Investment Banking and Analyst Objectivity:
Evidence on Forecasts and Recommendations of Analysts Affiliated with M&A Advisors

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Previous research finds some evidence that analysts affiliated with equity underwriters issue more optimistic recommendations of client stock and forecasts of client earnings growth than those issued by analysts without such affiliations. Unfortunately, these studies are unable to determine whether such optimism is due to a conflict of interest problem, whereby analysts compromise their objectivity at the behest of underwriting clients, or selection bias, whereby investment banks employing analysts more bullish on a particular stock are more likely to underwrite it. Examining the issue of analyst bias in the M&A context allows us to shed some light on which explanation is correct.

1. Introduction

Analysts play an important role in the securities underwriting business, and this role has become a topic of increasing interest to regulators and academics. Several studies find evidence that analysts affiliated with investment banking firms ("affiliated analysts") issue positively biased recommendations and overly optimistic long-term earnings growth forecasts of stocks underwritten by their employers.[1] Lin, McNichols and O'Brien (2003) find that affiliated analysts are slower to downgrade their recommendations of client firms than unaffiliated analysts, and Bradshaw, Richardson and Sloan (2003) find evidence that consensus analyst coverage of firms issuing securities is more optimistic than of firms not issuing any securities. Consistent with the academic research suggesting that economic incentives stemming from investment-banking relations and brokerage commission revenues optimistically skew the tone of affiliated analysts' research, the New York Attorney General recently reached a settlement with several investment banks. As per the settlement, in addition to paying a fine, the banks agreed to remove as a factor in analyst compensation the generation of underwriting revenue. The investment banks settled, it appears, largely because of the discovery of internal memos in which, in order to maintain their employers' investment banking relationships with the issuers, the analysts admitted to recommending stocks they believed to be unsound investments.[2]

In the equity underwriting context, corporate managers may seek optimistic analyst coverage in the hope that it would enable the company to issue shares at a higher

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1 See Lin and McNichols (1998), Michaely and Womack (1999), Dechow, Hutton and Sloan (2000), Dugar and Nathan (1995).

2 "Chronology of the Merrill Lynch Probe." *The Associated Press.* May 21, 2002.

price. Hence, it is alleged that managers reward optimistic analyst coverage by giving their equity underwriting business to the investment-banking firm employing the analyst. Seeking to gain such rewards, analysts might compromise their objectivity when issuing forecasts and recommendations of firms from which their employers' investment banking departments are seeking to obtain business. Optimistic analyst coverage, however, benefits managers in ways in addition to pushing up new issue prices. Since previous research demonstrates that favorable analyst coverage is associated with superior stock performance (e.g., Womack, 1996), managers have an incentive to do whatever they can to generate favorable analyst coverage, including rewarding firms who provide such coverage with M&A business.

In this paper we examine whether M&A relationships affect analyst objectivity. Studying analyst objectivity in the M&A context has certain advantages. First, the M&A context allows for more powerful tests of the effect of investment banking revenue on analyst forecasts and recommendations than does the equity issuance context. The tests are more powerful because depending on the M&A relationship with the target or acquirer the analyst might have an incentive to bias the research optimistically or pessimistically. Second, M&A transactions are much more frequent than equity issuances, and M&A fees make up at least as large a portion of investment banking revenue as underwriting fees. Thus, the incentives M&A fees provide for analysts to compromise their objectivity are potentially as large as that of stock issuances. Third, the number of firms engaging in M&A transactions is far greater than the number issuing equity. Therefore, M&A-driven analyst optimism or pessimism, if it were to exist, would be a far more pervasive problem than equity underwriting-driven analyst optimism.

Finally, and most importantly, unlike the equity underwriting context, the M&A context allows us to discriminate between competing hypotheses that predict a positive association between investment banking relationships and analyst optimism or pessimism.

There are two possible hypotheses consistent with the finding that affiliated analysts are more optimistic in their coverage of underwriting clients. The first hypothesis, henceforth the "conflict of interest hypothesis," postulates that such analysts deliberately bias their reports in order to curry favor with the clients (or potential clients). The second hypothesis, henceforth the "selection bias hypothesis," postulates that analysts are objective, but if an analyst is optimistic about the prospects of a given firm, the analyst's employer is more likely to get the investment banking business of that firm. Selection bias may result from investment banks' unwillingness to underwrite stocks if their analysts are not optimistic, or it may be result from CFOs' unwillingness to hire investment banks with pessimistic analysts. Regardless, the M&A context allows to discriminate between the conflict of interest and selection bias hypotheses because, for reasons explained in the last part of Section 2, the selection bias hypothesis would be an unlikely explanation of affiliated analyst optimism (or pessimism), were to exist, in the M&A context. Furthermore, we show in Section 2 that there are situations within the M&A context in which selection bias cannot possibly explain hypothetical analyst optimism (or pessimism).

In order to test the conflict of interest hypotheses and attempt to distinguish its effects from the selection bias hypothesis, we obtain a sample of every M&A deal completed between 1993 and 2001. Using OLS analysis, we test whether analysts

working for firms which collect M&A fees or have an M&A relationships issue more or less optimistic forecasts relative to consensus. Notwithstanding high power and large sample size, we fail to find a significant association. Using ordered logit analysis, we conduct a similar test on the recommendations of target or acquirer stock issued by affiliated analysts and find similar results. As will be explained in the next section, there is no reason to believe that there is any less potential for conflict of interest in the M&A context than in the equity underwriting context. Therefore, these results indicate that the association between analyst optimism and underwriting relationships found in previous studies is due mainly to selection bias rather than conflict of interest. We must stress that our research does not rule out the existence of conflict of interest. It is possible, given our results, that a conflict of interest exists, but regulations already in place prevent it from tainting analyst forecasts and recommendations.

Section 2 explains in detail the advantages of studying analyst objectivity in the M&A context and describes how the case of M&A relationships allows us to distinguish between the selection bias and conflict of interest explanations of the relative optimism of analysts affiliated with investment banks. Section 3 describes our data and presents descriptive statistics and preliminary analysis based on such statistics. Section 4 describes our ordinary least squares analysis of EPS and growth forecasts and presents the results. Section 5 describes our ordered logit analysis of recommendations and presents the results. Section 6 concludes.

2. M&A Context to Study Analyst Objectivity: Development of Competing Hypotheses

In this section we discuss in detail four topics to which we alluded above. First, we discuss how the M&A context allows us to design more powerful tests. Second, we explain how the potential for conflict of interest is just as strong, if not stronger in the M&A context than in the equity underwriting context. Third, we demonstrate how much more pervasive M&A advisory activity is relative to equity underwriting. Finally, we show that the M&A context allows us to distinguish between competing hypotheses.

2.1 More Powerful Tests

Previous research suggests that analysts optimistically bias their research to generate equity underwriting business (eg. Michaely and Womack, 1999). There are reasons specific to the M&A context that would cause managers to want optimistic coverage of their own firm and, in some cases, pessimistic coverage of the counterparty's firm. If optimistic (pessimistic) coverage tends to positively (negatively) influence the stock price, favorable coverage of the acquirer around the time of a stock deal would tend to make the terms of the deal better for the acquirer. Pessimistic coverage of the acquirer before the transaction is complete would make the terms better for a target in a stock deal, since target shareholders want to get as many acquirer shares as possible. Similarly, optimistic coverage of the target firm would be good for target shareholders but bad for acquiring shareholders in both cash and stock deals. Therefore, if analysts bias their reports to please M&A clients, in some instances their reports will be optimistic, and in other instances they will be pessimistic, depending on which advisor the analyst is working for, whose stock he is covering, and the type of deal. This greater variety of predicted biases allows us to design more powerful tests in the M&A context than in the equity underwriting context.

2.2 The Potential for Conflict of Interest: a Comparison of the M&A and Equity Underwriting Contexts.

Stock issuances, which generate underwriting revenue, are a rare event in the life of a firm; the vast majority of firms only have one, and very few have more than two. By contrast many firms make multiple acquisitions in their lifetime, and at any given time the probability of being acquired is high for a large number of firms. The volume of M&A activity is an order of magnitude higher than equity underwriting. For instance, in 1999, one of the biggest equity issuance years in history, our analysis of the SDC equity issuance database shows that public equity offerings in which an investment bank was hired raised just under $200 billion in aggregate proceeds. By contrast, in 1999 the aggregate transaction value of M&A deals in which at least one investment bank was hired as an advisor exceeded $1.8 trillion.

Not only are M&A transactions far more pervasive than equity issuances, M&A fees in aggregate are still just as important if not more important to investment banking firms than are equity underwriting fees. According to Freeman & Co. estimates, and as illustrated in figure 1, in every year since 1994, M&A fees in the US have been at least as large as equity underwriting fees, and in recent years significantly larger. Since M&A fee revenues are just as important to the investment banking business as are underwriting revenues it would be highly unlikely that managers would use the promise of equity underwriting fees and not M&A fees to coax investment banks into providing favorable desired analyst coverage. Since M&A transactions occur with greater frequency, the promise of M&A business would give managers of acquiring firms even more leverage since such a promise would mean repeat business for the investment bank, rather than a one-time equity underwriting fee. Furthermore, there is no reason why profit-

maximizing investment banks that pressure analysts to provide desired coverage in order to obtain underwriting business would not do the same in order to obtain M&A business.[3]

As counter-argument, one might argue that analysts are involved in the equity issuance process but are kept out of the M&A process. Hence analysts find out about equity deals earlier than M&A deals, about which they only officially learn after the public announcement. Hence analysts have a greater opportunity to compromise their objectivity in the equity issuance context than in the M&A context. Conversations with practitioners and personal experience in the investment banking industry on the part of one of the authors, however, reveal that this argument has little validity.[4] Analysts are typically brought on board equity deals late in the process, just before the deals are made public, and hence they do not learn about them much earlier than the public, at least officially. Furthermore, SEC regulations prohibit analysts from reporting on client firms from the time they have been brought on board an equity deal until the end of the SEC-mandated "quiet period" 25 days after the deal.[5] Hence there is no more opportunity for analysts to bias their forecasts and recommendations in equity deals than in M&A deals. In fact, there may be a greater opportunity to do so in the M&A context since there are no regulations or internal policies prohibiting analysts affiliated with M&A advisors from

3 There may be institutional reasons why investment banks may pressure analysts to generate underwriting business but not M&A business. For instance, the M&A and research departments may not be linked in the same manner as the underwriting and research departments, so the structure of the institution may not allow for analysts to be rewarded for generating M&A revenue as for underwriting revenue, even though such rewards would be profit-maximizing. We ignore such questions here, leaving them for future research.

4 We are greatful to Kevin Rock for his elucidation of the institutional deatails. Adam Kolasinski worked in the investment banking division of Wasserstein Perrella & Co. from 1998-1999.

