Do Stock Analysts Influence Merger Completion? An Examination of Post-Merger Announcement Recommendations

David A. Becher

Jonathan B. Cohn

Jennifer L. Juergens[†]

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This paper investigates the effects of analyst recommendations issued after a merger announcement on deal completion. We find the probability of completion increases (decreases) with the favorability of acquirer (target) recommendations. Results from instrumental variables tests support causality running from recommendations to merger outcomes. Additional tests suggest that these relations are driven by target shareholders reassessing the merger offer in response to movements in acquirer and target valuations. We also find that favorably-recommended firms in a proposed merger underperform following deal resolution, suggesting that investors overreact to post-merger announcement recommendations.

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[†] David Becher: Drexel University, Department of Finance, 3220 Market Street, 11th floor, and Fellow, Wharton Financial Institutions Center, University of Pennsylvania, Philadelphia, PA 19104, phone: (215) 895-2274, email: becher@drexel.edu. Jonathan Cohn: University of Texas at Austin, Finance Department, 2110 Speedway Stop B6600, Austin, TX 78712, phone: (512) 232-6827, email: jonathan.cohn@mccombs.utexas.edu. Jennifer Juergens: Drexel University, Department of Finance, 3220 Market Street, 11th floor, Philadelphia, PA 19104, phone: (215) 895-2308, email: jlj54@drexel.edu.

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One of the most important questions in finance is how information generated by financial markets impacts real economic decisions. One potentially important source of such information is securities analysts, who collectively produced over 29,000 stock recommendations and 196,000 earnings forecasts in 2012 alone. While these published opinions have been shown to move stock prices, their impact on corporate decisions and hence their real economic consequences remain largely unexplored.[1]

This paper studies the impact of analysts on an important set of real decisions: whether companies complete announced mergers. While most announced deals are ultimately completed, a substantial minority are terminated prior to conclusion by either the acquirer or target. After a merger is announced, stockholders and managers of acquirers and targets may continue to learn about the desirability of the transaction as new information arrives. Stock analysts, who continue to issue recommendations on firms after they announce their intention to merge, are a potentially important source of such information. As analysts specialize in interpreting complex, value-relevant information, these post-merger announcement recommendations (PMARs) are likely to resonate with the parties involved. We analyze the relation between these recommendations and merger outcomes (completion vs. termination).

Our analysis focuses on announced mergers involving publicly-traded U.S. firms from 1993 and 2008. We begin by exploring the relation between PMAR favorability and merger outcomes. We define a PMAR as favorable (unfavorable) if it represents an upgrade (downgrade) relative to an analyst's previous recommendation or an initiation of coverage with a strong buy (hold, sell, or strong sell). Our main finding is that the probability of deal completion increases (decreases) with the number of favorable (unfavorable) acquirer PMARs and decreases

[1] Papers showing that recommendations move stock prices include those by Womack (1996), Barber, Lehavy, McNichols, and Trueman (2001), and Loh and Stulz (2011).

(increases) with the number of favorable (unfavorable) target PMARs. Each additional favorable (unfavorable) PMAR on an acquirer's stock is associated with a 1.0%-1.1% increase (1.4%-1.9% decrease) in completion probability. Conversely, each additional favorable (unfavorable) target PMAR is associated with a 1.2%-2.2% decrease (0.3%-1.7% increase) in completion probability. These magnitudes are substantial relative to the 14% unconditional probability of termination.

These results are open to multiple interpretations. On the one hand, they could indicate that PMARs impact merger completion decisions, revealing a previously-undocumented channel through which analysts impact real economic outcomes. However, there are a number of other plausible interpretations of at least some of the relations we document based on omitted variables or reverse causality. We consider several of these explanations explicitly. While ruling these alternative interpretations out is difficult because there is no truly exogenous variation in PMARs, we seek further evidence that causality runs from PMARs to merger completing using an instrumental variables (IV) approach. We employ two instruments for the number of favorable and unfavorable PMARs on a firm. The first is the percentage of favorable recommendations by analysts covering the acquirer or target on their other covered firms, excluding the acquirer or target. The second is the percentage of favorable recommendations issued by acquirer or target analysts' brokerage houses on all firms outside the industries of the merger parties. Merger outcomes continue to exhibit similar relations with recommendation favorability when we employ these instruments. We discuss the assumptions under which these instruments are valid and possible violations of these assumptions in detail.

We next explore two distinct, non-mutually exclusive, causal explanations for the relations we observe, which we term "feedback" and "valuation" explanations. The feedback explanation relates closely to arguments that firms treat financial market responses to their

actions as feedback, and recalibrate their actions accordingly (Bond, Goldstein, and Prescott, 2010). Managers and shareholders may treat favorable (unfavorable) PMARs on their own firm as positive (negative) signals of their expected benefits from a proposed transaction, increasing (decreasing) the likelihood they ultimately approve the deal. This leads to a positive predicted relation between merger completion probability and the favorability of both acquirer and target PMARs. This is consistent with our findings for acquirer PMARs but not for target PMARs. This does not imply that the feedback effect is invalid, but suggests that if feedback affects merger outcomes, it does so by impacting acquirers' decisions to follow through on mergers.

The valuation explanation is based on the notion that the merger parties swap securities, and that signals about the values of these securities affect the attractiveness of a proposed merger to each party. An increase in a target's perceived standalone value makes a given offer less attractive to target shareholders but more attractive to the acquirer. In a merger where the acquirer pays target shareholders with a fixed number of its own shares (72% of the mergers in our sample), an increase in perceived acquirer value makes the offer more attractive to the target but less attractive to the acquirer. While the parties can, in principle, undo the effects of valuation movements by renegotiating the number of shares to be exchanged, bargaining frictions may make such renegotiation costly. The valuation explanation then predicts a negative (positive) relation between a party's willingness to complete a deal and the favorability of PMARs on its own (the other party's) stock. Thus, the relation between PMARs and recommendations depends on whether they have a greater impact the acquirer's or target's value assessment. Our results are consistent with a valuation explanation based on the target rather than the acquirer being primarily influenced by PMARs.

We implement three tests to further evaluate each of the two explanations. In the first, we estimate a multinomial logistic model of merger outcomes where we treat termination by the acquirer and the target as distinct outcomes. A target is less (more) likely to terminate a merger following favorable (unfavorable) acquirer PMARs and unfavorable (favorable) target PMARs. This is further evidence in support of a target-driven valuation explanation. The acquirer is also less likely to terminate following favorable acquirer PMARs, consistent with the feedback effect, though we observe no relation with the number of unfavorable acquirer PMARs.

In the second test, we examine offers including at least some acquirer stock ("stock offers") and those consisting only of cash ("cash offers") separately. The valuation explanation only leads to predictions about the relations between merger completion and acquirer PMARs in stock offers. The feedback explanation, however, should apply to both types of offer, as signals about merger gains to the acquirer provide feedback regardless of the consideration offered. We find that the positive relation between merger outcomes and acquirer PMAR favorability holds only in stock offers. This provides further support for the valuation explanation, and is difficult to reconcile with the feedback explanation.

In the third test, we examine how the relation between merger outcomes and acquirer PMARs varies with a target's size relative to the acquirer. An analyst's recommendation on an acquirer should reflect her beliefs about the sum of the standalone value of the acquirer and the value of merger gains, relative to the acquirer's current stock price. Other things being equal, beliefs about merger gains should play a bigger role in shaping an analyst's recommendation about an acquirer when the target is relatively larger. The feedback explanation predicts a stronger relation between acquirer PMARs and merger completion, at least as it pertains to the acquirer's decision to pursue the deal. Raising further doubts about the role of feedback, we find

no evidence of that relative size matters. Though not definitive, the results of these tests collectively provide support for the valuation explanation and little, if any support, for the feedback explanation.

Finally, we study the relation between post-merger resolution returns and PMAR favorability. While PMARs may influence merger outcomes because they are informative about the fundamentals of the firms involved or expected merger gains, Rhodes-Kropf and Viswanathan (2004) and Edmans, Goldstein, and Jiang (2012) present evidence that even non-fundamental components of value can impact merger decisions.[2] Consistent with PMARs affecting merger outcomes at least partly through their impact on non-fundamental value, we find that acquirers with relatively favorable PMARs underperform those with unfavorable ones by 12% over the first two years after merger completion or termination. Targets with relatively unfavorable PMARs, however, outperform those with favorable ones by 37% over the first two years after termination (target's stock ceases to trade after merger completion).

Our results support the claim that analyst recommendations have real consequences for merger outcomes. Recent papers tend to focus on the effects of analyst coverage (as opposed to the tenor of the recommendations) on real firm decisions. Doukas, Kim, and Pantzalis (2008) document a positive relation between analyst coverage and firm investment, arguing firms with more analyst coverage face fewer information asymmetries and therefore a lower cost of capital. Derrien and Kecskes (2013) document similar results using broker closures and mergers as exogenous sources of variation in analyst coverage. Degeorge, Derrien, Kecskes, and Michenaud (2013) and Chen, Harford, and Lin (2014) show analysts' preferences for certain types of corporate policies (e.g. investment, financing, payout, or governance) influence the decisions of

[2] Shleifer and Vishny (2003) study a theoretical model in which misvaluation drives merger decisions.

firms that they cover. He and Tian (2013) find that more analyst coverage results in less patenting and argue this is driven by the pressure analysts exert on managers to focus on the short run. Ours is the first paper that we are aware of to examine the impact of analyst opinions on merger outcomes and to assess the real consequences of the favorability of analyst opinions.[3]

Our results also contribute to the literature connecting valuation and merger decisions. Edmans et al. (2012) show that a lower stock price increases the likelihood a firm is acquired, using mutual fund redemptions to instrument for firm price. Rhodes-Kropf, Robinson, and Viswanathan (2005) find evidence overvaluation of a firm's stock is an important driver of its decision to become an acquirer. These papers relate to the decision to pursue a merger. Our results suggest that information about firm values affects the decision to complete a proposed merger as well.

II. Data and Sample Selection

II.A. Merger Sample

To test an association between PMARs and deal completion, we create a set of completed and terminated U.S. mergers and tender offers.[4] We collect all deals between 1993 and 2008 from Thomson/SDC Mergers & Acquisitions database where both the acquirer and target are publicly-traded. 407 deals announced or resolved in 2002 are excluded because the Global Research Analyst Settlement (GRAS) was implemented that year. GRAS, which was intended

[3]Bradshaw, Richardson, and Sloan (2006) show that decisions to issue equity and repurchase shares are related to the optimism of analysts' forecasts and recommendations. Bates, Chang, and Lindsey (2012) find that reductions in information asymmetries due to analyst coverage cause a positive relation between analyst coverage and cash holdings. However, the decisions studied in these papers are financial rather than real.

