

Analyst Sentiment around Takeover Announcements

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Abstract

This paper studies the sentiment among financial analysts around announcements of mergers and acquisitions (M&As). Analyst sentiment is measured using revisions of consensus earnings forecasts. We find that bidders are more likely to offer stock rather than cash in their takeovers when analyst sentiment is more favorable prior to their takeover announcements. However, the favorable sentiment on stock bidders experiences a downward swing subsequent to takeover announcements. The industry peers of stock bidders also face more favorable pre-announcement analyst sentiment than the industry peers of cash bidders. Unlike the firm-specific sentiment on stock bidders, the industry-wide sentiment persists even after bidders announce their takeovers. Finally, we find that stock bidders and their industries face more favorable analyst sentiment compared to targets and their industries prior to takeover announcements. Our evidence on analyst sentiment in M&As is consistent with inefficient market theories such as the investor sentiment explanation in Shleifer and Vishny (2003). But our evidence cannot be fully explained by efficient market theories such as the asymmetric information explanation in Hansen (1987) and Fishman (1989) and the explanations based on earnings management or affiliated analysts' biased forecasts.

1 Introduction

It is now well documented that firms' financing and investment decisions could be influenced by manager's market timing ability. For example, Graham and Harvey (2001) find in their survey that managers place market timing high on their list of reasons to issue equity. Most existing literature relates market timing to the existence of investor sentiment, see, e.g., Ritter (1991), Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), etc. on new security issues, Baker and Wurgle (2002) on capital structure, and Shleifer and Vishny (2003) and Dong, Hirshleifer, Richardson, and Teoh (2005) on mergers and acquisitions (M&As). However, similar to investor sentiment, sentiment among financial analysts could also affect firms' financing and investment decisions, either directly or indirectly through its impact on investor sentiment.

Analyst sentiment can be viewed as the optimism or pessimism demonstrated by financial analysts in their earnings forecasts or their buy-hold-sell recommendations. It could be irrational when financial analysts over-react or under-react to the prevailing public information. For example, Jagannathan, Ma, and Silva (2004) find that analysts show the same (irrational) optimism for the small/growth and small/loser stocks as investors do (see also Abarbanell and Lehavy (2002)). Analyst sentiment could also be rational when analysts rationally respond to new information on firm fundamentals. Both rational and irrational analyst sentiment can affect firms' share prices, and further affect firms' financing and investment decisions. The response of share prices to analyst sentiment as reflected in analysts' forecast revisions and analysts' recommendations has been well studied in the literature (see, e.g., Womack (1996), Barber, Lehavy, McNichols, and Trueman (2001), Jegadeesh, Kim, Krische, and Lee (2003), etc.). However, few studies have analyzed the impact of analyst sentiment on firm behaviors. Our paper studies this impact on firms' takeover decisions based on a sample of M&As. We find that bidders facing more favorable analyst sentiment

prior to their takeover announcements are more likely to offer stock rather than cash as their means of payment. We also study analyst sentiment subsequent to takeover announcements, as well as industry-wide analyst sentiment. Finally, we discuss potential explanations for the relation between analyst sentiment and takeover decisions, based on the existing theories of M&As.

We measure analyst sentiment using revisions of consensus earnings forecasts. A positive forecast revision indicates favorable analyst sentiment. We also construct adjusted forecast revisions. It has been documented that financial analysts tend to be optimistic and gradually correct their biases by revising their earnings forecasts downward prior to earnings announcement dates. Thus, adjusted forecast revisions are constructed to control for historical average revision in order to exclude the effect of this possible long-term trend of correction. Using both measures, we find that bidders are more likely to offer stock rather than cash as the means of payment in their takeovers if analysts' forecasts on their earnings are revised more favorably prior to takeover announcements. Our robustness check ensures that the findings on the pre-announcement forecast revisions are not driven by the magnitude of the forecast errors prior to these revisions. Thus, our results suggest that a bidder facing more favorable analyst sentiment prior to its takeover announcement is more likely to offer stock, and a bidder facing less favorable pre-announcement analyst sentiment is more likely to offer cash. We also study the pre-announcement analyst sentiment on the industries in which bidders are operating. We find that the positive pre-announcement analyst sentiment experienced by stock bidders is an industry-wide phenomenon. In the same pre-announcement period, the industry peers of stock bidders face more positive analyst sentiment than the industry peers of cash bidders.

Furthermore, we also find that the favorable pre-announcement analyst sentiment faced by stock bidders experiences a downward swing subsequent to takeover announcements. However,

the industry peers of stock bidders do not experience such a swing of sentiment around takeover announcements. As a result, stock bidders face similar analyst sentiment compared to cash bidders subsequent to their takeover announcements, while the industry peers of stock bidders continue to enjoy more favorable analyst sentiment compared to the industry peers of cash bidders in the same time period. Finally, we find that stock bidders and their industries face more favorable analyst sentiment than targets and the targets' industries prior to takeover announcements.

We then discuss several theories on M&As in order to find whether the different analyst sentiment around takeover announcements is driven by rational sentiment (e.g., rational response to changes in firm fundamentals) or by irrational sentiment (e.g., over-reaction to new information). We argue that our results are consistent with the theories based on inefficient capital markets, such as the investor sentiment explanation in Shleifer and Vishny (2003). Investor sentiment arises when investors irrationally over-react or under-react to the arrival of new information on a firm. As a result, investors are either optimistic or pessimistic about the firm, causing the firm's equity to be misvalued in equity market. Given the existence of investor sentiment, Shleifer and Vishny (2003) predict that stock bidders face more positive investor sentiment than cash bidders and are more over-valued. It is possible that investors follow analysts' recommendations in forming their perceptions on stock values, so that investor sentiment follows analyst sentiment. This possibility is supported by many empirical findings showing that share prices respond to changes in analysts' forecasts. In this case, positive forecast revisions (i.e., positive analyst sentiment) would indicate favorable sentiment in the market and favorable market conditions for a firm's equity. Thus, our results on analyst sentiment are consistent with the investor sentiment explanation.

However, our results cannot be explained by the theories based on efficient capital markets. In efficient markets, financial analysts rationally update their forecasts and investors rationally revise

their valuations in response to the arrival of new information on firm fundamentals, e.g., on firm-specific or industry-wide investment opportunities. In such markets, equity price fully captures the effect of public information so that any equity misvaluation can only be driven by the asymmetric information between managers and investors, which is independent from public information. Hansen (1987) and Fishman (1989) study this asymmetric information framework. They suggest that bidders are more likely to offer stock as their means of payment if their private information suggests that their stock is overvalued.¹ However, forecast revisions, which are calculated based on public information, are not suitable to measure the extent of bidders' private information, thus cannot explain bidders' takeover decisions that are driven by their private information.² We also discuss the possibilities of earnings management and biased forecasts from affiliated financial analysts. While our firm-level evidence cannot reject both possibilities, our industry-level evidence cannot be explained by them.

Our paper is related to the literature on market timing in M&As. Dong, Hirshleifer, Richardson, and Teoh (2005) and Ang and Cheng (2003) construct various measures of market misvaluations and test the implications in Shleifer and Vishny (2003). They find supporting evidence on market timing in M&As (see also Rosen (2003)).³ In both studies, firms' fundamental values are measured by using analysts' earnings forecasts, premising on the assumption that analyst forecasts are not

¹ If there is no asymmetric information and misvaluation, bidders would be indifferent between stock offers and cash offers, regardless of the forecast revisions prior to takeover announcements.

² It is possible that bidders determine their takeover-related decisions prior to our measurement periods of forecast revisions, so that our forecast revisions could pick up some asymmetric information factored into the bidders' takeover decisions. For example, consider the case where a bidder has private information on the overvaluation of its equity while financial analysts and investors do not know this information. In this case, the bidder's private information would induce the bidder to offer equity. Then, after the takeover decision, the bidder's private information is gradually revealed and financial analysts revise downward their earnings forecasts accordingly. As a result, we would expect a relation between equity offer and negative forecast revisions, which is contrary to our findings.