5 See SEC rule 174 of the Securities Act of 1933 and the 1988 revision of rule 174.

issuing reports on client or counterparty firms at any time.[6] The New York State Attorney General considers potential for conflict of interest problems generated by M&A relationships strong enough that the state's settlement with Merrill Lynch requires analysts to disclose in their reports M&A relationships as well as equity underwriting relationships.[7]

2.3 The Pervasiveness of M&A Activity

Analyst bias in the M&A context is even more important from the standpoint of public policy. The proportion of firms undergoing or likely to undergo an equity issue at any given point in time is small relative to the total number of public firms. Using the CRSP and SDC databases, we calculate that in 1999, one of the biggest equity issuance years in history, the year-end aggregate market capitalization of US firms undergoing at least one equity offering was $2.25 trillion, which, while not an inconsiderable number, was only 13% of the value of aggregate US equity market capitalization.[8] By contrast, the total 1999 year-end aggregate market value of public firms which engaged in an M&A transaction in which an advisor was hired was $9.21 trillion, or 55% of aggregate US market capitalization.[9] Figure 2 plots the historical share of aggregate US equity market capitalization represented by firms undergoing equity offerings and M&A

6 Investment banks almost universally have compliance policies that restrict analysts' direct communications with M&A client firms, but lack of such communications do not stop them from issuing reports about M&A clients.

7 John Goff, "Wall? What Chinese Wall?" *CFO.com,* April 22, 2002.

8 Year-end market capitalizations obtained from CRSP. If a year-end market capitalization was not available, the market-capitalization on the last trading day of the year was used.

9 Year-end market capitalizations obtained from CRSP. If a year-end market capitalization was not available, the market-capitalization on the last trading day of the year was used.

transactions. If M&A relationships taint analyst forecasts and recommendations, there would potentially exist a policy problem of massive proportions.

2.4 Distinguishing Between Competing Hypotheses

As discussed in the introduction, the association between analyst optimism and underwriting relationships found in previous research is consistent with both the conflict of interest hypothesis and the selection bias hypothesis. In this subsection, we note how all previous research has failed to distinguish between these two hypotheses, discuss in detail how each may or may not be valid in the M&A context, and demonstrate how, in some circumstances, the two hypotheses make different predictions in the M&A context.

2.4.1 Inability of Previous Research to Distinguish Between Competing Hypotheses

To date, no research that compares the forecasts and recommendations of affiliated analysts with those of unaffiliated analysts has managed to empirically distinguish between these two hypotheses. With most papers the inability to distinguish between hypotheses is obvious, and we shall not discuss them in detail here. There are, however, two papers whose research design seems to distinguish between these hypotheses. Below we explain why they do not.

Lin, McNichols, and O'Brien (2003), henceforth "LMO," claim that their finding that affiliated analysts are slower to downgrade client firms in response to bad news constitutes evidence in favor of the conflict of interest hypothesis and cannot be explained by the selection bias hypothesis. We disagree. An analyst who is optimistic about a firm's prospects is likely to give less weight to bad news, and hence would be

slower to downgrade a firm. Thus LMO's cannot rule out selection bias as an explanation for their results.

To justify their claim, LMO state, "To incorporate our evidence into the underwriter selection story, one must assume that managers choose underwriters both on their observable optimism and on the unobservable strength of their beliefs." We believe this argument to be flawed for two reasons. First, it is likely that an analyst's observable optimism and the strength of his beliefs are correlated, especially for IPO firms, about which there is little data other than *a priori* beliefs upon which to base an assessment. Second, there is no reason to rule out the possibility that managers do select underwriters based on the strength of beliefs. Managers of issuing firms typically meet in person with the analysts employed by prospective issuers, at which point they have every opportunity to ascertain the strength of their beliefs.

Bradshaw, Richardson, and Sloan (2003) conduct a study in which the selection bias hypothesis mentioned is a less compelling competing explanation to their results which, at first glance, seem to support the conflict of interest hypothesis. Their results do not support the conflict of interest hypothesis, however, because there exists yet another competing hypothesis involving another type of selection bias, which can explain their findings.

Instead of comparing the forecasts and recommendations of affiliated and unaffiliated analysts, Bradshaw, Richardson, and Sloan (BRS) compare the consensus forecasts and recommendations of firms that are net issuers of securities with firms that are not and find that the former are more optimistic than the latter. Since many investment banks may be competing for the financing business of a given firm, BRS

argue that conflict of interest bias may be present in the reports of unaffiliated analysts as such analysts may bias their forecasts in an attempt to help their employers win investment banking business, even though they ultimately fail. Thus BRS construe their finding of more optimistic consensus forecasts and recommendations of analysts reporting on firms that are about to issue or have just issued securities as evidence in favor or the conflict of interest hypothesis. The selection bias hypothesis as outlined above is a less compelling explanation of these results because the reports of analysts whose employers were not selected as underwriters are included in the consensus. It is important to note, however, that this methodology only reduces and does not eliminate the selection bias effect since affiliated analysts' reports are also part of the consensus, which for most firms includes no more than two or three analysts.

The BRS methodology introduces another type of selection bias. McNichols and O'Brien (1997) find that those analysts who are less optimistic about a firm are less likely to cover it. Thus the distribution of analyst forecasts and recommendations is censored on the left, thereby making it appear that analysts on average are optimistically biased. It is reasonable to conjecture that this phenomenon, henceforth the "self-selection phenomenon," is less pronounced for larger, better-established firms. Analysts less optimistic about a given firm may be more likely to cover it if it is larger and better established. Firms issuing equity tend to be smaller, and less well established, so finding greater optimism in analyst reports on firms issuing equity could be a result of the self-selection phenomenon rather than conflict of interest. The self-selection phenomenon, coupled with major statistical biases inherent to BRS's methodology, makes it drawing

any conclusions about the validity of the conflict of hypothesis from their results problematic.[10]

2.4.2 Conflict of Interest in the M&A Context

Since mangers like optimistic analyst coverage of their firms, the conflict of interest hypothesis would predict analysts affiliated with acquirer advisors, in both cash and stock deals, would tend to be optimistic about acquirer stock. If analysts can be swayed by investment banking business, the promise of repeat buy-side M&A business would seem to be an effective means for managers to obtain optimistic coverage, since many firms make multiple acquisitions during their lifetimes. Since the managers of acquiring firms seek to purchase the target at as low a price as possible, the conflict of interest hypothesis also predicts that analysts affiliated with the acquirer advisor, in both cash and stock deals, would tend to be pessimistic about target stock.

Since target managers want to obtain as high a price as possible, the conflict of interest hypothesis predicts that analysts affiliated with target advisors, in both cash and stock deals, will be optimistic about the target. In cash deals, the acquirer's stock is irrelevant to the target managers & shareholders, so the conflict of interest hypothesis predicts neither optimism nor pessimism on the part of target-affiliated analysts reporting on acquirer stock. In stock deals, however, target shareholders and managers do have an interest in acquirer stock. Since they will want as many acquirer shares exchanged for

10 BRS introduce statistical biases in their calculation of the optimism of analyst long-term EPS growth forecasts. First, in calculating the benchmark long-term growth rate used to estimate analyst optimism, they implicitly assume that analyst growth forecasts are continuously compounding rates. If analyst forecasts are of an annually compounding rate, a more reasonable assumption, BRS severely underestimate the benchmark rate and hence overestimate analyst optimism. Further, this overestimate is higher for high-growth firms, i.e., those more likely to issue securities, than low growth firms. Second, they calculate the benchmark long-term growth rate by using a log transformation of EPS, which also causes them to overestimate analyst optimism, and this overestimate is also higher for high-growth firms. Together, these biases can explain much of their results related to long-term growth forecasts.

target shares as possible, before the transaction they will want pessimistic coverage of the acquirer. Since immediately after the transaction target shareholders and managers become acquirer shareholders, they will want optimistic coverage of the acquirer. Hence in stock deals, the conflict of interest hypothesis predicts pessimism before the transaction and optimism after the transaction on the part of target-affiliated analysts reporting on the acquirer. Since the target no longer exists after the transaction, and hence cannot offer any repeat business to the target advisor, one might argue that the target advisor has no incentive to pressure its analyst into favorable coverage of the acquirer after the transaction. However, if target shareholders like positive analyst coverage of acquirer stock after a stock transaction, and a target advisor makes it a policy to provide such coverage, it will be more likely to be selected as an advisor by other targets in the future.

2.4.3 Selection Bias in the M&A Context

To understand how selection bias may work in the M&A context, it is necessary to outline the duties of M&A advisors and the various regulations involved. Our discussion here is based on conversations with practitioners and the personal experience of one of the authors. Target and acquirer advisors are typically hired some time before the transaction is announced. In most friendly deals, negotiations between target and acquirer begin before the transaction announcement as well. The target advisor's job is to get as high a price for target stock as possible, and in a stock deal it also involves making a case for as low a valuation of acquirer stock as possible. The lower the valuation of acquirer stock, the greater the number of acquirer shares exchanged for target shares. The acquirer advisor's job is the opposite: to argue for as low a valuation

as possible for the target stock, and in a stock deal to also argue for as high a valuation as possible for the acquirer stock. Both acquirer and target advisors typically must also convince their clients' boards that the terms of the deal are satisfactory. Analysts affiliated with either advisor are free to issue reports on both target and acquirer stock so long as they are kept out of the M&A process and given no inside information. These conditions are nearly always met.

To the extent that the opinion of an analyst in an advisor's employ affects the latter's ability to make the case for a low or high valuation of a given stock, and hence the advisor's execution ability, one would expect analyst opinion to influence a prospective M&A client's choice of advisor. Hence selection bias predicts that target advisor-affiliated analysts would tend to be optimistic about target stock. By a similar argument, selection bias predicts that an acquirer advisor in a stock deal would tend to have optimistic analysts in his employ. However, the selection bias hypothesis predicts that acquirer advisor-affiliated analysts will be neither pessimistic nor optimistic since in cash deals the acquirer stock is irrelevant. If employing an analyst pessimistic about the target makes it easier for the acquirer advisor to argue for a low target valuation, the selection bias hypothesis predicts that analysts affiliated with acquirer advisors will be pessimistic about target stock. Finally, in stock deals, the target advisor must make the case for a low acquirer valuation, so selection bias predicts that analysts affiliated with target advisors will tend to be pessimistic about the acquirer in stock deals. In cash deals, the acquirer's stock is irrelevant, so the hypothesis makes no predictions of target advisor-affiliated analyst pessimism or optimism about acquirer stock.

In addition, there seems to be less of a reason for selection bias in M&A relationships than in equity underwriting relationships. Legally, investment banks are obliged to keep their research activity separate from their M&A and underwriting activity. This institutional separation is often referred to as the "Chinese Wall." If an analyst in some way becomes involved in an M&A or underwriting transaction, he is prohibited from writing reports about parties to the transaction while involved in it and for a period afterward. In nearly every equity underwriting deal, analysts are "brought over the wall" and heavily involved. Their participation in the underwriter's sales pitch to the public is essential to the success of the deal. Krigman, Shaw, and Womack (2001) find that the promise of quality analyst coverage heavily influences underwriter choice. Since the analyst is so heavily involved in selling the deal, it seems that an underwriter with more optimistic analysts will be better able to execute a stock issuance, and hence selection bias should be significant in the underwriting context.

In the case of M&A transactions, however, analysts are seldom if ever "brought over the wall." Since the analyst is not in any way involved in the M&A advisor's attempts to make the case for a low or high valuation of an acquirer's or target's stock, it does not seem likely that the analyst opinion has a large effect on the advisor's ability to make such a case. Furthermore, the case for a low or high valuation typically has to be made to a board, and not the public, but boards have inside information about all firms involved that no analyst has access to, so it seems unlikely that boards would be influenced by analyst opinion. Of course, the board does eventually have to make the case for the deal to the public, which is influenced by analyst opinion, so some potential

for selection bias, albeit more muted than in the underwriting context, still exists in the M&A context.

