

Are Analyst Recommendations Biased? Evidence from Corporate Bankruptcies

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28 March 2005

The authors acknowledge the use of I/B/E/S data, a service of Thompson Financial, in the preparation of this study. This data has been provided as part of a broad academic program to encourage earnings expectation research. We would like to thank an anonymous referee, Hank Bessembinder (the editor), Bryan Church, Jere Francis, Robert Lawless, Anil Makhija, Connie Mao, John Stowe, and seminar participants at the 2003 Financial Management Association Annual Meetings, University of Missouri, and Wayne State University for their comments on earlier versions of this manuscript. We especially thank Chris Carman of AG Edwards for his helpful comments on the process by which analysts formulate their recommendations. All remaining errors are our responsibility.

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Abstract

In this study, we test whether a bias exists in analyst recommendations for a sample of firms that file for bankruptcy over the period 1995 –2001. Contrary to popular media reports, we fail to find evidence of over-optimism in analyst recommendations, including those of affiliated analysts. Analysts respond to corporate financial deterioration by revising their recommendations downward. Analysts also seem to have a limited ability to identify distressed firms that possess a greater potential for recovery. We detect some evidence, however, that all-star analysts are more responsive to deteriorating corporate circumstances. The market responds more dramatically to downgrades by analysts than to upgrades. Our multivariate analysis of the market reaction to changes in analyst recommendations generally indicates that prior affiliation exerts no impact on either returns or trading volume. Nor do we find that the market views recommendation upgrades by affiliated analysts as biased since there is no pattern of price reversal following such recommendation changes. Overall, our results suggest that recently passed regulations and laws to reduce analysts' conflicts of interest might be an overreaction by regulatory authorities.

Keywords: analyst optimism; recommendations; analyst bias; bankruptcy

JEL Classifications: G24, G32

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1. Introduction

The nature of analyst recommendations and the extent to which they might be biased by conflicts of interest has recently attracted the attention of the regulatory and legislative bodies that oversee the U.S. capital markets. In May 2002, the Securities and Exchange Commission (SEC) approved measures to strengthen the disclosures made by analysts and brokerage firms.¹ These measures represent an attempt to address conflicts of interest that can arise when analysts are employed by investment banks that have relationships with issuers of recommended securities or when the analyst/bank has purchased the securities of the recommended issuer.

One of the triggering events resulting in the call for new legislation and prompting extensive criticism of analysts by the press, investors, politicians, and regulators was the meltdown of Enron in late 2001. Though Enron filed for bankruptcy in December 2001, analysts continued to be optimistic about the stock as late as October 2001.² Indeed, of the 17 analysts then following the company, ten had a “strong buy” rating on the stock and five others had a “buy” rating, despite massive reported accounting losses and a 50% loss in Enron’s market value during the quarter preceding bankruptcy.

¹ The new rules were announced by the SEC on May 10, 2002 and were phased in over the following 180 days to provide firms with a reasonable time to develop procedures and policies compliant with the new requirements.

² *Wall Street Journal*, “Most Analysts Remain Plugged in to Enron,” October 26, 2001, page C1.

In addition to stimulating new regulations, the apparent persistence of analyst optimism about a firm in financial distress like Enron or Winstar, a telecommunications company, stimulated the passage of new regulations and laws effecting analysts as well as raising two important research questions.^{3,4} The first question focuses on the extent to which analysts are reluctant to issue negative recommendations because of the potential loss of future investment banking deals. Such behavior would produce positive biases in their recommendations (i.e., overly optimistic recommendations). The second question concerns the potential for conflicts of interest among analysts that have ongoing business dealings with a firm. Such analysts might face pressure to compromise their recommendations for these firms even as they become financially distressed. Through an examination of analyst recommendations for firms that eventually file for bankruptcy, our study provides useful insights into these two questions.

The existing literature examining security analyst activity for bankrupt firms, such as Moses, (1990) and Espahbodi, Dugar, and Tehranian (2001), focuses on earnings forecasts rather than recommendations. Our use of analyst recommendations is motivated by previous research that establishes the investment value of recommendations by security analysts. Womack (1996) finds that buy recommendations generate a 3.0% announcement-period abnormal return, while sell recommendations generate a -4.7% abnormal return. Subsequent research by Brown, Foster, and Noreen (1985), Stickel (1990), Dugar and Nathan (1995), Lin and McNichols (1998), Dechow,

³ In December, 2002 responding to the legal prodding of the New York state attorney general, the SEC, the North American Securities Administrators Association, the National Association of Securities Dealers and the New York Stock Exchange reached a settlement with the largest investment banking firms to resolve issues associated with analyst conflicts of interest. There are three aspects of this settlement that directly impact analysts. The first is the requirement that research analysts be insulated from investment banking pressures. Second, for a five-year period, each of the defendant brokerage firms must contract with no less than three independent research firms to provide analyst recommendations to the firm's customers. Finally, the firms must disclose their analyst recommendations in an effort to allow public evaluation of their performance.

⁴ Further, the Sarbanes-Oxley Act of 2002 requires that the SEC adopt rules to address conflicts of interest that can arise when analysts working for an investment banking firm recommend equities in research reports and public appearances. Sarbanes-Oxley instructs the SEC to draft regulations limiting the access to analysts by individuals within a brokerage house whose interests reside in the firm's other investment banking activities.

Hutton, and Sloan (1998), and Michaely and Womack (1999) shows that the information value of recommendations can be obscured by conflicts of interest among security analysts.

We believe that there are several reasons why a set of bankrupt firms provides a useful sample over which to examine possible recommendation bias by security analysts. First, studies by Altman (1968, 1970), Westerfield (1971), Aharony, Jones, and Swary (1980) and Clark and Weinstein (1983) report that financial deterioration of the firm occurs long before the actual bankruptcy filing, suggesting that alert analysts should begin revising their recommendations far in advance of the bankruptcy announcement.

Bankruptcy also causes firms to incur substantial direct and indirect costs, which impacts profitability and consequently should be reflected in analyst recommendations. Warner (1977) finds that the direct costs of bankruptcy are approximately 5.3% of the firm's value immediately prior to bankruptcy while Weiss (1990) reports that these costs average 3.1% of total firm value. Ferris and Lawless (2000) measure the median direct costs of bankruptcy as 3.5% of firm assets. Indirect costs are even more significant. Altman (1984) estimates that mean indirect bankruptcy costs approximate 17.5% of the firm's value one year prior to bankruptcy.

Previous studies also indicate that investing in bankrupt stocks is not particularly profitable, suggesting that analysts should downgrade their recommendations as a firm moves towards bankruptcy. Morse and Shaw (1988) note that while trading in a bankrupt firm's securities is common, this strategy does not yield significant positive abnormal returns. Hubbard and Stephenson (1997) likewise document the poor returns from investing in bankrupt firms. Thus, positive recommendations about the investment value of trading in bankrupt stocks are difficult to justify.

Because of the prolonged deterioration in a firm's financial condition preceding bankruptcy, the substantial direct and indirect costs associated with bankruptcy, and the losses resulting from a

strategy of trading bankruptcy equities, we expect analysts to downgrade their recommendations as a firm experiences financial distress. Thus, our sample is especially useful for testing whether analysts are systematically over-optimistic. Indeed, we expect to observe considerable revision by analysts in their recommendations and movement away from positive recommendations. If, however, we observe a pattern of non-revision or “stickiness” in analyst recommendations, then media claims of analyst over-optimism might be justified.

We also test whether “affiliated” analysts—analysts employed by banks that have a history of previous transactions with a firm—provide significantly different recommendations than other analysts. More specifically, we test whether affiliated analysts suffer from a conflict of interest when forming their recommendations. Because of a brokerage house’s potential to earn additional underwriting fees, an affiliated analyst might be encouraged to issue more positive recommendations for a firm than its financial circumstances warrant. Affiliated analysts might also be conflicted by reputational effects on their employer. For instance, if a brokerage house helps to raise external capital for a firm through a new securities issuance, but the firm subsequently enters bankruptcy, then that house would suffer a reputation cost. This cost can be avoided or at least diminished if the firm’s bankruptcy can be delayed, and one potential way to delay bankruptcy would be for the affiliated analyst to issue positive recommendations.

Based on a set of 384 sample firms that file for bankruptcy during the period 1995–2001 and a corresponding set of industry and size matched firms, we fail to find evidence of a positive bias in analyst recommendations. Over the eight quarters preceding bankruptcy as well as the quarter of the bankruptcy filing, mean recommendations monotonically decline. This trend is confirmed in our multivariate analysis of analyst recommendations. There is also a corresponding decline in the percentage of buy recommendations. When we benchmark the recommendations for the sample firms against their matches, we find that analysts more aggressively revise downward their

assessments for the sample firms. An analysis of abnormal returns surrounding changes in recommendations for the sample and matched firms provides additional evidence of a lack of bias in analyst recommendations.

