



Regulation fair disclosure and the market's reaction to analyst investment recommendation changes

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Abstract

Previous research has shown that affiliated analysts (those who are working for investment banks that underwrite securities for companies) have an incentive to provide optimistically biased recommendations from selective information they are given by the firm. In an effort to halt such activities, as of October 2000, Regulation Fair Disclosure (RegFD) prohibits selective disclosure of *material* non-public information by public companies to privileged individuals (such as favored research analysts) and requires broad, non-exclusionary disclosure of such information. We examine firms' stock price reactions to investment recommendation changes from affiliated analysts versus unaffiliated analysts from October 1998 to November 2002, around the passage of RegFD. Similar to previous research, we find that investors reacted more significantly to recommendation downgrades by affiliated analysts than to those by unaffiliated analysts prior to the passage of RegFD. However, we find that the difference in the reactions to recommendation changes is not present after the passage of RegFD. We also find that stock price reactions to analysts' (both affiliated and unaffiliated) recommendation changes decreased significantly after the passage of RegFD. Thus, RegFD appears to have curbed the selective disclosure of information (particularly negative information) by firms to affiliated analysts. Further, the smaller reactions to recommendation changes by all analysts after RegFD may reflect a change in analysts' behavior (irrespective of information that is available) or

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a response by corporate managers to withhold information rather than risking a violation of fair disclosure rules.

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1. Introduction

The Securities and Exchange Commission (SEC) passed Regulation Fair Disclosure (RegFD) on August 10, 2000. Effective October 23, 2000, RegFD prohibits selective disclosure of *material* non-public information by firms to privileged individuals such as securities markets professionals and requires broad, non-exclusionary disclosure of such information.³ The goal of the regulation, as stated by the SEC, is to improve transparency and fairness in US stock markets and to level the playing field by reducing information disparities between individuals and institutional market participants.

Proponents assert that RegFD will improve the flow of information to financial markets and allow financial analysts to produce more objective and accurate analysis by curbing corporate managers' abilities to use information as a commodity to pressure analysts. As pointed out by the Securities Industry Association, "whenever an issuer does decide to discuss material, contextual issues with an analyst, they may be prone to favor analysts representing larger firms and/or firms maintaining additional relationships with the issuer".⁴ In order to keep a positive relationship with the firm (and retain access to the selective information only management can provide), affiliated analysts [research analysts (who make investment recommendations about the firm to market participants) that are employed by an investment bank (IB) that underwrites security issues for the firm] may have an incentive to make favorably biased recommendations about firms. These affiliated analysts can claim that positive recommendations are the result of selective information only they receive from the firm's management. Unaffiliated analysts [research analysts (who make investment recommendations about a firm) that are employed by an IB that is not underwriting securities for the firm] and other market participants cannot refute these claims since they do not receive this selective information. RegFD prohibits the release of selective information by firms and thus, affects analysts' incentives to give biased recommendations about a firm. Given that RegFD results in all analysts having the same information set on a firm, affiliated analysts can no longer claim that biased recommendations are based on selective information only they have received from management.

Opponents of RegFD claim that the new rules could have a "chilling effect" on the flow of information to financial markets, and thus on the ability to resolve information asymmetry that exists regarding a firm. Specifically, along with independent fundamental

³ For example, in the first action taken under RegFD, on November 25, 2002 the SEC settled charges against Raytheon Company and issued a cease-and-desist order to its CFO, Franklyn Caine. The SEC alleged Caine selectively disclosed earnings guidance for the first quarter of 2001 and for the full year to a select group of analysts after conducting an investor conference.

⁴ Excerpt from Cost and Benefits of Regulation Fair Disclosure (by the Securities Industry Association): Section 4. Impact on Constituent Groups. B. Impact on Sell- and Buy-side Firms.

analysis, financial analysts rely on discussions with management and company officers to resolve any information asymmetry between the firm and potential investors. Affiliated analysts, through closer ties with the management, may become more knowledgeable about the firm than unaffiliated analysts and produce more accurate recommendations. RegFD may break down the *information mosaic* that analysts depend on to make final recommendations about the quality of various securities and thus resolve the information asymmetry problem. That is, rather than risking a violation of the fair disclosure rules, some corporate managers may choose to withhold material as well as *non-material* information. A well intentioned regulation, some argue, may actually end up hurting investors in the long run if more fundamental analysis cannot overcome the decrease in management-to-analyst discussions to resolve the asymmetric information problem.

In this paper, we examine whether market participants' responses to investment recommendation changes by affiliated versus unaffiliated analysts have changed since the passage of RegFD. The paper touches on two fundamental themes: (1) reactions to affiliated and unaffiliated analysts' recommendations can differ and (2) reactions to analysts' recommendations before versus after RegFD can differ. Previous research on differential reactions to affiliated versus unaffiliated analysts' investment recommendation changes prior to RegFD concludes that reactions to analysts' recommendation changes before RegFD can be affected by the availability of information and/or analysts' incentives (perceived credibility). RegFD intended to halt this selective disclosure of information by firms to favored analysts by requiring broad, non-exclusionary disclosure of such information. Accordingly, any differential stock market reactions to investment recommendation changes (due to the perceived information advantage of affiliated analysts) presumably disappear after RegFD. If RegFD worked as intended, we should see smaller differences, or none at all, in the reaction to investment recommendation changes for affiliated versus unaffiliated analysts after RegFD. Further, RegFD may have altered the information environment such that analysts and/or companies release less information altogether rather than risk a violation of the fair disclosure rule. If so, we would see smaller reactions to recommendation changes of both affiliated and unaffiliated analysts after RegFD. The main theme of this paper, then, is to examine whether market reactions to analysts recommendation changes do indeed change after RegFD.

We find that investors reacted more significantly to recommendation downgrades by affiliated analysts than to those by unaffiliated analysts prior to the passage of RegFD (possibly due to investors' belief that affiliated analysts had received selective (material non-public) information from the issuing firm). However, the difference in the reactions to recommendation changes is not present after the passage of RegFD. Further, we do not find that affiliated analysts gave favorably biased recommendation changes before RegFD. Changes in recommendations before RegFD are statistically the same for affiliated and unaffiliated analysts. We also find that stock price reactions to analysts' (both affiliated and unaffiliated) recommendation changes decrease significantly after the passage of RegFD. The decrease is consistently significant for recommendation upgrades by both affiliated and unaffiliated analysts and for downgrades by affiliated analysts. Thus, RegFD appears to have curbed the selective disclosure of information (particularly negative information) by firms to affiliated analysts. Further, the smaller reactions to recommendation changes by all analysts after RegFD may reflect a change in analysts' behavior (irrespective of information that is available) or a response by corporate managers to withhold information rather than risking a violation of fair disclosure rules.

The rest of the paper is organized as follows. Section 2 reviews the research on Regulation Fair Disclosure and the differences in information firms provide to affiliated versus unaffiliated analysts. Section 3 presents information on the data and the sample selection criteria used in the study. Section 4 outlines the methodology and summarizes the results, and Section 5 concludes the paper.