4.2.4 Where the Two Hypotheses Make Different Predictions

As we have seen, the conflict of interest hypothesis predicts that acquirer advisor-affiliated analysts will be optimistic, but the selection bias hypothesis predicts neither optimism nor pessimism. Before a stock transaction, both hypotheses predict target advisor-affiliated analysts will be pessimistic about acquirer stock, but after the transaction the conflict of interest hypothesis predicts optimism and the selection bias hypothesis predicts pessimism. By examining the whether analysts are optimistic or pessimistic in these scenarios, we can help distinguish between the hypotheses. Tables 1 presents all the different scenarios and what one might predict about analyst optimism or pessimism under the conflict of interest and selection bias hypotheses.

3. Data and Descriptive Statistics

We obtain M&A transaction data from SDC for years 1993 to 2001. We exclude from our sample buybacks, acquisitions of partial interest, recapitalizations, spin-offs, split offs, exchange offers, and acquisitions of remaining interest because analyst incentives in such deals are unclear. Thus our sample consists solely of statutory mergers, acquisitions of assets, and acquisitions of certain assets.[11] We also limit the sample to deals in which either the target or acquirer or both are public, as deals for which fee information is available, and deals which are completed. The number of deals

11 To implement our sample selection, include only SDC deals in which the field "form of deal" is labeled as 'AA', 'AC', or 'M.' These labels correspond to "acquisition of assets," "acquisition of certain assets," and "statutory merger", respectively. This method of sample selection is the same as excluding deals whose "form of deal" field is labeled 'A', 'AR', 'AP', 'R', 'B', and 'EO,' which correspond to spin-offs, acquisitions of remaining interest, acquisitions of partial interest, recapitalizations, buybacks, and exchange offers.

comes to 2,922. In 1,713 of these deals the acquirer paid more than 50% of the acquisition price in stock. In 1,201 the acquirer paid 50% or more in cash or other non-stock currency (usually assumed debt). In 18 deals no information was provided on currency. 44 of the deals were acquisitions of assts, 2887 were statutory mergers, and 1 was an acquisition of certain assets.

From I/B/E/S we obtain all available 1YR and 2YR-ahead EPS forecasts, long-term growth forecasts, and recommendations for all acquirers, targets, and their immediate and ultimate parents (as defined by SDC) published within one year of each transaction in our sample. We restrict our attention to the above forecasts because they are widely available for nearly every firm in our sample. Forecasts for horizons longer than 2 years are available for very few firms. In addition we obtain from I/B/E/S the closing price and shares outstanding of the stock on the last trading day of the calendar month in which the forecast was published. If a price for this day is not available, we take the closing price on the day closet to it, provided it is within 30 days. Table 2 presents descriptive statistics on the transaction values of the deals for which at least one I/B/E/S forecast or recommendation is available.

Next we determine the affiliation of each analyst who issued a forecast or recommendation in our sample. This task is not complicated in principle because SDC lists all M&A advisors retained on a deal, and I/B/E/S provides the name of the securities firm, which it calls the "broker," employing each analyst issuing a forecast or recommendation. Unfortunately, the SDC codes for M&A advisors and I/B/E/S codes for brokers are different, and there is no mapping between the two coding systems. Hence we must individually match I/B/E/S brokers and SDC advisors by hand using their

corporate names. In many instances, the names in the two databases are qualitatively the same and can be matched by sight.

In many other instances, however, the broker listed in the I/B/E/S database may be a subsidiary of an advisor in the SDC database, or vice-versa, and the names of the broker and advisor bear no similarities. In some instances, the SDC advisor and I/B/E/S broker are subsidiaries, with completely different names, of the same parent company. To check of such affiliations, we look up each I/B/E/S broker in Hoovers Online, the Directory of Corporate Affiliations, as well as Lexus-Nexus and corporate webpages to see if it has subsidiary-parent or common parent affiliations with one of the SDC advisors in our sample. We also look up each SDC advisor in our sample. Through this method, we are able to detect subsidiary-parent and common parent affiliations that continue until the present. Unfortunately, we have no way of detecting affiliations that were terminated in the past, unless there were a news stories about them. Still, since our sample begins only in 1993, this problem should not create too much concern.

In all of our tests, we seek to determine whether forecasts and recommendations issued by analysts affiliated with M&A advisors ("affiliated analysts") are optimistic or pessimistic relative to consensus. Because we do not want any forecast in our consensus to be contaminated by M&A affiliation, we exclude from consensus any forecasts or recommendations issued by analysts affiliated with an M&A advisor that was retained within one year of the forecast date by either the firm whose EPS is being forecasted or stock is being recommended or the counterparty to the M&A transaction.

Recent research indicates that herding behavior may be economically significant. Scharfstein and Stein (1990) initiated the herding literature with their model of firm

manager herding, which Trueman (1994) applies to analysts. Hong and Kubik (2000) as well as Welch (2000) find evidence that analysts do indeed exhibit herding behavior. Hence to make sure that herding by unaffiliated analysts does not taint our estimate of the unaffiliated consensus, we exclude from our consensus estimate any forecast or recommendation issued after the one issued by the affiliated analyst. In the case of forecasts, to calculate the consensus, we average all the unaffiliated forecasts and/or recommendations for a given firm issued within a calendar month and before the affiliated analyst's. We then calculate the difference between the affiliated analyst's forecast or recommendation and the consensus. In the case of EPS forecasts, we normalize the difference by the closing price as of the end of the month. If there is no closing price for the last trading day of the month, we use the closing price on the day closest to the last trading day for which one is available, provided this day is less than 30 days away from the last trading day. We also calculate each unaffiliated analyst's deviation from consensus in the same manner, except we define consensus in this case as the average of all other unaffiliated analysts' recommendations or forecasts.

Table 3 presents the scaled average deviation from consensus of affiliated analyst one-year-ahead EPS forecasts, 2-year ahead EPS forecasts, as well as absolute deviation from consensus of long-term growth forcasts and recommendations. The data are sorted by the currency use in the deal, analyst affiliation, the target or acquirer status of the firm upon which analyst is reporting, as well as whether the report was issued before or after the M&A transaction. We classify as stock deals those in which 50% or more of the consideration was paid in stock, and others we classify as cash.

The evidence in the table shows there to be little, if any, association between analyst affiliation in and relative optimism in forecasts. In nearly all cases, the mean optimism of affiliated analysts is statistically indistinguishable from zero. In those few cases where the mean is statistically significant, the sign is usually contrary to that predicted by the conflict of interest hypothesis. In the case of recommendations, the deviation from consensus is significant in the direction of the conflict of interest hypothesis in 5 out of 16 instances, but in none of those instances is it economically significant as the deviation is always less than 0.3 percentage points. Hence this analysis gives us very little, if any, evidence in favor of the conflict of interest hypothesis.

Thus far, we find little evidence of an association between M&A relationships and analyst optimism or pessimism relative to consensus. While the analysis of mean optimism/pessimism is instructive, it fails to take into account the numerous factors, such as investment banking fees, which might affect the degree to which an M&A relationship will affect analyst objectivity. It also has the limitation of treating all variables in a binary fashion. For instance, we either classify a deal as a cash deal or stock deal, yet in many deals the acquirer pays for the target with some combination of stock and cash. In the next section we will use regression analysis in order to address such issues.

4. Ordinary Least Squares Analysis of Forecasts

In this section we use regression analysis to determine whether there is an association between M&A relationships and the relative optimism of EPS and long-term growth forecasts of analysts affiliated with M&A advisors.

For each forecast or recommendation, let D_a equal 1 if the analyst is affiliated with the acquirer and zero otherwise. Likewise, let D_t equal 1 if the analyst is affiliated

with the target and zero otherwise. Finally, let A equal 1 if it is the acquirer's EPS or growth that is being forecast or recommended, respectively, and 0 if it is the target's. Since our hypotheses depend on both whose EPS or growth is being forecast or recommended as well as the affiliation of the analyst, it is useful to define the following row vector, **V**, of interaction terms:

$$\mathbf{V} = < AD_t, (1\text{-}A)D_t, AD_a, (1\text{-}A)D_a >$$

To see how investment banking fees affect analyst forecasts, we run the following regression for EPS and long-term growth forecasts:

$$O = \alpha + AF_a b_1 + (1\text{-}A)F_a b_2 + AF_t b_3 + (1\text{-}A)F_t b_4 + (365\text{-}d)\mathbf{Va} + L\mathbf{Vb} + M\mathbf{Vc} + N\mathbf{Vc} + e \quad \text{(Model 1)}$$

where O is the analyst's relative optimism, defined as the analyst's forecast less the consensus forecast. In the case of EPS forecasts, we normalize this difference by the month-end stock price. F_t is the dollar amount of fees paid to the analyst's employer by the target. F_a is the dollar amount of fees paid to the analyst's employer by the acquirer. b_1, b_2, b_3, and b_4 are regression coefficients. We interact the fee variables with A and 1-A because, based on our hypotheses, we make predictions according to who is paying fees as well as whose EPS or long-term growth is being forecast. For instance, it follows from both the conflict of interest and selection bias hypotheses that analysts receiving fees from the acquirer should be more optimistic about acquirer EPS or growth, and therefore we would predict that b_1 would be positive based on these hypotheses. Likewise, based on these hypotheses, we would predict b_4 to be positive, b_2 to be negative, and the predicted sign on b_3 is ambiguous.

a, **b**, **c**, and **d** are column vectors of regression coefficients corresponding to the interactions of **V** with our control variables, which we shall now describe. d is the

absolute number of days between the transaction and the date on which the analyst forecast was issued. We include (365-*d*) interacted with **V** as a control because affiliated analyst forecasts, if they are biased, are more likely to be biased closer to the transaction date. L is the length of the analysts career, that is, the difference in years between the date of the forecast or recommendation date in our sample and the date of the analyst's first ever forecast or recommendation recorded in the I/B/E/S database. We include L because recent research shows that more experienced analysts are more likely to deviate from consensus (Hong, Kubik, and Solomon, 2000). M is the market capitalization of the firm as of the end of the calendar month. We include it because uncertainty about future earnings is likely lower or larger firms. Finally, N is the number of analysts following the company, measured as the total number of analysts who issued at least one forecast within the same quarter. We include N because a greater number of analysts increases the likelihood of herding and therefore lessens dispersion in analyst forecasts. We interact all our control variables with **V** because they influence the variance, rather than the mean of the distribution of analyst forecasts. Thus these control variables are only going to affect the expected value of a given analyst's deviation from the consensus (or mean) if we already have a prior as to whether his forecast is likely to be greater or smaller than consensus. In our analysis, our priors are based on affiliation as well as which firm's EPS or growth is being estimated, so we interact our variance-affecting control variables with **V**.