[4]Tender offers constitute only 10% of the sample. As most of transactions are mergers, we use the term merger to refer to all transactions in our sample (Officer, 2003; Moeller, Schlingemann, and Stulz, 2004).

to address conflicts of interest within investment banks, resulted in numerous recommendation changes that likely had little to do with changes in analysts' perceptions of firm value.[5]

We also exclude non-U.S. and private acquirers or targets, divisions, divestitures, spin-offs, leveraged buyouts, liquidations, non-merger observations (i.e. majority interest), unit trusts, REITs, and ADRs, and retain only deals where the form was merger or acquisition. This yields an initial sample of 5,811 announcements. In transactions involving competing bids, analysis of a specific acquirer's takeover attempt is complicated by the possibility that a different acquirer may take over the target. To be conservative, we eliminate 430 deals in which we observe multiple acquirers for the same target. Our final sample consists of 5,381 announced mergers, including 4,625 completed and 756 terminated deals.

From SDC we gather information on mergers, including the names, cusips, tickers, acquirer and target SIC codes, deal form (merger or tender offer), merger outcome (completed or terminated), days to resolution, deal value, consideration offered, whether a collar offer is made, bid revisions, and the number and names of merger advisors and advisory fees. Due to the incompleteness of SDC data, we supplement information on merger status, deal value, collar type, announcement and resolution dates, consideration offered, termination reason, advisors, and fees using data from *Lexis-Nexis, Factiva*, *Dow Jones Newswire*, SEC filings, and *Mergers & Acquisitions*. We attempt to match each acquirer and target to CRSP and Compustat by cusip first and then by ticker. We verify the accuracy of matches by comparing company names, and if we are unable to obtain a match using cusips or tickers, we hand-match by company name.

[5]Kadan, Madureira, Wang, and Zach (2009) identify five days where at least one brokerage firm (for a total of eight firms) did a rescale. We identify at least 21 days in 2002 where the number of daily recommendation revisions by firms exceeded the mean of three by 10 standard deviations. Not all brokerage firms had mandatory GRAS transition dates, therefore, the migration to more conservative recommendations is difficult to pinpoint for many firms. We have verified that our results are qualitatively unchanged if we include these 407 mergers. Moreover, we split the sample into pre- and post-GRAS samples and obtain quantitatively similar results to our main analyses.

We are able to correctly match 5,034 acquirers and 4,649 targets. We obtain financial variables from Compustat and stock return data from CRSP. Although our initial tests rely on the full sample of 5,381 announced deals, we note our main analyses encompass 3,601 deals where all data are available for both acquirers and targets. Table I details merger characteristics.

Insert Table I here

Of the 5,381 announced mergers in our sample, 86% are ultimately completely and 14% are terminated. Of these 756 terminated deals, 168 (22%), 279 (37%), and 76 (10%) are terminated by acquirers, targets, and for regulatory reasons, respectively.[6] We are unable to assign the exact cause of termination for the remaining 219 terminated deals. In many of these cases, accounts indicate that the two sides came to a mutual agreement to terminate.

The acquirer offers at least some stock in 76% of transactions, and all stock in 41% of transactions. The majority (95%) of offers including at least some stock have fixed exchange ratios (i.e., a certain number of acquirer shares for each share of a target's stock). The remaining 5% have fixed dollar amounts (i.e., a certain dollar amount of acquirer stock at prevailing prices for each share of the target's stock). 11% of the stock offers in our sample include collars that constrain the dollar value of the merger offer if the acquirer's stock price moves outside of preset bounds. 260 (5%) of the offers are revised at some point prior to resolution, although we note that bid revision data are likely to be underrepresented in SDC. In addition to merger offers, our sample includes 551 tender offers, representing about 10% of the transactions in the sample.[7]

[6] As the regulatory terminations are unlikely to be related to analyst recommendation revisions, we remove these 76 transactions as a robustness check, and our results are qualitatively unchanged.

[7] We obtain almost identical results throughout our analysis if we exclude offers with fixed dollar values, offers with collars, offers where the initial bid is revised, tender offers, and any combination of these cases.

The average transaction value is $1.15 billion, and the acquirer offers an average premium of 45% relative to the target's price four weeks prior to announcement as reported by SDC. Consistent with prior studies (e.g., Betton, Eckbo, and Thorburn, 2008), targets experience positive announcement returns (three-day CARs) of nearly 19%. On average, acquirers experience a negative 1% announcement return (p-value of 0.03), but there is a run-up in acquirer stock price of about 2% between 30 and 5 days prior to deal announcement (p-value of 0.01). On average, 130 days elapses between merger announcement and resolution.

II.B. Analyst Recommendations

We obtain analyst recommendations from I/B/E/S (Thomson Financial) from 1993 to 2008 and retain a firm's cusip, ticker, and name, brokerage house, analyst name, date of current and prior recommendations, and standardized current and prior recommendation codes (1 = strong buy; 2 = buy; 3 = hold; 4 = sell; and 5 = strong sell). As with the CRSP and Compustat data, we use cusips, tickers, and company names to match firms between SDC and I/B/E/S. We collect all recommendations on the firms involved from 50 days pre-merger announcement through resolution (completion or termination). Our main analyses focus on post-merger announcement recommendations (PMARs), which are all recommendations issued on either an acquirer or target from the first day after an announcement (Day 1) until resolution.

Since we are interested in how innovations to recommendations impact merger outcomes, we focus on recommendation changes (e.g., upgrades and downgrades) as well as initiations rather than recommendation levels. Upgrades (e.g., from hold to buy) and initiations with a strong buy are considered "favorable" recommendations, while downgrades (e.g., from hold to

sell) and initiations with a hold, sell, or strong sell are "unfavorable" recommendations.[8] Recommendations that do not fall into the standard ratings system are eliminated.

Of the 5,381 deals in our sample, 3,332 acquirers and 2,124 targets have at least one PMAR change or initiation. Table II details PMAR characteristics and 3-day cumulative abnormal returns. In computing recommendation returns (only), we exclude PMARs for the first five days after a merger announcement to avoid contamination from returns associated with the deal itself.[9] Pre-announcement recommendations (issued 50 days to one day *before* a merger) are shown for comparison.

Insert Table II here

Recommendation changes are in Panel A, while initiations of coverage are in Panel B. From the day after a merger announcement through resolution, acquirers receive 3,670 upgrades, 3,398 downgrades, 1,128 favorable initiations, and 1,291 unfavorable initiations. Targets receive 813 upgrades, 1,559 downgrades, 158 favorable initiations, and 378 unfavorable initiations.

Prior studies document analyst recommendations tend to move stock prices in general (Stickel, 1995; Womack, 1996; Barber, et al., 2001). Since our study focuses on how PMARs affect merger outcomes through their impact on the valuations of the acquirer and target, it is important these particular recommendations affect acquirer and target stock prices beyond the announcement effect. If recommendations were simply a response to a deal announcement, the information content and expected return should be low. Consistent with prior studies, we observe

[8] We exclude 1,487 initiations with a buy (Dunbar, Hwang, and Shastri 1999) and 1,644 reiterations (Barber, et al., 2001) as the direction is ambiguous. While GRAS was designed to shift the distribution of recommendations away from buy to hold, recommendations only partially adjusted, and for most of our sample, buys were implicitly considered to be hold recommendations (Kadan, et al; 2009).

[9] We obtain qualitatively similar results if we include these five days.

significantly positive returns for favorable PMAR changes (1.51% for acquirers and 0.55% for targets) and significantly negative returns for unfavorable ones (-2.89% for acquirers and -0.60% for targets). Similar results are obtained if we examine PMA initiations (Panel B).[10]

Figure 1 displays the timing of PMARs relative to the announcement date both in absolute number of days (Panel A) and percentage of days elapsed between announcement and resolution (Panel B).[11] There is a clear spike in both acquirer and target recommendations immediately after a merger announcement, regardless of the panel examined. Since a prospective deal has important implications for the firms involved, analysts are likely to reevaluate stocks shortly after announcement. We obtain similar figures if we exclude deals resolved within 20 days, suggesting the patterns in Figure 1 are not driven by quickly-resolved transactions.

Insert Figure I here

To better understand the basis for PMARs, we analyze full-text research reports for firms involved in a randomly-selected sample of approximately 300 deals from 1999 to 2008 from Thomson One.[12] We only examine the subset of deals where both acquirers and targets have analyst coverage, and randomly draw 30 transactions per year. If a report on either merger party was unavailable between the announcement and resolution, the observation was replaced with another drawn from the same year, but not previously used. If multiple reports were available in the window, one was randomly selected. Appendix B (Panel A) provides details on the reports.

[10] Although multi-level changes are less frequent than single-level revisions, they represent a considerable portion of all recommendation changes, and generate a larger price response on average (i.e., acquirer returns for changes from strong buy to buy are -3.04% (N = 936) compared to -4.01% (N = 731) for strong buy to hold revisions and are significantly different at the 5% level).

[11] See Figure 2 in Malmendier, Opp, and Saidi (2012) for a similar approach.

[12] Due to limited sample availability prior to 1999, we constrain our sampling window between 1999 and 2008. We further note that the sample is not truly random as we require reports exist for both acquirers and targets.

Mergers are at least mentioned in 93% of the acquirer reports, and the possible consequences are discussed in the context of the analyst's recommendation on the firm in 57% of acquirer reports. 80% of acquirer reports provide some discourse on possible synergies or fit with the target, while 26% adopted a tone (positive or negative) on the price being offered. Very few (2%) mentioned the possibility of competing bids.

Similarly, in 95% of target reports, mergers are mentioned. Many of the remaining 5% appear to be boiler plate analyses of firm fundamentals that do not consider other factors. 61% discuss merger consequences in the context of an analyst's recommendation. In many, though not all cases, analysts appear to automatically change the target recommendation to neutral to reflect the fact that a transaction is likely to close, and the stock price has already adjusted to the offer price. Given the average analyst rating is generally more favorable than neutral, this causes the average change to be a downgrade. Initiations on the target also tend to be neutral (which is less favorable than average initiations overall) for the same reason.