³ Many studies also focus on the relation between market-wide misvaluation and mergers, instead of firm-level misvaluation. For example, Rhodes-Kropf and Viswanathan (2004) and Rhodes-Kropf, et. al. (2005) suggest that market-wide misvaluation could cause merge waves.

influenced by market sentiment.⁴ However, financial analysts could show the same behavior bias as investors do. Thus, the interpretation of their findings could be affected by the existence of analyst sentiment. In particular, if analyst sentiment is pessimistic on stock bidders, then stock bidders' fundamental values calculated based on these pessimistic analyst forecasts would be undervalued. In this case, the findings in Dong, et. al. (2005) and Ang and Cheng (2004) that stock bidders are more overvalued than cash bidders could be driven by this measurement error. On the other hand, if analyst sentiment is optimistic on stock bidders, one cannot reject their findings on the overvaluation of stock bidders, even if the level of stock bidders' overvaluation in their findings could be under-estimated. In this sense, our paper complements the existing literature on market timing in M&As. We document optimistic analyst sentiment for stock bidders, thereby supporting the empirical results in the existing literature.

Our paper is also related to the literature that examines the mode of payments in M&As. In addition to aforementioned studies based on inefficient capital markets, there is also a large literature based on efficient capital markets. For example, Chemmanur and Paglies (2003) provide empirical support for the two-sided asymmetric information framework (see also Martin (1996), Travlos (1987), Berkovitch and Narayanan (1989), Brown and Ryngaert (1991), Ghosh and Ruland (1998), etc.). However, most empirical studies above focus on choices of payment methods under the presence of asymmetric information. In comparison, our paper focuses on analyst sentiment in financial markets. We argue that our findings cannot be explained by the theories based on asymmetric information in efficient markets.

The remainder of the paper is organized as follows. Section 2 describes data and variable con-

⁴ Earlier studies also test market timing based on metrics such as market-to-book ratio, price run-up, future returns, etc. Market-to-book ratio may be correlated with other firm characteristics, and any tests based on long-term abnormal returns such as in the studies of future returns would be part of a joint test together with the test on market valuation models.

structions. Empirical results are presented in section 3. Section 4 discusses potential explanations for the empirical results, and section 5 concludes.

2 Data and Variable Constructions

Our initial takeover sample is obtained from the Securities Data Corporation's (SDC) U.S. mergers and acquisitions database between 1990-2000. We include in our sample only successful takeovers. We extract financial statement information from Standard & Poor's Compustat database. Data on stock prices are from the CRSP tapes and data on financial analyst forecasts from the I/B/E/S database. We decide on our final sample based on the following criteria: (1) the offer was announced between January 1, 1990 and December 31, 2000; (2) at least one firm involved in the takeover should have data available from I/B/E/S; (3) only all-stock offers and all-cash offers are included in the sample; (4) if a bidder makes multiple attempts to take over the target, only the first announcement is included in the sample; (5) there are at least four financial analysts covering the firm in the months around takeover announcement; (6) financial firms (SIC codes 6000 through 6999) and utilities (SIC codes 4900 through 4999) are excluded. Thus, our final sample includes 503 bidders and 249 targets, although in some of our empirical analyses, we are missing some observations due to incomplete information from CRSP or Compustat. Table 1 reports the annual breakdown of takeovers by methods of payment.

2.1 Revisions of Earnings Forecasts

In the paper, we use financial analysts' revisions of their earnings forecasts to measure analyst sentiment in the equity market. A larger (more positive) forecast revision indicates that analysts on average are more optimistic on the firm's earnings. We calculate forecast revisions based on consensus forecasts on the earnings in the fiscal years prior to takeover effective dates. Event

windows are constructed around announcement dates of takeovers, but prior to effective dates. We define forecast revisions, REV , in an i -month event window $(t - i + 1, t)$ as forecast revisions in months from month $t - i + 1$ to month t . It is calculated as $\frac{FORECAST_t - FORECAST_{t-i}}{P_{t-i}}$, i.e., the change in the median analyst forecasts, $FORECAST$, from the end of month $t - i$ (i.e., the beginning of month $t - i + 1$) to the end of month t , scaled by share price P at the end of month $t - i$.⁵ We also construct adjusted revisions of earnings forecasts, $AREV$, controlling for the potential long-term downward trend of error correction. $AREV$ in an i -month event window is defined as REV in the event window minus the average of historical REV s, where historical REV s are calculated based on i -month windows up to six months before takeover announcements. Table 2 presents the sample statistics of historical average REV in a one-month window, grouped by means of payment. Historical average REV can also be viewed as long-term analyst sentiment. In this sense, $AREV$ can be viewed as short-term analyst sentiment on top of the persistent analyst sentiment in the long run.

2.2 Other Variables

The other variables used in the paper are defined as follows. These variables will be used as control variables in regressions. We calculate $NUMBER$ as the number of analysts following the firm. Forecast error, $ERROR$, in the i th month is the difference between the median earnings forecast in the i th month and the actual earnings in that financial year, deflated by the share price at the end of the i th month. $DISPERSION$ is the standard deviation of analysts' earnings forecasts in the final month of the fiscal year prior to takeover announcement, deflated by the mean earnings forecast. $NUMBER$, $ERROR$, and $DISPERSION$ can be used as proxies for the extent of asymmetric information. $DISPERSION$ can also be used as a proxy for diversity

⁵ We also calculate REV by using mean earnings forecasts and find similar results.

of opinions among investors and analysts.

Further, we calculate *DIVS* to proxy the degree of diversification in a takeover transaction. *DIVS* equals one if a bidder takes over a target operating in an industry different from the bidder's industry, and zero otherwise. We use the first two digits of SIC codes to define industries. Thus, *DIVS* equals one if the first two digits of the bidder's SIC code are different from those of the target. It is documented that the ratio of the sizes between a target and a bidder (*RATIO*) is closely related to the bidder's payment choice in its takeover. We calculate *RATIO* as the market value of a target divided by the market value of a bidder. Firm size (*SIZE*) is also expected to affect a bidder's decision on means of payment. We measure *SIZE* by the log of the market value of a bidder's total assets, where the market value of assets equals the book value of assets minus the book value of common equity plus the market value of common equity. Further, according to Jung, Kim and Stulz (1996), investment opportunity set could affect a bidder's payment choice: managers facing lots of growth opportunities prefer to raise capital with equity in order to have more discretion over the funds raised. We measure a firm's investment opportunity set by using market-to-book ratio (*MTOB*), which is calculated as the ratio between the market value and the book value of a bidder's equity. We also use *LEVERAGE*, the ratio between the book value of debt and the market value of equity to measure a bidder's debt burden, and use *DIVIDEND* to proxy financial constraint. *DIVIDEND* equals one if a bidder pays cash dividends to its shareholders and zero otherwise. Finally, bidders with less tax shields may have more incentive to offer cash in their takeovers. To account for this tax effect, we construct a dummy variable, *TAXLOSS*, which equals one if a bidder has any tax-loss carry-forwards, and zero otherwise. Table 2 provides sample statistics of the above control variables grouped by means of payment.

3 Empirical Results

3.1 Analyst Sentiment Prior to Takeover Announcements

In this section, we study how analyst sentiment prior to takeover announcements affects bidders' choices of means of payment in their takeovers. The sample in this study consists of both the bidders offering only cash in their takeovers and those offering only stock.