In order to estimate model 1, we take the Cartesian product of every analyst forecast with every M&A transaction in our database to which a firm whose EPS or growth is being forecast was a party. Thus we obtain as observations every forecast-

transaction pair possible. Note that the same forecast may appear in multiple observations since some firms engage in multiple M&A transactions during the course of a year. We only include in our sample EPS or growth forecasts or recommendations of targets and acquirers, excluding their parents. We exclude from consensus, however, forecasts and recommendations of analysts who are affiliated with the parent of a company that is being reported on.

In order to ensure that cross-sectional error correlation does not bias our standard error estimates, we estimate model 1 using quarterly Fama-MacBeth ordinary least squares regressions. The following describes this procedure in detail. First we sort the data by calendar quarter and estimate the parameters for each quarter using ordinary least squares. We then compute parameter estimates for the whole sample by computing the sample means of the quarterly estimates, weighted by the number of observations in each quarter. We also compute standard error estimates and p-values using this quarterly time-series of parameter estimates, also weighting by number of observations in each quarter.

Our estimates of the parameters of model 1 can be found in Table 4, in the columns labeled "model 1." Also shown are standard errors and p-values. In casees where the conflict of interest hypothesis provides a prediction for the sign of a coefficient, the p-values are one-sided. None of the coefficient estimates in the "model 1" columns of the table is statistically significant in the predicted direction, even at the 10% level. Thus, based on our results for model 1, we cannot reject the null hypothesis that there is no relationship between analyst optimism and investment baking fees. Furthermore, as demonstrated by the standard errors, our power to reject this null is high. Where we use analyst optimism in EPS forecasts as the dependent variable, the standard

errors are so small as to be economically negligible. Where we use analyst optimism in long-term growth forecasts as the dependent variable, our standard errors, with one exception, are all less than 1. With a standard error of 1, affiliated analysts' deviation from consensus for every $1 million received in investment banking fees could be as low as 1.2 percentage points, and we would still be able to detect it at the 10% level of significance using a one-sided test. The only coefficient whose standard error estimate is greater than 1 is the coefficient on (1-A)Ft, whose standard error equals 1.63. Even with such a high standard error, however, we could detect an affiliated analyst deviation from consensus as low as 2 percentage points per $1 million in investment banking fees using a one-sided test at the 10% significance level. While such a deviation from consensus is not negligible, is still low compared to most growth forecasts. Hence even for the coefficient with the comparatively large standard error estimate, it appears we have high power to reject the null that affiliated analysts do not deviate from consensus.

The statistical tests based on model 1, while valid tests of the association between investment banking fees and analyst optimism in forecasts, do not discriminate between the conflict of interest and selection bias hypotheses discussed in the previous section. Since we fail to reject the null of no association, however, it does not matter that we fail to distinguish between hypotheses since the result of no association is consistent with neither hypothesis. Still, it is useful to test the hypotheses separately, and for this purpose we develop model 2, which we discuss next.

The type of consideration paid may alter the incentives of affiliated analysts, and thus we use a measure of it to help distinguish between the selection bias and conflict of interest bias hypotheses. We define two interaction terms:

$$I_{tb} = BASF_t$$

$$I_{ta} = (1\text{-}B)ASF_t$$

Where B is a dummy equal to 1 if the forecast was issued before the transaction announcement date and zero otherwise, and S is the percentage of consideration paid for in stock. These two interaction terms seek to measure the association the relative optimism in the target-affiliated analyst's estimate of acquirer EPS between and 1) target fees paid and 2) the percentage of the consideration paid in stock. I_{tb} measures this association when the estimate date falls before the announcement date, I_{ta} measures it when the estimate date falls after the announcement date. As explained in Section 2, under the selection bias hypothesis, analysts affiliated with the target in a stock deal issue pessimistic forecasts of acquirer EPS and growth, so under this hypothesis the coefficient on both these interaction terms should be negative. In Section 2 we also saw that under the conflict of interest hypothesis, analysts affiliated with the target advisor in a stock deal should be optimistic about acquirer EPS and growth, at least after the transaction, so the coefficient on I_{ta} should be positive. If both selection bias and conflict of interest effects are present, the coefficient on I_{tb} should be less than I_{ta}. If conflict of interest hypothesis dominates, the coefficient on I_{tb} should be negative and the coefficient on I_{ta} positive.

Finally, define a third interaction term:

$$I_{ac} = A(1\text{-}S)F_a$$

This interaction term measures the association between the acquirer-affiliated analyst's bias in estimating acquirer EPS and growth and the percentage of consideration paid in a manner other than acquirer stock as well as the fees paid by the acquirer. Recall from Section 2 that there should be no selection bias in forecasts of acquirer EPS issued by

acquirer-affiliated analysts in cash deals. Hence if conflict of interest does not affect analyst objectivity, the coefficient on this term should be zero. If conflict of interest problems exist and managers of acquiring firms reward analysts for favorable coverage with M&A business, it should be positive. Selection bias should not affect the coefficient, for reasons given in section 2. We thus have another regression specification:

$$O = \alpha + b_1 A F_a + b_2 (1-A) F_a + b_3 A F_t + b_4 (1-A) F_t + (365-d)\mathbf{Va} + L\mathbf{Vb} + M\mathbf{Vc} + N\mathbf{Vc} + \\ + g_1 I_{ac} + g_2 I_{tb} + g_3 I_{ta} + e \quad \text{(Model 2)}$$

where g_1 , g_2 , and g_3 are regression coefficients.

As with model 1, we estimate model 2 by running quarterly Fama-McBeth type ordinary least squares regressions. Our estimates of the parameters of model 2 are presented in Table 4 in the columns labeled "model 2," along with standard errors and p-values. P-values are one-sided where the conflict of interest hypothesis predicts the sign of a parameter. None of our estimates is statistically significant at the 10% level or better. Hence we cannot reject the null of no conflict of interest bias. As before, our power to reject is high in most cases. Where optimism in EPS forecasts is the dependent variable, the standard errors are economically negligible.

In the case where optimism in long-term growth forecasts is the dependent variable, the standard errors are low for all coefficient estimates except for those of terms interacting target fees and A, the dummy indicating that the acquirer's growth is being forecast. The high standard error in these cases is driven by the fact that we have four variables interacted with target fees, and these four variables are likely to be highly correlated.

A potential problem with our analysis lies with the possibility that the relationship between affiliated analyst deviation from consensus and investment banking fees may be

nonlinear. In order to test for this possibility, for each year we rank target and acquirer fees and compute fee terciles. We define a variable, t_feerank, which takes the value of the tercile to which the fees received from the target belong. We define a second variable, a_feerank, which takes the value of the tercile to which the fees received from the acquirer belong. a_feerank or t_feerank equal zero if the analyst is unaffiliated with the acquirer or target, respectively. We re-estimate models 1 and 2, substituting a_feerank and t_feerank for F_a and F_t. The results for this specification are qualitatively similar to the results from the linear one, except that the standard are higher, indicating that the linear specification is probably more appropriate. For reasons of brevity, we do not report the results from the non-linear specification. To give the reader a sense of how little difference the magnitude of fees makes, in Figures 3a-3c we report selected descriptive statistics for deviation from consensus EPS and growth forecasts of affiliated analysts within the high and low fee terciles.

5. Ordered Logistic Regression Analysis for Recommendations

In this section we use ordered logistic regression analysis to determine whether M&A relationships affect the relative optimism of analyst recommendations. We use similar specifications to those we used in section 4 to test our hypotheses. Recommendations, however, unlike forecasts, are discrete and ordinal. They are assigned a value of 0 if the analyst issues a strong-sell recommendation and are assigned a value of 4 if the analyst issues a strong buy. Buy, hold, and sell recommendations are assigned values of 3,2, and 1, respectively.

The discrete and ordinal nature of recommendations makes the ordinary least squares regression in which recommendations are the dependent variable an inappropriate

statistical tool, since it will produce biased and inconsistent parameter estimates. Similarly, the discrete and ordinal nature of recommendations makes deviation from consensus a suspect measure of analyst optimism. We therefore use a logistic specification because it is naturally better suited to dealing with discrete dependent variables.

The dependent variable in all of our logistic regressions is the analyst recommendation. In order assure that the estimates of the coefficients on our independent variables are valid measures of those variables' impact on analyst optimism relative to consensus, we also include as independent variables the number of strong buy, buy, hold, sell and strong sell recommendations previously issued by unaffiliated analysts. Let **U** be a vector that contains these 5 variables. The 3 logit models we estimate are described below:

Logit Model	Independent variables
1	**U**
2	**U**, AF_a, (1-A)F_a, AF_t, (1-A)F_t, (365-d)$\boldsymbol{V}$, $L\mathbf{V}$, $M\mathbf{V}$, $N\mathbf{V}$
3	**U**, AF_a, (1-A)F_a, AF_t, (1-A)F_t, (365-d)$\boldsymbol{V}$, $L\mathbf{V}$, $M\mathbf{V}$, $N\mathbf{V}$, I_{ac}, I_{tb}, and I_{ta}

Logit models 2 and 3, in addition to **U**, contain the same independent variables as the OLS model (1) and (2) in Section 4. We include logistic model 1 to estimate the extent to which an analyst's unaffiliated colleagues' recommendations explain his own recommendations, and hence to verify that the inclusion of **U** as an independent variable causes our estimates of other coefficients to be valid measures of the extent to which

other factors influence analyst optimism relative to consensus, rather than absolute optimism.

Unfortunately, we cannot estimate our logistic models using Fama-McBeth type methodology because in some calendar quarters there are too few observations to compute parameter estimates, so we estimate our logistic models using the full panel of data. If error cross-correlations exist in the data, therefore, our standard error estimates will be biased toward zero, making us more likely to erroneously reject the null hypothesis of no conflict or interest. The fact that we still fail to reject the null despite the potential bias, however, only strengthens our results.

The results of our estimates of logistic models 1-3 can be found in Table 5. We report odds ratios estimates along with the standard error of the odds ratio and the p-value. For reasons of spatial parsimony, we do not report results for the control variables, which are available upon request. We estimate the odds ratio standard error using the delta method, and we estimate p-values using the logit parameter estimates and their standard errors, which we do not report since their economic interpretation is not as intuitive as that of the odds ratio. Since the ratio of a logit parameter estimate to its standard error, under reasonable assumptions, is Gaussian, we use a Gaussian, rather than t, CDF to compute p-values.

In all the models, the only statistically significant odds ratios are those corresponding to **U**, the vector of recommendation frequencies of unaffiliated colleagues. All others are not significant at even the 10% level, so we cannot reject the null hypothesis that there is no association between M&A fees and analyst pessimism and/or optimism. As with model 2 in section 4, model 3 in this section allows us to distinguish

between the conflict of interest hypothesis and selection bias hypothesis. We fail to reject the null that neither of these biases is present.

Given the small size of the standard errors, in all the models, our power to reject the null is high. The highest standard error is 4.3%, meaning that if $1 million in investment banking fees were to make analysts at least (approximately) 5.6% more likely to give a higher (or lower) recommendation, we would be able to detect it at the 10% level of significance using a one-sided test. While not negligible, 5.6% is not economically large. Hence our results provide powerful evidence that investment banking fees fail to influence analyst recommendations.