2. Regulation fair disclosure and affiliated versus unaffiliated analysts

2.1. Investment recommendations by affiliated versus unaffiliated analysts

The issue of how affiliated analysts use selective information has been investigated in previous studies. Many papers have found that (prior to RegFD) market participants reacted differently to investment recommendations of affiliated versus unaffiliated analysts. However, past research is mixed on whether affiliated analysts used selective information to produce more accurate investment recommendations or to give favorably biased investment recommendations. For example, [Womack \(1996\)](#) and [Michaely and Womack \(1999\)](#) show that stocks recommended by affiliated analysts perform more poorly than those recommended by unaffiliated analysts. In addition, [Agrawal and Chen \(2004\)](#), [Iskoz \(2004\)](#), [Dugar and Nathan \(1995\)](#), [Dechow et al. \(2000\)](#), [Galant \(1992\)](#) and [Krigman et al. \(2001\)](#) show that affiliated analysts have an incentive to provide optimistically biased recommendations from selective information they are given by the firm (in order to maintain a positive relationship with management and retain access to the private company information only management can provide). Indeed, because securities underwriting requires substantial investment in developing and managing relationships with security issuing firms, research often concludes that investment bankers do not welcome a negative investment recommendation by their research analysts and may actively discourage them. It also concludes that an investment bank's willingness to underwrite a firm's securities requires that it has a favorable opinion about the client firm's prospects. If issuers select underwriters on the basis of the favorableness of the terms underwriters offer and these terms are related to their research analysts' recommendations, then the chosen underwriter's analysts are more likely to have a favorable recommendation of the issuing firm.

An alternative view is that affiliated analysts' recommendations will not only be unbiased but will be more accurate than those of unaffiliated analysts. For example, [Lin and McNichols \(1998\)](#) and [Hirst et al. \(1995\)](#) examine the effect of underwriting relationships on analyst's earnings forecasts and recommendations. They find that investors respond similarly when either affiliated or unaffiliated analysts issue "buy" recommendations. However, abnormal announcement period returns to affiliated "hold" recommendations are significantly more negative than are those to unaffiliated "hold" recommendations. The results of this research suggest that market participants recognize the potential for the selective release of information to affiliated (versus unaffiliated) analysts and react accordingly.⁵ In their review of the literature on firm information disclosure, [Healy and Palepu \(2001\)](#)

⁵ [Daniel et al. \(1998\)](#) refer to this type of reaction as biased self-attribution, which causes asymmetric shifts in investors' confidence. That is, overconfident investors are those who overestimate the precision of affiliated analysts' recommendation changes but not of recommendations changes based on publicly available information (used by unaffiliated analysts). Further, [Hirst et al. \(1995\)](#) apply attribution to MBA students assessments of affiliated versus unaffiliated analysts research reports.

note that analysts add value in the capital markets as their earnings forecasts are more accurate than time-series models of earnings.⁶ However, analysts also have incentives to make optimistic recommendations when their brokerage house has been hired to underwrite a firm's securities. Thus, affiliated analysts help firms resolve information asymmetry problems that may exist regarding the firm's true value.

A drawback to this view, however, is that affiliated analysts are more likely to be the beneficiaries of selective disclosure by the firms they evaluate and therefore are more likely to use the information provided by the firm's management than information they uncover on their own to make their investment recommendations. Unaffiliated analysts, on the other hand, receive less information from the firms they evaluate and create more (but less biased) information on their own. Market participants know that recommendations from affiliated analysts may be more biased but also more complete than those from unaffiliated analysts. The problem for investors, therefore, is to optimally weigh potentially more biased, but more complete information (provided by affiliated analysts) against less biased, but potentially incomplete information (provided by unaffiliated analysts).

2.2. *The impact of RegFD on investment recommendations by analysts*

With the passage of RegFD the potential disparity of material information between affiliated and unaffiliated analysts should no longer exist. This regulation requires a company to reveal any material information to all investors and to Wall Street analysts simultaneously in the case of intentional disclosures or within 24 hours in the case of unintentional disclosures. As reviewed by the [Securities Industry Association \(2001\)](#), the benefits of RegFD include (i) the boosting of investor confidence in the securities markets, (ii) the leveling of the playing field between individual investors and securities market professionals, and (iii) the provision of an additional enforcement tool to use in instances where selective disclosure occurs. Each of these benefits is the result of RegFD's intent to curb the incentive of affiliated analysts to announce favorably biased investment recommendations (in order to keep a positive relationship with the firm and retain access to selective information). However, the Securities Industry Association also concluded that RegFD had significant costs that could outweigh the benefits, including (i) a reduction in the quantity of information disseminated by issuers, (ii) a decline in the quality of information disseminated to the market, (iii) a reduction in the release of non-material as well as material information by firms, (iv) an increase in the volatility in security prices due to the decreased information dissemination, (v) an increase in the costs of issuing securities,⁷ and (vi) disadvantages to investors who depend on analysts for their investment decisions. These costs are the result of the change in the information mosaic if RegFD results in the release of less material and even non-material information on a firm. Fear of a violation of fair disclosure rules may leave firms unwilling to release information needed to resolve the information asymmetry problem.

⁶ Zitzewitz (2001) develops a methodology for measuring biases in analysts' reports, particularly whether opinion producers under or over emphasize their private information.

⁷ The Securities Industry Association (2001) estimated the increased costs in the first year of RegFD to be \$250–\$400 million, the bulk of which would be incurred by security issuers.

2.3. Empirical tests of the impact of RegFD on analysts' recommendations

A number of papers have examined the effect of Regulation FD on analysts' recommendations with mixed results. Several papers have found a decrease in the quality of information produced by analysts after RegFD. For example, [Irani and Karamanou \(2004\)](#) and [Gintchel and Markov \(2004\)](#) find that the market reaction to earnings forecasts and recommendation changes is lower in the post RegFD period. Further, [Bailey et al. \(2003\)](#) and [Mohanram and Sunder \(2003\)](#) find that both absolute forecast errors and forecast dispersion have increased after RegFD. Finally, [Heflin et al. \(2003a\)](#) find generally higher volatility in stock returns around earnings pre-announcements immediately after the implementation of RegFD.

In contrast to these generally negative findings for RegFD, [Ferreira and Smith \(2003\)](#) find that even after RegFD analysts' recommendations still have a strong impact on stock prices. [Zitzewitz \(2002\)](#) finds that prior to RegFD about 70% of analyst forecasts occurred on days in which no other analyst issued a forecast and these forecasts contained about 65% of the new information about earnings. The remaining 30% of forecasts occurred on days in which many analysts updated their forecasts and these forecasts contained about 35% of new information about earnings. Since RegFD was implemented, solo forecasts have accounted for only 50% of forecasts and 27% of new information. Consistent with RegFD, which requires that firms release any material information to all investors and to Wall Street analysts simultaneously, over 70% of new information is now being revealed on multi-forecast days. Finally, [Jorion et al. \(2005\)](#) examine a sample of credit rating changes and the effect on a company's stock price. RegFD still allows the disclosure of non-public information to credit rating agencies not made available to equity analysts. Jorion et al. find that the informational effect of credit rating downgrades and upgrades is much bigger post-RegFD.

This paper examines stock price responses to changes in investment recommendations by affiliated and unaffiliated analysts around RegFD. Prior to RegFD investors reacted differently to announcements made by affiliated analysts relative to unaffiliated analysts. RegFD is intended to level the playing field between individual investors and market *insiders*. If affiliated analysts (who were more likely to be favored by companies in information dissemination prior to RegFD) lose exclusive access to selective information about firms post RegFD, we should see a difference in the way stock prices react to recommendation changes by the two groups of analysts pre- versus post-RegFD. Specifically, if companies respond to RegFD by disseminating material information to all market participants simultaneously, then, by definition, the incremental information provided by affiliated analysts is going to be less. Further, RegFD may have altered the information environment such that companies release less information altogether rather than risk a violation of the fair disclosure rule. If so, we should see smaller reactions to recommendation changes of both affiliated and unaffiliated analysts after RegFD.