3.1.1 Univariate Comparison

Table 3 presents the results on forecast revisions prior to takeover announcements. Four event windows are studied: (-1), (-2, -1), (-3, -1), and (-4, -1). Here, -1 stands for the month one month prior to takeover announcements; -2 stands for the month two months prior to takeover announcements, etc. Thus, (-1) stands for a one-month window during the month one month prior to takeover announcements, (-2, -1) stands for a two-month window prior to takeover announcements, etc. In panel A of table 3, we show the results based on *REV*, (unadjusted) revisions of earnings forecasts. The results are organized based on a sample of cash bidders (shown in column (I)), a sample of stock bidders (shown in column (II)), and the difference in *REV* between cash bidders and stock bidders (shown in column (III)). In general, we find that cash bidders experience negative forecast revisions prior to their takeover announcements while stock bidders experience nonnegative (either positive or insignificant) pre-announcement forecast revisions. Specifically, during the one month immediately before takeover announcements, i.e., in event window (-1), financial analysts on average revise downward their earnings forecasts by 1.7 cents for cash bidders with stock priced at \$100. In comparison, for stock bidders with stock priced at \$100, financial analysts revise upward their earnings forecasts by an average 1.2 cents in the same event window. Both the above forecast revisions for cash bidders and for stock bidders are significant at the one percent significance level in the *t*-test and the Wilcoxon signed-rank test. The difference in *REV* between cash bidders and

stock bidders in event window (-1) is also significant at the one percent level in both the t -test and the Wilcoxon non-parametric test. We also find similar results on the differences of REV in two-month event window (-2, -1) and three-month window (-3, -1), though both differences are only weakly significant. These results suggest that the bidders that are about to offer equity in their takeovers experience more favorable analyst sentiment, compared to the bidders that are about to offer cash.

Panel B of table 3 presents results on $AREV$, adjusted revisions of earnings forecasts. We find that $AREV$ of stock bidders is positive and significant (at the one percent level) in event windows (-1) and (-2, -1). However, $AREV$ of cash bidders is insignificant in all the event windows. According to Wilcoxon tests, the difference in $AREV$ between cash bidders and stock bidders is negative and significant in all event windows. Thus, our results on $AREV$ are consistent with our earlier results on REV . They again suggest that stock bidders face more favorable pre-announcement analyst sentiment than cash bidders. Further, if we view historical REV as long-term analyst sentiment and $AREV$ as short-term analyst sentiment, our results on $AREV$ also suggest that the short-term pre-announcement analyst sentiment is positive for stock bidders and insignificant for cash bidders.

3.1.2 Multivariate Analysis

In this part, we run the following logistic regressions to study the impact of pre-announcement analyst sentiment on the choice of cash versus stock in M&As:

$$\text{Log}\left[\frac{P(y = 1)}{1 - P(y = 1)}\right] = \beta_0 + \beta_1 REVISION + \beta_2 X + \varepsilon. \quad (1)$$

Here, the dependent variable y takes a value of one if a bidder offers stock in its acquisition, and zero if it offers cash; $REVISION$ is either unadjusted forecast revisions REV or adjusted forecast revisions $AREV$ prior to takeover announcements and is used to measure analyst sentiment; ε is error term; and X refers to a vector of control variables consisting of $ERROR$, $SIZE$, $MTOB$,

RATIO, DIVIDEND, TAXLOSS, LEVERAGE, DIVS, NUMBER, and DISPERSION.

The control variables are calculated either at the end of the month before takeover announcements or at the end of the last fiscal year right before takeover announcements.

Table 4 presents the results from the logistic regressions. In column (1), the independent variable *REVISION* is unadjusted forecast revisions, *REV*, in event window (-1), a one-month window before takeover announcements. In column (2), it is *REV* in a two-month window (-2,-1). Columns (3) and (4) report results from the regressions based on adjusted forecast revisions, *AREV*, in event windows (-1) and (-2, -1), respectively. In all four specifications, the coefficients of forecast revisions, β_1 , are positive and significant. These results suggest that bidders experiencing more positive forecast revisions prior to their takeovers announcements are more likely to offer stock in their takeovers, while those experiencing more negative pre-announcement forecast revisions are more likely to offer cash. In sum, according to our results from both the univariate comparisons and the logistic regressions, bidders are more likely to offer stock when they face more favorable analyst sentiment prior to their takeover announcements and that they are more likely to offer cash when they face less favorable pre-announcement analyst sentiment.

3.1.3 Robustness Check

In the studies above, we use forecast revisions to measure the analyst sentiment in the market prior to takeover announcements, i.e., positive pre-announcement forecast revisions indicate positive pre-announcement sentiment in the market. However, forecast revisions could also be a process where forecast errors are corrected. If so, forecast revisions may not be a good proxy for the prevailing analyst sentiment in the market. For example, consider a case where analysts are optimistic and over-estimate a firm's earnings at month $t-i$. From month $t-i$ to the announcement month t , analysts may revise their forecasts downward in order to correct their forecast errors at

month $t - i$. In this case, the downward forecast revisions are driven by the earlier optimism, rather than the short-term (contemporary) negative analyst sentiment in which we are interested in the paper. The pattern of analysts' earlier optimism and downward error corrections prior to earnings announcements has been well documented. Thus, we need to ensure that our results on forecast revisions are not driven by the forecast errors prior to these revisions.

We first constructed adjusted forecast revisions *AREV*. Although raw forecast revisions *REV* could be driven by the adjustment of pre-revision forecast errors, *AREV* is less likely to be affected. *AREV* is adjusted for the historical average forecast revision. If analysts correct their earlier optimism and forecast errors by revising their forecasts evenly in each forecast period, then *AREV* could exclude the part of forecast revisions that are related to the correction of the forecast errors existing prior to the revisions.

To further address the robustness of our results, we also study bidders' forecast errors, *ERROR*, at the beginning of our measurement period (i.e., prior to the forecast revisions measured in the paper). Our study in the previous section focuses on the difference between cash and stock bidders. Thus, we only need to ensure that the different forecast revisions between cash and stock bidders are not driven by the different forecast errors between these firms prior to the revisions. We compare *ERROR* between bidders offering cash and bidders offering stock in the month five months prior to takeover announcements. The result from this comparison is provided in panel C of table 3. We find that *ERROR* of cash bidders is not significantly different from *ERROR* of stock bidders in the pre-revision month. Thus, our result on *ERROR* excludes the possibility that the forecast revisions during our five-month measurement period are driven by the forecast errors at the beginning of the measurement period.

3.2 Industry-wide Analyst Sentiment Prior to Takeover Announcements

In this part, we study industry-wide analyst sentiment in the same event windows as those in the previous section, based on forecast revisions of the earnings of matching firms. We define a bidder's matching firms as those non-takeover firms operating in the same industry as the bidder's industry. Specifically, we select matching firms for each bidder based on the four digits of the bidder's SIC code. In order to minimize the effect of outliers, we require the sample of matching firms for each bidder to consist of at least six firms. If the resulting sample of matching firms from the above industry screen has less than six firms, we then re-select matching firms by using the first three digits of the SIC code, or the first two digits, until the sample of matching firms for each bidder contains at least six firms. We also require each matching firm to have at least four financial analysts covering it around the date of the bidder's takeover announcement. After the industry matching, we calculate industry average REV and industry average $AREV$ as the average REV and the average $AREV$ of all matching firms for each bidder.

We first compare REV and $AREV$ between the industries of cash bidders and the industries of stock bidders. The results of these comparisons are presented in panels A and B of table 5, with panel A presenting the results on REV and panel B on $AREV$. We find that the industries of cash bidders on average have smaller REV and $AREV$ compared to the industries of stock bidders. The differences in industry average REV and industry average $AREV$ between cash and stock bidders are negative and significant for most event windows. These results suggest that the pre-announcement analyst sentiment experienced by both cash bidders and stock bidders is an industry-wide phenomenon: compared to the industry peers of cash bidders, the industry peers of stock bidders on average experience more positive analyst sentiment prior to bidders' takeover announcements.