As with our analysis of forecasts, our analysis of recommendations may suffer from the possibility that the relationship between investment banking fees and the probability of an analyst deviating from consensus is non-linear. As with the OLS models in section 4, we re-estimate all the models in this section substituting a_feerank and t_feerank for F_a and F_t, respectively. The results are qualitatively similar, except that the standard errors of the parameter estimates of the new specification are higher. This indicates that the new specification is inferior, so for reasons of brevity we do not report its results. To give the reader a sense of how little difference the magnitude of fees makes, in Figure 3d we report selected descriptive statistics for deviation from the consensus recommendation for affiliated analysts within the high and low fee terciles.

6. Summary and Conclusions

Previous research has documented that analysts affiliated with equity underwriters tend to issue reports on client firms that are more optimistic than the reports issued by unaffiliated analysts. Some researchers claim that these results constitute evidence in

favor of what we call the conflict of interest hypothesis: the hypothesis that affiliated analysts deliberately bias their reports on client firms. There is, however, an alternative hypothesis, which we call the selection bias hypothesis, that can explain these results. It is possible that affiliated analysts are objective, but that underwriters whose analysts are more optimistic about a given firm are more likely to underwrite that firm's equity issuance.

Our finding that there is no association between M&A advisory relationships and analyst optimism or pessimism constitutes strong evidence against the conflict of interest hypothesis; our results suggest that the selection bias hypothesis is the more likely explanation of equity underwriter-affiliated analyst optimism. The incentives analyst face to bias reports on M&A clients are as least as large as those they face to bias reports on equity underwriting clients. M&A fees constitute at least as great a share of investment banking revenues as do underwriting fees, and firms engaging in M&A transactions have no less a reason to want favorable analyst coverage than firms engaging in equity underwriting transactions. Furthermore, as we have demonstrated, selection bias is unlikely to be present in the M&A context. In fact, there are instances in which it is impossible, such as in the case of an analyst affiliated with an acquirer in an all-cash transaction. Thus our finding that M&A fees do not influence analyst forecasts and recommendations constitutes strong evidence that any appearance of underwriting fees doing so is due mainly to selection bias.

Our results, however, do not necessarily indicate that there are no potential conflict of interest problems. As mentioned previously, "Chinese Wall" regulations

restrain communication between investment bankers and analysts, so it is possible that conflicts of interest exist but are being successfully thwarted.

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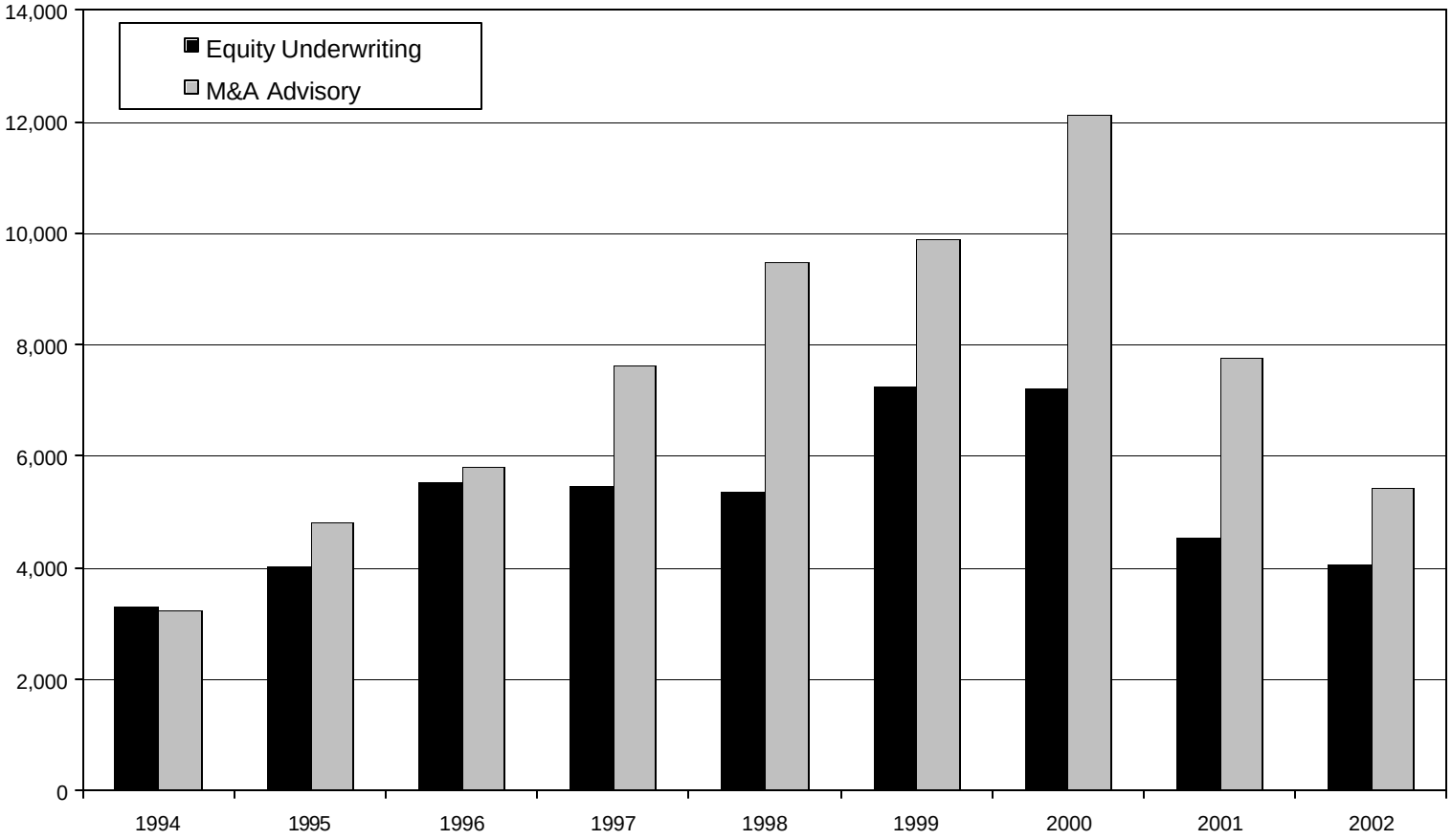
Figure 1: Aggregate US Investment Banking Fee Revenues ($Millions)



Source: Freeman & Co. estimates. Freeman & Co. compiles its estimates using Captial IQ, Bloomberg, Thomson Financial, and SDC

Figure 2: Market Capitalization of Firms Issuing Equity vs. Firms Engaging in M&A Activity as a % of Aggregate Equity Market Capitalization

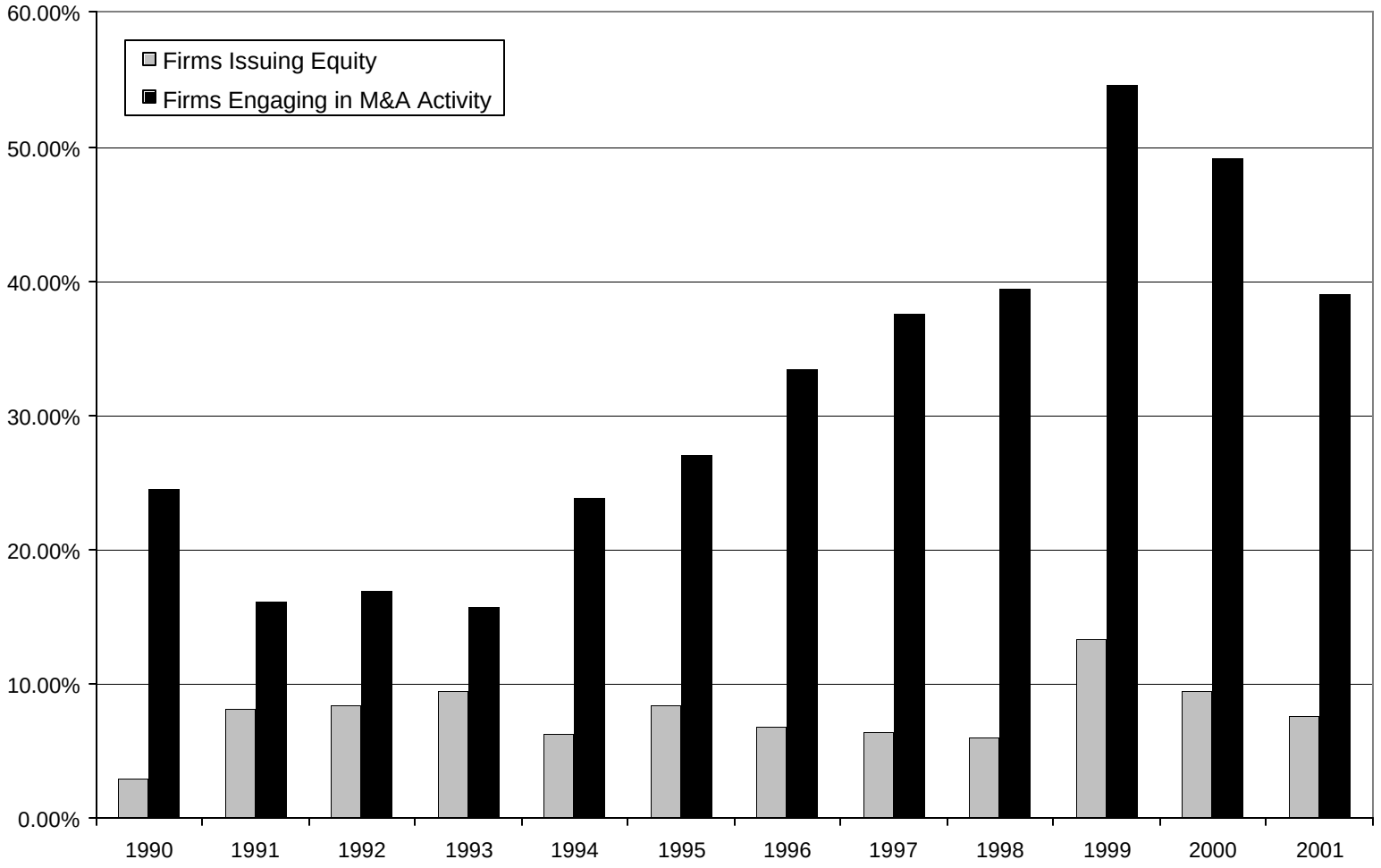


Figure 3a: Deviation From Consensus 1-Year Ahead EPS Forecasts of Affiliated Analysts Paid High and Low Fees