We find that affiliated analysts' recommendations are not influenced by previous relationships between the analyst's employer and the sample firm. We estimate analyst affiliation in a number of different ways, including measures based on the kind of transaction, the elapsed time since the last transaction, and the number of investment bankers involved in the transaction. Our results remain robust and indicate that affiliated analysts, in general, do not let potential conflicts of interest influence their recommendations.

Our multivariate analysis of the market's reaction to changes in analyst recommendations offers further confirmation that a previous affiliation has no impact. The recommendations of affiliated analysts affect neither the firm's abnormal returns nor its trading volume. Further, we fail to observe that the market views recommendation upgrades by affiliated analysts as biased since there is no pattern of price reversal following such changes.

Our conclusion that affiliated analysts are no more optimistic than unaffiliated analysts differs from those of Dechow, Hutton, and Sloan (1998) and Michaely and Womack (1999). It is consistent, however, with Kolasinski and Kothari (2003). Our findings suggest that the recently passed regulations and laws to reduce analyst conflict might have been an overreaction by regulatory authorities. This conclusion is consistent with the arguments of Holmstrom and Kaplan (2003) regarding U.S. corporate governance and the possibility of "overreacting to extreme events."

The remainder of this paper is organized as follows. The next section provides a description of our data and sample characteristics. Section 3 contains empirical results concerning the presence of analyst bias in recommendations for sample firms. Section 4 presents our findings from an

examination of affiliated analysts and the extent to which conflicts of interests might influence their recommendations. We conclude with a brief summary and discussion in Section 5.

2. Data description, sample characteristics and recommendation estimation

2.1. Data description

We identify firms that enter the Chapter 11 bankruptcy process through Bankruptcy DataSource. This is an online database that contains reorganization plans and news related to the bankruptcy process for all publicly traded companies with assets in excess of \$50 million. Our initial sample consists of 995 firms that file for bankruptcy over the period 1995–2001. We eliminate 263 firms that lack Compustat data.

We recognize that construction of our sample from firms filing for bankruptcy might introduce a selection bias since analysts could not have known this with certainty in real time. This sample selection procedure, however, biases our subsequent empirical analysis against finding significant results. The significant results that we report later in this study confirm that whatever selection bias might be present in the sample construction process does not overstate our conclusions regarding analyst recommendations for financially distressed firms.

We obtain analyst recommendations from I/B/E/S. The database begins in October 1993 and contains recommendations from a wide range of brokerage firms. It tracks the analyst issuing the forecast, the analyst's current employer, the recommendation report date, and the recommendation itself. Recommendations are based on a five-point scale and are coded as follows: (1) strong buy, (2) buy, (3) hold, (4) underperform, and (5) sell. We then determine the intersection between the sample of bankrupt firms and those firms included on the I/B/E/S recommendations database. Of the remaining 732 firms, we lose 348 firms because I/B/E/S does not contain recommendations for

them.⁵ Our final sample consists of 384 firms. The distribution of bankruptcies over the sample period is as follows: 1995 (24), 1996 (28), 1997 (25), 1998 (46); 1999 (71), 2000 (80), and 2001 (110).

We begin our analysis in 1995 for two reasons. First, because recommendation data only begins in October 1993, the study cannot be undertaken earlier. Second, our research questions focus on the time-series behavior of analyst recommendations during the period preceding bankruptcy. We select eight quarters as a reasonable time period over which to examine the nature of analyst recommendations. This collapses our recommendations time series back to 1993, the starting point for their inclusion on I/B/E/S. We obtain stock market returns from the Center for Research in Security Prices (CRSP) and data on firm characteristics from Compustat.

To define an affiliated analyst, we compile a comprehensive database on investment-banking deals between 1986 and 2001 from *Thompson Financial's Securities Data New Issues* and *Mergers & Acquisitions (M&A)* databases. From the new issues database, we obtain the identity of the investment banker/bankers retained by the issuer for every initial public offering (IPO), seasoned equity offering (SEO), and bond offering. From the mergers and acquisitions database, we obtain the identity of the investment banker/bankers for the target and acquirer as well as the announcement and effective dates of the transaction.

There are a total of 45,253 deals in our database. The deals are distributed as follows: 3,901 initial public offerings, 4,257 seasoned equity offerings, 10,677 bond offerings, and 26,418 acquisitions where either the target or acquirer retains the services of an investment bank.

⁵ We test to determine whether there are any significant differences between the sample firms and those that we eliminate. Analysts, in general, do not cover small firms. Indeed, the mean (median) market capitalization of our sample firms is \$599.3 million (\$122.3 million) whereas the mean (median) size of the firms we eliminate is \$48.2 million (\$19.3 million).

We define an affiliated analyst as one whose investment bank has acted as an advisor to the firm in a financial transaction (i.e., bond offering, M&A deal, SEO, or IPO) during the three years prior to the recommendation. We use the I/B/E/S Broker Code Key to match the recommendation data to the investment banking deal data.

2.2. Sample characteristics

To further analyze the nature of the recommendations for the sample firms, we identify a set of firms that are covered by IBES and that do not file for bankruptcy. We then match our sample firms with these firms on the basis of a two-digit SIC code and an Altman's z-score. The Altman's z-score is estimated two years preceding the year of bankruptcy for the sample firm. We further require that the matched firms have at least one recommendation for the year following their sample firm's bankruptcy. Of the original 384 sample firms, we eliminate 94 because z-scores two years prior to bankruptcy can not be calculated. Of the remaining 290 firms, we are able to identify matches for 289 firms. These 289 sample firms and their corresponding matches serve as the focus of this study. This approach provides us with an initial characterization of our sample firms and allows us to compare analyst recommendations with a set of similarly financially distressed firms that do not file for bankruptcy.

Table 1 provides a comparison of select accounting and financial variables between the sample and matched firms of this study. The results show that the sample firms are smaller than their matches. The sample firms have a mean equity market capitalization of \$628.9 million, compared to \$1,525.2 million for the matched firms. We observe comparable values when we measure firm size by the book value of total assets. The sample firms are more highly leveraged and less profitable than the matched firms. Given that these sample firms are approaching bankruptcy, such differences in leverage and profitability are not surprising. Important to this analysis, however,

is the finding that there is no statistically significant difference in the number of analysts covering the firms in the two different groups.

2.3. Estimation of recommendations

The mean analyst recommendation for any quarter includes both actual and inferred recommendations for the quarter of interest. Actual recommendations are those made and issued by the analyst. They are readily obtained from the I/B/E/S databases. Limiting our analysis to only these recommendations ignores information when no recommendations are available for a specific quarter. For any quarter, a recommendation will be missing because either no new recommendation is made or the analyst decides to drop coverage.

Using the I/B/E/S stopped recommendations file, we attempt to discriminate between these two possibilities and to infer an appropriate recommendation. In the first possibility, a recommendation is missing for a specific quarter, but the analyst continues to provide recommendations for subsequent quarters. Since the analyst has not dropped coverage of this firm, we simply infer that the recommendation of the preceding quarter remains valid.

The second possibility occurs when the missing recommendation is due to the analyst dropping coverage of the firm. If the last recommendation issued by the analyst prior to dropping coverage is a strong buy (1) or a buy (2), we infer an underperform (4). Otherwise, the recommendation is inferred to be a sell (5). Because an analyst generally remains at the same brokerage company after dropping coverage, the fact that the analyst no longer issues a recommendation is likely to be associated with negative expectations regarding the firm's prospects.

3. Are analysts positively biased?

3.1. Time trend in aggregate analyst recommendations

Table 2 presents the time series of analyst recommendations for the eight quarters preceding the quarter of the bankruptcy filing. We calculate analyst recommendations using only actual recommendations (Panel A) as well as a combination of actual and inferred recommendations (Panel B).

In Panel A, the mean analyst recommendation deteriorates from 2.06 at eight quarters prior to bankruptcy to 3.22 in the quarter of the bankruptcy filing. Similarly, the median recommendation increases from 2 to 3 while the percentage of recommendations that are buys or strong buys declines from 66% to only 20%. These results suggest that analysts react to the financial circumstances of our sample firms and adjust their recommendations accordingly.

We present an expanded set of analyst recommendations in Panel B, consisting of both actual and inferred recommendations. Our results are similar to those obtained in Panel A that use only actual recommendations. Both the mean and median analyst recommendation declines from a buy to a recommendation between a hold and an underperform over the nine quarters of our analysis. The decrease in the percentage of buy recommendations is virtually identical to that observed for actual recommendations.

The combined findings of Panels A and B suggest that analysts are capable of discerning and responding with revisions of their recommendations to negative developments regarding a firm's financial performance in advance of an actual bankruptcy filing. Further, this conclusion is robust to the inclusion of inferred recommendations.

Using the combined set of actual and inferred recommendations, Panel C presents another analysis of the overall trend in analyst recommendations for the sample firms benchmarked against their matched firms. We observe significant differences in the mean (median) recommendations and

the percentage of buys between the sample and matched firms. Panel C shows that analysts are more aggressive in lowering their recommendations for the sample firms relative to the matched firms as they approach the quarter of bankruptcy filing. The findings of panel C further confirm that analysts are responsive to the financial deterioration of the sample firms and manage their recommendations accordingly. We obtain quantitatively similar results using only the actual recommendations.