We further calculate the pair-wise differences in REV and $AREV$ between bidders and their industry peers. We denote these differences as industry-adjusted REV and $AREV$. The results on these industry-adjusted REV and $AREV$ are presented in panels C and D of table 5, with panel C presenting results on industry-adjusted REV and panel D on industry-adjusted $AREV$. On average, for both cash bidders and stock bidders, the industry-adjusted REV s are positive and significant and the industry-adjusted $AREV$ s are insignificant. The results in column (3) in panel C further show that the difference in industry-adjusted REV between cash and stock bidders is insignificant. Similarly, panel D shows an insignificant difference in industry-adjusted $AREV$ as well. These results show that the difference in pre-announcement forecast revisions between stock bidders and cash bidders is similar to the difference between the industries of cash bidders and the industries of stock bidders. Thus, they are consistent with our earlier results in panels A and B, suggesting again that the different pre-announcement analyst sentiment between cash and stock bidders is an industry-wide phenomenon.

3.3 Analyst Sentiment Subsequent to Takeover Announcements

In this section, we compare the post-announcement analyst sentiment between cash bidders and stock bidders by studying their forecast revisions subsequent to takeover announcements. Four event windows are studied: (0), (1), (1, 2), and (1, 3). Event window (0) stands for the month when takeovers are announced; (1) stands for the month immediately following takeover announcements; (1, 2) stands for a two-month window following takeover announcements; etc. Table 6 provides the results on the post-announcement forecast revisions. We find that, for both the bidders in cash offers and in stock offers, their post-announcement forecast revisions are insignificant from zero. Also, the difference in post-announcement forecast revisions between these two groups of bidders is insignificant. These patterns exist in most event windows, regardless whether we use unadjusted

forecast revisions, REV (as shown in panel A of table 6), or adjusted forecast revisions, $AREV$ (as shown in panel B of table 6). Thus, the pattern of post-announcement forecast revisions on bidders' earnings is different from the pattern of pre-announcement forecast revisions. The favorable pre-announcement analyst sentiment on stock bidders (over that on cash bidders) disappears after takeover announcements.

However, the pattern of forecast revisions on bidders' industries remains unchanged before and after takeover announcements. According to panels C and D, the difference in REV between the industry peers of cash bidders and the industry peers of stock bidders remains negative and significant in most post-announcement event windows. Similar results are also found for the difference in $AREV$. These results suggest that, subsequent to bidders' takeover announcements, the industries of stock bidders still enjoy more favorable analyst sentiment, compared to the industries of cash bidders.

We then compare post-announcement forecast revisions with pre-announcement forecast revisions. We study the sample of cash offers and the sample of stock offers separately. The results from these comparisons are presented in table 7. We first compare forecast revisions in event window (0) with those in event window (-1). We also compare forecast revisions in event window (1) with those in event window (-1). We find that, for cash bidders, the pattern of forecast revisions on their earnings does not change around takeover announcements (i.e., from the month before the announcements to the month after the announcements). On the other hand, forecast revisions on the earnings of stock bidders become more negative following their takeover announcements. These patterns exist for both unadjusted revisions, REV (as shown in panel A), and adjusted revisions, $AREV$ (as shown in panel B). Thus, analyst sentiment does not change for cash bidders around their takeover announcements, while stock bidders face deteriorated analyst sentiment following

their takeover announcements. These results are consistent with our findings in table 6. They suggest that the subsequent disappearance of the favorable analyst sentiment enjoyed by stock bidders prior to their takeover announcements could result from the downward swing of analyst sentiment on stock bidders around takeover announcements.

In panels C and D, we show results on industry-wide *REV* and *AREV*, which are calculated based on bidders' matching firms. We find that, for both the industries of cash bidders and the industries of stock bidders, the industry-wide patterns of forecast revisions do not change significantly around bidders' takeover announcements. These results are consistent with our industry-level findings in table 6. Thus, unlike the analyst sentiment on stock bidders, the industry-wide analyst sentiment remains almost the same during the months surrounding takeover announcements for both the industries of stock bidders and the industries of cash bidders.

In sum, the above results suggest that stock bidders experience a downward swing of analyst sentiment following their takeovers. In comparison, cash bidders do not experience any change in analyst sentiment. As a result, the positive sentiment on stock bidders prior to takeover announcements disappears following the announcements. On the other hand, the industry-wide sentiment remains the same around takeover announcements for both the industries of cash bidders and the industries of stock bidders.

3.4 Forecast Revisions: Bidders versus Targets

In this part, we compare the analyst sentiment between bidders and targets by comparing their pre-announcement forecast revisions. The results from this study are presented in table 8. Table 8 is grouped by cash offers (shown in column (1)), stock offers (shown in column (2)), and all offers including both cash and stock offers (shown in column (3)). Panels A and B present results on *REV* and *AREV* of targets; and panels C and D present results on the pair-wise differences in *REV* and

AREV, respectively, between bidders and targets. We find that targets in stock offers experience significant downward forecast revisions prior to takeover announcements. In contrast, bidders in stock offers experience insignificant or even positive pre-announcement forecast revisions (as shown in table 3). The differences in pre-announcement *REV* and *AREV* between stock bidders and their targets are positive and significant at the one percent level. These results suggest that, in stock offers, the pre-announcement analyst sentiment on bidders is more optimistic than that on targets. However, we could not find the same pattern on pre-announcement forecast revisions in cash offers: the difference in pre-announcement forecast revisions between cash bidders and their targets is insignificant in most event windows. This insignificance could be due to the small sample size of cash offers. As to the whole sample consisting of both stock offers and cash offers, we find similar results to those found in the sample of stock offers. Again, this similarity may be driven by the dominating sample size of stock offers, compared to the sample size of cash offers.

In panels E and F of table 8, we present results on the pair-wise differences in *REV* and *AREV*, respectively, between bidders' industries and targets' industries. The results are similar to those presented in panels C and D where we focus on bidders and targets. In the sample of stock offers, there is a positive and significant difference in the industry-wide pre-announcement forecast revisions (and thereby industry-wide analyst sentiment) between bidders and targets. Similar results are found as well for the whole sample including both stock offers and cash offers. These results suggest that the different analyst sentiment between stock bidders and their targets before takeover announcements could be an industry-wide phenomenon.

4 Discussions

In the section, we discuss various explanations on the analyst sentiment around takeover announcements. We start with the explanation based on inefficient capital markets, followed with

explanations based on efficient capital markets. Note that analyst sentiment measured in the paper could capture both the rational sentiment (such as the rational response to new information) and the irrational sentiment (such as over-reaction or under-reaction to new information). In the following, we rely on several existing theories on M&As, including both irrational market theories and rational market theories, and discuss whether the part of rational sentiment or the part of irrational sentiment in our sentiment measure could explain our findings on the relation between takeover decisions and analyst sentiment.

4.1 Inefficient Markets and Investor Sentiment Explanation

In inefficient capital markets, investor sentiment exists when investors irrationally over-react or under-react to the prevailing information. In particular, investor sentiment can be viewed as investors' aggregate sentimental demand in the equity market, either under optimism or under pessimism about stocks. Consider a case where limits on arbitrage are held constant and a positive shock on sentimental demand occurs.⁶ In this case, the speculative investment associated with the increased sentimental demand would cause the firm's stock to be overvalued (see Shleifer (2000)). Shleifer and Vishny (2003) provide a theoretical framework analyzing how such uniformed shock on sentimental demand could affect managers' decisions in M&As. They suggest that overvalued bidders (resulting from positive investor sentiment) could exploit investors' misvaluations by offering overvalued equity, while undervalued bidders (resulting from negative investor sentiment) are more likely to offer cash.