Possible synergies and fit are also discussed in 55% of target reports. Virtually all of these involve deals in which the acquirer offers at least some stock (i.e., target shareholders will own stakes in the acquirer post-merger). Only 7% adopt any tone on the price being offered, and again, very few (3%) mention the possibility of competing bids. We refer back to some of these details later in our assessment of the effects of PMARs on merger completion decisions.

III. Post-Announcement Analyst Recommendations and Merger Completion

In this section, we investigate the effect of PMAR favorability on the completion of announced mergers. A merger announcement represents either the signing of a merger agreement between the acquirer and target or the initiation of a tender offer by the acquirer. Fulfillment of a

merger agreement (or tender offer) always requires target shareholders to approve the merger in a vote (or tender shares), and in some cases also requires acquirer shareholders to approve it as well. In addition, management may elect to terminate a merger.

Regardless of the transaction type, shareholders, managers or both of either the acquirer or target can effectively prevent completion. A party presumably terminates a deal if it expects a higher payoff in the absence of the merger than if completed. PMARs could alter this calculation for any of the parties involved by changing beliefs about the merger benefits, and hence could influence deal completion. In this section, we assess the relations between merger completion probability and acquirer and target PMARs. In Section IV, we consider two specific explanations why PMARs might impact outcomes through their influence on the parties involved.

III.A. Analyst Recommendations and the Probability of Merger Completion

To analyze the relation between the favorability of PMARs and likelihood of merger completion, we estimate a sequence of logistic regressions in which the dependent variable is an indicator taking a value of one if a deal is completed and zero if it is terminated. We include four primary explanatory variables in all specifications: the number of favorable and unfavorable PMARs separately for the acquirer and target. We further control for the number of analysts covering an acquirer and target to remove the potentially contaminating effects of coverage amount. All models include year and industry indicators. Table III shows the results.

Insert Table III here

In this and later regressions, we report marginal effects evaluated at the means of the explanatory variables as well as p-values based on standard errors clustered at the acquirer level

to account for possible correlation in residuals for repeat acquirers.[13] In the first model, we include the number of favorable and unfavorable acquirer and target PMARs and total number of analysts covering the acquirer and target. The marginal effects of the number of favorable acquirer and unfavorable target PMARs are significantly positive, while those of the number of unfavorable acquirer and favorable target PMARs are both significantly negative. Since these explanatory variables are count variables, the marginal effects represent the estimated effect of one additional PMAR of the relevant type on the probability of deal completion. One additional favorable (unfavorable) acquirer PMAR is associated with a 1.11% increase (1.94% decrease) in completion probability, and one more favorable (unfavorable) target PMAR is associated with a 2.15% decrease (1.65% increase) in completion probability. These associations are economically important relative to the unconditional probability of termination of 14% in our sample.

We also find that the likelihood of merger completion increases (decreases) significantly with the number of analysts covering the acquirer (target). While not the focus of our paper, one possible explanation for the effect of the number of acquirer analysts could be that more analyst coverage reduces information asymmetry, increasing the likelihood that both parties accept a transaction. However, with reduced information asymmetry, more visible targets potentially have more outside options, which is consistent with the negative effect for target coverage.

In the second model of Table III, we include additional controls (detailed in Appendix A). Merger characteristics include deal size (log of transaction value), number of acquirer and target advisors, days until resolution, run-up and announcement period returns, and indicators for method of payment, cash tender offers, fixed or floating collars, horizontal deals, and merger programs. Analyst/recommendation controls include average recommendation levels for targets

[13] We alternatively cluster on acquirer industry, target industry, acquirer industry-year, or target industry-year and obtain qualitatively similar results.

and acquirers, total number of pre-announcement and PMARs (non-directional), and if the same analyst provides recommendations for the acquirer and target. In this expanded model, the marginal effects of some of the acquirer and target PMAR favorability variables decrease slightly in magnitude but retain their signs, and all except the marginal effect of unfavorable target PMARs remain statistically significant at the five percent level.

Another possible driver of deal completion is the incentives of the investment banks that advise the merger parties. Almost all investment banks employ stock analysts, who in many cases cover one or both of the merger parties. Several papers, including Rau (2000), find advisor market share (function of deal count) impacts bank reputation and primarily charge contingency fees to capitalize on completion.[14] To test if advising banks' incentives influence deal outcomes, we hand-collect data on acquirer and target advisor fees, and include two fee indicators as explanatory variables in the third model (our base model for the remainder of the paper).

The marginal effects of the target and acquirer fee variables are positive and statistically significant at the five percent level or better. This is consistent with banks taking more actions to facilitate deal completion when their compensation is explicitly linked to completion (McLaughlin, 1992; Rau, 2000). This is further reinforced by the fact that the marginal effects of acquirer and target recommendations, while retaining the same statistical significance as in Model 2, decrease slightly when fee variables are included.

III.B. Instrumental variables approach

While merger outcomes exhibit robust relations with PMARs, these relations need not reflect the effect of PMARs on outcomes. We focus on three other explanations that may account

[14] In addition to merger fees, investment banks may also derive financing fees in completed deals. To capture these effects, we collect data on financing arrangements; however, in only 4% of our mergers was a financing agreement disclosed and in almost no instance was the actual financing fee disclosed.

for at least some of the relations. The first is that a greater likelihood of a competing bid reduces the likelihood a merger is completed, and analysts may be less inclined to downgrade a target to neutral if they expect competing bids. This prediction would explain a negative relation between merger completion probability and target PMAR favorability. The second is that positive signals from other sources about merger gains may cause analysts to upgrade an acquirer and increase the likelihood that an acquirer elects to complete the merger.[15] This prediction would explain the positive relation between merger completion probability and acquirer PMAR favorability. The third is that a positive signal about deal completion probability could cause analysts to positively update acquirers that they believe will gain from the merger. This prediction would also explain the positive relation between merger completion probability and acquirer PMAR favorability.

Ruling out these and other alternative explanations based on omitted variables or reverse causality is difficult. Recommendations represent analysts' conscious choices, so there is no truly exogenous source of variation in PMARs. We seek further evidence that PMARs affect merger outcomes using an instrumental variables approach. However, as we discuss below, it is difficult to find good instruments, and concerns about the validity of the instruments we use limit our ability to draw strong conclusions.

There are four endogenous variables for which we need to instrument: the number of favorable and unfavorable acquirer and target PMARs. The order condition for the validity of instrument variables requires that the number of instruments be at least as great as the number of endogenous variables. The first instrument ("AA") is the percentage of favorable (vs. unfavorable) recommendations of all analysts covering the acquirer or the target for all other firms they cover, excluding the acquirer or target. The definition of favorable and unfavorable

[15] As recommendations are based on differences between the analyst's assessment of a company's true value and its current stock price, this explanation requires that the market fails to correctly impound such information.

recommendations is the same as for PMARs (upgrades and initiations at strong buy are favorable; downgrades and initiations at hold, sell, or strong sell are unfavorable). If individual analysts exhibit systematic optimism or pessimism in their recommendations, then an analyst's recommendation regarding one firm will be correlated with her others.

The second variable we use as an instrument ("BA") is the average recommendation favorability of the brokerages of all analysts issuing PMARs on a firm for all firms outside the acquirer's and target's industries. If brokerages exhibit systematic optimism or pessimism, then an analyst's recommendation should be related to other analyst recommendations issued by the brokerage firm. AA and BA are measured as changes in recommendations from six months prior to the merger announcement until deal resolution.[16] We measure AA and BA separately for the acquirer and target, giving us four instruments in total. Thus the order condition is satisfied.

We use a two-stage least squares approach. In a series of first-stage regressions, we predict the number of favorable and unfavorable acquirer and target PMARs using OLS regressions. The explanatory variables in the first-stage regressions are the instruments, along with all of explanatory variables in Model 3 of Table III, excluding the PMAR variables. In a second stage, we estimate a linear probability model analogous to model 3 of Table III, replacing favorable and unfavorable PMARs with the predicted number of favorable and unfavorable PMARs from the first stage. Table IV presents results from first and second stage regressions.

Insert Table IV here

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[16] We also consider instruments based on recommendation levels rather than changes, as average levels may also predict given recommendation revisions. For instance, if the average analyst recommendation level is close to a strong buy ("1"), then it is more likely that future revisions will be negative (downgrades).

Columns 1 through 4 detail results from the first stage regressions. All three instruments exhibit independent predictive power over at least one of the dependent variables. More importantly, at least two of the instruments predict each of the dependent variables, suggesting the relevance condition for instrumental variables is satisfied.

The fifth column of Table IV presents results from the second stage regression. The signs, magnitudes, and p-values of the marginal effects are similar to those shown in Table III. Estimated at the means of the variables, the marginal effect of one extra predicted favorable (unfavorable) acquirer PMAR is a 0.91% increase (1.36% decrease) in the probability of merger completion, while the marginal effect of one extra favorable target PMAR is a 1.52% decrease in the probability of merger completion.

The validity of the instrumental variables approach requires that the "relevance condition" and "exclusion restriction" both be satisfied. The relevance condition requires that the instruments be correlated with the explanatory variables of interest and can be checked by the statistical significance of the coefficients in the first stage regressions. The dependent variable in each of the first stage regressions is related to at least one of the instruments at a statistical significance level of 10% or higher, suggesting that the relevance condition is satisfied. The Craig-Donald Wald F statistic for weak identification testing is 13.54. Based on weak identification test critical values from Stock and Yogo (2005), this implies that the maximal bias of our IV estimates relative to OLS estimates is less than 5% (critical value equals 10.27).

The exclusion restriction requires that the instruments not be related to the error term in the second stage regression. Thus our IV approach assumes that AA and BA do not contain incremental information about factors (other than PMARs) that affect merger outcomes once we control for other observable acquirer, target, and transaction characteristics. As the exclusion

restriction cannot be tested, it is important to consider the likelihood that this assumption holds on theoretical grounds carefully.

One concern is that analysts tend to specialize in their coverage (e.g., by industry). AA could capture broader "sentiment" about firms of a given type, and such sentiment might positively affect the likelihood that a firm of that type completes a proposed deal, for example through its impact on perceived synergy values. This would cause us to overestimate the effects of acquirer PMARs on merger completion probability and underestimate the effects of target PMARs. Brokerages could specialize to a degree as well, which could induce a direct relation between BA and merger completion. This is less of a concern, as brokerages tend to be large and cover multiple industries. We note though that AA has stronger predictive power over PMARs than BA does. While the IV regressions provide some additional support for PMARs affecting merger outcomes, we cannot rule out violations of the exclusion restriction, and therefore refrain from drawing strong conclusions about causality based on this test.