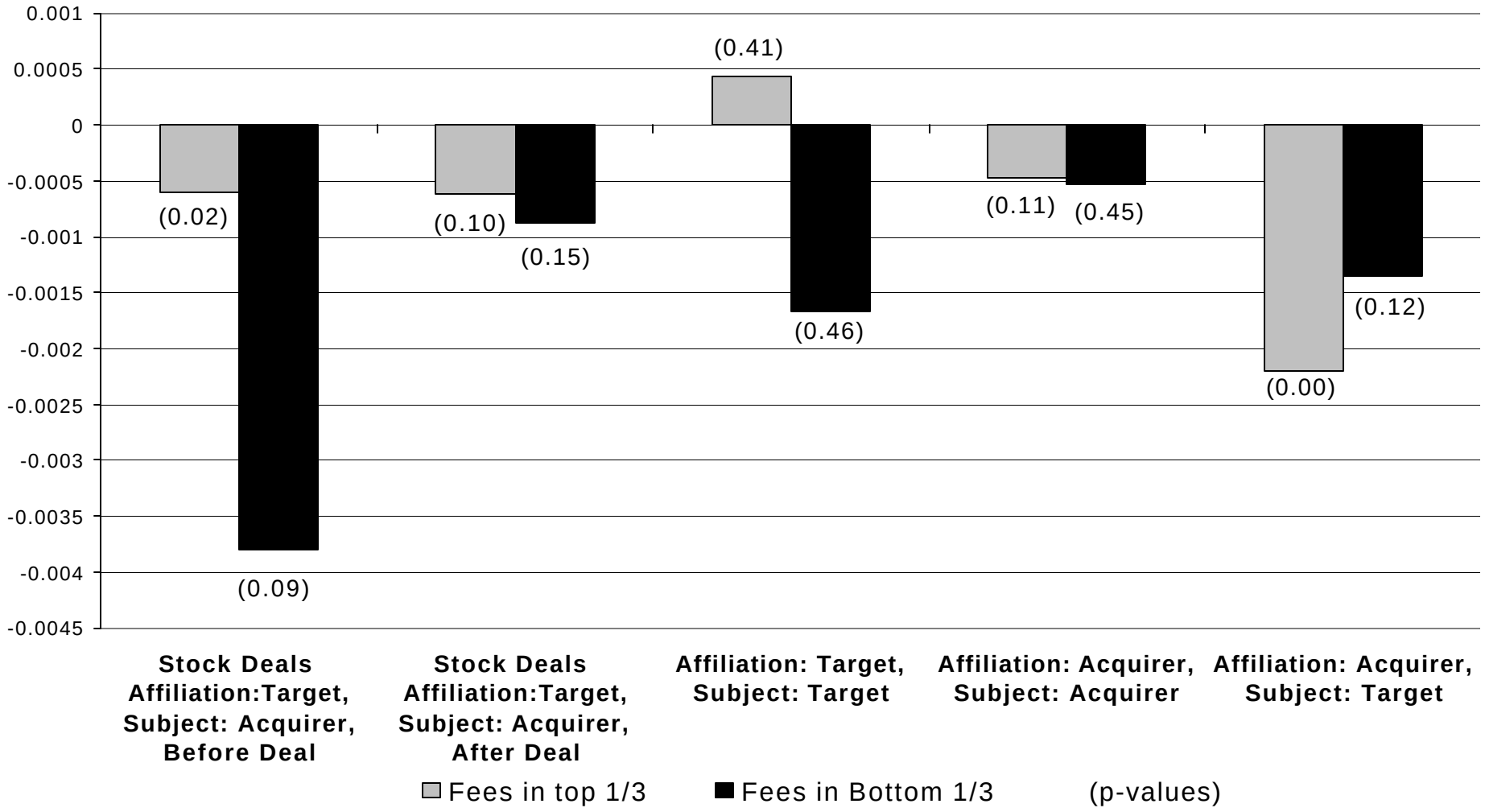


Figure 3b: Deviation From Consensus 2-Year Ahead EPS Forecasts of Affiliated Analysts Paid High and Low Fees

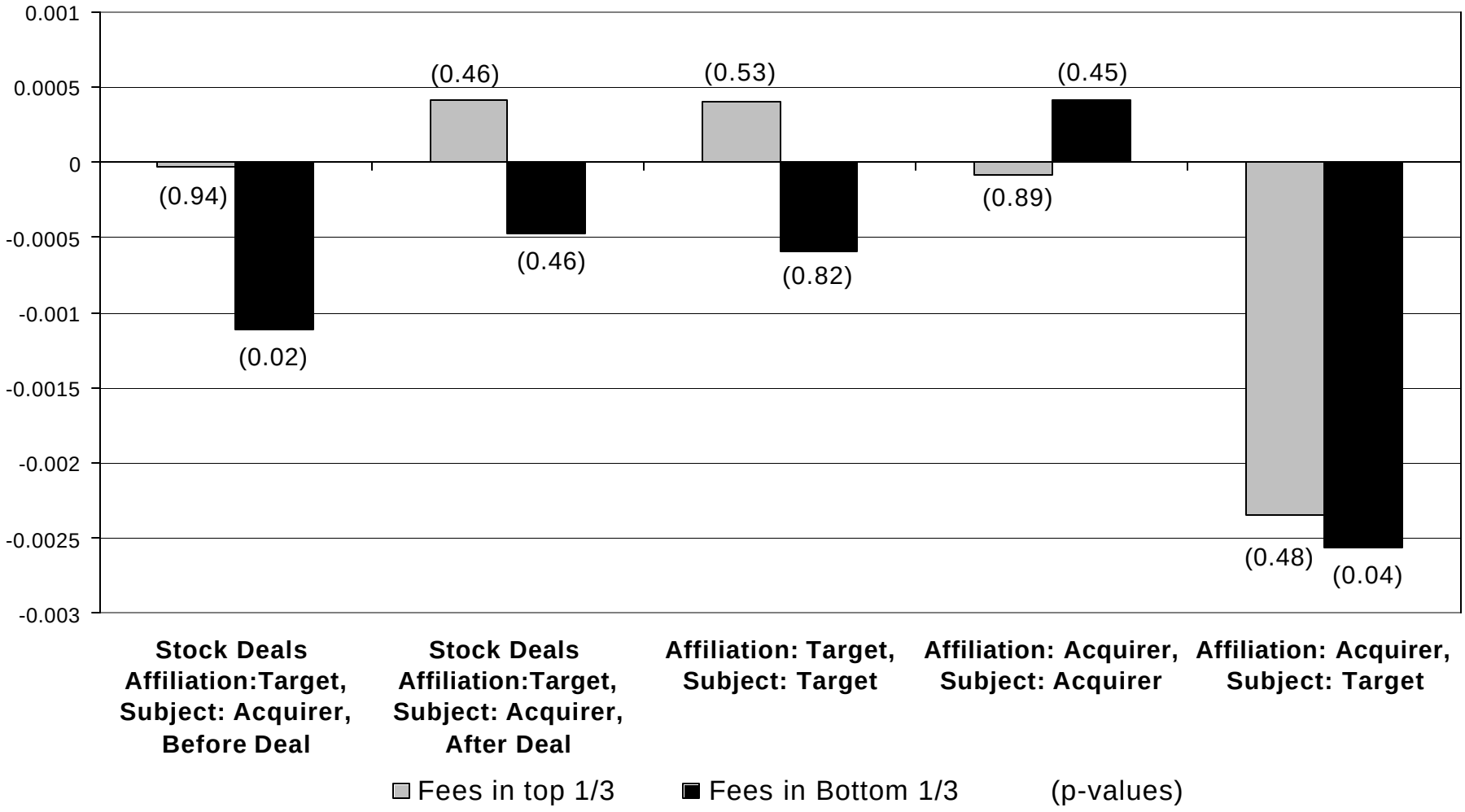


Figure 3c: Deviation From Consensus Long-Term Growth Forecasts of Affiliated Analysts Paid High and Low Fees

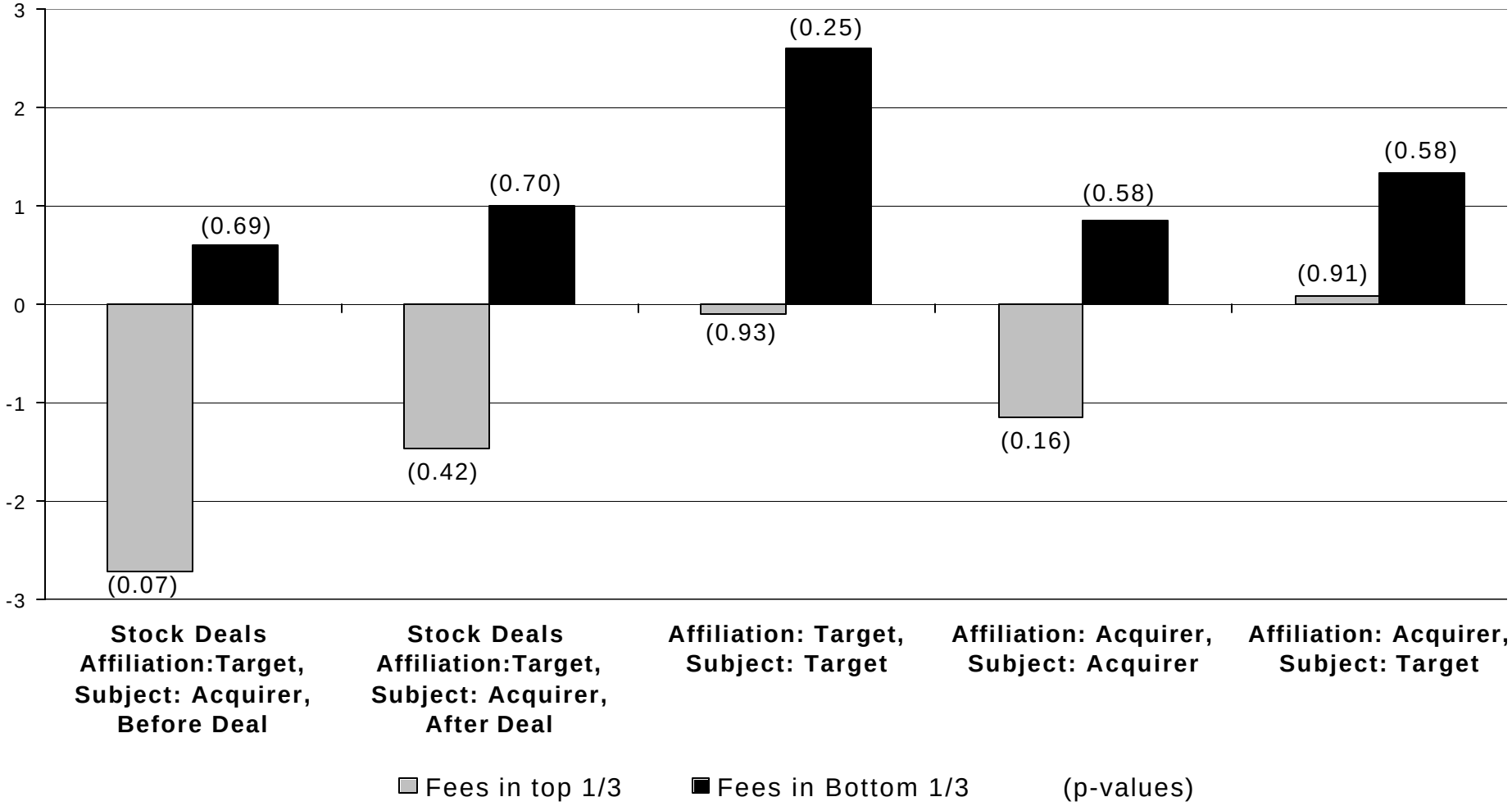


Figure 3d: Deviation From Consensus Recommendation of Affiliated Analysts Paid High an Low Fees