Investor sentiment in the above framework could be caused by analyst sentiment. This can happen when investors follow analysts' recommendations when determining their trading strategies. In this case, the above investor sentiment framework could be explained by analyst sentiment as

⁶ To understand the rationale behind investor sentiment in face of demand shocks, one can refer to the framework in Barberis, Shleifer, and Vishny (1998).

well. It would predict that bidders facing more positive analyst sentiment are more likely to offer equity as their means of payment and that bidders facing more negative analyst sentiment are more likely to offer cash payment. This prediction is supported by our findings.

It is also possible that analysts and investors are subject to the same sentiment in the market. Consider a group of heterogeneous investors and heterogeneous analysts with a wide spectrum of beliefs on the expected value of a firm's stock as suits their sentiments. Each analyst forecasts the firm's earnings based on his belief. Each investor invests in the firm's stock only when the stock's price falls below his valuation of the stock. Now suppose a change of sentiment occurs, which could be initiated either by investors or by other exogenous reasons. Such a change of sentiment in the market would induce analysts to revise their forecasts and, at the same time, induce investors to revise their valuations and adjust their holdings of the stock. In this case, analyst sentiment is positively correlated with investor sentiment, so that we can use analyst sentiment to proxy the overall sentiment in the market. A positive forecast revision would indicate that both analysts and investors are more optimistic and that the firm's stock is more likely to be overvalued. Thus, we would reach the similar prediction as that discussed in the previous case.

Our industry-level findings can also be explained by inefficient market theories. In a case where an industry-wide shock occurs on sentimental demand, all the firms in the same industry would be misvalued in the same direction at the same time. Managers perceive and respond to the misvaluation of their own firms when determining their means of payment in M&As, thereby indirectly responding to the industry-wide sentiment.

Finally, in addition to our findings on choices of means of payment, inefficient market theories can also explain our findings on the changes in analyst sentiment around takeover announcements. According to Barberis, Shleifer, and Vishny (1998), investors' conservatism and representativeness

heuristic cause investors to focus too much on the strength of the information (salience and extremity), but too little on the weight of the information (statistical informativeness), relative to a rational Bayesian in revising their forecasts. Some information prevailing in the market before takeover announcements could have either low strength or low weight. As a result, investor sentiment and analyst sentiment exist prior to takeover announcements either because investors and analysts over-react to the prevailing information with low weight (but high strength), or because they under-react to the prevailing information with low strength (but high weight). However, unlike such information in the market prior to takeovers (with either low weight or low strength), takeover announcements could convey a salient piece of information which is of both high strength and high weight. Consequently, investors and analysts respond to takeover announcements in line with the benchmark of a rational Bayesian reaction.

In sum, our results on analyst sentiment are consistent with the theories based on inefficient capital markets and irrational investor sentiment.

4.2 Efficient Market Explanations

In efficient capital markets, financial analysts' earnings forecasts rationally take into consideration all prevailing information, and their forecast revisions are responses to the arrival of new information. Such new information could be firm-specific such as good performance of a firm, or industry-wide such as the change in investment opportunities in the entire industry, or even market-wide. In the following, we discuss several efficient market theories in the M&A literature, and relate these theories to our findings.

First, if the firm, investors, and financial analysts have the same access to the new information, then the firm's equity would be fairly priced at any time. In this case, a bidder should be indifferent between cash payment and stock payment, no matter whether pre-announcement revisions are

positive or negative. Clearly, this possibility that investors and analysts have full information cannot explain our empirical evidence.

Second, the firm may have more information than investors and financial analysts. For example, firm insiders know the exact nature of the new information, while market outsiders don't know. However, in efficient markets, investors and analysts rationally anticipate the existence of the asymmetric information and value the firm accordingly. In particular, given investors' prior on the distribution of the nature of the new information, investors price the firm's equity at the average value of all possible natures of the information, thereby causing misvaluation on the firm's equity. This asymmetric information framework has been analyzed in Hansen (1987) and Fishman (1989). They predict that a bidder is more likely to offer equity in its takeover if it has private information that its equity is overvalued, and more likely to offer cash if its equity is undervalued.⁷ However, our findings based on forecast revisions cannot be explained by this asymmetric information explanation. In the case where the firm's private information has never been revealed during the periods of forecast revisions, forecast revisions (our measure of analyst sentiment) are not suitable for the test of this asymmetric information explanation. In this case, forecast revisions, which are constructed based on publicly observed information, contain no private information possessed by firm insiders, and thus cannot proxy whether a firm is undervalued or overvalued in efficient markets.

On the other hand, if the asymmetric information is gradually resolved during the periods of forecast revisions, forecast revisions could be correlated with the asymmetric information used by firm insiders in determining takeover-related decisions. For example, the bidder may know

⁷ They also predict a downward price adjustment following stock offers. The downward adjustment occurs since offering stock conveys negative information to the market that the bidder's stock is overvalued. This prediction is consistent with our findings.

privately that its equity is overvalued and chooses equity as its means of payment. After the bidder's decision, which may occur several months before the takeover announcement, the bidder's private information on the overvaluation of its equity is gradually released. In this case, financial analysts would revise their forecasts downward in response to the revealed information. Thus, this case of asymmetric information would predict that those firms experiencing downward forecast revisions are more likely to be firms with overvalued equity in the first place, thus are more likely to offer stock. This prediction is inconsistent with our findings.⁸

Third, managers could irrationally respond to the new information, while investors and financial analysts are rational in the market. Roll (1986) studies this possibility under the hubris explanation and suggests that mergers could be driven by bidders' overconfidence (see also Malmendier and Tate (2005)). According to the hubris explanation, overconfident bidders would view their company as undervalued by outside investors, thus are less likely to offer stock as their means of payment. However, analyst sentiment, or specifically forecast revisions, may not be a good measure of managers' overconfidence. Thus, our findings on the relation between analyst sentiment and means of payment in M&As cannot be explained by the hubris explanation.

The above discussions on the efficient market explanations ignore the possibility that financial analysts may rely on wrong information to form their forecasts. The prediction in this case would be the same as that in the investor sentiment hypothesis. However, it is impossible that analysts systematically rely on wrong information unless they are misled by firm management. We discuss the case where analysts are misled by firm management in the following.

⁸ Note that our results does not exclude the existence of the impact of asymmetric information, since it is possible that the difference between consensus forecasts and actual earnings could result from both irrational investor sentiment and asymmetric information simultaneously. Our discussions only suggest that the asymmetric information that contributes partially to such a difference cannot explain the difference in pre-announcement analyst sentiment between stock bidders and cash bidders.

4.3 Earnings Management Explanation

Bidders could manage earnings to create a favorable market condition for their equity when they decide to use equity to acquire targets. Suppose that investors do not observe detailed business activities undertaken by managers and that earnings are important signals upon which investors infer a firm's value. In this case, bidders could manipulate their short-term earnings in order to boost share prices. For example, Stein (1989) suggests that managers might underinvest in R&D to increase current earnings if investors ignore or underestimate the benefits associated with R&D and focus more on the level of current earnings. In addition, managers sometimes could even provide inaccurate information to mislead the market. By doing so, managers could use overvalued equity as the means of payment in their takeovers.

Managers' earnings management would mislead both investors and financial analysts. If so, upward revisions of earnings forecasts would be coincident with a firm's stock being overvalued. In this sense, the earnings management explanation would draw the same prediction as that in inefficient market theories on the firm-specific pre-announcement analyst sentiment. However, the earnings management explanation cannot explain our findings on industry-wide analyst sentiment.