IV. Explanations for Relations between PMARs and Merger Outcomes

In this section, we explore two possible causal explanations for the relations between PMARs and merger outcomes documented in Section III. Both are based on the idea that PMARs affect the perceived benefits to the acquirer and/or target of completing a proposed deal.

The "feedback" explanation posits that PMARs influence merger outcomes by providing feedback to the parties involved on the merger decision. If, for example, analysts believe that the merger will create more value for acquirer shareholders than the current price of the acquirer reflects, they will upgrade their recommendations on the acquirer (or initiate coverage with a relatively favorable recommendation). If the acquirer treats PMARs as informative signals, this

should have a positive impact on its perceived benefits of completing the merger. The same could hold for the target as well.[17]

In general, then, the feedback explanation would suggest that more favorable PMARs on a party should increase its willingness to complete a proposed merger. This would explain the positive (negative) relation we observe between deal completion and number of favorable (unfavorable) acquirer PMARs. The same logic applied to a target should lead to a positive (negative) relation between merger completion and favorable (unfavorable) target PMARs, which is the opposite of what we find. There is no a priori reason, however, that feedback from analysts must influence the decisions of both acquirers and targets equally. Given the relations we observe, we focus primarily on feedback from PMARs into the acquirer's decision to complete a merger when further assessing the relevance of the feedback explanation.

The "valuation" explanation posits that PMARs impact merger outcomes by influencing each party's beliefs about the value of the consideration it is to give or receive in the merger. In a completed deal, target shareholders surrender claims on the target and, at least in stock deals (76% of our sample), receive ownership in the acquirer in exchange. Acquirer shareholders, on the other hand, gain ownership of the target and, again at least in stock deals, surrender an ownership stake in their own firm to target shareholders. Each party should be more inclined to agree to a merger when the perceived value of the consideration it is to receive (relinquish) increases (decreases). To the extent that each extra dollar of consideration received by one party reduces the value of the merger to the other party by one dollar, any movement in valuations due to PMARs could, in theory, have offsetting effects. However, there is again no a priori reason to

[17] Table II shows that stock prices react to PMARs, suggesting that they do influence beliefs, and our analysis of the text of analyst reports (see Section II.B) shows that 57% of reports on acquirers and 61% of reports on targets mention the potential impact of a merger when discussing the rationale for the recommendation made.

believe that valuation considerations impact the decisions of both parties equally. If the effect is asymmetric, then the impact of PMARs on valuations could impact merger completion.

Reassessment by the target in response to a valuation shift explains the positive (negative) relation between acquirer (target) PMAR favorability and deal completion likelihood. Both of these findings, however, appear inconsistent with reassessment by the acquirer after valuation changes. If there is an increase in acquirer favorability, this could increase the value of the acquirer. As the majority of deals are fixed exchange offers, this would increase the value of the consideration offered to the target, thereby decreasing the probability of completion as the deal becomes less attractive to the acquirer. Motivated again by the observed relations, we focus on the valuation effects of PMARs on the target's merger decision when further assessing the empirical relevance of the valuation explanation.

Our focus then is on two specific explanations for the results in Section III: a feedback explanation based on feedback to the acquirer and a valuation explanation based on the target's assessment of merger considerations. We next present three tests to further assess the relevance of each of these explanations. As a reference, Table V presents the predictions of both explanations for each of the tests. For completeness, it also details (in the first four rows) the predicted signs of the relations between deal completion likelihood and acquirer and target PMAR favorability under each explanation based on both acquirer and target assessment.

Insert Table V here

IV.A. Test 1: Identity of party terminating merger

Either an acquirer or target can elect to terminate a deal. Our first test involves examining acquirer and target termination decisions separately. As noted, the feedback explanation relates

to acquirer termination decisions and predicts that favorable (unfavorable) acquirer PMARs decrease (increase) the likelihood of acquirer termination. It makes no predictions about the impact of favorable or unfavorable target PMARs on acquirer decisions. The valuation explanation, on the other hand, relates to target termination decisions. It predicts that favorable (unfavorable) acquirer PMARs decrease (increase) target termination likelihood, while favorable (unfavorable) target PMARs increase (decrease) that likelihood. The second set of rows in Table V shows these predictions.

We test both of these sets of predictions by estimating a multinomial logistic model. The dependent variable is merger outcome, which can be completion, termination by the acquirer, or termination by the target. As Table I shows, acquirers and targets terminate mergers in 168 and 279 cases, respectively. We remove from this test any deals terminated for regulatory reasons and those where we cannot determine the cause of termination unambiguously. The explanatory variables of interest continue to be the number of favorable and unfavorable acquirer and target PMARs. Table VI details results from this multinomial logistic estimation.

Insert Table VI here

The base case is completion. The first column details marginal effects of the determinants of acquirer termination relative to the base case, while the second column reports the marginal effects of the determinants of target termination. Note that we are modeling the probability of termination rather than completion here, so the signs of the marginal effects have the opposite interpretation of those in Tables III and IV (this is reflected in the predictions in Table V).

The first column illustrates that acquirer termination is negatively related to the number of favorable (unfavorable) PMA acquirer (target) recommendations. While the signs of these

marginal effects are consistent with the feedback explanation, they are statistically insignificant and small in magnitude. The second column shows that target termination is negatively (positively) related to the number of favorable (unfavorable) acquirer PMARs. These relations are large and statistically significant at the ten and one percent levels, respectively.[18] They support a target's merger completion decision responding to valuation movements in an acquirer as dictated by the valuation explanation. The signs of the marginal effects of target PMARs on target termination are consistent with the target's merger completion decision also responding to movements in the target's stock, though they fall short of statistical significance.

IV.B. Test 2: Stock- vs. cash-based transactions

In our second test, we examine the relation between merger completion and acquirer PMARs in stock and all-cash mergers separately. According to the valuation explanation, acquirer PMARs influence deal outcomes by altering a target's perception of the value of an acquirer's stock and hence the value of the offer. If the valuation explanation drives the relation between merger completion and acquirer PMARs, then we should only observe this relation in transactions involving at least some stock. This explanation makes no set prediction about differences between stock and cash mergers in the relation of merger outcome to target PMARs, as target shareholders surrender their stock in the target in both cases.

It is less clear what differences, if any, the feedback explanation predicts between cash and stock mergers. One might argue an acquirer could learn from recommendations about the deal regardless of method of payment, and therefore the feedback explanation should predict no difference between the two. However, target shareholders share in any increases in expectations

[18] These marginal effects are smaller than those in Table III because they represent the sensitivity of only one reason for termination to PMARs. In untabulated tests, we find similar relations between the likelihood of termination by an undetermined party and acquirer PMARs. This may indicate that the target is responsible for a majority of these unclassified terminations, though we have no way of verifying this.

about post-merger acquirer value if a stock merger is completed, while such gains accrue solely to acquirer shareholders in a cash deal. Part of such gains then should impact target rather than acquirer valuation, and analysts might therefore react more mutedly to information about the anticipated effect of a merger on acquirer value. In contrast to the valuation explanation, the feedback explanation would appear then to, if anything, predict stronger relations between merger completion and acquirer PMARs in cash mergers than in stock mergers. These predictions are shown in the third set of rows in Table V.

To examine the relation between merger completion and PMARs in cash and stock mergers separately, we classify each merger as a stock deal if the offer includes at least some acquirer stock, and a cash deal if it does not. We then rerun our base model (Model 3 of Table III) using each of the resulting samples. Table VII presents the results.

Insert Table VII here

For stock deals (model 1), the probability of completion is positively (negatively) related to the number of favorable (unfavorable) acquirer PMARs, consistent with the results in Table III. The relations for stock deals are similar if we remove offers involving fixed dollar values or collars (model 2), where the valuation explanation should not apply. In pure cash deals (model 3), however, there is no significant relation between the probability of completion and the number of favorable or unfavorable acquirer PMARs. The results for stock-financed deals support the role of the valuation effect in driving relations between completion and the favorability of acquirer PMARs.[19]

[19] One potential concern with this test is that there are considerably more stock than cash mergers in our sample. Thus, we may have more power to test the relation of merger outcomes to PMARs in stock deals than in cash deals.

As already noted, the valuation explanation does not apply in cash mergers. It also does not apply if the acquirer offers shares with a fixed dollar value rather than a fixed number of shares. It applies to a lesser degree if the merger offer includes a collar that restricts movements in valuation outside of preset bounds. To further assess the valuation explanation, we rerun the IV results (Table IV) and multinomial logistic results (Table VI) excluding cash offers, offers with fixed dollar values, and offers with collars. Table VIII presents the results. The IV results remain largely unchanged when we use the restricted sample. In the termination decision test, target termination continues to be negatively (positively) related to the number of favorable (unfavorable) acquirer PMARs. In addition, target termination is now positively related to the number of favorable target PMARs (though it continues to be unrelated to the number of unfavorable target PMARs). This is consistent with the target becoming less willing to complete a proposed merger after a positive shock to its own valuation.

Insert Table VIII here

IV.C. Test 3: Relative target size

In our third test, we examine how the relation between merger completion probability and PMARs varies with the relative sizes of the target and acquirer. Other things being equal, the larger the target is relative to the acquirer, the larger the impact of the merger on the acquirer. Novel information about the value of the merger to the acquirer is, therefore, more likely to be material if the target is larger. The feedback explanation then would suggest that the sensitivity of merger completion to acquirer PMARs should be stronger when the target is larger in relative

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In an untabulated test, we construct a matched sample of stock and cash deals, and obtain virtually identical results to those in Table VI using this matched sample.

size. It is less clear what the valuation explanation would predict about variation with relative target size. One possibility is that firm size is correlated with the amount of information available and hence the impact of a recommendation on assessment of its value. We address this concern directly by accounting for absolute target size in our analysis. Thus, the fourth set of rows in Table V only shows predictions for the feedback explanation.