3.2. Market reaction to changes in analyst recommendations

In this section, we examine the extent to which the market reacts to changes in the recommendations made by analysts for the sample firms. If analysts have superior information about a firm, then changes in their recommendations should provoke a market response. If, however, the market recognizes that analysts have a positive bias towards distressed firms, then its response to a recommendation upgrade will be insignificant. We measure the abnormal return to a recommendation change using market-adjusted returns over the three-day window from recommendation release date, day -1 to recommendation release date, day +1.

Table 3 presents our findings. We observe that the market generally ignores upgrades for the sample firms, especially when they occur within a year of the bankruptcy filing. Upgrades occurring at quarters further from the filing such as quarters -4, -6, and -7 are met with positive excess returns, suggesting that the market views these changes as credible and perhaps suggestive of future performance improvements. The market appears to ignore reiterations, with the excess returns surrounding reiterations statistically insignificant for seven of the nine quarters of our study period.⁶ Our findings are most dramatic for downgrades, with excess returns significantly negative for all of

⁶ We further examine the market reaction to reiterations by reviewing the I/B/E/S database to identify the actual wording used by the brokerage house to describe a recommendation. In 31 cases, recommendations are classified as reiterations even though the text of the actual recommendation indicates a change has been made. For instance, a recommendation change from “Perform in line” to “Neutral” is classified as a reiteration since both recommendations are coded by I/B/E/S as a “Hold.” Even after eliminating these cases, our results remain qualitatively similar.

the sample quarters. The average three-day abnormal return across the eight quarters preceding bankruptcy for these downgraded firms is -14.8%.

We obtain similar results for the matched firms. The trends in the returns to these firms are comparable to those of the sample firms. That is, we find a significant negative response to downgrades, no meaningful reaction to reiterations in most quarters, and a positive market response for most upgrades occurring prior to quarter -1.

We find with our comparison of market returns between the sample and matched firms that the market reacts more significantly to downgrades for our sample firms than for matched firms. There is also some evidence that the market response to reiterations is also more negative for the sample firms. The differences in upgrades between the sample and matched firms are generally insignificant. We conclude that the market reacts more negatively to downgrades of the sample firms while the responses to other changes are more similar between the two groups.

In un-tabulated findings, we also examine the impact of recommendation changes on trading volume beginning eight quarters prior to the quarter of bankruptcy filing. Using the methodology of Campbell and Wasley (1996) to measure abnormal volume, we find a substantial increase in trading volume on days when a recommendation is released. For recommendation upgrades, log transformed abnormal trading volume averages 0.77% (t-statistic of 11.0) for the three-day window surrounding the recommendation release date. For recommendation downgrades, log transformed abnormal trading volume averages 1.49% (t-statistic of 24.4) over the same interval. These results suggest that both types of recommendation changes can influence trading volume, but the magnitude of the effect due to a downgrade is nearly twice as large as that of an upgrade.⁷

⁷ For the Nasdaq-listed firms in our sample, we also examine closing bid-ask spreads over the same period. We estimate OLS regressions of the quoted half spread divided by price on the natural log of trading volume, the closing price, and three dummy variables that indicate whether an upgrade, downgrade, or reiteration was issued on a given trading day. We find no change in the bid-ask spread on days when an upgrade or reiteration is released and a significant increase in the bid-ask spread on days when a downgrade is released. These results further suggest that the information content of recommendation downgrades is larger than for other types of recommendation changes.

3.3. *The impact of reputation: all-star analysts*

It is widely recognized that there is significant variation in the ability of analysts, and the competition to hire and retain top-rated analysts is intense. Indeed, Clarke, Dunbar, and Kahle (2002) report that investment banks acquiring an all-star analyst experience an increase in their IPO market share of 1.25%. Because of the market value associated with their reputation, it might be that highly regarded analysts are less prone to exhibit bias in their recommendations, especially for failing firms. In this section we examine whether top-rated analysts demonstrate a different pattern in their recommendations than that of other analysts.

Consistent with Dunbar (2000), Krigman, Shaw, and Womack (2001) and Clarke, Dunbar, and Kahle (2002), we define an all-star analyst as one who is named to *Institutional Investor's* All-America Research Team the year the recommendation is released. Leone and Wu (2002) find that *Institutional Investor* All-Americans have better earnings forecast accuracy, superior stock recommendation returns, and less bias than other analysts. Leone and Wu also report that ranked analysts are “bolder” than others in the sense that they deviate more often from the consensus forecast. They conclude that ranked analysts possess an innate superior ability that is not solely attributable to experience and are more likely to be promoted to larger brokerage houses.

Table 4 compares the time series of recommendations by all-star analysts with other analysts (i.e., those analysts not selected as all-stars). The mean recommendation for both sets of analysts monotonically increases over the sample period, but the increase is marginally greater for those not selected as all-stars. About half of the differences between the quarterly recommendations of the two groups of analysts are statistically significant. The percentage of buy recommendations demonstrates a similar pattern, but two-thirds of the differences are statistically significant. The median values also show that all-star analysts provide less favorable recommendations than other analysts. Indeed, the differences are statistically significant for seven of the nine quarters that we

examine. Similarly, the median recommendation increases from 2 to 3 one quarter earlier for the all-star analysts. The differences in medians between these groups are also significant for seven of the eight quarters preceding bankruptcy. The percentage of buy recommendations demonstrates a similar pattern, but two-thirds of the quarterly differences are statistically significant. These findings suggest that all-star analysts tend to move away from a buy recommendation for firms approaching bankruptcy both earlier and more forcefully than other analysts.

The results in Table 4 indicate that there are some modest differences in the recommendations provided by all-star analysts relative to other analysts. Although both sets of analysts revise their recommendations as a firm approaches bankruptcy, it appears that the all-stars do it more extensively than others. Both sets of analysts recognize the deterioration of the firm's investment potential, but the all-star analysts issue a lower percentage of buy recommendations for these firms. We conclude that all-star analysts have a greater ability to recognize failing firms and are more aggressive in revising their recommendations than other analysts.

3.4. Firm and accounting characteristics

In this section, we examine whether certain firm and accounting characteristics result in the generation of higher mean (median) recommendations. We first determine whether analysts are able to discriminate between those firms in financial distress possessing the potential for a return to strong financial performance and those lacking it. We then investigate whether analysts respond to the signals that might be contained in a qualified auditor opinion or a change in the firm's auditor or investment banker.

3.4.1. Firm performance

Table 5 dichotomizes our sample of firms based on whether they experience positive or negative abnormal returns over the one-year period following bankruptcy. These one-year returns proxy for the firm's potential to recover from bankruptcy and return to profitability. If analysts

provide unbiased recommendations for sample firms, then we should observe more positive recommendations for those firms that earn positive abnormal returns following bankruptcy filing. Conversely, we anticipate that analysts will issue less favorable recommendations for firms reporting negative post-bankruptcy abnormal returns.

We find that the mean recommendation is consistently more optimistic for firms with positive abnormal returns, although the difference between these firms and those that experience negative abnormal returns is statistically significant for only the last several quarters of our sample period. We obtain similar results for the median recommendation and the percentage of buy recommendations. We conclude from our analysis that in the year before bankruptcy, analysts appear able to discriminate between firms likely to perform well following a bankruptcy filing and those that will not. This result is inconsistent with a positive recommendation bias by analysts for the sample firms.

3.4.2. Accounting information

Analyst recommendations are based on earnings projections that, in turn, are derived from accounting data. The importance of truthful accounting data has assumed renewed importance following the Enron and WorldCom scandals. In this section, we examine the influence of auditor opinion and auditor choice on analyst recommendations.

An auditor's opinion is the section of an audit that establishes the credibility of the firm's financial statements. To the extent that a qualified auditor's opinion implies that the firm's financial condition is uncertain, analysts might be less willing to recommend such stocks. Hence, we compare analyst recommendations between firms with qualified and unqualified opinions. We find in un-tabulated results that during the eight quarters preceding the quarter of bankruptcy filing, the average recommendation for firms with qualified opinions is not generally different from those with unqualified opinions.

Chow and Rice (1982), Craswell (1988), and Citron and Taffler (1992) suggest that managers will change auditors to avoid the release of unfavorable information to investors. Consequently, analysts following firms reporting an auditor change might tend to issue less favorable recommendations than those covering firms without an auditor change. Based on an analysis of both the level of analyst following and the percentage of buy recommendations, we find that a change in auditor fails to influence analyst perceptions regarding the investment attractiveness of a firm's equity.

3.4.3. Changes in investment banks

As a firm's performance deteriorates, its securities become less attractive to investors and consequently more difficult to distribute. Thus, high-prestige investment banking firms might be less interested in retaining the firm as a client. We test for such a possibility by identifying any change in investment bankers among our sample firms within a three-year period prior to the quarter of the recommendation. We find that there are generally no significant differences between the average recommendation or the percentage of buys for sub-samples constructed on the basis of a change in investment bankers.