First, it is hard to believe that all other firms in a bidder's industry would systematically manage their earnings to affect analyst forecasts when these firms are not involved in any takeovers. Second, even in the case where earnings management is indeed an industry-wide phenomenon, it is still unlikely to observe a relation between industry-wide forecast revisions and takeover decisions on cash versus stock. In the case of industry-wide earnings management, the bidder's industry peers should be motivated by other non-takeover reasons, given that they are not undertaking takeovers. Thus, if the bidder manages its earnings not only for the non-takeover reasons underlying the earnings management of its industry peers but also for its own takeover, then the bidder, especially

stock bidders, would manage its earnings more aggressively than its industry peers. On the other hand, unlike stock bidders which have an incentive to manipulate their stock prices, cash bidders have no incentive to inflate their stock prices so that they will not manage earnings more aggressively than their industry peers. Thus, the earnings management explanation predicts different patterns of analyst sentiment between stock bidders and their industry peers, but not between cash bidders and their industry peers. However, this prediction is not supported by our results in table 5.

4.4 Conflict of Interest Explanation

Many recent allegations suggest that the research departments of investment banks could be influenced and pressured to issue favorable research coverage to their investment banking clients without resorting to those clients' prospects, see, e.g., Michaely and Womack (1999), Kolasinski and Kothari (2004), etc. M&As are certainly very lucrative business for investment banks. Therefore, a potential conflict of interest could exist as bidders may sway the affiliated analysts to issue biased earnings forecasts. In other words, the relation between the choice of payment methods and forecast revisions could arise from the biased forecasts issued by affiliated analysts.

However, the above conflict of interest explanation cannot explain our industry results. First, if bidders' industry peers are not engaged with investment banks through any M&A deals, we don't expect to see any analyst sentiment on them. Even if investment banks may also issue biased earnings forecasts to non-takeover firms in the consideration of future deals, we still don't expect any difference in analyst sentiment between cash bidders' industry peers and stock bidders' industry peers, given that the choice of cash versus stock has not factored into the decision of these industry peers. Thus, our findings on industry-wide analyst sentiment cannot be explained by the conflict of interest explanation.

5 Conclusion

This paper studied the analyst sentiment around takeover announcements. Revisions of consensus earnings forecasts are used to measure analyst sentiment on bidders' equity. We found that bidders are more likely to offer stock rather than cash in their takeovers when their analyst sentiment is favorable prior to their takeover announcements. We also found that bidders' industries experience a similar pattern of pre-announcement analyst sentiment compared to that experienced by the bidders. Further, we studied the changes in analyst sentiment on both bidders and their industries around takeovers and subsequent to takeovers. We found a sudden downward swing of analyst sentiment around takeover announcements for bidders in stock offers, while such a swing does not exist for cash bidders. In comparison, the industries of stock bidders do not experience any change in sentiment around takeover announcements. Finally, we compared pre-announcement analyst sentiment between bidders and targets. We found that in stock offers, the pre-announcement sentiment on bidders is more favorable than the sentiment on targets.

We argued that these patterns of analyst sentiment around takeover announcements can be explained by inefficient market theories such as the investor sentiment explanation in Shleifer and Vishny (1989). But these patterns cannot be explained by efficient market theories such as the asymmetric information explanation in Hansen (1987) and Fishman (1989) and the explanations based on earnings management or affiliated analysts' biased forecasts.

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Table 1: Number of Firms by Years, 1990-2000

Year	All Cash		All Stock	
	Bidder	Target	Bidder	Target
1990	3	0	3	3
1991	3	2	20	8
1992	5	2	20	5
1993	10	4	21	8
1994	11	6	40	8
1995	12	5	48	32
1996	17	7	36	20
1997	15	7	66	34
1998	23	11	63	43
1999	20	11	51	29
2000	6	0	10	4
Total	125	55	378	194

Table 2: Descriptive Statistics: This table reports means and medians of the variables used in the paper. All variables are measured for bidders unless specified. REV (historical average) is defined as the difference of the median earnings forecasts in a one-month window between month $t-1$ to month t , deflated by the share price at the end of month $t-1$ where t is up to six months before takeover announcements. ERROR is defined as the median earnings forecast minus the actual earnings, deflated by stock price; NUMBER is the number of analysts following; DISPERSION is the standard deviation of analysts' earnings forecasts, deflated by the average forecast; DIVS equals one if a bidder diversifies in its takeover and zero otherwise; RATIO is the ratio of the market values between a target and a bidder; SIZE is the log of the market value of total assets; MTOB is the ratio between the market value and the book value of equity; LEVERAGE is the ratio between the book value of debt and the market value of equity; DIVIDEND equals one if a firm pays cash dividends and zero otherwise; and TAXLOSS equals one if a firm has any tax-loss carry-forwards, and zero otherwise.

	All-Cash Offers		All-Stock Offers	
	Mean	Median	Mean	Median
REV (historical average)	-0.0002	0.00004	-0.00004	0.00001
SIZE	8.49	8.50	8.76	8.88
MTOB	3.01	2.09	2.98	2.59
RATIO	0.11	0.048	0.14	0.039
DIVS	0.57	1	0.55	1
DISPERSION	0.0021	0.0014	0.0020	0.0011
NUMBER	14.47	13	15.19	13
ERROR	-0.0005	-0.0004	-0.0004	-0.0004
DIVIDEND	0.65	1	0.61	1
LEVERAGE	0.26	0.16	0.39	0.18
TAXLOSS	0.20	0	0.12	0

Table 3: Forecast Revisions and Forecast Errors Prior to Takeover Announcements for Bidders: This table reports forecast revisions, REV, and adjusted forecast revisions, AREV, in panels A and B, respectively, and forecast errors, ERROR, in panel C. Cash offers include bidders offering only cash in their takeovers; and stock offers include bidders offering only stock. Panels A and B are based on four event windows: (-1) stands for the month one month prior to takeover announcements; (-2, -1) stands for a two-month window from two months to one month prior to takeover announcements; etc. REV in event window $(t-i, t)$ is defined as the change in the median earnings forecasts in months from month $t-i$ to month t , deflated by the share price at the end of month $t-i$. AREV is defined as REV minus the average of historical forecast revisions up to six months before takeover announcements. ERROR in the i th month is defined as the difference between the median earnings forecast in the i th month and the actual earnings, deflated by the share price at the end of month i . The tests on means are based on t -tests, and the tests on medians are based on Wilcoxon signed-rank tests. *, **, and *** indicate significant difference from zero at 10, 5, and 1 percent levels, respectively.

Event Windows	(I) Cash Offers			(II) Stock Offers			(III) t statistic of (I)-(II)	
	# of Obs.	Mean	Median	# of Obs.	Mean	Median	Mean	Median
<i>Panel A: Forecast Revisions (REV) on Bidders</i>								
(-1)	125	-0.00017***	0***	378	0.00012***	0***	-3.78***	-3.19***
(-2,-1)	125	-0.00024*	0	378	0.00007	0**	-1.86*	-1.13
(-3,-1)	125	-0.00045**	0	378	-0.00002	0	-1.64*	-0.99
(-4,-1)	125	-0.00052	0	378	-0.00018	0	-0.95	-0.99
<i>Panel B: Adjusted Forecast Revisions (AREV) on Bidders</i>								
(-1)	76	-0.00009	-0.00009	199	0.00034***	0.00012***	-2.18**	-2.24**
(-2,-1)	76	-0.00023	-0.00010	199	0.00041***	0.00021***	-1.52	-1.93*
(-3,-1)	76	-0.00003	-0.00024	199	0.00041	0.00031*	-0.70	-1.68*
(-4,-1)	76	-0.00036	-0.00078	199	0.00043	0.00027	-0.92	-2.09**
<i>Panel C: Forecast Errors (ERROR) on Bidders at the End of the Month Five Months Prior to Announcements</i>								
Five Months Prior	125	-0.00015	-0.00053	374	-0.00036	-0.00063**	0.39	0.30

Table 4. Logistic Regressions on the Likelihood of Offering Stock Rather Than Cash in Acquisitions:

