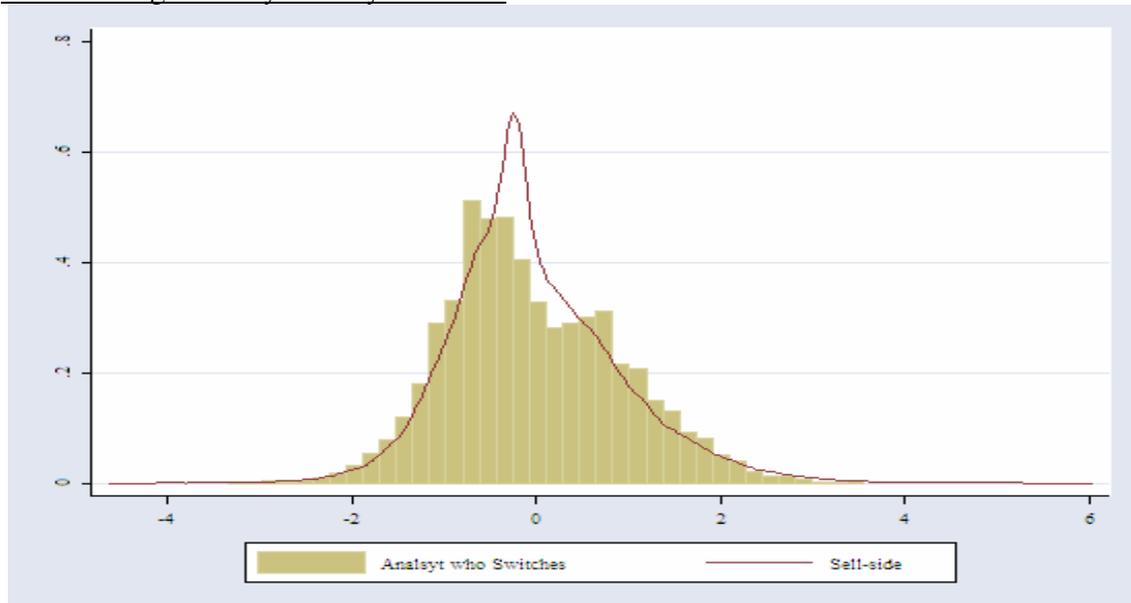
After hiring by buy-side firm



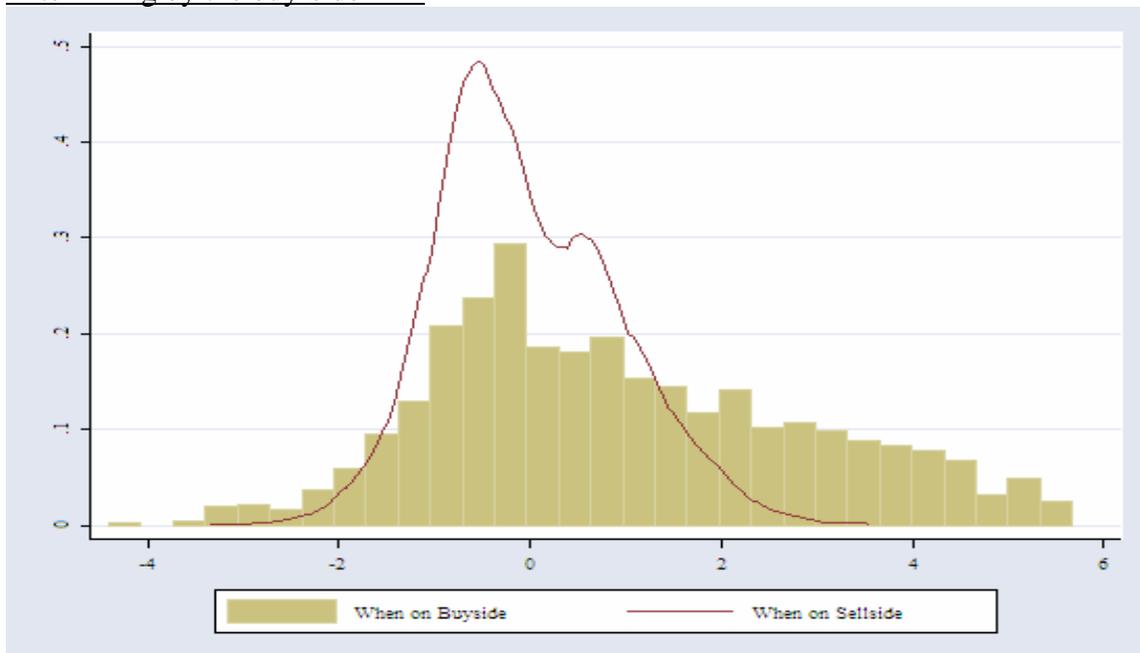
<sup>a</sup> Relative earnings forecast optimism is the difference between an analyst's forecast and the average forecast for all analysts forecasting for the same company, quarter, and forecast horizon, deflated by the standard deviation of forecasts for the company, quarter, and horizon.

Figure 2  
 Distribution of relative absolute earnings forecast error for buy-side analysts hired from the sell-side (before and after hiring). The sample period is January 1984 to December 2004<sup>a</sup>

Before being hired by the buy-side firm



After hiring by the buy-side firm



<sup>a</sup> Relative earnings forecast error is the difference between an absolute value of the analyst's forecast error and the average absolute forecast error for all analysts forecasting for the same company, quarter, and forecast horizon, deflated by the standard deviation of the absolute forecast errors for the company, quarter, and horizon.