3.5 A logit analysis of analyst recommendations

In this section, we compare the nature of analyst recommendations between the sample and matched firms in a multivariate framework that allows us to pool the recommendations for these firms while controlling for various analyst, investment bank, and firm characteristics. Specifically, in Table 6 we present the results from a logistic regression where the dependent variable assumes a value of 1 if the recommendation is either a strong buy or a buy and is 0 otherwise. We estimate two regression models. The first model does not control for analyst affiliation while the second model contains a dummy variable that represents analyst affiliation based on whether the brokerage house and the firm have done a deal within three years. Other independent variables relating to the analyst

are dummy variables that capture an analyst's all-star status and employment by a high-prestige investment banking firm. We also include dummy variables to reflect the presence of a qualified auditor's opinion and changes in the choice of auditor. The firm's potential for reorganization is captured with its Altman z-score. We also include as independent variables a dummy variable incorporating the nature of the previous recommendation, the one-month cumulative abnormal return prior to the release of the recommendation, a dummy variable to capture the firm's status as either a sample or matched firm, a set of dummy variables to control for the quarter in which the forecast is issued, and a dummy variable to capture the recommendation date relative to that of the firm's earnings announcement date.⁸

The results for the first model, which does not control for analyst affiliation, show that analysts begin to react to firm financial deterioration as much as a year in advance of the actual bankruptcy filing. We also observe a significantly negative coefficient for the sample firm dummy variable, indicating that these firms have lower recommendations than their matched firms. These findings suggest the ability of analysts to recognize the negative developments occurring within these firms and to revise their recommendations accordingly. The results for the second model, which include a control for analyst affiliation, are discussed in section 4.2 where we examine the issue of analyst conflict of interest in detail.

4. Are affiliated analysts subject to conflicts of interest?

4.1 The impact of investment banking affiliation

The flashpoint for the controversy regarding analyst recommendations has been the perceived linkage between the favorableness of a recommendation and the potential for subsequent

⁸ Ivkovic and Jegadeesh (2004) find that recommendation revisions released in the week after an earnings announcement are significantly less informative than those released during other periods. Using their methodology, we include in our analysis a dummy variable, EAD, that assumes a value of one if a recommendation is released the week after the earnings announcement date and is zero otherwise.

investment banking business. Underwriting a firm's security offerings and providing related services can generate more revenue for firms than from brokerage or securities research. Hence, recent public interest has focused on analyst impartiality concerning recommendations for securities issued by firms that maintain other business affiliations with the brokerage company.

We initially define an affiliated analyst as one who has issued a recommendation for a client for which the analyst's firm undertook a transaction within three years of the recommendation.⁹ Transactions for this purpose are bond or equity offerings (seasoned equity offerings or an initial equity offering) or a merger/acquisition. We include cases where the brokerage house assisted either the target or the purchaser in the merger and acquisition deals.

Table 7 presents a comparison of average recommendations between affiliated and unaffiliated analysts. These two groups experience similar declines in mean recommendations throughout the pre-bankruptcy period. For both sets of analysts, the mean recommendation falls from a buy to a recommendation between a hold and underperform. The differences in means between these groups are generally statistically insignificant, suggesting an equivalence in the pattern of recommendations for affiliated and unaffiliated analysts. The median recommendations behave in a similar fashion, further confirming that affiliated analysts do not generally provide biased recommendations. We also find that the percentage of recommendations classified as buys is similar between the two groups, although there is a tendency for that of the affiliated analysts to be slightly higher. The results in Table 7 suggest that analysts are responsive to changes in an issuer's financial circumstances regardless of their previous or current investment banking relationships with the firm.

⁹ We also consider other methods for determining an affiliated analyst such as the number of deals completed and the size of deals completed with the firm. The results are qualitatively similar. We also define affiliated analysts using only deals completed during a five-year window prior to bankruptcy, with qualitatively identical results. Finally, we consider an analyst to be affiliated based on any deal done within either one or two years of a recommendation. Our findings again remain virtually identical.

To further investigate the potential of bias among affiliated analysts, we consider alternative definitions of affiliation. We first separate our sample of affiliated analysts into those affiliated due to a capital formation transaction and those with affiliations resulting from an M&A deal. There is no difference in the pattern of recommendations between these two types of affiliated analysts. Nor is there any significant difference in recommendations between M&A-affiliated analysts and unaffiliated analysts or between capital formation-affiliated and unaffiliated analysts.

We then decompose our sample of firms into two sub-samples based on whether they use one or multiple investment bankers to complete a transaction. In the case of a single investment banker, the affiliated analyst is the only analyst participating in the transaction and faces considerable reputation risk resulting from the pressure applied by the investment banker. With multiple investment bankers, the affiliated analyst is simply one of a number of participating analysts and consequently bears less reputation risk.

Similar to our results regarding the type of investment banking transaction, there are no significant differences between our sub-samples. That is, we observe no significant differences in the pattern of recommendations by affiliated analysts whether the firm uses one or a number of investment bankers. Likewise, there are no significant differences in the average recommendations between the affiliated and unaffiliated analysts within these groups.

These robustness tests confirm our initial conclusion that affiliated analysts are no more likely than unaffiliated analysts to issue positive recommendations for firms that become bankrupt. It might further suggest that the conflict of interest attributed to affiliated analysts is overstated.

4.2 Multivariate analysis of analyst recommendations

In the second model contained in Table 6, we present a multivariate analysis of analyst recommendations that controls for analyst affiliation. Consistent with our definition of an affiliated analyst used in section 4.1, we construct a dummy variable that assumes a value of 1 if the analyst

provides a recommendation on an issuer for which the analyst's firm undertook a transaction during the three-year period prior to the issue of the recommendation and is zero otherwise. The estimate for the affiliation dummy variable is statistically insignificant, indicating that there is no difference in the recommendations between affiliated and unaffiliated analysts. The results from this multivariate examination confirm the analysis contained in Table 7 that analyst affiliation exerts no consistent significant influence on the recommendations issued for the sample firms.

4.3 Market reaction to recommendation changes

In Table 8, we examine whether affiliated analysts suffer from a conflict of interest by comparing the market's reaction to their recommendation changes with those of unaffiliated analysts. Our results in Panel A show that this difference is almost uniformly insignificant across the downgrade, upgrade, and reiteration subsamples. Panel B further demonstrates that the percentage of downgrade recommendations does not significantly differ between affiliated and unaffiliated analysts. The combined results of Tables 7 and 8 suggest that a prior relationship with a client firm does not meaningfully impact the kind of recommendation an affiliated analyst will issue. This result appears robust to a number of alternative definitions of affiliation. Additionally, the market does not react differently to recommendation changes by affiliated analysts, suggesting that the market does not view the opinions of affiliated analysts as compromised.

4.4. A logit analysis of changes in recommendation

In this section, we extend our comparison of affiliated and unaffiliated analysts by examining the extent to which analyst affiliation influences changes in recommendations while simultaneously controlling for various analyst, investment bank, and firm characteristics.

To begin our examination of recommendation changes, we classify all recommendations as upgrades, downgrades, or reiterations by comparing the current recommendation to the most recent previous recommendation. We then estimate three separate logistic models. In model 1, the

dependent variable assumes a value of one if a recommendation is an upgrade and is zero otherwise. In model 2, the dependent variable is assigned a value of one if the recommendation is a downgrade and is zero otherwise. In model 3, we examine all recommendations by estimating an ordered logit regression. The dependent variable in this regression assumes one of three different values: 1 for an upgrade recommendation, 0 for a reiteration and -1 for a downgrade.

These three different models for our logit analysis allow us to focus separately on downgrade recommendations, upgrade recommendations, and the set of all recommendations. For each logit model we use the same independent variables as are described in Table 6.

For each model contained in Table 9, the affiliation dummy is statistically insignificant. Thus, even after controlling for a number of other possible factors, we fail to find evidence that a previous relationship with a firm influences an analyst's change in recommendation for that stock. These results confirm those contained in Tables 6, 7 and 8 that affiliated analysts appear to suffer no conflict of interest resulting from their employer's earlier association with the firm they are recommending.

We find other interesting relations in our regression results as well. There is a strong relation between the abnormal stock price performance during the month prior to the release of the recommendation, ABRET, and the probability of a recommendation change. Stronger stock price performance increases the probability of an upgrade. When the abnormal returns change from one standard deviation below the mean (-36.5%) to one standard deviation above the mean (17.0%), the probability of an upgrade increases by 4.2%. There is a strong relation between the previous recommendation and the likelihood of a recommendation change. A previous strong buy or buy recommendation increases the likelihood of a recommendation downgrade. There is no evidence that affiliated analysts are more likely to upgrade their recommendation. We find, however, some evidence that high-reputation investment banks are less likely to issue upgrades around bankruptcy.

We also find that changes in either direction are more likely to occur in the week following an earnings announcement than at other times.

The probability of an upgrade is positively related to the Altman z-score. This suggests that the likelihood of a ratings upgrade is higher for firms with higher z-scores and consequently greater potential for a successful reorganization. There is no evidence, however, that the probability of a recommendation change is related to either the quality of an auditor's opinion or a change in the auditor's identity.