This table presents results from logistic regressions. The dependent variable equals one for bidders offering only stock and zero for bidders offering only cash. The independent variable REV/AREV in column (1) is forecast revisions REV in event window (-1); REV in event window (-2,-1) in column (2); adjusted forecast revisions AREV in event window (-1) in column (3); and AREV in event window (-2,-1) in column (4). (-1) stands for a one-month window in the month prior to takeover announcements, etc. REV in event window ($t-i, t$) is defined as the change in the median earnings forecasts in months from month $t-i$ to month t , deflated by the share price at the end of month $t-i$. AREV is REV minus the average of historical forecast revisions up to six months before takeover announcements. Both REV and AREV are multiplied by 100. ERROR is defined as the median earnings forecast minus the actual earnings, deflated by stock price. The independent variables are lagged by one year and are measured for bidders unless specified. They include NUMBER, the number of analysts following; DISPERSION, the standard deviation of analysts' earnings forecasts, deflated by the average forecast; DIVS, equal to one if a bidder diversifies in its takeover and zero otherwise; RATIO, the ratio of the market values between a target and a bidder; SIZE, the log of the market value of total assets; MTOB, the ratio between the market value and the book value of equity; LEVERAGE, the ratio between the book value of debt and the market value of equity; DIVIDEND, equal to one if a firm pays cash dividends and zero otherwise; and TAXLOSS, equal to one if a firm has any tax-loss carry-forwards, and zero otherwise. *, **, and *** indicate significant difference from zero at 10, 5, and 1 percent levels, respectively.

Dependent Variable Is Equal to One for Firms Offering Stock in Acquisitions				
Explanatory Variables	(1) REV (-1)	(2) REV (-2, -1)	(3) AREV (-1)	(4) AREV (-2, -1)
INTERCEPT	-1.22 (0.23)	-1.53 (0.13)	-1.93 (0.15)	-2.41* (0.08)
REV / AREV	7.426*** (0.00)	2.186** (0.02)	2.639** (0.03)	1.459** (0.02)
RATIO	1.02 (0.14)	0.84 (0.21)	0.310 (0.70)	0.48 (0.55)
SIZE	0.32** (0.02)	0.37*** (0.01)	0.40** (0.03)	0.47*** (0.01)
MTOB	-0.002 (0.90)	-0.003 (0.87)	0.11 (0.11)	0.093 (0.26)
LEVERAGE	0.10 (0.66)	0.056 (0.80)	0.160 (0.61)	0.17 (0.57)
DIVS	0.23 (0.36)	0.240 (0.35)	0.007 (0.98)	-0.17 (0.64)
TAXLOSS	-0.78** (0.02)	-0.90*** (0.01)	-0.30 (0.54)	-0.30 (0.53)
DIVIDEND	-0.43 (0.19)	-0.44 (0.19)	-0.36 (0.44)	-0.35 (0.44)
NUMBER	-0.030 (0.16)	-0.033 (0.12)	-0.05* (0.06)	-0.047* (0.10)
DISPERSION	-2.47 (0.96)	3.52 (0.94)	-2.21 (0.97)	-74.32 (0.38)
ERROR	4.71** (0.05)	4.88** (0.05)	4.51 (0.12)	4.44 (0.14)

Table 5: Industry-wide Forecast Revisions Prior to Takeover Announcements. This table reports forecast revisions, REV, and adjusted forecast revisions, AREV for matching firms, in panels A and B, respectively, and the differences in REV and AREV between bidders and their matching firms in panels C and D, respectively. Matching firms are selected based on the SIC codes of bidders. Panels A and B are based on four event windows. (-1) stands for a one-month window prior to takeover announcements; (-2,-1) stands for two-month window during two months prior to takeover announcements; etc. Cash offers include the matching firms of cash bidders and stock offers include the matching firms of stock bidders. REV in event window ($t-i, t$) is defined as the change in the median earnings forecasts in months from month $t-i$ to month t , deflated by the share price at the end of month $t-i$. AREV is defined as REV minus the average of historical forecast revisions up to six months before takeover announcements. The tests on means are based on t-tests, and the tests on medians are based on Wilcoxon signed-rank tests. *, **, and *** indicate significant difference from zero at 10, 5, and 1 percent levels, respectively.

Event Windows	(I) Cash Offers			(II) Stock Offers			(III) t -stat. of (I)-(II)	
	# of Obs.	Mean	Median	# of Obs.	Mean	Median	Mean	Median
<i>Panel A: Forecast Revisions (REV) on Matching Firms</i>								
(-1)	117	-0.00024***	-0.00011***	362	-0.00011***	-0.00005***	-2.41**	-1.82*
(-2,-1)	117	-0.00080***	-0.00050***	362	-0.00040***	-0.00023***	-2.30***	-3.26***
(-3,-1)	117	-0.0014***	-0.0011***	362	-0.00069***	-0.00044***	-3.50***	-3.26***
(-4,-1)	117	-0.0022***	-0.0017***	362	-0.0011***	-0.00068***	-3.86***	-3.40***
<i>Panel B: Adjusted Forecast Revisions (AREV) on Matching Firms</i>								
(-1)	69	-0.00004	0.00006	199	0.00022***	0.00005***	-1.78*	-1.04
(-2,-1)	69	-0.00038	-0.00021	199	0.00011	-0.00004	-1.62	-1.38
(-3,-1)	69	-0.0010**	-0.00084**	199	0.00018	-0.00002	-2.70***	-2.40**
(-4,-1)	69	-0.0016***	-0.00093***	199	0.00023	-0.00004	-3.32***	-2.80***
<i>Panel C: Difference in REV between Bidders and Their Matching Firms</i>								
(-1)	113	0.00008	0.00007*	334	0.00025***	0.00010***	-1.75*	-1.36
(-2,-1)	113	0.00046***	0.00066***	334	0.00044***	0.00039***	0.12	0.70
(-3,-1)	113	0.00067**	0.00107***	334	0.00068***	0.00061***	-0.07	0.90
(-4,-1)	113	0.00151***	0.00150***	334	0.00096***	0.00090***	1.27	1.47
<i>Panel D: Difference in AREV between Bidders and Their Matching Firms</i>								
(-1)	69	-0.00006	-0.0003	192	0.00012	0.00004	-0.77	-1.03
(-2,-1)	69	0.00038	-0.00009	192	0.00039*	0.00038*	-0.01	-1.02
(-3,-1)	69	0.0011	0.00050	192	0.00036	0.00049	0.97	0.31
(-4,-1)	69	0.0014	0.00061	192	0.00034	0.00025	1.17	0.62

Table 6: Forecast Revisions Subsequent to Takeover Announcements: This table reports forecast revisions, REV, and adjusted forecast revisions, AREV, for bidders in panels A and B; and for matching firms in panels C and D. Cash offers include both cash bidders and their matching firms; and stock offers include both stock bidders and their matching firms. Matching firms are selected based on the SIC codes of bidders. All panels are based on four event windows. (0) stands for a one-month window in the month of takeover announcements; (1) stands for a one-month window subsequent to takeover announcements; etc. REV in event window $(t-i, t)$ is defined as the change in the median earnings forecasts in months from month $t-i$ to month t , deflated by the share price at the end of month $t-i$. AREV is defined as REV minus the average of historical forecast revisions up to six months before takeover announcements. The tests on means are based on t -tests, and the tests on medians are based on Wilcoxon signed-rank tests. *, **, and *** indicate significant difference from zero at 10, 5, and 1 percent levels, respectively.