To test variation in the relation between merger outcomes and PMARs with relative target size, we first define *Absolute Target Size* and *Absolute Acquirer Size* as the market values of the target's and acquirer's equity computed as stock price three months prior to the merger announcement date multiplied by shares outstanding from CRSP if available and augmented by SDC when missing. We use this measure of size because it is the most comprehensive measure of target size available.[20] We then calculate *Relative Target Size* as

$$Relative\ Target\ Size = \frac{Absolute\ Target\ Size}{Absolute\ Target\ Size + Absolute\ Acquirer\ Size}.$$

We estimate the same three logistic models shown in Table III, except that we add *Relative Target Size* and *Absolute Target Size* as well as their interactions with each of the analyst recommendation variables (including numbers of acquirer and target analysts).[21] Table IX presents the results of this test.

Insert Table IX here

The marginal effects of the interactions of PMARs with relative target size are generally statistically insignificant. While the sign of the marginal effect of the interaction with number of

[20] Given that we do not impose a size restriction on our sample firms, using assets from Compustat as a measure of size would reduce our sample substantially.

[21] The marginal effects of the interaction terms are corrected to account for problems with interaction effects in nonlinear models as discussed by Ai and Norton (2003).

unfavorable acquirer PMARs is consistent with the feedback explanation, the one with the number of favorable acquirer PMARs has the wrong sign. Tests of differences in sensitivity of completion to acquirer PMARs with relative target size do not support the feedback explanation.

Overall, the tests in this section provide significantly more support for the valuation explanation than for the feedback explanation. Of course it is impossible to perfectly isolate the effects of each explanation. Nevertheless, our results provide consistent support for the argument that PMARs affect merger outcomes by altering the desirability of the transaction from the target's standpoint through their impact on acquirer and target valuations.

IV.C. Further consideration of alternative explanations

In Section III, we discussed three non-causal alternative explanations for the relations between merger outcomes and PMARs. We now further consider these explanations in light of the evidence in Section IV. The first is that the probability of merger completion decreases with the probability of a competing bid, which causes analysts to maintain more favorable target recommendations rather than automatically dropping them to neutral. This explanation focuses primarily on the relation between the target's decision to terminate a merger and target PMARs. It is difficult to reconcile this explanation with the lack of a relation between target termination decisions and target recommendations shown in Table VI.

The second alternative explanation is that information about the value created by a merger drives both merger completion and PMARs. This would explain the positive relation between merger completion probability and acquirer PMAR favorability. It is unclear, however, why this would hold in stock but not cash mergers, as such information impacts the gains to the acquirer in both cases. Also, in contrast to our findings, it seems likely that the effect would be stronger when the target is relatively large, as such news has a bigger impact on acquirer gains.

The third alternative explanation is that information about the probability of merger completion more generally impacts both merger completion and PMARs. This would also explain the positive relation between merger completion probability and acquirer PMAR favorability, and is also difficult to reconcile with the stock versus cash and relative target size results. While still not definitive, these results help rule out at least some non-causal alternative explanations for the relations we find between PMARs and merger outcomes.

V. Analyst Recommendations and Post-Resolution Stock Performance

Our evidence suggests that PMARs affect the merger process at least in part through their impact on a target's perception of a deal's value. This could indicate that PMARs represent informative signals about the values of the merger parties. Alternatively, it is possible PMARs do not contain information even though the market responds as though they do. This would add to evidence that merger decisions are driven in part by movements in valuations unrelated to firm fundamentals (Rhodes-Kropf et al., 2005; Edmans et al., 2012). We assess the information content of PMARs by examining medium- to long-run stock returns after a deal is completed or terminated. We focus on the post-resolution period to remove the effects of the decision to complete or terminate a merger itself from returns.

The predicted relation between the favorability of PMARs and post-resolution returns depends on whether the market impounds these recommendations into stock prices pre-resolution. If it does, we should observe no relation between PMAR favorability and post-merger returns. If it does not and these recommendations are informative, then stocks of firms with favorable PMARs should outperform those of firms with unfavorable PMARs. However, if the market overestimates the information contained in PMARs, then we should observe lower

long-run returns in firms with favorable PMARs than in those with unfavorable ones. We consider firms to be favorably recommended if the percentage of favorable PMARs relative to total PMARs exceeds 50%.

We implement a calendar-time based approach to compute long-run abnormal returns post-merger resolution advocated by Fama (1988) and developed formally by Mitchell and Stafford (2000). This involves, in each month, constructing an equal- or value-weighted portfolio of all firms experiencing an event in the past *n* months, where *n* is the number of months over which we measure abnormal returns. We then capture the intercept (alpha) from a regression of the abnormal returns of each month's portfolio on the Fama and French (1993) factors, Mkt, SMB, and HML. This approach accounts for cross-sectional correlation in returns in overlapping periods for different firms experiencing an event.[22]

We compute calendar-time portfolio abnormal returns for firms involved in mergers with favorable and unfavorable recommendations separately over three month, six month, one year, and two year horizons post-merger resolution. Returns are calculated for acquirers for all deals, as well as completed and terminated mergers separately. We also examine targets in terminated deals (as a target's stock ceases to trade after a completed transaction). Table X details long-run abnormal returns for each group over each of the four post-event horizons.

Insert Table X here

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[22] An alternative approach is to compute buy-and-hold returns (BHARs) by calculating each firm's return over a period after a deal relative to returns over the same window for a benchmark set of firms (Lyon, Barber, and Tsai, 1999). While some argue BHARs do not account for cross-sectional correlations in returns, this method is still commonly-used (Fu, Lin, and Officer, 2013; Savor and Lu, 2009); Bessembinder and Zhang (2013) argue differences in the two methods are based on control firms selected.

Over six-month to two-year horizons, acquirers with favorable (unfavorable) PMARs earn negative (positive) abnormal returns. While these returns are small and indistinguishable from zero in the six-month window, one and two year returns are large and statistically significant. Acquirers with favorable PMARs earn abnormal returns 6.57% and 12.19% lower than those of acquirers with unfavorable ones over one- and two-year post-resolution horizons, respectively. These differences are both statistically significant at the 1% level and are similar in completed deals. Differences in abnormal returns for *targets* with favorable and unfavorable average PMARs are also statistically significant at the one- and two-year horizons, and range between 16.61% and 36.51% (p-vals 0.07 and 0.01, respectively), even though the sample size is small (460 terminations).[23]

Overall, the results in this section, combined with returns around PMARs, indicate that investors overreact to PMARs. This suggests that the effect of PMARs on merger outcomes represents firms and/or shareholders reacting to valuation effects that are systematically biased.

VI. Conclusion

This paper investigates the effect of stock analyst recommendations issued after merger announcements on completion decisions. Results based on a sample of U.S. public deals between 1993 and 2008 suggest recommendations impact deal outcomes by altering a target's assessment of the acquirer's and target's valuations, and hence the desirability of the offer. The probability of deal completion increases (decreases) substantially with the number of favorable acquirer

[23] Using BHARs, the differences between abnormal post-resolution returns of acquirers with favorable and unfavorable average PMARs are -0.46%, 0.49%, 4.20%, and 7.92% over three-month, six-month, one-year, and two-year horizons, respectively. Similar to the calendar-time portfolio approach, the differences are significant at the 1% level at the one- and two-year horizons. We also obtain similar results if we measure abnormal returns using BHARs with Fama-French industry adjustments (BHARFF), cumulative abnormal returns (CAR), and CARs with Fama-French industry adjustments (CARFF).

(target) PMARs and decreases (increases) with the number of unfavorable acquirer (target) PMARs. Using an instrumental variables approach, merger outcomes continue to be related to recommendation favorability, consistent with PMARs having a causal effect on deal outcomes.

In order to clarify the causal relations between PMARs and merger outcomes, we explore two possible explanations: feedback and valuation. Using three tests to differentiate between these two explanations, we collectively provide support for valuation rather than feedback in driving the relations we observe between PMARs and merger completion. We also find that the stock market overreacts to these recommendations, as firms with favorable PMARs significantly underperform those with unfavorable PMARs over various horizons.

Although a number of papers have examined how markets respond to analysts' opinions, few have examined the real economic implications of these recommendations on the decisions of firms and managers. Our results suggest managers and/or shareholders account for valuation implications of analyst recommendations around mergers, and these recommendations impact deal completion. Potential biases in recommendations, however, lead to possible mispricings of acquirers and targets in these transactions. This hints at the possibility that shifts in value for reasons unrelated to fundamentals play a role in determining the outcomes of proposed mergers.

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Appendix A

Descriptions of Variables Used in Analyses

Variable	Description
Favorable Acq Recs	Number of favorable acquirer PMARs (upgrades or strong buy initiations)
Favorable Tgt Recs	Number of favorable target PMARs (upgrades or strong buy initiations)
Unfavorable Acq Recs	Number of unfavorable acquirer PMARs (downgrades and initiations below buy)
Unfavorable Tgt Recs	Number of unfavorable target PMARs (downgrades and initiations below buy)
Number of Recs. in Pre-Ann.	Number of opinions in the pre-announcement period (-50 to -1)
Number of Recs. from Ann.	Number of opinions from day +1 to resolution
Average Acq Rec	Average acquirer PMAR
Average Tgt Rec	Average target PMAR
Acquirer Advisors	Number of M&A advisors to the acquirer
Target Advisors	Number of M&A advisors to the target
Number Acq Analysts	Number of analysts making at least 1 acquirer PMAR in merger window
Number Tgt Analysts	Number of analysts making at least 1 target PMAR in merger window
Same Analyst for Acquirer and Target	Indicator = 1 if an analyst makes a recommendation on both the acquirer and target on same day
Acq (Tgt) Fee	Indicator = 1 if a fee is paid to the acquirer (target) advisor
Merger Program	Indicator = 1 if acquirer makes 3 or more public deals over a 5-year window
Same 3-digit SIC	Indicator = 1 if target and acquirer have the same 3-digit SIC code
Merger Completion	Indicator = 1 if transaction is completed after announcement
100% Cash	Indicator = 1 if transaction is a pure cash deal
100% Stock	Indicator = 1 if transaction is a pure stock deal
Tender Offer	Indicator = 1 if transaction is a tender offer
Cash Tender Offer	Indicator = 1 if transaction is a cash tender offer
Fixed Dollar Amount	Indicator = 1 if transaction has a fixed dollar payment
Fixed Exchange Ratio	Indicator = 1 if number of shares exchanged between acquirer and target is fixed
Fixed Payment Collar	Indicator = 1 if transaction has a fixed payment collar
Fixed Exchange Collar	Indicator = 1 if transaction has a fixed exchange collar
Collared Deal	Indicator = 1 if transaction has any form of collared offer
Bid Revisions	Indicator = 1 if final price offered varies from initial offer price (SDC)
Days to Resolution	Number of days from deal announcement to completion or termination
Log Transaction Value	Natural log of value of the deal
Absolute Size	Acquirer or target log market value of equity obtained from CRSP (Price*Shares)
Relative Size	Absolute target size divided by sum of absolute target and acquirer size
Premium	Offer price to target stock price premium 4 weeks prior to announcement (SDC)
Acquirer Run-up	Pre-announcement returns for the acquirer (-30 days to –5 days)
Acquirer Ann Return	Announcement returns for the acquirer (-1 day to +1 days)
Target Run-up	Pre-announcement returns for the target (-30 days to –5 days)
Target Ann Return	Announcement returns for the target (-1 day to +1 days)
AA	Recommendation favorability by the recommending analyst on her coverage universe from the six months prior to the merger announcement through resolution
BA	Recommendation favorability at recommending analyst's brokerage firm excluding acquirer and target industries from the six months prior to the merger announcement through resolution

Appendix B

Content of Analyst Reports on Acquirer and Targets

This table provides a summary on the information provided in a sample of 300 randomly-selected acquirer and target analyst reports from Thomson One between 1999 and 2008. Panel A shows commonly delivered content in each report, while Panel B provides excerpts of anecdotal reports from four analysts on Veritas (target) which received a bid from Symantec Corp (acquirer) in 2004.