4.5 The influence of analyst affiliation on returns and volume

In this section, we examine whether an analyst's affiliated status influences the nature of the market's response to a change in recommendation while controlling for a variety of other factors. More specifically, we separately examine market returns and trading volume surrounding changes in analyst recommendations.

In Table 10, the three-day cumulative abnormal return obtained from the market-adjusted returns is the dependent variable. The independent variables are the same as those used in the logit analysis with the exception that we do not include variables to control for either the previous quarter's recommendation or the prior one-month cumulative abnormal return. We do, however, control for the nature of the current recommendation. A dummy variable, BUYREC, is created and assumes a value of one if the current recommendation is a strong buy (1) or a buy (2) and zero otherwise.

The affiliation dummy variable is statistically insignificant for all three categories of recommendation changes. This suggests that the market ignores the affiliation status of an analyst in responding to news of a recommendation change. The market likewise ignores the all-star status of an analyst, reacting equivalently to recommendation changes by all-star and other analysts.

We also examine the influence of affiliation status on abnormal volume surrounding a recommendation change while controlling for the same set of independent variables used with the return analysis. We find in un-tabulated results that the analyst's affiliation coefficient is statistically insignificant for downgrades, reiterations and upgrades. Like the return analysis, trading volume does not appear responsive to the affiliation of the analyst issuing a recommendation change.

The return results presented in Table 10 and our un-tabulated volume results indicate that the affiliation status of the analyst providing a recommendation change exerts no influence in shaping the market's response. If these affiliated analysts were subject to conflicts of interest that might compromise their evaluation of these firms, we would expect the market to discount their recommendations. The general failure to obtain significant coefficients for our measures of analyst affiliation for either returns or trading volume provides strong evidence that affiliated analysts do not suffer from conflicts of interest sufficient to compromise their recommendations.

4.6 Price reversals and recommendation changes by affiliated analysts

Finally, we test the extent to which there are long-term negative abnormal returns following an upgrade recommendation issued by an affiliated analyst. Table 11 measures abnormal returns over trading days 2 through 40 following a change in analyst recommendation.¹⁰ The coefficient for analyst affiliation is statistically insignificant for the subsample of upgrades. This result indicates that there is not a pattern of price reversals following recommendation upgrades by affiliated analysts. This implies that the upgrade recommendations of affiliated analysts are not viewed as excessively optimistic since the market does not react negatively to such upgrades during the post-recommendation revision period.

¹⁰ We also examine other periods such as day two through day 50, 55, and 60 and obtain similar results.

5. Conclusions

Recent public controversy about over-optimistic stock recommendations by analysts suffering from various conflicts of interest has resulted in a wave of regulatory and legislative changes. These regulations and laws will impact the way that analysts perform their duties and how investment banks relate to their research departments. In this study, we examine whether such optimism actually exists in analyst recommendations or is the product of media hype. We undertake this analysis on a sample of firms that file for bankruptcy between 1995 and 2001.

We first examine whether there is a bias in the recommendations issued by analysts covering the sample firms. We compare their recommendations against those provided for a set of matched firms. The mean recommendation for our sample firms is remarkably responsive to the distressed circumstances of these firms; it declines from a buy approximately two years prior to bankruptcy to midway between a hold and an underperform during the actual quarter of bankruptcy. The recommendations for our sample firms monotonically decline while those of the matched firms remain fairly constant. Our multivariate analysis offers further confirmation of this trend. We additionally find that the market does not generally differentiate in its response to recommendation changes for either the sample or matched firms, suggesting that in the aggregate, analysts correctly revise their recommendations. We do find, however, that all-star analysts are more pessimistic than other analysts in their recommendations for our sample firms.

The second issue examined in this study is the extent to which affiliated analysts might suffer from a conflict of interest that would result in overoptimistic recommendations. After considering several measures of affiliation, we fail to find consistent and convincing evidence that such analysts are compromised. Indeed, the preponderance of our findings suggests the opposite. There is no difference in the average recommendation between affiliated and non-affiliated analysts in the eight quarters preceding the quarter of bankruptcy filing, nor is there any difference in the

market response to changes in their recommendations. Our multivariate analysis of the market reaction to changes in analyst recommendations generally indicates that prior affiliation has no impact. Nor do we find that the market views recommendation upgrades by affiliated analysts as biased since there is no pattern of price reversal following such recommendation changes.

In summary, our findings indicate that analysts actively revise their recommendations downward as bankruptcy approaches. We do not find evidence that analysts are biased in their recommendations for our sample firms. Nor is there evidence that affiliated analysts suffer from a conflict of interest that affects the objectiveness of their recommendations. Our findings suggest that the recently passed regulations and laws to reduce analyst conflict might be an over-reaction by regulatory authorities.

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Table 1
Comparison between sample and matched firms two years prior to bankruptcy

The non-bankrupt matched firms are selected on the basis of a two-digit SIC code and an Altman's z-score two years preceding bankruptcy. The matched firm is also required to have at least one recommendation during the following year. The variable definitions given by Fama and French (2002) are used. Statistical significance at the 1% and 5% level is indicated by ** and * respectively.

	Sample Firm (A)			Matched Firms (B)			Mean Difference (A – B)	Median Difference (A – B)
	N	Mean	Median	N	Mean	Median	t-test (t-value)	Median Test (t-value)
Market Equity Capitalization (\$Million)	289	628.9	115.2	289	1,525.2	253.0	-3.11**	-3.57**
Book value of Total Asset (\$Million)	289	731.7	226.1	289	1,987.5	314.9	-3.43**	-2.24*
z-score	289	4.49	1.89	289	3.93	2.05	0.49	-0.91
Total Liability/Market Value	289	0.514	0.531	289	0.463	0.477	2.31*	2.08*
EBIT/Total Assets	273	-0.083	-0.031	270	-0.040	0.048	-1.99*	-5.53**
Number of Analysts per company	289	1.78	1.33	289	1.80	1.50	-0.27	-1.57

Table 2
Quarterly trend in analysts' actual and inferred recommendations

The recommendations are those made or inferred during each of the eight fiscal quarters preceding the quarter of the bankruptcy filing. Recommendations are coded as 1 (strong buy), 2 (buy), 3 (hold), 4 (underperform), and 5 (sell). We calculate analyst recommendations using only actual recommendations (Panel A) as well as a combination of actual and inferred recommendations (Panel B). We infer an underperform (4) for analysts who drop coverage if the last recommendation is either a strong buy (1) or a buy (2). Otherwise, the recommendation is inferred to be a sell (5). If no recommendation is made during a quarter without dropping coverage, we assume that the previous recommendation applies. In Panel C, we report analysts' recommendations including inferred recommendations for sample and matched firms. The matched firms are selected on the basis of a two-digit SIC industry code and Altman's z-score two years preceding the bankruptcy of the corresponding sample firm. The matched firm is required to have at least one recommendation during the next year and has the closest z-score to that of the sample firm within the same two-digit SIC industry code. The percentage of buys represents the percentage of all recommendations that are coded as either a 1 or a 2. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Panel A: Actual Recommendations for Sample Firms

Relative quarter	Number of recommend	Number of firms	Mean analyst recommend	Median analyst recommend	Percentage buys
0	103	53	3.22	3	0.20
-1	258	114	2.90	3	0.23
-2	289	138	2.61	3	0.38
-3	328	156	2.52	3	0.41
-4	386	172	2.33	2	0.55
-5	449	205	2.20	2	0.61
-6	409	191	2.08	2	0.66
-7	447	210	2.03	2	0.66
-8	437	203	2.06	2	0.66

Panel B: Recommendations including Inferred Recommendations for Sample Firms

Relative quarter	Number of recommend	Number of firms	Mean analyst recommend	Median analyst recommend	Percentage buys
0	1332	341	3.36	3	0.21
-1	1459	352	3.04	3	0.28
-2	1514	360	2.75	3	0.38
-3	1504	361	2.56	3	0.46
-4	1446	355	2.37	2	0.54
-5	1305	342	2.22	2	0.60
-6	1061	314	2.11	2	0.63
-7	798	278	2.08	2	0.64
-8	437	203	2.06	2	0.66

Table 2
Quarterly trend in analysts' actual and inferred recommendations
(continued)

Panel C: Analysts' Recommendations including Inferred Recommendations for Sample and Matched Firms

Relative quarter	Recommendations	Sample Firms	Matched Firms	Statistical Significance
0	Mean	3.37	2.44	**
	Median	3.00	2.00	**
	Percentage Buy	0.21	0.53	**
-1	Mean	3.04	2.39	**
	Median	3.00	2.00	**
	Percentage Buy	0.28	0.54	**
-2	Mean	2.76	2.33	**
	Median	3.00	2.00	**
	Percentage Buy	0.38	0.55	**
-3	Mean	2.56	2.22	**
	Median	3.00	2.00	**
	Percentage Buy	0.46	0.60	**
-4	Mean	2.34	2.10	**
	Median	2.00	2.00	**
	Percentage Buy	0.55	0.66	**
-5	Mean	2.21	2.06	**
	Median	2.00	2.00	**
	Percentage Buy	0.60	0.68	**
-6	Mean	2.09	2.05	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.65	0.68	Not Significant
-7	Mean	2.05	2.02	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.66	0.70	Not Significant
-8	Mean	2.02	1.96	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.68	0.73	Not Significant