3. Data and sample selection

In this paper, we look at firms' stock price responses to changes in investment recommendations by affiliated versus unaffiliated analysts (before versus after the passage of RegFD). As will be discussed in more detail below, an affiliated analyst is one that is employed by an investment bank that underwrites security issues for a firm. These "affiliated" analysts are more likely to have access to material non-public information about

the firm as a result of their closer relationship to corporate managers than “unaffiliated” analysts. Thus, our primary data set is the Securities Data Company (SDC) “Global New Issues” database. We first collect all 3751 US public offerings between October 1, 1998 and November 29, 2002.⁸ We then limit the analysis to only those issues in which the lead or co-lead investment bank is included in Institutional Investor’s (top 14) All-American Research Team (see below). This filter reduces the SDC sample size to 3227 observations. Finally, we eliminate cases in which there are multiple security issues by a firm on a given day. Eliminating the duplicates produces a final set of 2830 security issues in the sample.

We obtain analyst information (investment bank affiliation and recommendation changes) by matching the SDC database security issues to the IBES (FirstCall) recommendations database. Obviously, more than one analyst (affiliated or unaffiliated) may announce an investment recommendation change on the same day. Thus, we initially collect information (the level of the recommendation change and the date the recommendation change is announced) on any analyst recommendation change for the security issues collected from the SDC database. In order to avoid any biases due to analysts’ reputations, we limit the sample to only analysts (affiliated and unaffiliated) which are listed in the Institutional Investor All-American Research Team (top 14) any time between 1998 and 2002.⁹ While the use of only those analysts listed as part of the All-American Research Team somewhat reduces the sample size, it allows us to avoid the potential problem that investors might overweigh recommendations from more reputable analysts and underweigh those from less reputable analysts. By using recommendation changes from the most reputable analysts only, changes in stock price reactions before versus after RegFD can more reliably be attributed to the effect of regulation change on the perceived credibility of affiliated versus unaffiliated analysts.¹⁰ This procedure results in 10,858 recommendation changes from affiliated and unaffiliated analysts.

The next step in the data collection process is to identify whether each of the analyst recommendation changes involves an affiliated or unaffiliated analyst. Affiliated analysts are defined as those analysts working for the lead or co-lead investment bank or underwriter (identified from the SDC database) on the security issue. The lead and co-lead underwriters are the IBs that negotiate the deal directly with the security issuing firm. They are the IBs that develop the closest relationship with the corporate managers of the security issuing firms. These “affiliated” analysts are more likely to have access to material non-public information about the firm as a result of their favored status by corporate managers.

⁸ Security issues we examine include common stock, convertible debt, preferred stock, non-convertible debt, and non-convertible preferred stock. We exclude all IPOs and ADRs, as well as issues sold by financial institutions and government agencies.

⁹ To select the members of the All-American Research Team, *Institutional Investor* sends questionnaires covering 71 industry groups and investment specialists to the directors of research and chief investment officers of major money management institutions. *Institutional Investor* also contacts selected institutional clients from lists submitted by Wall Street research directors and sends questionnaires directly to analysts and portfolio managers at many top institutions.

¹⁰ More than 85% of the issues in the original sample are underwritten by the top 14 All-American Research Team. Less reputable investment banks do not get much underwriting business. As a result, looking at the All-American Research Team, rather than others, is pretty common in this literature. In this paper, we focus on just the results for the most reputable analysts.

The timing of the analyst's investment recommendation change relative to the security issue allows for alternate ways of determining whether an analyst working for the lead or co-lead IB is, indeed, an affiliated or unaffiliated analyst. We classify an affiliated analyst as one who makes a recommendation change any time after the file date on a security issue in which the IB is the lead or co-lead underwriter.¹¹ Thus, an unaffiliated analyst is one who is not working for an IB, one working for an IB other than the lead or co-lead underwriter, or one working for the lead or co-lead IB where the recommendation change is made before the file date of the new issue.¹² With this classification, the security issuer is a client of the lead or co-lead IB (for which the analyst is employed) at or before the time the new security is issued and the investment recommendation is changed. The recommendation change can occur at any time after the file date on the security issue.¹³

The final step in the data collection process is to match the SDC/IBES sample with the CRSP data base. Firms being evaluated by analysts must be listed on CRSP at the time the analyst recommendation changes are announced. Further, the three-day return centered on the recommendation change date must be available.¹⁴ After matching the SDC, the IBES, and the CRSP databases the sample includes 9600 recommendation change days during the October 1998–November 2002 period.

Table 1 presents information on the sample. Panel A summarizes the sample construction process discussed above, while Panel B lists summary statistics on the sample by year of the security issue. There are a total of 9600 analyst recommendation change days. Of these, 9089 involve a recommendation change by a single analyst on a given day. The remaining 511 recommendation change days involve those in which multiple analysts announced a recommendation change for a sample firm on a given day.

IBES categorizes recommendations in the following way: 1 = Strong Buy, 2 = Buy, 3 = Hold, 4 = Underperform, and 5 = Sell. From these, we create a recommendation change variable (ΔREC) equal to the original IBES recommendation minus the revised

¹¹ We use the Securities Data Company bookrunner(s) data to make this identification.

¹² In this case the "unaffiliated" analyst making the recommendation change may work for the lead or co-lead IB, however, the investment recommendation change is made before the new security issue is filed, i.e., before the underwriter/issuer relation begins.

¹³ Alternatively, we classify an affiliated analyst as one who makes a recommendation change after the file date and within one year of a security issue in which the IB was the lead or co-lead underwriter. In this case, an unaffiliated analyst is one who is not working for an IB, one working for an IB other than the lead or co-lead underwriter, or one working for the lead or co-lead IB where the recommendation change is made before the file date of the new issue or more than one year after the security issue date. Again, with this classification, the security issuer is a client of the lead or co-lead IB (for which the analyst is employed) at or before the time the new security is issued and the investment recommendation is changed. However, with the second classification, the recommendation change must occur after the file date but within one year of the issue date of the security. In the first classification, the security issue underwritten by the investment bank with which the analyst is affiliated can occur well before the investment recommendation change is made by the analyst. In the second classification, the security issue occurs within one year before the investment recommendation change. The results and conclusions are the same for both classifications of affiliated versus unaffiliated analysts. Accordingly, in the paper we present only the results for our first classification of affiliated and unaffiliated analyst. The results for the second classification are available from the authors on request.

¹⁴ In this paper, we are interested in the perceived credibility of investment recommendation changes by analysts as assessed by market participants at the initial release of new information about security issuing firms. Thus, we use the 3-day CARs. An additional research topic, which we save for a future research project, is to look at longer term return windows. The performance of the firm over a longer window would allow for a look at the true accuracy in analysts investment recommendation changes.

Table 1
Sample construction and summary statistics

Panel A: Sample construction			
<i>Security issues:</i>			
Original sample of security issues from SDC Global New Issues Database (10/01/98–11/29/02) ^a			3751
Less: Those not involving Institutional Investor's All-American Research Team			–524
Those with multiple issues on the same date			–397
Final sample of security issues			2830
<i>Recommendation changes from IBES:</i>			
Recommendation changes from Investment Banks which underwrote securities and placed in Institutional Investor's (top 14) All-American Research Team			10,858
Less: Those with missing CRSP data			–1258
Final sample of analyst recommendation changes			9600
Panel B: Sample summary statistics			
Year	Total number of analyst recommendation change days	Number of single analyst recommendation change days	Number of multiple analyst recommendation change days
1998	788	765	23
1999	1676	1596	80
2000	2038	1883	155
2001	2240	2129	111
2002	2858	2716	142
Total	9600	9089	511

This table describes the sample development and lists summary statistics on analyst investment recommendation changes for firms involved in security issuances between October 1, 1998 and November 29, 2002. Panel A summarizes the sample construction and Panel B gives the distribution of recommendation changes by year of security issue. We include the number of total analyst recommendation changes, the number of recommendation changes by a single analyst on a given day, and the number of recommendation changes by multiple analysts on a given day.