Panel A: Summary of Information in Analyst Reports

Content	**Acquirer %**	**Target %**
Merger mentioned in report	93%	95%
Specific discussion of synergies/fit	80%	55%
Merger explicitly discussed with respect to recommendation or price target	57%	61%
Non-merger fundamentals discussed with respect to recommendation or price target	98%	65%
Positive tone on transaction price	15%	6%
Negative tone on transaction price	11%	1%
Possibility of competing bids mentioned	2%	3%

Panel B: Veritas Reports

JP Morgan	We believe that it is hard to make a case for buying VRTS as stand-alone equity at current levels, which now represents a premium to the group. We do not believe VRTS deserves a premium valuation given slowing growth, recent miss-execution and structural changes in the marketplace that will make it harder for VRTS to sustain growth longer term. We maintain our Neutral rating; however, there could be an acquisition premium given the recent announcement. We do believe that VRTS has more value as an acquisition, and while we would obviously expect to see a premium in an acquisition, we believe that $29.70 is probably on the inside of what VRTS could garner in a transaction.
Fulcrum	We are lowering our rating on VRTS to NEUTRAL (from BUY) primarily based on the stock's limited upside from the current level. We believe the merger with Symantec will go through. Although there are speculations of potential bidders with higher bids, we don't think speculation is a good reason for investors to buy the stock at the current level. Although we fail to see significant product-synergy between VRTS and SYMC, we would also see issues if a hardware vendor were to acquire VRTS – primarily being hardware channel conflict. Also, VRTS stock is likely to move in-synch with SYMC stock going forward (1.1242 share conversion); SYMC shares are down 30% this week, so we believe a rebound in SYMC stock could move VRTS stock upward. However, again, the upside could be limited from the current level.
CIBC	"We are downgrading the shares of VERITAS from Sector Outperformer to Sector Performer…. The company has agreed to be bought by Symantec for roughly $13.5 billion, or between $30-$31 per share, which is just above our former target price of $30. Although there is a chance a competing bid could emerge, we believe both the boards and management teams of both Symantec and VERITAS sound very committed to this deal, giving any competing offer a low chance of success. Absent this, the only alternative outcome, other than consummation, would be for the deal to break, which we believe would yield a negative return for investors.
Credit Suisse	We are assuming coverage of VERITAS due to the departure of the previous lead analyst. Given the pending merger with Symantec, we are assuming coverage with a Neutral rating and $28 price target, as compared with an Outperform rating and $25 price target previously.

Table I
Descriptive Statistics: Merger Sample

The table provides descriptive data on the merger sample for our sample of public mergers that were announced and resolved between 1993 and 2008, excluding 2002 mergers. Merger variables, including method of payment, merger program, horizontal mergers, tender offers, cash tender offers, if a fixed dollar amount is set, bid revisions, collars, merger window, deal value, premium, and returns are presented. Hand-collected data on reasons for termination are also presented. Data are collected from SDC, SEC filings, as well as *Factiva*, *Lexis-Nexis*, and *Dow Jones Newswire*.

		Full	**Completed**	**Terminated**
N	Number of Mergers	5,381	4,625	756
	Pure Cash Financed	1,310	1,172	138
	Pure Stock Financed	2,200	1,908	292
	Tender Offers	551	506	45
	Cash Tender Offers	387	361	26
	Fixed Dollar Amount	190	149	41
	Bid Revisions	260	218	42
	Collared Deal	431	404	27
	Acquirer Merger Program	2,060	1,857	203
	Horizontal Mergers	1,778	1,552	226
Termination Reason	Acquirer			168
	Target			279
	Regulatory			76
	Indeterminate			219
Average	Days to Resolution	130	132	116
	Deal Value (in millions)	$1,153	$1,126	$1,352
	Premium	45.01%	45.82%	37.51%
	Acquirer Run-up	2.99%	3.16%	1.91%
	Target Run-up	6.23%	6.71%	3.19%
	Acquirer Announcement Return	-0.84%	-0.76%	-1.36%
	Target Announcement Return	19.07%	19.83%	14.24%

Table II
Acquirer and Target PMARs and Returns

This table presents a summary of analyst recommendations and three-day cumulative abnormal returns for acquirers and targets. Panel A displays the recommendations returns and the total number of upgrades, reiterations, and downgrades (in parentheses) for acquirers and targets made prior to the merger announcement (-50 to -1 days) and following the merger announcement (the fifth day through resolution). Panel B provides the total number of strong buy, buy, and sell (including hold, sell, and strong sell initiations) for acquirers and targets over the same time periods as noted in Panel A. Recommendation data are collected from I/B/E/S, announcement and resolution dates are collected from SDC, and returns are collected from CRSP. ***, ** and * indicates significance at the 1%, 5%, and 10% confidence levels, respectively.

Panel A: Recommendation Revisions

	Acquirer			***Target***		
	Upgrade	**Reiteration**	**Downgrade**	**Upgrade**	**Reiteration**	**Downgrade**
Pre-Announcement	2.09%*** (1,204)	-0.01% (465)	-2.14%*** (1,098)	3.27%*** (519)	0.74% (209)	-4.15%*** (617)
Post-Announcement	1.51%*** (3,670)	0.10% (1,240)	-2.89%*** (3,398)	0.55%*** (813)	-0.30% (404)	-0.60%*** (1,559)

Panel B: Recommendation Initiations

	Acquirer			***Target***		
	Strong Buy	**Buy**	**Sell**	**Strong Buy**	**Buy**	**Sell**
Pre-Announcement	1.18%*** (452)	0.47% (515)	-0.30% (475)	2.50%*** (161)	5.88% (204)	-0.70% (193)
Post-Announcement	1.12%*** (1,128)	0.08% (1,302)	-0.44%*** (1,291)	0.42% (158)	-0.07% (185)	-0.09% (378)

Table III
Modeling the Probability of Completion

This table presents marginal effects (in percentages) from logistic regressions on the probability of a merger completion. Predictors of merger completion include recommendation and analyst characteristics, merger characteristics, and indicator variables for M&A advisory fees. Models 2 and 3 include variables for the number of advisors, log transaction value, method of payment, days to resolution, acquirer and target run-up and announcement returns, and an indicator and merger programs. Additional controls for total number of recommendations, the average recommendation level, same analyst for acquirer and target, collar type, and an indicator for horizontal mergers are included in the regressions (Models 2 and 3) but are suppressed for exposition. z-statistic p-values are reported and bold indicates significance of at least 10%. Huber-White robust standard errors are used and are clustered at the acquirer level. Pseudo-R^2s are also provided for each model. Variables are defined in Appendix A.

	Model 1		**Model 2**		**Model 3**	
Variable	***M.E.***	***p-val***	***M.E.***	***p-val***	***M.E.***	***p-val***
Favorable Acq Recs	1.11	**0.06**	1.01	**0.04**	0.97	**0.04**
Unfavorable Acq Recs	-1.94	**0.00**	-1.36	**0.00**	-1.40	**0.00**
Favorable Tgt Recs	-2.15	**0.00**	-1.24	**0.02**	-1.24	**0.02**
Unfavorable Tgt Recs	1.65	**0.01**	0.34	0.42	0.29	0.47
Num Acq Analysts	1.74	**0.00**	0.82	**0.01**	0.81	**0.01**
Num Tgt Analysts	-1.13	**0.01**	-0.62	0.15	-0.33	0.39
Acquirer Advisors			2.82	**0.00**	0.01	0.93
Target Advisors			8.07	**0.00**	1.55	0.14
Merger Program			2.08	**0.01**	2.26	**0.01**
Days to Resolution			0.01	0.18	0.01	0.28
Log Transaction Value			-1.67	**0.00**	-1.92	**0.00**
100% Cash			-0.21	0.87	0.25	0.84
Cash Tender Offer			3.60	**0.00**	2.92	**0.02**
100% Stock			0.85	0.35	0.75	0.43
Acq Run-up			3.37	0.13	3.99	**0.08**
Acq Ann Return			6.40	0.12	7.68	**0.07**
Tgt Run-up			5.39	**0.00**	5.17	**0.00**
Tgt Ann Return			3.16	**0.06**	2.56	0.13
Acq Fee					4.49	**0.02**
Tgt Fee					18.45	**0.00**
Additional Controls		No		Yes		Yes
Year Fixed Effects		Yes		Yes		Yes
Industry Fixed Effects		Yes		Yes		Yes
Observations		5,388		3,601		3,601
Pseudo-R^2		0.09		0.19		0.21

Table IV

Modeling the Probability of Completion: Instrumental Variable Approach

This table presents marginal effects (in percentages) from a linear probability regression for the probability of a merger completion. First stage OLS regressions model acquirer or target upgrades and downgrades using two instrumental variables. The first is the recommendation favorability for the predicting analyst (AA) for either the acquirer or target, and the second is the recommendation favorability for the brokerage house of the recommending analyst excluding all firms covered by the analyst or in the same industry as the acquirer or target (BA). Fitted values from these regressions are then used as instruments in second stage linear probability regressions. Independent variables are the same as those reported in Table III, Model 3. p-values are reported and bold indicates significance of at least 10%. Huber-White robust standard errors are used and are clustered at the acquirer level. Adjusted-R^2s and pseudo-R^2s are also provided for each model. Variables are defined in Appendix A.