Table 3
Market reaction to announcements of actual recommendation changes

Abnormal returns are three-day cumulative abnormal returns computed from market-adjusted returns. Downgrades (upgrades) are any recommendations for an issue that are numerically higher (lower) than that observed for the preceding quarter. Reiterated recommendations are those that are numerically equal to the previous quarter's recommendation. The matched firms are selected on the basis of a two-digit SIC code and Altman's z-score two years preceding the bankruptcy of the corresponding sample firm. The matched firm is required to have at least one recommendation for the following year and has the closest z-score to that of a sample firm among firms with the same two-digit SIC industry code as the sample firm. The medians are reported in the square brackets. The number of observations is presented in the angle brackets. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Quarter Relative to Bankruptcy	Downgrades			Reiterate			Upgrades		
	Abnormal Returns (Sample)	Abnormal Returns (Match)	Statistic for differences	Abnormal Returns (Sample)	Abnormal Returns (Match)	Statistic for differences	Abnormal Returns (Sample)	Abnormal Returns (Match)	Statistic for differences
0	-0.254** [-0.195]** <71>	-0.050* [-0.031]** <43>	-4.83** [-4.04]**	-0.072 [-0.186] <11>	0.000 [0.002] <25>	-1.25 [-0.36]	-0.019 [-0.121] <10>	0.053 [0.020] <38>	-0.60 [-1.41]
-1	-0.226** [-0.176]** <171>	-0.077** [-0.023]** <78>	-5.20** [-5.25]**	-0.085* [-0.048] <32>	0.045 [0.023]* <39>	-3.09** [-3.02]**	0.082 [0.017] <31>	0.016 [0.000] <61>	1.34 [0.66]
-2	-0.161** [-0.126]** <168>	-0.115** [-0.067]** <148>	-1.99* [-2.03]*	-0.037 [-0.023] <44>	0.000 [-0.008] <45>	-1.22 [-0.32]	-0.010 [-0.019] <23>	0.040** [0.028]** <75>	-1.09 [-2.13]*
-3	-0.146** [-0.109]** <160>	-0.078** [-0.038]** <128>	-2.85* [-4.26]**	-0.071** [-0.066]** <37>	-0.018 [-0.024]* <53>	-2.74** [-2.77]**	0.044 [0.023] <41>	0.057** [0.026] <68>	-0.39 [-0.12]
-4	-0.131** [-0.088]** <187>	-0.096** [-0.050]* <97>	-1.76 [-1.88]	-0.023 [-0.034] <46>	0.002 [-0.002] <63>	-0.96 [-2.24]*	0.050** [-0.002] <50>	0.028** [0.015] <80>	0.83 [-1.08]
-5	-0.101** [-0.064]** <163>	-0.087** [-0.037]** <94>	-0.60 [-1.47]	-0.004 [-0.004] <55>	0.005 [-0.020] <42>	-0.47 [-1.13]	-0.008 [-0.004] <55>	0.026* [0.015] <79>	-1.51 [-1.22]
-6	-0.080** [-0.046]** <141>	-0.071** [-0.045]** <107>	-0.48 [-0.13]	0.004 [0.002] <53>	0.014 [0.005] <41>	-0.66 [-0.62]	0.031* [0.022] <69>	0.007 [-0.006] <73>	1.56 [1.17]
-7	-0.132** [-0.075]** <138>	-0.085** [-0.053]** <83>	-2.15* [-1.59]	0.017 [-0.014] <39>	-0.011 [0.000] <55>	0.58 [-1.46]	0.067** [0.035]** <83>	0.020 [0.019] <61>	2.30* [0.84]
-8	-0.099** [-0.055]* <120>	-0.062** [-0.030]* <57>	-1.59 [-1.50]	-0.014 [0.001] <46>	0.002 [0.006] <42>	-0.82 [-0.42]	0.023 [0.004] <80>	0.030* [0.010]* <67>	-0.34 [-0.24]

Table 4
The impact of analyst all-star status on recommendations

The recommendations are based on forecasts made or inferred during each fiscal quarter preceding the quarter of the bankruptcy filing. Recommendations are coded as 1 (strong buy), 2 (buy), 3 (hold), 4 (underperform), and 5 (sell). We infer an underperform (4) for analysts who drop coverage if the last recommendation is either a strong buy (1) or a buy (2). Otherwise, the recommendation is inferred to be a sell (5). If no recommendation is made during a quarter without dropping coverage, we infer that the previous recommendation applies. All-star analysts are those listed on the annual *Institutional Investor* All-America Research Team. The percentage of buys represents the percentage of all recommendations that are coded as either a 1 or a 2. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Relative quarter	Recommendations	All-star	Non-all star	Statistical Significance of Difference
0	Mean	3.43	3.34	Not Significant
	Median	3.00	3.00	Not Significant
	Percentage Buy	0.15	0.23	**
-1	Mean	3.19	3.00	**
	Median	3.00	3.00	**
	Percentage Buy	0.21	0.30	**
-2	Mean	2.86	2.73	Not Significant
	Median	3.00	3.00	*
	Percentage Buy	0.33	0.40	*
-3	Mean	2.74	2.52	**
	Median	3.00	3.00	**
	Percentage Buy	0.38	0.48	**
-4	Mean	2.52	2.33	**
	Median	3.00	2.00	**
	Percentage Buy	0.46	0.56	**
-5	Mean	2.31	2.20	Not Significant
	Median	2.00	2.00	*
	Percentage Buy	0.56	0.61	Not Significant
-6	Mean	2.24	2.08	*
	Median	2.00	2.00	**
	Percentage Buy	0.57	0.65	*
-7	Mean	2.20	2.04	*
	Median	2.00	2.00	*
	Percentage Buy	0.58	0.66	Not Significant
-8	Mean	2.17	2.03	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.61	0.67	Not Significant

Table 5
The influence of post-bankruptcy performance on analyst recommendations

The recommendations are based on forecasts made or inferred during each fiscal quarter preceding the quarter of the bankruptcy filing. Recommendations are coded as 1 (strong buy), 2 (buy), 3 (hold), 4 (underperform), and 5 (sell). We infer an underperform (4) for analysts who drop coverage if the last recommendation is either a strong buy (1) or a buy (2). Otherwise, the recommendation is inferred to be a sell (5). If no recommendation is made during a quarter without dropping coverage, we assume that the previous recommendation applies. Abnormal returns are computed either over a one-year period or till a stock is delisted following bankruptcy, whichever comes first. Abnormal returns are calculated from the market-adjusted returns. The percentage of buys represents the percentage of all recommendations that are coded as either a 1 or a 2. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Relative quarter	Recommendations	Positive Abnormal Returns	Negative Abnormal Returns	Statistical Significance
0	Mean	3.00	3.43	**
	Median	3.00	3.00	**
	Percentage Buy	0.28	0.19	*
-1	Mean	2.78	3.12	**
	Median	3.00	3.00	**
	Percentage Buy	0.34	0.24	**
-2	Mean	2.54	2.80	**
	Median	3.00	3.00	*
	Percentage Buy	0.42	0.35	Not Significant
-3	Mean	2.36	2.64	**
	Median	3.00	3.00	*
	Percentage Buy	0.50	0.41	*
-4	Mean	2.25	2.44	*
	Median	2.00	3.00	Not Significant
	Percentage Buy	0.56	0.50	Not Significant
-5	Mean	2.11	2.28	*
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.64	0.56	Not Significant
-6	Mean	2.03	2.15	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.66	0.59	Not Significant
-7	Mean	1.94	2.12	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.68	0.60	Not Significant
-8	Mean	2.07	2.07	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.62	0.64	Not Significant