Event Windows	(I) Cash Offers			(II) Stock Offers			(III) t -stat. of (I)-(II)	
	# of Obs.	Mean	Median	# of Obs.	Mean	Median	Mean	Median
<i>Panel A: Forecast Revisions (REV) on Bidders</i>								
(0)	125	-0.00005	0	378	-0.00002	0	-0.45	-0.08
(1)	91	-0.00006	0	313	-0.00003	0	-0.31	0.88
(1,2)	69	-0.00024	0	233	-0.00013	0	-0.43	0.68
(1,3)	50	-0.0011*	0	158	-0.00030	0	-1.23	-0.62
<i>Panel B: Adjusted Forecast Revisions (AREV) on Bidders</i>								
(0)	76	0.00026	-0.00003	199	0.00006	-0.00005	0.73	-0.34
(1)	55	0.00022	-0.00015	168	0.00001	-0.00002	0.91	-0.51
(1,2)	42	-0.00016	-0.00034	127	0.00010	-0.00001	-0.49	-1.17
(1,3)	31	-0.0020	-0.00054**	86	0.00006	0.00007	-1.40	-1.80*
<i>Panel C: Forecast Revisions (REV) on Matching Firms</i>								
(0)	117	-0.00025***	-0.00017***	362	-0.00009***	-0.00005***	-3.88***	-4.04***
(1)	86	-0.00029***	-0.00013***	297	-0.00007***	-0.00003***	-3.68***	-4.33***
(1,2)	62	-0.00087***	-0.00040***	216	-0.00027***	-0.00011***	-3.55***	-3.46***
(1,3)	46	-0.0016***	-0.00067***	142	-0.00059***	-0.00024***	-3.30***	-2.84***
<i>Panel D: Adjusted Forecast Revisions (AREV) on Matching Firms</i>								
(0)	69	0.00012	0.00014	199	0.00026***	0.00013***	-1.45	-0.99
(1)	52	-0.00003	0.00008	162	0.00022***	0.00012***	-2.01**	-1.41
(1,2)	38	-0.00049**	-0.00001	117	0.00025**	0.00007*	-2.52***	-2.27**
(1,3)	28	-0.0014***	-0.00085***	77	0.00049**	0.00017**	-3.14***	-3.62***

Table 7: Change in Forecast Revisions Around Takeover Announcements: This table reports the change in forecast revisions REV and the change in adjusted forecast revisions AREV, for bidders in panels A and B; and for matching firms in panels C and D. Cash offers include both cash bidders and their matching firms; and stock offers include both stock bidders and their matching firms. Matching firms are selected based on the SIC codes of bidders. Event window (0) stands for the month of takeover announcement; (1) stands for the month one month subsequent to takeover announcements; and (-1) stands for the month one month prior to takeover announcements. REV in event window (t) is defined as the change in the median earnings forecasts during month t , deflated by the share price at the beginning of month t . AREV is defined as REV minus the average of historical forecast revisions up to six months before takeover announcements. The tests on means are based on t -tests, and the tests on medians are based on Wilcoxon signed-rank tests. *, **, and *** indicate significant difference from zero at 10, 5, and 1 percent levels, respectively.

Event Windows	(I) Cash Offers			(II) Stock Offers		
	# of Obs.	Mean	Median	# of Obs.	Mean	Median
<i>Panel A: Forecast Revisions (REV) on Bidders</i>						
(0) - (-1)	125	0.00012	0	378	-0.00014***	0***
(1) - (-1)	91	0.00011	0	313	-0.00015***	0***
<i>Panel B: Adjusted Forecast Revisions (AREV) on Bidders</i>						
(0) - (-1)	76	0.00035	0	199	-0.00028***	-0.0017***
(1) - (-1)	55	0.00031	0	168	-0.00034***	-0.0012***
<i>Panel C: Forecast Revisions (REV) on Matching Firms</i>						
(0) - (-1)	117	-0.00001	-0.00006	362	0.00002	-0.00001
(1) - (-1)	86	-0.00009	-0.00005	297	-0.00003	-0.00001
<i>Panel D: Adjusted Forecast Revisions (AREV) on Matching Firms</i>						
(0) - (-1)	69	0.00016	0.00008	199	0.00004	0.00008
(1) - (-1)	52	-0.00001	0.00002	162	-0.00001	-0.00005

Table 8: Forecast Revisions Prior to Takeover Announcements: Bidders versus Targets. This table reports forecast revisions, REV, and adjusted forecast revisions, AREV, on targets in panels A and B; the differences in REV and AREV between bidders and their targets in panels C and D; and the differences in REV and AREV between the matching firms of bidders and the matching firms of targets in panels E and F. Cash offers include both the firms (bidders and targets) in takeovers with cash as the only means of payment and their matching firms; and stock offers include both the firms (bidders and targets) in takeovers with stock as the only means of payment and their matching firms. All panels are based on three event windows. (1) stands for the month one month prior to takeover announcements; (-2, -1) stands for a two-month window from two months to one month prior to takeover announcements; etc. REV in event window ($t-i, t$) is defined as the change in the median earnings forecasts in months from month $t-i$ to month t , deflated by the share price at the end of month $t-i$. AREV is defined as REV minus the average of historical forecast revisions up to six months before takeover announcements. The tests on means are based on t -tests, and the tests on medians are based on Wilcoxon signed-rank tests. *, **, and *** indicate significant difference from zero at 10, 5, and 1 percent levels, respectively.

Event Windows	(I) Cash Offers			(II) Stock Offers			(III) All Offers		
	# of Obs.	Mean	Median	# of Obs.	Mean	Median	# of Obs.	Mean	Median
<i>Panel A: Forecast Revisions (REV) on Targets</i>									
(-1)	23	-0.0023**	0**	96	-0.0004***	0***	119	-0.0008***	0***
(-2,-1)	22	-0.0033**	-0.0008***	93	-0.0019***	0***	115	-0.0022***	0***
(-3,-1)	23	-0.0043**	-0.0010***	92	-0.0028***	-0.0004***	115	-0.0031***	0***
<i>Panel B: Adjusted Forecast Revisions (AREV) on Targets</i>									
(-1)	19	-0.0012	-0.0008	56	0.00001	-0.00002	75	-0.0003	-0.00004
(-2,-1)	19	-0.0004	-0.0007	57	-0.0015**	-0.0005	76	-0.0012*	-0.0006
(-3,-1)	19	-0.0007	-0.0012	58	-0.0025**	-0.0011**	77	-0.0021**	-0.0012**
<i>Panel C: Difference in Forecast Revisions (REV) between Bidders and Targets</i>									
(-1)	21	0.0017	0	92	0.0005***	0***	112	0.0007***	0***
(-2,-1)	21	0.0028*	0.0008	89	0.0017***	0.00028***	110	0.0019***	0.0004***
(-3,-1)	21	0.0037*	0.0006	89	0.0022***	0.0007***	110	0.0025***	0.0007***
<i>Panel D: Difference in Adjusted Forecast Revisions (AREV) between Bidders and Targets</i>									
(-1)	10	0.0027	0.0016	34	0.0008***	0.0003***	44	0.0013**	0.0003***
(-2,-1)	10	0.0015	0.0005	34	0.0026**	0.0007**	44	0.0023**	0.0006**
(-3,-1)	10	0.0025	0.0009	36	0.0034***	0.0010**	46	0.0032**	0.0010**
<i>Panel E: Difference in Revisions between Matching Firms of Bidders and Those of Targets</i>									
(-1)	23	0.0002	0.00006	99	0.0001***	0.00003***	122	0.0001***	0.00004***
(-2,-1)	23	0.0001	0.00008	99	0.0003***	0.00005***	122	0.0002**	0.00005***
(-3,-1)	23	-0.0002	0.00008	99	0.0005***	0.0002***	122	0.0003**	0.0002***
<i>Panel F: Difference in Adjusted Revisions between Matching Firms of Bidders and Those of Targets</i>									
(-1)	22	0.0002	0	97	0.0004***	0.0001***	119	0.0003***	0.00007***
(-2,-1)	22	-0.0003	-0.0004	97	0.0007***	0.0001***	119	0.0005***	0.00004***
(-3,-1)	22	-0.0005	-0.0003	97	0.001***	0.0003***	119	0.0007***	0.00003**