^a We limit our original sample to common stock, convertible debt, preferred stock, non-convertible debt, and non-convertible preferred stock offered by US companies in the domestic market. We also exclude IPOs as well as issues sold by financial institutions and government agencies.

IBES recommendation. We concentrate on recommendation changes because we are interested in the incremental information that analysts produce and market participants' reactions to this information. Analysts' reiteration of the same recommendation means there is no significant new information being conveyed. However, a change in analysts' recommendations allows us to examine days where there is a flow of new information to the market. Notice that a positive value for ΔREC signifies an analyst's recommendation upgrade (e.g., ΔREC for a recommendation change from Hold to Strong Buy is $3 - 1 = 2$), while a negative value signifies an analyst downgrade (e.g., ΔREC for a recommendation change from Hold to Underperform is $3 - 4 = -1$).

Table 2 lists summary statistics on analysts' beginning investment recommendations and changes in these recommendations for the security issuing firms. Almost 80% of recommendation changes involve a 1 category change, and very rarely there is a 3 or 4 category recommendation change. In each cell of Table 2, we list the number of analyst recommendation changes out of the total 9089 (excluding multiple recommendations that occur on the same day), the percent of the total 9089 observations in the cell, the percent of total observations in a particular row (or by beginning IBES rating), and the

Table 2
 Statistics on analysts' beginning IBES recommendation and change in IBES recommendation

BREC = Original IBES recommendation	ΔREC = Change in the IBES recommendation								Total
	–4 = Four-category downgrade	–3 = Three-category downgrade	–2 = Two-category downgrade	–1 = One-category downgrade	1 = One-category upgrade	2 = Two-category upgrade	3 = Three-category upgrade	4 = Four-category upgrade	
1 = Strong buy	6 0.07 0.23 100.00	15 0.17 0.57 62.50	984 10.83 37.66 90.94	1608 17.69 61.54 40.45	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	2613 28.75
2 = Buy	0 0 0 0	9 0.10 0.24 37.50	53 0.58 1.41 4.90	2097 23.07 55.96 52.75	1588 17.47 42.38 49.00	0 0 0 0	0 0 0 0	0 0 0 0	3747 41.23
3 = Hold	0 0 0 0	0 0 0 0	45 0.50 1.79 4.16	262 2.88 10.43 6.59	1517 16.69 60.37 46.81	689 7.58 27.42 91.87	0 0 0 0	0 0 0 0	2513 27.65
4 = Underperform	0 0 0 0	0 0 0 0	0 0 0 0	8 0.09 4.82 0.20	134 1.47 80.72 4.13	18 0.20 10.84 2.40	6 0.07 3.61 60.00	0 0 0 0	166 1.83
5 = Sell	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	2 0.02 4.00 0.06	43 0.47 86.00 5.73	4 0.04 8.00 40.00	1 0.01 2.00 100.00	50 0.55
Total	6 0.07	24 0.26	1082 11.90	3975 43.73	3241 35.66	750 8.25	10 0.11	1 0.01	9089 100.00

This table lists the original and changes in IBES recommendations for 9089 analyst-stock observations from October 1998 to November 2002. BREC is the original IBES recommendation and ΔREC is the change in the recommendation. IBES Recommendations are listed numerically as 1 = Strong buy, 2 = Buy, 3 = Hold, 4 = Underperform, and 5 = Sell. ΔREC is the original recommendation minus the updated recommendation, –4 = four-category downgrade in the IBES recommendation (i.e., Strong buy to Sell), –3 = three-category downgrade (i.e., Strong buy to Underperform), –2 = two-category downgrade (i.e., Buy to Underperform), –1 = one-category downgrade (i.e., Buy to Hold), 1 = one-category upgrade (i.e., Hold to Buy), 2 = two-category upgrade (i.e., Hold to Strong buy), 3 = three-category upgrade (i.e., Sell to Buy), and 4 = four-category upgrade (i.e., Sell to Strong buy).

Each cell lists the number of observations out of the total 9089, the percent of the total observations in the cell, the percent of total observations in a particular row and the percent of the total observations in a particular column.

percent of total observations in a particular column (or by size of the change in the IBES recommendation). For example, 984 analyst recommendation changes were from Strong Buy to Hold (a 2 category downgrade). These represent 10.83% of the full sample of analyst recommendation changes, 37.66% of the recommendation changes in which the original recommendation was a Strong Buy, and 90.94% of the recommendation changes involving a two-category downgrade. Not surprisingly, very few analysts issue recommendations of Underperform (166 of the 9089 observations) or Sell (50 of the observations).

4. Research design and test results

The crux of the analysis is on market price reactions to affiliated versus unaffiliated analyst investment recommendation changes before versus after RegFD. We begin the analysis by comparing changes in the magnitude of analyst recommendation upgrades and downgrades around RegFD by these two groups of analysts. We then examine the announcement period market response to recommendation changes around RegFD using both univariate tests and regression analysis.

4.1. Analyst recommendation changes

Table 3 reports the average magnitude of IBES affiliated and unaffiliated analyst recommendation changes (ΔREC) for upgrades and downgrades, both before and after the implementation of RegFD. The larger the absolute value of ΔREC , the larger is the magnitude (upgrade or downgrade) of the recommendation change. The Table lists the mean value of recommendation changes and the two sided p -values of a t -test and z -test for the significance of the difference between the comparison groups.

To make a clean distinction of affiliation, we report results using only the 9089 events which involve a single analyst recommendation change on a given day. The sample includes 4002 (44.03% of the sample) upgrade and 5087 (55.97%) downgrade recommendations. Further, 3784 recommendation changes occur before RegFD, while the remaining 5305 occur after. The number of downgrades is smaller than the number of upgrades before RegFD (1731 versus 2053) and larger than the number of upgrades after RegFD (3356 versus 1949). The increase in the frequency of downgrades is not surprising given the weak state of the US economy during the latter part of the sample period.

From of Table 3, we find that the magnitude of both downgrades and upgrades has increased after RegFD for both types of analysts. The mean ΔREC before RegFD for unaffiliated analysts' downgrades is -1.184 IBES categories, while after RegFD is -1.241 . The difference in ΔREC is highly significant. Before RegFD the mean ΔREC at an upgrade announcement by unaffiliated analysts is 1.181 categories, yet after RegFD is 1.211 categories. The difference is significant at better than 5% level. For the affiliated analysts' downgrades, the mean ΔREC before RegFD is -1.186 categories, while after RegFD is -1.264 categories. The difference is significant at better than 5% level. Finally, before RegFD the mean ΔREC at an upgrade announcement by affiliated analysts is 1.141 categories, yet after RegFD is 1.215.

The last two rows of Table 3 show that there is no significant difference in the size of affiliated versus unaffiliated analyst recommendation changes before or after RegFD. Contrary to previous research, these results suggest that affiliated analysts do not favor their clients when it comes to the magnitude of recommendation upgrades and downgrades.