Table 6
Logit model analysis for analyst recommendations

The dependent variable in the logit regression is a dummy variable that assumes a value of unity if the recommendation is either 1 (strong buy) or 2 (buy) and zero otherwise. The ALLSTAR dummy assumes a value of unity if the analyst is included on the annual *Institutional Investor* All-America Research Team and zero otherwise. The AFFIF dummy takes the value of unity if the analyst has provided a recommendation on an issuer for which the analyst's firm undertook a transaction during the three-year period prior to the issue of the recommendation and zero otherwise. The IBRANK dummy takes the value of unity if the analyst's firm is a high-prestige investment bank and zero otherwise. The AUDIT dummy takes the value of unity if there was any change in the auditor for the firm during the two years prior to the quarter of bankruptcy and zero otherwise. The OPIN dummy takes the value of unity if the most recent auditor's opinion is unqualified and zero otherwise. The ZSCORE dummy takes the value of unity if the firm is above the median Altman (1968)'s Z-score for our sample and zero otherwise. The PREBUY dummy takes the value of unity if the previous recommendation is coded either 1 (strong buy) or 2 (buy) and zero otherwise. ABRET denotes the one-month cumulative abnormal return prior to the release of the recommendation. Abnormal returns are calculated from the market-adjusted returns. The EAD dummy assumes a value of unity if a recommendation is issued for the period between the next and fifth trading day after the earnings announcement and zero otherwise. The SAMPLE dummy takes the value of unity for the sample firm and zero otherwise. The Q0 (Q1, Q2, Q3, Q4, Q5, Q6, or Q7) dummy variable takes the value of unity if the recommendation is made in the bankruptcy quarter (1, 2, 3, 4, 5, 6, or 7 quarter(s) before the bankruptcy) and zero otherwise. The associated standard deviations are reported within parentheses. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Variable	Model 1	Model 2
Intercept	0.9745 (0.1632)**	0.9734 (0.1632)**
ALLSTAR	0.0698 (0.0938)	0.0522 (0.0948)
AFFIF		0.1728 (0.1301)
IBRANK	-0.2206 (0.0817)**	-0.2307 (0.0820)**
AUDIT	-0.0108 (0.1169)	-0.0158 (0.1170)
OPIN	0.0962 (0.0855)	0.0977 (0.0855)
ZSCORE	0.2486 (0.0764)**	0.2525 (0.0765)**
PREBUY	-0.0569 (0.0838)	-0.0647 (0.0841)
ABRET	1.0418 (0.1674)**	1.0462 (0.1675)**
EAD	-0.0389 (0.0908)	-0.0397 (0.0908)
SAMPLE	-0.5747 (0.0786)**	-0.5812 (0.0788)**
Q0	-0.8303 (0.2077)**	-0.8294 (0.2077)**
Q1	-0.9132 (0.1642)**	-0.9130 (0.1642)**
Q2	-0.8867 (0.1558)**	-0.8846 (0.1558)**
Q3	-0.8974 (0.1542)**	-0.8959 (0.1542)**
Q4	-0.5258 (0.1518)**	-0.5230 (0.1518)**
Q5	-0.2563 (0.1499)	-0.2590 (0.1499)
Q6	-0.2090 (0.1522)	-0.2100 (0.1523)
Q7	-0.2479 (0.1528)	-0.2467 (0.1528)
N	3,368	3,368
Likelihood Ratio	237.5**	239.3**

Table 7
Impact of analyst affiliation on recommendations

The recommendations are based on forecasts made or inferred during each fiscal quarter preceding the quarter of the bankruptcy filing. Recommendations are coded as 1 (strong buy), 2 (buy), 3 (hold), 4 (underperform), and 5 (sell). We infer an underperform (4) for analysts who drop coverage if the last recommendation is either a strong buy (1) or a buy (2). Otherwise, the recommendation is inferred to be a sell (5). If no recommendation is made during a quarter without dropping coverage, we assume that the previous recommendation applies. An affiliated analyst is defined as one who has provided a recommendation on an issuer for which the analyst's firm undertook a transaction during the three-year period prior to the recommendation. The percentage of buys represents the percentage of all recommendations that are coded as either a 1 or a 2. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Relative quarter	Recommendations	Affiliated	Unaffiliated	Statistical Significance
0	Mean	3.28	3.37	Not Significant
	Median	3.00	3.00	Not Significant
	Percentage Buy	0.27	0.20	Not Significant
-1	Mean	2.99	3.05	Not Significant
	Median	3.00	3.00	Not Significant
	Percentage Buy	0.34	0.27	Not Significant
-2	Mean	2.59	2.78	*
	Median	2.00	3.00	**
	Percentage Buy	0.52	0.36	**
-3	Mean	2.42	2.58	Not Significant
	Median	2.00	3.00	**
	Percentage Buy	0.55	0.45	**
-4	Mean	2.24	2.39	Not Significant
	Median	2.00	2.00	*
	Percentage Buy	0.62	0.53	*
-5	Mean	2.05	2.25	*
	Median	2.00	2.00	*
	Percentage Buy	0.70	0.59	**
-6	Mean	2.00	2.13	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.72	0.62	*
-7	Mean	2.11	2.08	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.66	0.64	Not Significant
-8	Mean	2.00	2.07	Not Significant
	Median	2.00	2.00	Not Significant
	Percentage Buy	0.68	0.66	Not Significant

Table 8
Comparison between affiliated and unaffiliated analysts' actual recommendation changes

Abnormal returns are three-day cumulative abnormal returns calculated from the market-adjusted returns. Downgrades (upgrades) are any recommendations for an issue that are numerically higher (lower) than that observed for the preceding quarter. Reiterated recommendations are those that are numerically equal to the previous quarter's recommendation. An affiliated analyst is defined as one who has provided a recommendation on an issuer for which the analyst's firm undertook a transaction during the three-year period prior to the recommendation. The t-statistic for the mean difference is reported. The z-statistic for the median difference is reported in the square brackets. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Panel A: Comparison of Mean and Median Abnormal Returns

	Downgrade	Reiteration	Upgrade
Relative quarter	Mean difference [Median difference]	Mean difference [Median difference]	Mean difference [Median difference]
0	-0.80 [0.04]	-1.42 [-1.36]	-0.24 [1.00]
-1	-1.23 [-0.45]	-0.86 [-0.60]	-
-2	-1.17 [-0.95]	-0.37 [0.00]	-0.59 [0.69]
-3	-0.56 [-0.24]	0.76 [0.64]	-0.64 [-1.36]
-4	0.06 [-0.64]	0.76 [1.43]	0.74 [0.59]
-5	0.90 [0.51]	-0.97 [0.06]	-0.81 [-1.32]
-6	-0.58 [-0.50]	2.23* [1.07]	1.31 [0.40]
-7	-1.29 [-0.24]	-1.05 [-1.99]	-0.15 [-0.70]
-8	-1.23 [-1.07]	-0.11 [1.10]	1.13 [2.04]*

Table 8
Comparison between affiliated and unaffiliated analysts' actual recommendation changes
(continued)

Panel B: Comparison of Percentage of Downgrade Recommendations to Total Recommendation Changes

Relative quarter	Percentage of downgrade recommendations by affiliated analysts	Percentage of downgrade recommendations by unaffiliated analysts	Chi-square statistic for the percentage difference between affiliated and unaffiliated analysts
0	66.7%	78.3%	0.63
-1	87.0%	71.6%	2.50
-2	80.0%	70.5%	0.99
-3	70.4%	66.8%	0.14
-4	82.1%	64.3%	3.58
-5	52.6%	60.9%	0.92
-6	55.2%	53.4%	0.03
-7	58.3%	52.2%	0.46
-8	55.2%	47.9%	0.54

Table 9**Logit model analysis for changes in analyst recommendations**

In model 1(2), the dependent variable in the logit regression is a dummy variable that assumes a value of unity if the recommendation is an upgrade (downgrade) and zero otherwise. In model 3, the dependent variable in the ordered logit regression assumes three values: 1 for an upgrade, 0 for a reiteration, and -1 for a downgrade. Downgrades (upgrades) are any recommendations for an issue that are numerically higher (lower) than that observed for the preceding quarter. Reiterated recommendations are those that are numerically equal to the previous quarter's recommendation. The ALLSTAR dummy assumes a value of unity if the analyst is included on the annual *Institutional Investor* All-America Research Team and zero otherwise. The AFFIF dummy takes the value of unity if the analyst has provided a recommendation on an issuer for which the analyst's firm undertook a transaction during the three-year period prior to the issue of the recommendation and zero otherwise. The IBRANK dummy takes the value of unity if the analyst's firm is a high-prestige investment bank and zero otherwise. The AUDIT dummy takes the value of unity if there was any change in the auditor for the firm during the two years prior to the quarter of bankruptcy and zero otherwise. The OPIN dummy takes the value of unity if the most recent auditor's opinion is unqualified and zero otherwise. The LIQUID dummy takes the value of unity if the firm is liquidated and zero otherwise. The ZSCORE dummy takes the value of unity if the firm is above the median Altman (1968) Z-score for our sample and zero otherwise. The PREBUY dummy takes the value of unity if the previous recommendation is coded either 1 (strong buy) or 2 (buy) and zero otherwise. ABRET denotes the one-month cumulative abnormal return prior to the release of the recommendation. Abnormal returns are calculated from the market-adjusted returns. The EAD dummy assumes a value of unity if a recommendation is issued for the period between the next and fifth trading day after the earnings announcement and zero otherwise. The Q0 (Q1, Q2, Q3, Q4, Q5, Q6, or Q7) dummy variable takes the value of unity if the recommendation is made in the bankruptcy quarter (1, 2, 3, 4, 5, 6, or 7 quarter(s) before the bankruptcy) and zero otherwise. The associated standard deviations are reported within parentheses. Statistical significance at the one and five percent level is indicated by ** and * respectively.