	Acq 1st Stg Favorable		**Acq 1st Stg Unfavorable**		**Tgt 1st Stg Favorable**		**Tgt 1st Stg Unfavorable**		**Model 3 IV-2nd Stg**	
Variable	***Est***	***p-val***	***Est***	***p-val***	***Est***	***p-val***	***Est***	***p-val***	***M.E.***	***p-val***
Favorable Acq Recs									0.91	**0.07**
Unfavorable Acq Recs									-1.36	**0.00**
Favorable Tgt Recs									-1.52	**0.01**
Unfavorable Tgt Recs									0.25	0.56
Num Acq Analysts	0.34	**0.00**	0.36	**0.00**	-0.00	0.79	-0.00	0.88	0.90	**0.00**
Num Tgt Analysts	-0.02	0.50	-0.02	0.33	0.19	**0.00**	0.58	**0.00**	-0.16	0.69
Acquirer Advisors	-0.08	0.34	0.11	0.25	-0.13	**0.04**	-0.09	0.28	-0.13	0.91
Target Advisors	-0.14	**0.05**	-0.07	0.35	-0.02	0.67	-0.01	0.90	1.52	0.16
Merger Program	-0.10	**0.09**	-0.06	0.34	0.04	0.16	0.03	0.39	3.20	**0.00**
Days to Resolution	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.01	**0.07**
Log Transaction Value	0.18	**0.00**	-0.10	**0.00**	0.04	0.20	-0.03	0.42	-1.82	**0.00**
100% Cash	-0.04	0.62	0.02	0.84	0.10	**0.02**	0.18	**0.00**	0.55	0.67
Cash Tender Offer	0.08	0.43	-0.12	0.30	0.04	0.56	-0.05	0.55	2.67	**0.06**
100% Stock	0.07	0.32	-0.11	**0.09**	0.09	**0.01**	-0.09	**0.04**	1.04	0.27
Acquirer Run-up	0.02	0.87	-0.60	**0.00**	-0.02	0.78	-0.04	0.69	3.34	0.17
Acq Ann Return	0.30	0.16	-0.65	**0.01**	0.09	0.48	-0.39	**0.03**	8.43	**0.07**
Target Run-up	-0.09	0.39	-0.11	0.37	-0.13	**0.00**	0.11	0.11	5.39	**0.00**
Target Ann Return	-0.02	0.89	-0.06	0.57	0.05	0.37	0.21	**0.00**	2.62	0.13
Acquirer Fee	-0.02	0.84	-0.10	0.42	0.13	**0.09**	0.06	0.53	4.62	**0.02**
Target Fee	0.15	0.15	0.10	0.39	-0.02	0.82	0.05	0.52	19.54	**0.00**
AA	0.71	**0.00**	-0.80	**0.00**	0.46	**0.00**	-0.49	**0.01**		
BA	0.16	0.58	-0.47	**0.10**	0.20	0.18	0.40	**0.07**		
Additional Controls		Yes		Yes		Yes		Yes		Yes
Year Fixed Effects		Yes		Yes		Yes		Yes		Yes
Observations		3,601		3,601		3,601		3,601		3,601
Adjusted-R^2/Pseudo-R^2		0.64		0.63		0.59		0.77		0.19
Anderson test statistic										30.13
Cragg-Donald test statistic										13.54
Sargen test statistic										4.22

Table V

Feedback and Valuation Explanation Predictions

This table describes the effects of favorable and unfavorable acquirer and target PMARs predicted by the feedback and valuation explanations. For the probability of completion (Table III), we examine the predictions based on both explanations from both the acquirer's and target's standpoint. Pos (Neg) indicate a positive (negative) relation with the probability of deal completion. For the remainder of the tests, we focus on acquirer-driven feedback and target-driven valuation explanations.

Feedback					**Valuation**			
Acquirer		**Target**			**Acquirer**		**Target**	
Fav	*Unfav*	*Fav*	*Unfav*		*Fav*	*Unfav*	*Fav*	*Unfav*
				Probability of Completion (Table III)				
Pos	**Neg**			Acquirer PMAR	**Neg**	**Pos**	**Pos**	**Neg**
		Pos	**Neg**	Target PMAR	**Pos**	**Neg**	**Neg**	**Pos**
				Determinants of Termination* (Table VI)				
				Acquirer Terminates				
Neg	**Pos**			Acquirer PMAR				
				Target PMAR				
				Target Terminates				
				Acquirer PMAR			**Neg**	**Pos**
				Target PMAR			**Pos**	**Neg**
				Method of Payment (Table VII)				
				Stock Merger				
Pos	**Neg**			Acquirer PMAR			**Pos**	**Neg**
				Target PMAR			**Neg**	**Pos**
				Cash Merger				
Pos	**Neg**			Acquirer PMAR				
				Target PMAR			**Neg**	**Pos**
				Relative Target Size (Table IX)				
Pos	**Neg**			Acquirer PMAR				
				Target PMAR				

* Prediction of termination rather than completion

Table VI
Modeling Who Terminates

This table presents marginal effects (in percentages) from multinomial logistic regressions on the probability of which party terminates an announced merger. The base case is completion. Predictors of merger termination include recommendation and analyst characteristics, merger characteristics, and indicator variables for M&A advisory fees and are similar to those presented in previous tables. z-statistic p-values are reported and bold indicates significance of at least 10%. Huber-White robust standard errors are used and are clustered at the acquirer level. Pseudo-R^2s are also provided for each model. Variables are defined in Appendix A.

	Acquirer Terminates		**Target Terminates**	
Variable	***M.E.***	***p-val***	***M.E.***	***p-val***
Favorable Acq Recs	-0.10	0.11	-0.33	**0.07**
Unfavorable Acq Recs	0.03	0.59	0.48	**0.00**
Favorable Tgt Recs	-0.01	0.92	0.28	0.18
Unfavorable Tgt Recs	-0.08	0.19	-0.08	0.58
Num Acq Analysts	-0.03	0.44	-0.39	**0.00**
Num Tgt Analysts	0.06	0.20	0.11	0.37
Acquirer Advisors	0.02	0.91	0.08	0.84
Target Advisors	0.14	0.27	-0.74	**0.10**
Merger Program	-0.33	**0.02**	0.03	0.95
Days to Resolution	0.00	**0.08**	0.00	**0.05**
Log Transaction Value	0.16	**0.00**	0.72	**0.00**
Acquirer Run-up	-0.40	0.22	-1.10	0.19
Acq Ann Return	-1.14	**0.06**	-0.17	0.88
Target Run-up	-0.62	**0.01**	-1.55	**0.02**
Target Ann Return	-0.08	0.74	-0.48	0.44
Acquirer Fee	-0.48	**0.07**	-2.17	**0.01**
Target Fee	-2.45	**0.00**	-4.69	**0.00**
Additional Controls		Yes		Yes
Year Fixed Effects		Yes		Yes
Industry Fixed Effects		Yes		Yes
Observations				3,437
Pseudo-R^2				0.23

Table VII

Modeling the Probability of Completion: Cash vs. Stock Mergers

This table presents marginal effects (in percentages) from logistic regressions on the probability of a merger completion by method of payment. Stock (1) includes all transactions with at least some stock financing, while Stock (2) excludes mergers with fixed dollar value offers or collars. Predictors of merger completion include recommendations and analyst characteristics, as well as variables for the number of advisors, log transaction value, days to resolution, acquirer and target run-up and announcement returns, and an indicator and merger programs. Additional controls for total number of recommendations, the average recommendation level, same analyst for acquirer and target, collar type, and an indicator for horizontal mergers are included in the regressions but are suppressed for exposition. z-statistic p-values are reported and bold indicates significance of at least 10%. Huber-White robust standard errors are used and are clustered at the acquirer level. Pseudo-R^2s are also provided for each model. Independent variables are defined in Appendix A.

	Stock (1)		**Stock (2)**		**Pure Cash**	
Variable	***M.E.***	***p-val***	***M.E.***	***p-val***	***M.E.***	***p-val***
Favorable Acq Recs	1.25	**0.03**	1.23	**0.05**	0.00	0.99
Unfavorable Acq Recs	-1.38	**0.00**	-1.27	**0.00**	-0.19	0.63
Favorable Tgt Recs	-1.58	**0.04**	-1.42	**0.08**	-0.74	0.45
Unfavorable Tgt Recs	0.22	0.69	-0.02	0.97	1.21	0.12
Num Acq Analysts	0.50	0.17	0.22	0.53	1.42	**0.00**
Num Tgt Analysts	-0.49	0.31	-0.45	0.35	-0.17	0.75
Acquirer Advisors	0.10	0.94	0.00	0.99	-0.84	0.61
Target Advisors	2.42	**0.04**	2.55	**0.04**	-1.58	0.27
Merger Program	2.27	**0.03**	1.68	0.15	1.69	0.17
Days to Resolution	0.01	**0.06**	0.02	**0.02**	-0.01	**0.09**
Log Transaction Value	-1.45	**0.00**	-1.48	**0.00**	-1.87	**0.00**
Acquirer Run-up	3.69	0.13	1.69	0.52	3.45	0.37
Acq Ann Return	10.85	**0.02**	10.09	**0.04**	-4.73	0.49
Target Run-up	6.02	**0.00**	8.15	**0.00**	0.63	0.77
Target Ann Return	3.50	**0.09**	3.65	**0.09**	1.26	0.57
Acquirer Fee	5.22	**0.03**	5.26	**0.04**	3.04	0.22
Target Fee	16.59	**0.00**	16.20	**0.00**	34.33	**0.00**
Additional Controls		Yes		Yes		Yes
Year Fixed Effects		Yes		Yes		Yes
Industry Fixed Effects		Yes		Yes		Yes
Observations		2,697		2,209		892
Pseudo-R^2		0.22		0.23		0.30

Table VIII

Instrumental Variables and Modeling Who Terminates: Stock Deals Only

This table presents estimates (in percentages) from linear probability regressions on the probability of merger completion using two instrumental variables detailed in Table IV (Column 1). Fitted values from OLS regressions are used to capture acquirer and target recommendation favorability and independent variables are the same as those reported in Table IV. Columns 2 and 3 present marginal effects (in percentages) from multinomial logistic regressions on the probability of which party terminates an announced deal. Predictors of merger termination are similar to those in previous tables. Only deals in which at least some stock is used as a method of payment are included in this table, and mergers with fixed dollar value offers or collars are excluded. z-statistic p-values are reported and bold indicates significance of at least 10%. Huber-White robust standard errors are used and are clustered at the acquirer level. Pseudo-R^2s are also provided for each model. Variables are defined in Appendix A.