Table 3

Analyst recommendation changes before and after the implementation of regulation fair disclosure

Unaffiliated analyst		Before RegFD	After RegFD	Before versus after RegFD ^a	
				<i>t</i> -Test	<i>z</i> -Test
Downgrade	<i>n</i>	1494	2535		
	Mean	-1.184	-1.241	<0.0001	<0.0001
	Std. error	0.0104	0.0090		
Upgrade	<i>n</i>	1784	1511		
	Mean	1.181	1.211	0.0302	0.0193
	Std. error	0.0094	0.0106		
Affiliated analyst		Before RegFD	After RegFD	Before versus after RegFD ^a	
				<i>t</i> -Test	<i>z</i> -Test
Downgrade	<i>n</i>	237	821		
	Mean	-1.186	-1.264	0.0173	0.0165
	Std. error	0.0260	0.0161		
Upgrade	<i>n</i>	269	438		
	Mean	1.141	1.215	0.0170	0.0134
	Std. error	0.0219	0.0199		
		<i>t</i> -Test	<i>t</i> -Test		
		<i>z</i> -Test	<i>z</i> -Test		
Downgrade	Unaffiliated versus affiliated ^b	0.9550	0.2089		
		0.9257	0.1675		
Upgrade	Unaffiliated versus affiliated ^b	0.1258	0.8764		
		0.1154	0.8831		

This table reports the average magnitude of recommendation changes for downgrades and upgrades before versus after the implementation of Regulation Fair Disclosure based on whether the analyst making the recommendation change is affiliated with the lead or co-lead investment bank (IB) underwriting the security issue. Affiliated analyst is defined as one who makes a recommendation change any time after the file date of a security issue in which the IB is the lead or co-lead underwriter. The *t*-statistics and Wilcoxon scores *z*-statistics in the last two columns of the table test for differences (mean and median, respectively) in the magnitude of recommendation downgrades and upgrades before versus after RegFD. The last two rows of the table test for differences in the market response to recommendation downgrades or upgrades of unaffiliated and affiliated analysts separately for before and after RegFD periods. Two sided *p*-values are reported for both types of tests.

^a Tests for differences in the magnitude of before versus after RegFD recommendation downgrades or upgrades separately for unaffiliated and affiliated analysts.

^b Tests for differences in the magnitude of recommendation downgrades or upgrades of unaffiliated and affiliated analysts separately for before and after RegFD periods.

However, this is not surprising given that we restrict our analysis only to analysts who work at top-rated institutions. In earlier studies, these types of analysts have been shown to be less biased than their counterparts at less reputable institutions.

Overall, results in Table 3 suggest that RegFD is associated with an increase in analyst independence and a reduction in optimism in investment recommendations. After RegFD, we see an increased frequency of downgrades with a larger magnitude of decline. Even though the magnitude of upgrades also goes up, we see a smaller fraction of positive recommendation changes after the implementation of the regulation. However, it should again be mentioned that this time coincides with a downturn in the US economy. We explore this issue further below.

4.2. Returns at announcements of recommendation changes

The event day used in our analysis is any day, identified from the IBES data, on which there is a recommendation change by affiliated or unaffiliated analysts. Our focus is on the size-adjusted Cumulative Abnormal Returns (CARs) over trading days $t = -1$ through $t = +1$ relative to the recommendation change announcement. Abnormal returns are calculated as in Womack (1996). That is, CARs are three day buy-and-hold returns for an upgraded/downgraded security less the three day buy-and-hold return for the relevant CRSP size decile, centered on the recommendation change date. For NYSE/AMEX (NASDAQ) listed stocks, we use the CRSP NYSE/AMEX (NASDAQ) size decile.¹⁵ Table 4 presents CARs for affiliated versus unaffiliated analyst recommendation changes before versus after the implementation of RegFD. Similar to Table 3, we report results using only the 9089 solo recommendation change days so as not to contaminate the average values for affiliated and unaffiliated analysts.

We first look at the difference in market reactions to unaffiliated or affiliated analysts' recommendation changes before versus after RegFD. For unaffiliated analysts' downgrades, the average CAR at a downgrade announcement before RegFD is -4.160% , while after RegFD is -4.617 . In this case only, the decrease is statistically insignificant. Before RegFD the average CAR at an upgrade announcement by unaffiliated analysts is 4.042% , yet after RegFD is 3.143 . The decrease is significant at the 1% level. For affiliated analysts, the average CAR at a downgrade announcement before RegFD is -7.402% , while after RegFD is -5.024 . The decrease is significant at better than the 5% level. Finally, before RegFD the average CAR at an upgrade announcement by affiliated analysts is 4.981% , yet after RegFD is 3.571 . The decrease is significant at better than the 5%, but the z -test fails to reject the hypothesis that the two medians are the same.

The results so far show that the magnitude of CARs for both groups of analysts and for both upgrades and downgrades decreases after RegFD (except for the downgrades by unaffiliated analysts – in which case the market response roughly remains the same both before and after RegFD). If companies respond to RegFD by disseminating material information to all market participants simultaneously, then, by definition, the incremental information provided by analysts is going to be less. Further, rather than risking a violation of fair disclosure rules, corporate managers may choose to withhold both non-material as well as material information. Therefore, we should expect to see less of a response to analyst recommendation changes after RegFD. The results are supportive of this view, at least with respect to upgrades.

However, these univariate results should be interpreted cautiously. The sample period after the passage of RegFD, October 2000 through November 2002, generally coincides with a bear market in the US (i.e., the period March 2001–November 2002). Thus, it is possible that any decrease in CARs after RegFD, for both groups of analysts and for both upgrades and downgrades, may be due to this bear market rather than RegFD. In the next section, we address this concern employing a multivariate analysis.

¹⁵ Note that we calculate abnormal returns based on market listing as well as size decile. That is, if a company is listed on the NYSE/AMEX, we use NYSE/AMEX size decile returns; if it is listed on NASDAQ, we use the NASDAQ size decile returns. Calculating returns based on market listing allows us to remove the effects of the NASDAQ crash that was nearly concurrent to the passage of RegFD.

Table 4

Cumulative abnormal returns at the announcement of analyst recommendation changes before and after the implementation of regulation fair disclosure

Unaffiliated analyst		Before RegFD	After RegFD	Before versus after RegFD ^a	
				<i>t</i> -Test	<i>z</i> -Test
Downgrade	<i>n</i>	1494	2535		
	Mean	-4.160	-4.617	0.2325	0.5345
	Std. error	0.277	0.245		
Upgrade	<i>n</i>	1784	1511		
	Mean	4.042	3.143	0.0030	0.0214
	Std. error	0.206	0.221		
Affiliated analyst		Before RegFD	After RegFD	Before versus after RegFD ^a	
				<i>t</i> -Test	<i>z</i> -Test
Downgrade	<i>n</i>	237	821		
	Mean	-7.402	-5.024	0.0207	0.0024
	Std. error	0.894	0.488		
Upgrade	<i>n</i>	269	438		
	Mean	4.981	3.571	0.0391	0.1841
	Std. error	0.564	0.408		
		<i>t</i> -Test	<i>t</i> -Test		
		<i>z</i> -Test	<i>z</i> -Test		
Downgrade	Unaffiliated versus affiliated ^b	<0.0001	0.4275		
		0.0003	0.7955		
Upgrade	Unaffiliated versus Affiliated ^b	0.1024	0.3594		
		0.1210	0.1007		

This table reports the size-adjusted, cumulative abnormal returns (CARs) at the announcements of downgrades and upgrades before and after the implementation of Regulation Fair Disclosure based on whether the analyst making the recommendation change is affiliated with the lead or co-lead investment bank (IB) underwriting the security issue. Affiliated analyst is defined as one who makes a recommendation change any time after the file date of a security issue in which the IB is the lead or co-lead underwriter. CARs are the three day buy-and-hold returns for the upgraded/downgraded security less the three day buy-and-hold return for the relevant CRSP size decile, centered on the recommendation change date. For NYSE/AMEX (NASDAQ) listed stocks, we use the CRSP NYSE/AMEX (NASDAQ) size decile. Returns are expressed in percent form. The *t*-statistic and Wilcoxon scores *z*-statistic in the last two columns of the table test for differences (mean and median, respectively) in the market response to before versus after RegFD recommendation downgrades or upgrades. The last two rows of the table test for differences in the market response to recommendation downgrades or upgrades of unaffiliated and affiliated analysts separately for before and after RegFD periods. Two sided *p*-values are reported for both types of tests.