Variable	Model 1	Model 2	Model 3
Intercept 1	0.6795 (0.2687)*	-1.9405 (0.2603)**	0.7333 (0.2235)**
Intercept 0			1.8667 (0.2297)**
ALLSTAR	-0.1154 (0.2174)	0.2708 (0.1826)	-0.1411 (0.1682)
AFFIF	-0.0483 (0.2676)	0.0209 (0.2128)	-0.0923 (0.2021)
IBRANK	-0.2964 (0.1795)	-0.1310 (0.1480)	-0.0680 (0.1376)
AUDIT	-0.3775 (0.2475)	0.1176 (0.1938)	-0.1686 (0.1820)
OPIN	-0.0957 (0.1702)	-0.0242 (0.1454)	-0.0708 (0.1332)
LIQUID	0.1779 (0.1763)	0.0318 (0.1512)	0.0689 (0.1390)
ZSCORE	0.6241 (0.1616)**	-0.2660 (0.1347)*	0.4066 (0.1245)**
PREBUY	-2.2526 (0.1647)**	2.4298 (0.1673)**	-2.2847 (0.1411)**
ABRET	0.5827 (0.2837)*	-1.1839 (0.2548)**	0.8917 (0.2276)**
EAD	0.2031 (0.1934)	-0.0072 (0.1665)	0.0158 (0.1541)
Q0	-1.6387 (0.6360)**	1.6814 (0.5474)**	-1.5430 (0.4950)**
Q1	-1.6519 (0.3818)**	1.2623 (0.3231)**	-1.4497 (0.2967)**
Q2	-2.0116 (0.4050)**	1.0127 (0.2966)**	-1.2777 (0.2755)**
Q3	-1.0663 (0.3213)**	0.8853 (0.2736)**	-0.9651 (0.2506)**
Q4	-1.0275 (0.2998)**	0.8649 (0.2558)**	-0.9351 (0.2348)**
Q5	-0.6346 (0.2727)*	0.4336 (0.2362)	-0.5342 (0.2166)*
Q6	-0.2244 (0.2646)	0.2541 (0.2400)	-0.2403 (0.2171)
Q7	0.1320 (0.2568)	0.1810 (0.2372)	-0.1136 (0.2141)
N	1339	1339	1339
Likelihood Ratio	295.0**	352.9**	388.9**

Table 10
Multivariate analysis of abnormal returns surrounding a change in analyst recommendations

Abnormal returns are three-day cumulative abnormal returns calculated from the market-adjusted returns. Downgrades (upgrades) are any recommendations for an issue that are numerically higher (lower) than that observed for the preceding quarter. Reiterated recommendations are those that are numerically equal to the previous quarter's recommendation. The ALLSTAR dummy takes the value of unity if the analyst is included on the annual *Institutional Investor* All-America Research Team and zero otherwise. The BUYREC dummy takes the value of unity if the recommendation is coded either 1 (strong buy) or 2 (buy) and zero otherwise. The AUDIT dummy takes the value of unity if there was any change in the firm's auditor from two years prior to bankruptcy and zero otherwise. The OPIN dummy takes the value of unity if the most recent auditor's opinion is unqualified and zero otherwise. The LIQUID dummy takes the value of unity if the firm is liquidated and zero otherwise. The ZSCORE dummy takes the value of unity if the firm is above the median Altman's (1968) Z-score for our sample and zero otherwise. The AFFIF dummy takes the value of unity if the analyst has provided a recommendation on an issuer for which the analyst's firm undertook a transaction during the three-year period prior to the issue of the recommendation and zero otherwise. The IBRANK dummy takes the value of unity if the analyst's firm is a high-prestige investment bank and zero otherwise. The EAD dummy takes the value of unity if a recommendation was issued for the period between the next and fifth trading day after the earnings announcement and zero otherwise. The associated t-values are reported within parentheses. Statistical significance at the one and five percent level is indicated by ** and * respectively. Dummy variables for the individual quarters of our sample period are included as control variables in model 2, but the corresponding coefficients are not reported.

	Downgrade		Reiteration		Upgrade	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	-0.138 (-8.43)**	-0.100 (-3.68)**	-0.039 (-1.37)	-0.056 (-1.36)	0.013 (0.32)	-0.000 (-0.01)
ALLSTAR	0.013 (0.65)	0.010 (0.51)	0.014 (0.51)	0.010 (0.36)	0.051 (1.81)	0.045 (1.58)
BUYREC	0.052 (3.13)**	0.044 (2.68)**	0.051 (2.32)*	0.050 (2.12)*	0.017 (0.46)	0.007 (0.19)
AUDIT	0.008 (0.38)	0.007 (0.36)	-0.033 (-1.06)	-0.036 (-1.09)	-0.057 (-1.76)	-0.060 (-1.83)
OPIN	-0.030 (-2.02)*	-0.051 (-3.17)**	0.011 (0.50)	0.003 (0.13)	0.008 (0.38)	0.017 (0.79)
LIQUID	0.004 (0.25)	0.001 (0.06)	-0.025 (-0.96)	-0.024 (-0.89)	0.043 (1.93)	0.041 (1.82)
ZSCORE	0.058 (3.88)**	0.059 (3.95)**	0.011 (0.52)	0.012 (0.55)	0.000 (0.01)	-0.004 (-0.22)
AFFIF	-0.027 (-1.18)	-0.030 (-1.34)	-0.020 (-0.57)	-0.019 (-0.54)	0.014 (0.39)	0.022 (0.63)
IBRANK	-0.044 (-2.66)**	-0.042 (-2.54)*	0.011 (0.49)	0.011 (0.49)	-0.023 (-0.99)	-0.021 (-0.90)
EAD	-0.012 (-0.65)	-0.009 (-0.47)	-0.084 (-3.00)**	-0.080 (-2.79)**	-0.023 (-0.93)	-0.025 (-1.00)
N	811	811	239	239	289	289
Adjusted R ²	0.038	0.056	0.036	0.028	0.003	0.014
F	4.53**	3.82**	1.98*	1.41	1.09	1.24

Table 11
Multivariate analysis of returns reversal after a change in analyst recommendations

Abnormal returns are cumulative abnormal returns calculated from the market-adjusted returns from 2 through 40 trading days after a change in recommendation. Downgrades (upgrades) are any recommendations for an issue that are numerically higher (lower) than that observed for the preceding quarter. Reiterated recommendations are those that are numerically equal to the previous quarter's recommendation. The ALLSTAR dummy takes the value of unity if the analyst is included on the annual *Institutional Investor* All-America Research Team and zero otherwise. The BUYREC dummy takes the value of unity if the recommendation is coded either 1 (strong buy) or 2 (buy) and zero otherwise. The AUDIT dummy takes the value of unity if there was any change in the firm's auditor from two years prior to bankruptcy and zero otherwise. The OPIN dummy takes the value of unity if the most recent auditor's opinion is unqualified and zero otherwise. The LIQUID dummy takes the value of unity if the firm is liquidated and zero otherwise. The ZSCORE dummy takes the value of unity if the firm is above the median Altman's (1968) Z-score for our sample and zero otherwise. The AFFIF dummy takes the value of unity if the analyst has provided a recommendation on an issuer for which the analyst's firm undertook a transaction during the three years prior to the issue of the recommendation and zero otherwise. The IBRANK dummy takes the value of unity if the analyst's firm is a high-prestige investment bank and zero otherwise. The EAD dummy takes the value of unity if a recommendation was issued for the period between the next and fifth trading day after the earnings announcement and zero otherwise. ABRET_3DAY is the three-day cumulative abnormal return around the change date in analyst recommendations. The regressions include Q0 (Q1, Q2, Q3, Q4, Q5, Q6, or Q7) dummy that takes the value of unity if the recommendation was made in the bankruptcy quarter (1, 2, 3, 4, 5, 6, or 7 quarter(s) before the bankruptcy) and zero otherwise. The coefficients for quarter dummies are not reported. The associated t-values are reported within parentheses. Statistical significance at the one and five percent level is indicated by ** and * respectively.

	Downgrade	Reiteration	Upgrade
Intercept	-0.087 (-1.89)	-0.072 (-0.77)	-0.250 (-2.47)*
ALLSTAR	-0.017 (-0.51)	-0.032 (-0.52)	-0.049 (-0.75)
BUYREC	0.025 (0.88)	-0.018 (-0.34)	0.148 (1.74)
AUDIT	0.030 (0.86)	-0.012 (-0.16)	-0.039 (-0.53)
OPIN	-0.015 (-0.53)	-0.025 (-0.47)	-0.054 (-1.11)
LIQUID	-0.034 (-1.18)	-0.013 (-0.23)	-0.008 (-0.15)
ZSCORE	0.026 (1.02)	0.016 (0.33)	0.090 (2.05)*
AFFIF	0.024 (0.64)	0.042 (0.55)	-0.124 (-1.66)
IBRANK	0.025 (0.88)	0.029 (0.55)	0.018 (0.36)
EAD	0.017 (0.53)	0.060 (0.90)	0.050 (0.95)
ABRET_3DAY	-0.046 (-0.77)	-0.073 (-0.51)	0.289 (2.21)*
N	732	204	237
Adjusted R ²	0.056	0.011	0.113
F	3.40**	1.13	2.67**