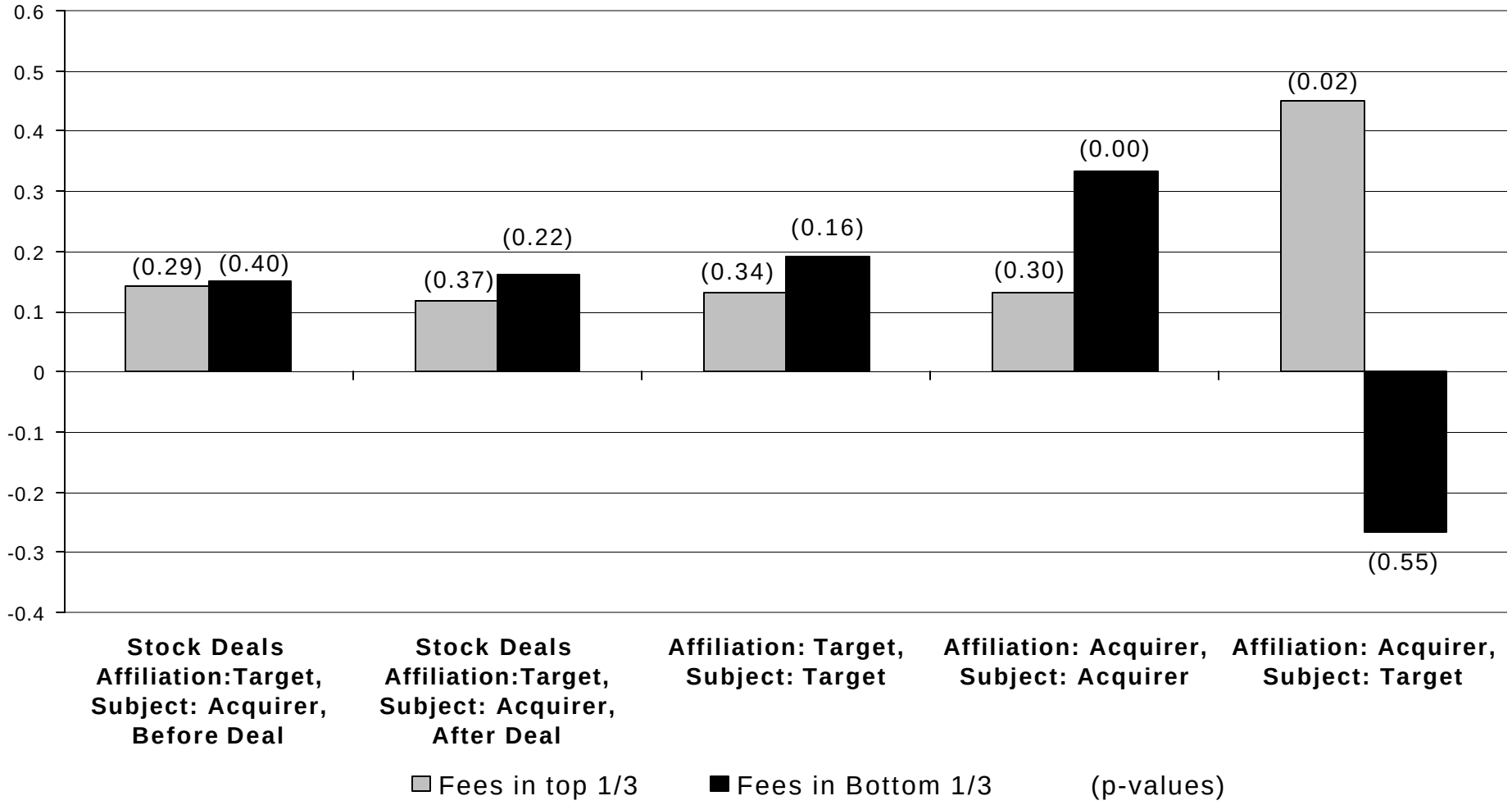


Table 1:
Predictions Under Selection Bias and Conflict of Interest Hypotheses

Panel A: Stock Deal Predictions

Affiliation and Time of Analyst Report (Before or After Transaction)	Subject of Report and Hypothesis			
	Target: Selection Bias	Target: Conflict of Interest	Acquirer: Selection Bias	Acquirer: Conflict of Interest
Target: Before	Positive	Positive	Negative	Negative
Target: After	Positive	Positive	Negative	Positive
Acquirer: Before	Negative	Negative	Positive	Positive
Acquirer: After	Negative	Negative	Positive	Positive

Predictions of Analyst Bias Under the Selection Bias and Conflict Of Interest Hypotheses in Stock Deals. Predictions are sorted by analyst affiliation, whether the reports are on the acquirer or target, and whether the report is issued before or after the transaction.

Panel B: Cash Deal Predictions

Affiliation and Time of Analyst Report (Before or After Transaction)	Subject of Report and Hypothesis			
	Target: Selection Bias	Target: Conflict of Interest	Acquirer: Selection Bias	Acquirer: Conflict of Interest
Target: Before	Positive	Positive	Negative	Negative
Target: After	Positive	Positive	Negative	Negative
Acquirer: Before	Negative	Negative	**No Bias**	Positive
Acquirer: After	Negative	Negative	**No Bias**	Positive

Predictions of Analyst Bias Under the Selection Bias and Conflict Of Interest Hypotheses in Cash Deals. Predictions are sorted by analyst affiliation, whether the reports are on the acquirer or target, and whether the report is issued before or after the transaction.

Table 2: Statistics On Deals

Deals Where Estimates are Available for Target or Acquirer								
Currency	# Deals	Mean Value	Stdev	25%	Median	75%	Min	Max
Cash	900	635	1,417	72	198	613	1	25,065
Stock	1,655	1,617	6,886	64	202	790	2	164,746

Deals Where Estimates are Available for Acquirer								
Currency	# Deals	Mean Value	Stdev	25%	Median	75%	Min	Max
Cash	649	559	1,431	53	164	474	1	25,065
Stock	1,606	1,593	6,934	64	201	768	2	164,746

Deals Where Estimates are Available for Target								
Currency	# Deals	Mean Value	Stdev	25%	Median	75%	Min	Max
Cash	586	888	1,681	155	360	938	12	25,065
Stock	901	2,689	8,842	214	561	1,832	6	164,746

Summary statistics on the aggregate transaction values of all the deals in our database in where information on fees as well as EPS or growth forecasts were available for either the target, acquirer, or the parents of the target or acquirer. Currency for a deal is classified as “stock” if 50% or more of the consideration was paid for in stock and “cash” otherwise.

Table 3:
Descriptive Statistics on Affiliated Analyst Relative Optimism/Pessimism

Panel A: Cash Deals, 1 FY ahead forecast

Analyst Affiliation	Subject of Forecast	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	496	0	0	-0.04%	0.22	-0.16%	0.00%	0.10%	-5.23%	3.70%
Target	Acquirer	After	506	0	0	-0.03%	0.49	-0.20%	0.00%	0.16%	-4.55%	15.33%
Target	Target	Before	425	+	+	-0.05%	0.61	-0.21%	0.00%	0.14%	-18.46%	30.21%
Target	Target	After	15	+	+	0.03%	0.76	-0.24%	0.11%	0.25%	-0.64%	0.62%
Acquirer	Acquirer	Before	598	0	+	-0.07%	0.47	-0.23%	-0.01%	0.15%	-39.08%	21.57%
Acquirer	Acquirer	After	679	0	+	**-0.20%**	**0.01**	-0.29%	-0.04%	0.11%	-43.39%	3.81%
Acquirer	Target	Before	207	-	-	-1.94%	0.25	-0.21%	-0.02%	0.13%	-339.61%	46.47%
Acquirer	Target	After	9	-	-	**0.44%**	**0.06**	0.00%	0.41%	0.45%	-0.22%	1.71%

Panel B: Stock Deals, 1 FY ahead forecast

Analyst Affiliation	Subject of Forecast	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	1034	-	?	**-0.11%**	**0.03**	-0.09%	0.00%	0.07%	-48.74%	3.08%
Target	Acquirer	After	1115	-	+	-0.03%	0.24	-0.14%	0.00%	0.09%	-10.25%	14.46%
Target	Target	Before	726	+	+	0.10%	0.51	-0.19%	0.00%	0.15%	-25.42%	84.75%
Target	Target	After	87	+	+	0.08%	0.63	-0.22%	0.00%	0.23%	-4.40%	12.96%
Acquirer	Acquirer	Before	1129	+	+	-0.03%	0.14	-0.11%	0.00%	0.11%	-5.42%	6.31%
Acquirer	Acquirer	After	1205	+	+	-0.03%	0.25	-0.13%	0.00%	0.11%	-14.03%	8.38%
Acquirer	Target	Before	448	-	-	-0.07%	0.19	-0.19%	-0.01%	0.11%	-16.95%	7.05%
Acquirer	Target	After	72	-	-	0.00%	0.97	-0.10%	0.00%	0.10%	-2.09%	3.83%

Statistics on affiliated analysts' deviation from consensus 1-Year ahead EPS forecasts. Data are segregated by affiliation, whose EPS is being forecast, and whether forecast is issued before or after deal. A deal is a stock deal if 50% or more of the deal value is paid in stock; otherwise it is a cash deal.

Table 3, Continued
Descriptive Statistics on Affiliated Analyst Relative Optimism/Pessimism

Panel C: Cash Deals, 2 FY ahead forecast												
Analyst Affiliation	Subject of Forecast	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	428	0	0	**-0.03%**	**0.51**	-0.30%	0.00%	0.25%	-5.30%	6.67%
Target	Acquirer	After	426	0	0	**-0.13%**	**0.10**	-0.30%	-0.01%	0.24%	-12.95%	7.27%
Target	Target	Before	319	+	+	-0.09%	0.57	-0.32%	0.00%	0.35%	-18.22%	31.43%
Target	Target	After	12	+	+	0.36%	0.40	-0.05%	0.22%	0.78%	-2.67%	3.47%
Acquirer	Acquirer	Before	533	0	+	-0.10%	0.49	-0.24%	0.00%	0.33%	-55.00%	49.74%
Acquirer	Acquirer	After	677	0	+	-0.15%	0.10	-0.29%	-0.06%	0.39%	-47.99%	8.99%
Acquirer	Target	Before	160	-	-	1.06%	0.12	-0.27%	0.03%	0.36%	-5.26%	104.15%
Acquirer	Target	After	3	-	-	0.21%	0.46	-0.25%	0.40%	0.47%	-0.25%	0.47%
Panel D: Stock Deals, 2 FY ahead forecast												
Analyst Affiliation	Subject of Forecast	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	974	-	-	-0.03%	0.27	-0.16%	0.01%	0.17%	-10.78%	8.28%
Target	Acquirer	After	938	-	+	-0.01%	0.81	-0.19%	0.00%	0.20%	-9.43%	15.37%
Target	Target	Before	592	+	+	-0.15%	0.58	-0.24%	0.00%	0.26%	-148.31%	40.68%
Target	Target	After	60	+	+	0.00%	0.99	-0.63%	0.08%	0.61%	-6.19%	6.93%
Acquirer	Acquirer	Before	1039	+	+	-0.03%	0.40	-0.15%	0.01%	0.22%	-13.02%	5.60%
Acquirer	Acquirer	After	1040	+	+	0.04%	0.25	-0.20%	0.00%	0.20%	-8.56%	7.59%
Acquirer	Target	Before	362	-	-	-0.37%	0.11	-0.25%	-0.01%	0.17%	-53.39%	11.86%
Acquirer	Target	After	59	-	-	-0.04%	0.81	-0.53%	-0.16%	0.19%	-2.17%	4.96%

Statistics on affiliated analysts' deviation from consensus 2-Year ahead EPS forecasts. Deviation is defined as affiliated analyst forecast less consensus, scaled by the last available closing stock price. Data are segregated by affiliation, whose EPS is being forecast, and whether forecast is issued before or after deal. A deal is a stock deal if 50% or more of the deal value is paid in stock; otherwise it is a cash deal.