	IV-ALL Completion		**Acquirer Terminates**		**Target Terminates**	
Variable	***M.E.***	***p-val***	***M.E.***	***p-val***	***M.E.***	***p-val***
Favorable Acq Recs	1.19	**0.05**	-0.13	**0.08**	-0.65	**0.01**
Unfavorable Acq Recs	-1.37	**0.00**	-0.13	0.24	0.41	**0.03**
Favorable Tgt Recs	-1.76	**0.02**	-0.01	0.57	0.22	**0.05**
Unfavorable Tgt Recs	0.16	0.78	-0.11	0.11	0.01	0.98
Num Acq Analysts	0.67	**0.06**	0.09	0.24	-0.31	**0.04**
Num Tgt Analysts	-0.39	0.44	0.22	**0.05**	0.19	**0.35**
Acquirer Advisors	-0.16	0.90	-0.13	0.68	0.29	0.63
Target Advisors	2.38	**0.04**	0.26	0.34	-1.26	**0.05**
Merger Program	3.38	**0.00**	-0.77	**0.06**	0.17	0.76
Days to Resolution	0.02	**0.02**	-0.00	0.57	-0.01	**0.02**
Log Transaction Value	-1.51	**0.00**	0.33	**0.01**	0.38	**0.07**
Acquirer Run-up	2.31	0.37	0.12	0.90	-0.54	0.63
Acq Ann Return	10.56	**0.03**	-2.56	0.15	-1.09	0.43
Target Run-up	6.67	**0.00**	-2.51	**0.00**	-2.14	**0.03**
Target Ann Return	3.49	**0.09**	-1.40	**0.09**	0.54	0.40
Acquirer Fee	5.45	**0.02**	-0.91	0.18	-2.61	**0.09**
Target Fee	17.72	**0.00**	-5.81	**0.04**	-2.70	0.18
Additional Controls		Yes		Yes		Yes
Industry Fixed Effects		No		Yes		Yes
Year Fixed Effects		Yes		Yes		Yes
Observations		2,209				2,083
Pseudo-R^2		0.20				0.19
Anderson test statistic		24.79				
Crragg-Donald test statistic		12.22				
Sargen test statistic		4.96				

Table IX

Modeling the Probability of Completion: Relative and Absolute Target Size

This table presents marginal effects (in percentages) logistic regressions on the probability of a merger completion by relative target size (target market value of equity scaled by the sum of the target and acquirer market value of equity) controlling for the target absolute size. Relative and absolute size measures are interacted with acquirer and target PMAR favorability variables and analyst coverage. Models 1 – 3 replicate those presented in Table III and include recommendations and analyst characteristics, as well as variables for the number of advisors, total number of recommendations, the average recommendation level, same analyst for acquirer and target, collar type, log transaction value, days to resolution, acquirer and target run-up and announcement returns, and indicators for horizontal mergers, merger programs, acquirer fees and target fees but are suppressed for exposition. Further each model includes the relative and absolute size measures as additional controls. z-statistic p-values are reported and bold indicates significance of at least 10%. Huber-White robust standard errors are used and are clustered at the acquirer level. Pseudo-R^2s are also provided for each model. Variables are defined in Appendix A.

	Model 1		**Model 2**		**Model 3**	
Variable	***M.E.***	***p-val***	***M.E.***	***p-val***	***M.E.***	***p-val***
Favorable Acq Recs	-0.09	0.96	-1.09	0.44	-1.31	0.32
Unfavorable Acq Recs	-1.32	0.42	-1.97	0.18	-2.12	0.12
Favorable Tgt Recs	-9.96	**0.00**	-4.58	**0.07**	-3.97	**0.10**
Unfavorable Tgt Recs	4.32	0.11	4.04	**0.06**	3.97	**0.06**
Num Acq Analysts	2.26	0.11	3.52	**0.00**	3.53	**0.00**
Num Tgt Analysts	0.82	0.67	-2.94	**0.07**	-3.41	**0.03**
Favorable Acq Recs*Rel Size	-3.14	0.33	-2.66	0.23	-3.07	0.17
Unfavorable Acq Recs*Rel Size	-4.14	**0.06**	-2.16	0.18	-1.73	0.26
Favorable Tgt Recs*Rel Size	5.59	**0.07**	3.49	0.17	3.03	0.24
Unfavorable Tgt Recs*Rel Size	-3.13	0.20	-0.33	0.84	0.32	0.84
Num Acq Analysts*Rel Size	2.38	**0.07**	1.33	0.20	1.33	0.20
Num Tgt Analysts* Rel Size	0.87	0.60	-0.87	0.45	-1.25	0.28
Favorable Acq Recs*Abs Size	0.38	0.24	0.42	**0.09**	0.45	**0.05**
Unfavorable Acq Recs*Abs Size	0.14	0.57	0.21	0.34	0.21	0.29
Favorable Tgt Recs*Abs Size	0.82	**0.02**	0.33	0.31	0.26	0.39
Unfavorable Tgt Recs*Abs Size	-0.26	0.42	-0.46	**0.07**	-0.48	**0.06**
Num Acq Analysts*Abs Size	-0.35	**0.10**	-0.52	**0.00**	-0.51	**0.00**
Num Tgt Analysts*Abs Size	-0.19	0.46	0.40	**0.05**	0.49	**0.01**
Additional Controls		No		Yes		Yes
Year Fixed Effects		Yes		Yes		Yes
Industry Fixed Effects		Yes		Yes		Yes
Observations		2,743		2,743		2,743
Pseudo-R^2		0.14		0.23		0.25

Table X
Post-Resolution Performance

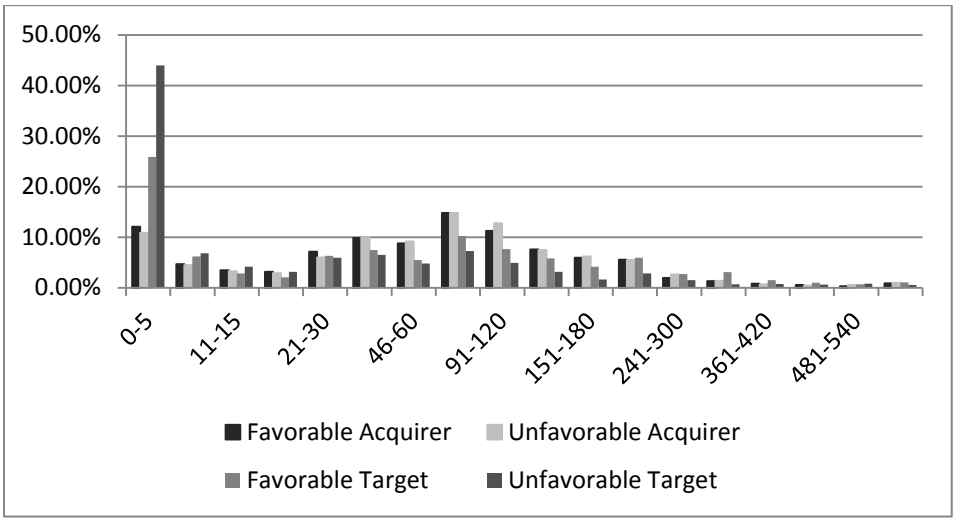
This table examines whether analysts, through their recommendations, have the ability to predict post-resolution performance. Post-resolution returns are measured as calendar-time portfolio abnormal returns using the methodology presented in Mitchell and Stafford (2000) for three months, six months, one year and two years following the resolution (either completion or termination) of the merger. Recommendations are delineated into favorable (percentage favorable > 50%) and unfavorable recommendations (percentage favorable ≤ 50%). Acquirers and targets are distinguished by whether the merger was completed or not. P-values for difference of means tests between recommendation levels are also reported. Bolding indicates significance at the 10% level or better.

	Rec	**N**	**3-month**	**6-month**	**1-year**	**2-year**
Acquirer						
All	Fav	1739	0.05%	-0.84%	**-6.09%**	**-7.60%**
All	Unfav	2302	-0.60%	0.35%	0.48%	**4.59%**
Difference			-0.65%	1.19%	6.57%	12.19%
p-val			*0.5209*	*0.3789*	***0.0014***	***0.0001***
Completed	Fav	1498	0.22%	-1.02%	**-6.05%**	**-7.24%**
Completed	Unfav	1952	-0.79%	0.46%	0.63%	**4.93%**
Difference			-1.01%	1.48%	6.68%	12.17%
p-val			*0.3047*	*0.2715*	***0.0013***	***0.0001***
Withdrawn	Fav	190	**-6.19%**	-2.97%	**-11.23%**	**-16.72%**
Withdrawn	Unfav	301	-1.32%	-3.31%	-3.57%	-1.06%
Difference			4.87%	-0.34%	7.66%	15.66%
p-val			*0.3105*	*0.9270*	*0.4073*	*0.2219*
Target						
All	Fav	173	-2.07%	-2.82%	-7.51%	**-18.79%**
All	Unfav	287	-1.14%	**5.06%**	**9.10%**	**17.72%**
Difference			0.93%	7.88%	16.61%	36.51%
p-val			*0.8801*	*0.2399*	***0.0674***	***0.0045***

Figure 1
Distribution of Recommendation Revisions from Announcement through Resolution

This figure shows the distribution of acquirer and target favorable and unfavorable recommendations from the merger announcement date through either completion or termination. Panel A shows the number of days that has passed from the merger announcement date relative to the percentage of total recommendations split by upgrade and downgrade for acquirers and targets by time bucket (i.e., 43.7% of all target downgrades occur within Days 0 to 5 from the merger announcement date). Panel B provides a normalized depiction using methodology in Malmendier, Opp, and Saidi (2012), where the merger horizon is normalized to our average of 130 days. Recommendation data are collected from I/B/E/S and completion and termination dates are collected from SDC.

Panel A: Recommendation Distribution



Panel B: Normalized Distribution