^a Tests for differences in the market response to before versus after RegFD recommendation downgrades or upgrades separately for unaffiliated and affiliated analysts.

^b Tests for differences in the market response to recommendation downgrades or upgrades of unaffiliated and affiliated analysts separately for before and after RegFD periods.

The last two rows of Table 4 examine the difference in market reactions to unaffiliated versus affiliated analyst downgrades and upgrades, both before and after RegFD. The results suggest that, prior to RegFD, investors react to affiliated analysts more than unaffiliated analysts when it comes to the release of bad news (an investment downgrade). The *t*-test and *z*-test for differences in CARs around the date of an investment recommendation downgrade for affiliated versus unaffiliated analysts are significant at better than the 1%

level. There is, however, no significant difference in the market response to affiliated versus unaffiliated analysts' recommendation upgrades (t -test p -value = 0.1024 and z -test p -value = 0.1210). It seems that the perceived credibility of affiliated analysts is higher prior to the passage of RegFD for downgrades but not for upgrades. If an affiliated analyst announces an investment upgrade, the market reacts to this information to the same extent as if an unaffiliated analyst announces an upgrade. If, however, an affiliated analyst announces a recommendation downgrade, the market reacts more severely than if an unaffiliated analyst announces the same downgrade. An affiliated analyst's recommendation downgrade (that is more likely to be based on selective information and released at the risk of losing the relationship with the firm) is evaluated as more credible by the market than an unaffiliated analyst's downgrade.

After the implementation of RegFD investors pay no more attention to affiliated analysts than unaffiliated analysts when it comes to recommendation changes. The difference in the market's reaction to both recommendation downgrades and upgrades by unaffiliated versus affiliated analysts is insignificant. The signal given to the market as a result of recommendation changes by analysts is more consistent. As stated by the SEC, "... the regulation will encourage competition because it places all analysts on equal competitive footing with respect to access to material information. Analysts will continue to be able to use and benefit from superior diligence or acumen, without facing the prospect that other analysts will have a competitive edge simply because they have been favored with selective disclosure. Additionally, analysts will be able to express their honest opinions without fear of being denied access to material corporate information".¹⁶

4.3. Returns at announcements of recommendation changes: Regression evidence

One drawback of the univariate analysis examined above is that it does not allow for interdependencies between variables. For example, market reactions to recommendation changes by a single (affiliated or unaffiliated) analyst for a sample firm on a given day would be small relative to recommendation changes by multiple analysts. Further, with the passage of RegFD the potential disparity of material information between affiliated and unaffiliated analysts should no longer exist. Thus, after the passage of RegFD, a release of material information by a firm should mean that both affiliated and unaffiliated analysts covering the stock will move quickly to change their recommendations. In this section, we examine market reactions to unaffiliated and affiliated analyst recommendation changes before and after RegFD in a multivariate setting. We model the relation between three-day size-adjusted buy-and-hold returns and recommendation changes using various versions of the following equation:

$$\begin{aligned} \text{CAR} = & \beta_1 \text{Up} + \beta_2 \text{UpFD} + \beta_3 \text{Down} + \beta_4 \text{DownFD} + \beta_5 \text{Mult} + \beta_6 \text{MultFD} \\ & + \beta_7 \text{AffUp} + \beta_8 \text{AffUpFD} + \beta_9 \text{AffDown} + \beta_{10} \text{AffDownFD} + e, \end{aligned}$$

¹⁶ Excerpt from the SEC Final Rule: Selective Disclosure and Insider Trading. Section VI.

where

- CAR three-day size-adjusted abnormal announcement period return,
 Up an indicator variable equal to 1 if the recommendation change (ΔREC) is an upgrade and 0 otherwise,¹⁷
 UpFD an interaction variable between the variable Up and an indicator variable for the passage of RegFD,
 Down an indicator variable equal to 1 if the recommendation change (ΔREC) is a downgrade and 0 otherwise,
 DownFD an interaction variable between the variable Down and an indicator variable for the passage of RegFD,
 Mult an indicator variable equal to 1 if there are multiple recommendation changes on the same date and 0 otherwise,
 MultFD an interaction variable between the variable Mult and an indicator variable for the passage of RegFD,
 AffUp an interaction variable between the variable Up and an indicator variable for the affiliated analyst recommendation change,
 AffUpFD an interaction variable between the variable AffUp and an indicator variable for the passage of RegFD,
 AffDown an interaction variable between the variable Down and an indicator variable for the affiliated analyst recommendation change, and,
 AffDownFD an interaction variable between the variable AffDown and an indicator variable for the passage of RegFD.

Standard errors are adjusted for heteroscedasticity using the White correction.

We first examine whether there is a change in the way the market responds to analyst recommendation changes before versus after RegFD. That is, we look at the relation between CAR and variables Up, Down, UpFD, and DownFD. Results in Table 4 of this paper document differences in stock price reactions to upgrades versus downgrades in investment recommendations by affiliated versus unaffiliated analyst. Thus, we look at stock price reactions to investment recommendation upgrades separately from downgrades. The coefficient on Up (Down) captures the average stock price response to analysts' recommendation upgrades (downgrades), while UpFD (DownFD) captures the incremental mean stock price response in the post-RegFD period. If companies disseminate material public information through public channels rather than through research analysts after RegFD, we would expect a decrease in the contribution of individual analysts to the overall

¹⁷ We originally considered the fact that a one-category downgrade from 1 to 2 may not have the same meaning as a one-category downgrade from 2 to 3 or 4 to 5 or, alternatively, a two-category upgrade from 5 to 3 may not have the same meaning as a two-category upgrade from 4 to 2 or 3 to 1, etc. Accordingly, we evaluated recommendation changes based on the direction and magnitude, as well as the original IBES recommendation. For example, among the stocks with an original recommendation of 1, 1608 are downgraded one category and 984 are downgraded two categories; of such stocks only 21 are downgraded by three or four categories. Among all stocks ranked 4 by IBES analysts, there are only 8 downgraded one category and 134 upgraded one category; there are only 24 two or three category upgrades and no four category upgrades. We found no impact on our results and conclusions from the inclusion of the magnitude of the recommendation change, and therefore, focus mainly on the direction of upgrades versus downgrades in this paper. The results including the magnitude of recommendation changes are available from the authors upon request.