Table 3, Continued
Descriptive Statistics on Affiliated Analyst Relative Optimism/Pessimism

Panel E: Cash Deals, Long-Term Growth Forecast

Analyst Affiliation	Subject of Forecast	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	51	0	0	-0.43	0.65	-3.20	-0.40	2.40	-22.00	21.00
Target	Acquirer	After	47	0	0	1.22	0.19	-2.00	0.00	3.00	-20.00	20.00
Target	Target	Before	28	+	+	0.31	0.84	-4.50	-1.50	3.25	-15.00	25.00
Target	Target	After	1	+	+	10.00	.	10.00	10.00	10.00	10.00	10.00
Acquirer	Acquirer	Before	39	0	+	1.13	0.23	-1.50	0.25	4.00	-15.00	20.00
Acquirer	Acquirer	After	45	0	+	-1.20	0.18	-4.70	-1.00	3.00	-15.00	13.67
Acquirer	Target	Before	17	-	-	-5.40	0.40	-3.80	0.50	2.00	-100.00	20.00
Acquirer	Target	After	1	-	-	-26.00	.	-26.00	-26.00	-26.00	-26.00	-26.00

Panel F: Stock Deals, Long-Term Growth Forecast

Analyst Affiliation	Subject of Forecast	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	46	-	?	0.91	0.37	-2.00	0.00	2.50	-12.50	26.00
Target	Acquirer	After	13	-	+	-1.66	0.36	-1.75	0.00	1.00	-20.00	5.00
Target	Target	Before	81	+	+	-0.74	0.25	-2.50	0.00	2.00	-22.00	12.00
Target	Target	After	136	+	+	1.28	0.04	-2.00	0.00	3.38	-20.00	40.00
Acquirer	Acquirer	Before	29	+	+	0.22	0.72	-1.00	0.00	3.00	-10.00	5.00
Acquirer	Acquirer	After	7	+	+	2.96	0.24	-1.00	0.55	5.00	-2.00	15.20
Acquirer	Target	Before	0	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acquirer	Target	After	0	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Statistics on affiliated analysts' deviation from consensus long-term growth forecasts. Deviation is defined as affiliated analyst forecast less consensus, scaled by the last available closing stock price. Data are segregated by affiliation, whose growth is being forecast, and whether forecast is issued before or after deal. A deal is a stock deal if 50% or more of the deal value is paid in stock; otherwise it is a cash deal.

Table 3, Continued
Descriptive Statistics on Affiliated Analyst Relative Optimism/Pessimism

Panel G: Cash Deals, Recommendations

Analyst Affiliation	Stock being Recom-mended	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	68	0	0	0.00	0.97	-0.29	0.00	0.83	-4.00	2.00
Target	Acquirer	After	81	0	0	-0.01	0.91	-1.00	0.00	1.00	-2.00	2.00
Target	Target	Before	54	+	+	0.06	0.66	-1.00	0.00	1.00	-2.00	2.00
Target	Target	After	5	+	+	0.70	0.18	1.00	1.00	1.00	-1.00	1.50
Acquirer	Acquirer	Before	65	0	+	0.17	0.16	-0.33	0.00	1.00	-2.00	2.00
Acquirer	Acquirer	After	143	0	+	**0.23**	**0.00**	0.00	0.00	1.00	-2.00	2.00
Acquirer	Target	Before	27	-	-	0.29	0.16	0.00	0.00	1.00	-1.00	3.00
Acquirer	Target	After	3	-	-	**1.56**	**0.00**	1.50	1.50	1.67	1.50	1.67

Panel H: Stock Deals, Recommendations

Analyst Affiliation	Stock being Recom-mended	Before/ After Deal	N	Prediction under selection bias	Prediction under Conflict of Interest	Mean	pvalue	25 pctile	Median	75th pctile	min	max
Target	Acquirer	Before	174	-	-	0.04	0.59	-1.00	0.00	1.00	-2.00	4.00
Target	Acquirer	After	232	-	+	**0.12**	**0.09**	-0.82	0.00	1.00	-2.00	3.00
Target	Target	Before	101	+	+	**0.29**	**0.00**	0.00	0.00	1.00	-3.00	2.00
Target	Target	After	27	+	+	0.15	0.43	-0.50	0.00	1.00	-1.50	2.25
Acquirer	Acquirer	Before	154	+	+	**0.18**	**0.02**	0.00	0.00	1.00	-3.00	3.00
Acquirer	Acquirer	After	241	+	+	**0.13**	**0.04**	-0.50	0.00	1.00	-3.00	3.00
Acquirer	Target	Before	56	-	-	**0.26**	**0.06**	-0.50	0.00	1.00	-2.00	3.00
Acquirer	Target	After	17	-	-	**0.74**	**0.00**	0.00	1.00	1.50	-1.00	2.00

Statistics on affiliated analysts' deviation from consensus recommendation. Deviation is defined as affiliated analyst forecast less consensus. Data are segregated by affiliation, whose stock is being recommended, and whether the recommendation is issued before or after deal. A deal is a stock deal if 50% or more of the deal value is paid in stock; otherwise it is a cash deal.

Table 4: OLS Results

	Prediction	1-Year Ahead EPS		2-Year Ahead EPS		Long-Term Growth	
		Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
AF_a	+	-0.0003	-0.0038	0.011	0.0037	-0.1164	-0.4255
Standard Error		*0.0006*	*0.0078*	*0.0243*	*0.0063*	*0.663*	*1.1081*
Pvalue		*0.71*	*0.69*	*0.33*	*0.28*	*0.57*	*0.65*
$(1\text{-}A)F_t$	+	0.0002	0.0002	-0.0015	-0.0015	1.0052	1.005
Standard Error		*0.0006*	*0.0006*	*0.0025*	*0.0025*	*1.6329*	*1.6327*
Pvalue		*0.35*	*0.35*	*0.72*	*0.72*	*0.27*	*0.27*
AF_t	0	0.0001	0.0001	0	-0.0002	-0.0975	-28.87
Standard Error		*0.0001*	*0.0001*	*0.0002*	*0.0002*	*0.2871*	*24.072*
Pvalue		*0.36*	*0.71*	*0.92*	*0.53*	*0.74*	*0.24*
$(1\text{-}A)F_a$	-	-0.0002	-0.0002	0.0024	0.0024	-0.015	-0.015
Standard Error		*0.0006*	*0.0006*	*0.0021*	*0.0021*	*0.1449*	*0.1449*
Pvalue		*0.38*	*0.38*	*0.87*	*0.87*	*0.46*	*0.46*
I_{tb}	-	.	0.0016	.	0.0001	.	38.604
Standard Error		*.*	*0.0033*	*.*	*0.0002*	*.*	*29.3*
Pvalue		*.*	*0.69*	*.*	*0.64*	*.*	*0.90*
I_{ta}	+	.	0.0003	.	0.0002	.	38.465
Standard Error		*.*	*0.0002*	*.*	*0.0004*	*.*	*29.948*
Pvalue		*.*	*0.12*	*.*	*0.33*	*.*	*0.10*
I_{ac}	+	.	0.0022	.	-0.0039	.	-0.5814
Standard Error		*.*	*0.0056*	*.*	*0.006*	*.*	*1.6956*
Pvalue		*.*	*0.35*	*.*	*0.74*	*.*	*0.63*
Observations		164,928	164,928	143,354	143,354	12,579	12,579

The above table presents results from OLS regressions in which analyst optimism in forecasts, in both EPS and long-term growth, are the dependent variables, and various interaction terms are the dependent variables. Control variables are also included. F_a are fees received from the acquirer. F_t are fees received from the target. A is a dummy equal to 1 if the acquirer's growth or EPS is being forecast, and 0 otherwise. $I_{tb} = BASF_t$ and $I_{ta} = (1\text{-}B)ASF_t$, where S is the percent of deal value paid in stock and B is a dummy indicating whether the forecast was issued before the deal. Finally, $I_{ac} = A(1\text{-}S)F_a$.

Table 5: Logistic Regression Results

	Prediction	Model 1	Model 2	Model 3
#strongbuy	>1	1.207	1.207	1.207
Standard Error		*0.017*	*0.017*	*0.017*
Pvalue		*0.00*	*0.00*	*0.00*
#buy	>1	1.068	1.072	1.072
Standard Error		*0.015*	*0.015*	*0.015*
Pvalue		*0.00*	*0.00*	*0.00*
#hold	0	0.761	0.763	0.763
Standard Error		*0.009*	*0.009*	*0.009*
Pvalue		*0.00*	*0.00*	*0.00*
#sell	<1	0.548	0.549	0.549
Standard Error		*0.031*	*0.031*	*0.031*
Pvalue		*0.00*	*0.00*	*0.00*
#strongsell	<1	0.645	0.653	0.653
Standard Error		*0.043*	*0.043*	*0.043*
Pvalue		*0.00*	*0.00*	*0.00*
AF_a	>1	.	0.980	0.983
Standard Error		*.*	*0.020*	*0.022*
Pvalue		*.*	*0.84*	*0.78*
$(1\text{-}A)F_t$	>1	.	1.028	1.028
Standard Error		*.*	*0.022*	*0.022*
Pvalue		*.*	*0.10*	*0.10*
AF_t	None	.	1.003	0.992
Standard Error		*.*	*0.010*	*0.022*
Pvalue		*.*	*0.78*	*0.74*
$(1\text{-}A)F_a$	<1	.	0.904	0.904
Standard Error		*.*	*0.041*	*0.041*
Pvalue		*.*	*0.01*	*0.01*
I_{tb}	<1	.	.	1.006
Standard Error		*.*	*.*	*0.026*
Pvalue		*.*	*.*	*0.59*
I_{ta}	>1	.	.	1.019
Standard Error		*.*	*.*	*0.026*
Pvalue		*.*	*.*	*0.24*
I_{ac}	>1	.	.	0.989
Standard Error		*.*	*.*	*0.043*
Pvalue		*.*	*.*	*0.60*
R-square		3.893%	4.241%	4.245%
Observations		26,863	26,786	26,786

The above table presents results from logit regressions in which analyst recommendations are the dependent variables, and various interaction terms are the independent variables, as well as the frequency of unaffiliated colleague recommendations of various types (#strongbuy, #buy, #hold, #sell, and #strongsell). Control variables are also included. F_a are fees received from the acquirer. F_t are fees received from the target. A is a dummy equal to 1 if the acquirer's stock is being recommended, and 0 otherwise. $I_{tb} = BASF_t$ and $I_{ta} = (1\text{-}B)ASF_t$, where S is the percent of deal value paid in stock and B is a dummy indicating whether the forecast was issued before the deal. Finally, $I_{ac} = A(1\text{-}S)F_a$.