Table 5

Regression analysis of the impact of analyst affiliation and regulation fair disclosure on cumulative abnormal returns at the announcement of analyst recommendation changes

Variable	Regression 1		Regression 2		Regression 3 ^a	
	Parameter estimates	<i>p</i> -Values	Parameter estimates	<i>p</i> -Values	Parameter estimates	<i>p</i> -Values
Up	4.32	0.000	4.64	0.000	4.51	0.000
UpFD	−1.09	0.000	−0.96	0.001	−0.93	0.003
Down	−5.75	0.000	−5.17	0.000	−4.67	0.000
DownFD	0.17	0.646	0.20	0.576	−0.16	0.664
Mult			−8.06	0.000	−7.97	0.000
MultFD			−2.38	0.189	−2.48	0.171
AffUp					0.98	0.110
AffUpFD					−0.54	0.481
AffDown					−3.65	0.000
AffDownFD					3.05	0.005
Adj. <i>R</i> ²	0.1493		0.1771		0.1789	

This table reports the estimation results of various versions of the following equation:

$$CAR = \beta_1 Up + \beta_2 UpFD + \beta_3 Down + \beta_4 DownFD + \beta_5 Mult + \beta_6 MultFD + \beta_7 AffUp + \beta_8 AffUpFD + \beta_9 AffDown + \beta_{10} AffDownFD + e,$$

CARs are the three day buy-and-hold returns for the upgraded/downgraded security less the three day buy-and-hold return for the relevant CRSP size decile, centered on the recommendation change date. For NYSE/AMEX (NASDAQ) listed stocks, we use the CRSP NYSE/AMEX (NASDAQ) size decile. Returns are expressed in percent form. Up (Down) is an indicator variable equal to 1 if the recommendation change is an upgrade (downgrade) and 0 otherwise, UpFD (DownFD) is an interaction variable between the variable Up (Down) and an indicator variable for the passage of RegFD. The coefficient on Up (Down) captures the average stock price response to analysts' recommendation upgrades (downgrades), while UpFD (DownFD) captures the incremental mean stock price response in the post-RegFD period. Mult is an indicator variable equal to 1 if there are multiple recommendation changes on the same date and 0 otherwise, MultFD is an interaction variable between the variable Mult and an indicator variable for the passage of RegFD. The coefficient on Mult captures the mean stock price response to public announcements that are potentially contemporaneous with recommendation changes. The coefficient on MultFD, on the other hand, captures the incremental mean stock price response to public announcements in the post-RegFD period. AffUp (AffDown) is an interaction variable between the variable Up (Down) and an indicator variable for the affiliated analyst recommendation change, and AffUpFD (AffDownFD) is an interaction variable between the variable AffUp (AffDown) and an indicator variable for the passage of RegFD. The coefficients on AffUp and AffDown reflect the incremental mean returns associated with affiliated analyst upgrades and downgrades, whereas the coefficients on AffUpFD and AffDownFD capture the incremental mean stock price reaction associated with an affiliated analyst's recommendation change after RegFD. Standard errors are adjusted for heteroscedasticity using the White correction.

^a Affiliated analyst is defined as one who makes a recommendation change any time after the file date of a security issue in which the IB is the lead or co-lead underwriter.

information content. Therefore, we expect the incremental stock price response to analyst recommendation changes in the post-RegFD period to go down in magnitude.

We next add two variables to our regression. Mult is an indicator variable set equal to one if there are multiple analyst recommendation changes on any date and zero otherwise. The coefficient on this variable captures the mean stock price response to public news that is directly or indirectly related to a security. Additionally, MultFD is an interaction term of Mult and an indicator variable for the passage of RegFD. The coefficient on this variable captures the incremental mean stock price response to recommendation changes by multiple analysts in the post-RegFD period.

Table 6

Regression analysis of the impact of economic downturn on cumulative abnormal returns at the announcement of analyst recommendation changes

Variable	Regression 1		Regression 2		Regression 3 ^a	
	Parameter estimates	<i>p</i> -Values	Parameter estimates	<i>p</i> -Values	Parameter estimates	<i>p</i> -Values
<i>Panel A: October 2000–February 2001</i>						
Up	3.91	0.000	4.54	0.000	4.15	0.000
Down	−8.00	0.000	−6.81	0.000	−6.45	0.000
Mult			−14.19	0.000	−14.23	0.000
AffUp					2.13	0.064
AffDown					−1.81	0.247
Adj. <i>R</i> ²	0.1755		0.2233		0.2238	
<i>Panel B: March 2001–November 2002</i>						
Up	3.10	0.000	3.53	0.000	3.47	0.000
Down	−5.21	0.000	−4.67	0.000	−4.52	0.000
Mult			−10.15	0.000	−10.15	0.000
AffUp					0.26	0.602
AffDown					−0.59	0.308
Adj. <i>R</i> ²	0.1261		0.1555		0.1554	

This table reports the estimation results of various versions of the following equation:

$$CAR = \beta_1 Up + \beta_2 Down + \beta_3 Mult + \beta_4 AffUp + \beta_5 AffDown + e,$$

CARs are the three day buy-and-hold returns for the upgraded/downgraded security less the three day buy-and-hold return for the relevant CRSP size decile, centered on the recommendation change date. For NYSE/AMEX (NASDAQ) listed stocks, we use the CRSP NYSE/AMEX (NASDAQ) size decile. Returns are expressed in percent form. Up (Down) is an indicator variable equal to 1 if the recommendation change is an upgrade (downgrade) and 0 otherwise. The coefficient on Up (Down) captures the average stock price response to analysts' recommendation upgrades (downgrades). Mult is an indicator variable equal to 1 if there are multiple recommendation changes on the same date and 0 otherwise. The coefficient on Mult captures the mean stock price response to public announcements that is potentially contemporaneous with recommendation changes. AffUp (AffDown) is an interaction variable between the variable Up (Down) and an indicator variable for the affiliated analyst recommendation change. The coefficients on AffUp and AffDown reflect the incremental mean returns associated with affiliated analyst upgrades and downgrades. To control for the effect of the economic downturn in the US economy in the post-RegFD period, we split the post-RegFD data into two periods: October 2000–February 2001 ($n = 1054$) and March 2001–November 2002 ($n = 4686$). Panel A reports regression results for the period October 2000–February 2001, while Panel B reports results for March 2001–November 2002. Standard errors are adjusted for heteroscedasticity using the White correction.

^a Affiliated analyst is defined as one who makes a recommendation change any time after the file date of a security issue in which the IB is the lead or co-lead underwriter.

The central focus of this paper is to analyze the differential market reaction to recommendation changes made by affiliated versus unaffiliated analysts both before and after RegFD. Accordingly, we add four additional variables to the regression. AffUp (AffDown) is an interaction variable between the variable Up (Down) and an indicator variable for affiliated analyst recommendation change. The coefficients on these variables reflect the incremental mean return associated with affiliated analyst upgrades and downgrades. AffUpFD (AffDownFD) is an interaction variable between the variable AffUp (AffDown) and an indicator variable for the passage of RegFD. The coefficients on these variables capture the incremental mean stock price reaction associated with an affiliated analyst's recommendation change relative to an unaffiliated analyst's after RegFD.

If the market views affiliated analysts as holding an information advantage over unaffiliated analysts, we would expect to see a significant positive (negative) coefficient on AffUp (AffDown). Furthermore, if RegFD was successful in curbing this perceived advantage, then the incremental mean stock price response for an affiliated analyst's recommendation change should decrease in magnitude after the passage of the regulation. Therefore, we would expect to see a significant negative (positive) coefficient on AffUpFD (AffDownFD). If RegFD was successful in leveling the playing field among competing analysts as was intended, then the informational disadvantage should completely be eliminated and the sum of the coefficients on AffUp and AffUpFD (AffDown and AffDownFD) should be indistinguishable from zero.

4.3.1. Main regression results

Table 5 presents the results of the regression analysis. Regression 1 in Table 5 reports results on the impact of investment recommendation changes before versus after RegFD. On average, the market responds more to unfavorable than favorable news reported by analysts. The mean stock price response to recommendation upgrades is 4.32%, while the response to downgrades is -5.75% . After RegFD, the average stock price response decreases significantly by 1.09% for upgrades, whereas there is no significant change in the reaction to downgrades. The R^2 on this regression is 14.93%. This result is consistent with claims of the Securities Industry Association (and others) that after RegFD the incremental information conveyed by analysts is not as informative for market participants, at least when it comes to upgrades. These results are consistent across all regressions reported in Table 5.¹⁸

Regression 2 in Table 5 reports results on the impact of investment recommendation changes before versus after RegFD, after controlling for the number of analysts announcing a recommendation change. The average stock price response to analysts' recommendation upgrades (downgrades) is now 4.64 (-5.17%). Further, the stock price response after RegFD to upgrades (the coefficient on UpFD) decreases significantly by 0.96%, whereas the response to downgrades remains the same. The coefficient on Mult is -8.06% , and there is no statistically significant change in this parameter after RegFD. Thus, the market's response is, on average, smaller when many analysts change their outlook on a stock. The insignificance of MultFD implies that the market's response to a recommendation change by multiple analysts does not change after RegFD. The R^2 on this regression increases to 17.71%. These results and conclusions are consistent for Regression 3 in Table 5 as well.

Regression 3 in Table 5 reports results on the impact of investment recommendation changes by affiliated versus unaffiliated analysts before versus after RegFD. The results indicate that investors react more significantly to affiliated than unaffiliated analysts for recommendation downgrades only. The coefficient on affiliated analyst recommendation

¹⁸ On January 19, 2001, the NYSE/AMEX fully converted price quotes to a decimal system. On April 9, 2001, the NASDAQ fully converted to decimalization. Heflin et al. (2003b) find that documented lower return volatility around earnings announcements after the implementation of RegFD is due to decimalization of stock trading rather than the adoption of RegFD. To ensure that our results are not due to this change in decimalization, we added a dummy variable to this regression equal to one for recommendation change announcements after decimalization and 0 otherwise. The coefficient on this variable was insignificant. Thus, the results reported above do not appear to be a function of the stock market's conversion to decimalization. The results are available from the authors upon request.

downgrades (-3.65% in Regression 3) is significant at better than the 1% level. In contrast, the coefficient on affiliated analyst upgrades, *AffUp*, is 0.98% (which is not significant). After the implementation of *RegFD*, the market response to affiliated analyst recommendation changes is smaller. The coefficient on *AffUpFD* (*AffDownFD*) is -0.54% , which is insignificant (3.05, significant at better than 1%).

An *F*-test fails to reject the hypothesis that the coefficients on *AffUp* and *AffUpFD*, and *AffDown* and *AffDownFD*, sum to zero for either regression. The *F*-test produces *p*-values of 0.483 for upgrades and 0.215 for downgrades for Regression 3. These results suggest that investors viewed affiliated analysts as having an advantage over unaffiliated analysts for recommendation changes prior to the implementation of *RegFD*. However, this perceived advantage has been eliminated since then. Thus, as was intended *RegFD* appears to be successful in leveling the playing field among competing analysts.

4.3.2. Robustness checks

As mentioned above, the sample period after the passage of *RegFD* in October 2000 generally coincides with a bear market in the US (i.e., the period March 2001–November 2002). Thus, it is possible that the results are due to the impact of this economic downturn/market conditions and not to the imposition of *RegFD*. Of our sample of 9600 analyst recommendation change days, 1054 (10.98%) occur during the period October 2000–February 2001 (after the passage of *RegFD*, but before the bear market), while 4688 (48.83%) occur during the period March 2001–November 2002 (after the passage of *RegFD* and during the bear market). To control for the effect of the economic downturn in the US economy in the post-*RegFD* period, we run the regression model using the post-*RegFD* data only, splitting the data into two periods: October 2000–February 2001 and March 2001–November 2002. Table 6 presents the regression results: Panel A reports results for the period October 2000–February 2001, while Panel B reports results for March 2001–November 2002.¹⁹

¹⁹ We also reexamine the sample of recommendation changes accounting for those that are defined as recessionary (versus expansionary or non-recessionary) by the NBER. Specifically, we define a dummy variable “Recession” that is set equal to 1 if the recommendation change occurs in an NBER recessionary month and 0 otherwise. Of our sample of 9600 analyst recommendation change days, 1518 (15.81%) occur in an NBER recessionary month while 8082 (84.19%) occur in an NBER non-recessionary month. We include the Recession variable in the analysis by adding the Recession dummy variable in the regression equations from Table 5. The recession dummy is insignificant across all three regressions. Thus, when an analyst recommendation change is announced in an NBER recessionary month the average stock price response is not significantly different than when an analyst recommendation change is announced in an NBER non-recessionary month. However, comparing the results in these regressions to those in Table 5, we find that the coefficients on all other variables are virtually the same. We also use a measure of business cycle defined as a down (versus up) stock market month. A down stock market month is defined as any month in which the return on the S&P500 index is smaller than the return on the 30-day Treasury bill. This measure is basically a market risk premium. If the S&P500 index return is greater than the 30-day T-bill rate, the stock market has earned more than the risk free rate. If the S&P500 index return is less than the 30-day T-bill rate, the stock market has earned less than the risk free rate. For this measure of business cycle 5283 (55.03%) of the observations in our sample occur in a down stock market period and 4317 (44.97%) occur in an up stock market period. We again find no changes in our results or conclusions. More specifically, our earlier conclusion still remains valid, i.e., the perceived informational advantage of affiliated over unaffiliated analysts disappears after the implementation of the regulation and regardless of business cycles/market conditions at the time of the recommendation change, *RegFD* has had a significant impact on the stock price reaction to a change in analysts’ investment recommendations. The results using these data are available from the authors upon request.

Comparing the results in Panels A and B in Table 6, we see that the coefficients on the explanatory variables are virtually the same. More importantly, our earlier conclusion still remains valid, i.e., the perceived informational advantage of affiliated over unaffiliated analysts disappears over the entire period after the implementation of the regulation. From Panel A, the results show that after RegFD (but before the confounding effects of a market downturn) the differential reaction to downgrades disappears (the coefficient on AffDown is -1.81 and is insignificant). From Panel B (post-RegFD and during the market downturn), we also see that there is no differential reaction to downgrade announcements by affiliated analysts (the coefficient on AffDown is -0.59 and is insignificant). Thus, during the entire period after RegFD investors reacted similarly to investment downgrades by affiliated and unaffiliated analysts. Further, in Panel A (after RegFD and before the market downturn) there is a marginally significant response to upgrades by affiliated analysts relative to unaffiliated analysts (the coefficient on AffUp is 2.13 and is significant at the 10% level), while in Panel B (after RegFD and during the market downturn) there is no significant difference in the market response to affiliated versus unaffiliated upgrade announcements (the coefficient on AffUp is 0.26 and is insignificant). Thus, during the entire period after RegFD, the market's response to an investment recommendation change (whether it is an upgrade or a downgrade) is the same for affiliated and unaffiliated analysts.

5. Conclusions

In this paper we examine whether market participants' responses to investment recommendation changes by affiliated versus unaffiliated analysts have changed since the passage of RegFD. We do not find that affiliated analysts made favorably biased recommendation changes before RegFD. Changes in recommendation upgrades before RegFD were statistically the same for affiliated and unaffiliated analysts. Further, we find that investors reacted more significantly to recommendation downgrades by affiliated analysts than unaffiliated analysts prior to the passage of RegFD [possibly due to investors' belief that affiliated analysts had received selective (material non-public) information from the issuing firm]. However, the difference in the reactions to recommendation changes is not present after the passage of RegFD. Thus, as was intended RegFD appears to be successful in leveling the playing field among competing analysts. We also find that stock price reactions to analysts' (affiliated and unaffiliated) recommendation changes decreased significantly after the passage of RegFD. The decrease is consistently significant for recommendation upgrades by both affiliated and unaffiliated analysts and for downgrades by affiliated analysts. We find decreases in market reactions to investment recommendation changes by both affiliated and unaffiliated analysts. Thus, RegFD appears to have curbed the selective disclosure of information (particularly negative information) by firms to affiliated analysts.

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