

See the Gap: Firm Returns and Shareholder Incentives

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Abstract

Smart money often trades actively during times of large corporate events. We document in the context of mergers and acquisitions (M&A) that, during the bid negotiation period, institutional investors increase their holdings of acquirers in deals that generate positive value and decrease their holdings in those that generate negative value. The resulting trading profits create a significant gap between the return to the acquiring firm and the return to these investors, and this gap renders firm return a misleading measure of investors' incentives in pursuing mergers. On average, institutional investors earn 2.4% from M&A while the return to acquirers is only -0.9%. In deals that deliver volatile returns to acquiring firms, the gap increases to 6.3%. We further show how the trading motive impacts the ex ante holdings of institutional investors and how the trading decision and the resulting gap are impacted by the investors' ability to vote on the deals as well as other deal characteristics such as merger size, stock liquidity, initial holdings, and the institutional investors' trading skills. Our study highlights that the group of investors who have influence over corporate actions do not necessarily bear the full consequences of such events, and therefore accounting for the dynamics of shareholder composition is critical in measuring investors' incentives correctly.

Keywords: Institutional investors, mergers and acquisitions, trading, incentives.

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1 Introduction

An important pillar in corporate governance is the voice of institutional investors, with the underlying assumption that institutional investors' interest aligns with the firm's value. One common way of measuring the value of corporate actions to a firm is to look at the market reaction to related corporate events. Insofar as corporate decisions are meant to maximize shareholder value, market reaction is commonly used to gauge shareholders' incentives in these events. For a given shareholder, however, his return from a corporate event equals the market reaction to the firm only if he passively holds the firm's shares and sees through the corporate events. In reality, many shareholders trade actively during corporate events and therefore the group of shareholders who have a say on such events are not necessarily the group of shareholders who bear the consequences of these events. Due to the dynamics of shareholder composition, market reaction measures only the changes to the firm's equity value (i.e., the return to the firm henceforth) resulting from the corporate events, but not necessarily the incentives of shareholders who make crucial decisions on such events. This problem is aggravated by the fact that "smart money" (e.g., sophisticated institutional investors such as top mutual funds, hedge funds, and other asset management firms) often possess both superior ability in trading and greater influence on corporate decisions, and these advantages allow them to strategically exploit the trading opportunity generated by corporate events. Hence firm returns can differ substantially from the return to these informed institutional investors, creating misleading implications on their incentives. In this paper, we examine the existence of the gap between firm returns and returns to the informed institutional investors in the context of mergers and acquisitions (M&A), and we quantify this gap to better understand their incentives.

We focus on the market of M&A for two reasons. First, M&A are one of the most important decisions corporations make in their lifetime, which impact firm value to a large extent. Given the challenge in selecting the merger partner and integrating operation after business combination, M&A create great uncertainty in firm value. Informed institutional shareholders are likely to leverage their informational advantage to exploit trading opportunities in M&A events, and thus the gap between firm return and the return to these shareholders well exemplifies our research question. Second, the M&A literature has largely relied on the market reaction, both in the short-run and long-run, to gauge shareholders' incentives in pursuing mergers (see e.g., [Andrade, Mitchell, and Stafford \(2001\)](#); [Betton, Eckbo, and Thorburn \(2008\)](#) and references therein). Recognizing the gap between the return to the firm and the

return to shareholders sheds new insight on this literature. For example, this gap allows us to provide a complementary explanation for the long standing value creation puzzle – why do acquirers pursue M&A when they experience overtly small or even negative announcement returns on average. Previous studies offer plausible explanations based on the conflict of interest between managers and shareholders (Jensen (1986), Harford (1999), and Roll (1986)) as well as information asymmetry between corporate insiders and outsiders (Shleifer and Vishny (2003); Rhodes-Kropf and Viswanathan (2004); Rhodes-Kropf, Robinson, and Viswanathan (2005), Cai, Song, and Walkling (2011); Bhagat, Dong, Hirshleifer, and Noah (2005), and Wang (2018)), and our paper shows that informed institutional investors may choose to embrace acquisitive firms because they are able to capture the option value generated in M&A, which differs strikingly from the return to the acquiring firms.

Two examples help illustrate the idea. On August 4th, 1999, Dow Chemical announced its takeover bid for Union Carbide. Forty one investment companies of Dow Chemical, including Putnam Investment, Wellington Management, Vanguard and Rowe Price Group, held 11% of Dow Chemical shares before the announcement. The deal closed on February 6th, 2001, and during the bid negotiation period (from bid announcement to deal consummation), these institutional investors purchased another 8% of Dow Chemical shares outstanding and formed a total holding of 19% post merger. During the next 12 months, Dow Chemical realized a buy-and-hold abnormal return (BHAR) of 18%, generating a great profit for these institutional investors. A back-of-the-envelope calculation suggests that these institutional investors would have earned only 593 million dollars (i.e., BHAR of 18%) if they remained passive in this deal, while their trading produces additional 418 million dollars of profits (i.e., additional return of 13%), and thus their return from this merger event is 31%, which is substantially higher than what the return to Dow Chemical stock suggests. Another example is Sealed Air Corp's acquisition of Diversey. The deal was announced on June 1st, 2011, and completed on October 3rd, 2011. Twenty investment companies held 42% of Sealed Air Corp before the announcement, and they liquidated most of their initial holdings during the bid negotiation period by selling off 27% of total shares outstanding. Sealed Air Corp lost 15% of value during the 12-month period post merger, compared with its matched firm. These institutional investors would have lost 262 million dollars (i.e., BHAR of -15%) if they remained passive in holding the shares, but they actively cut back their holdings and limited their losses to 73 million dollars (i.e., the return of -5%) from this bad deal. Their trading renders the return to Sealed Air Corp a poor measure

of their realized loss and a misrepresentation of their incentives in such merger events.

How prevalent is the gap between the return to acquiring firms and the return to their informed institutional shareholders, as demonstrated in the above examples? How does this gap misrepresent the incentives of these institutional investors? To answer these questions, we construct a sample of M&A with US acquirers and targets announced between 1980 and 2017, and we match this sample to the 13F dataset to obtain institutional holding of acquirers. We examine institutional investors' trading of acquirer stocks in two stages: before bid announcement and during bid negotiation. We relate their trading in each stage to the post-merger deal performance measured by BHAR over different horizons. We focus on BHAR because we find that institutional investors' trading on M&A events concentrates in the period of bid negotiation, which occurs after the realization of the cumulative abnormal return (CAR) around bid announcements, and BHAR matches the trading and holding horizon of these institutional investors. Since the ultimate success of a merger critically depends on the post-merger integration and the realization of expected synergies, it is also possible that the market needs to learn more information gradually after deal closure to evaluate the value of the merger to the firm, and thus BHAR may reflect the market's updated assessment as new information arrives. For this reason, BHAR has also been used in previous studies to examine shareholder behavior and deal quality in the long-run.¹

Our analysis yields a few novel findings. First, we find that institutional trading during the bid negotiation period is strongly and positively correlated with the ex post deal performance. Specifically, we find that following the bid announcement, institutional investors increase their holdings of acquirer stocks in mergers that end up with good ex post performance and reduce their holdings of acquirer stocks in mergers that eventually turn out bad. This finding confirms the observation we made from the two examples above in a large-sample study. Our estimate suggests that, for a one-standard deviation increase in the ex post deal performance (measured by 12-month BHAR), institutional investors increase their holding of acquirer stocks by 30% through their trading during the bid negotiation period. For an average M&A deal, the return to these institutional investors is 3.3 percentage-points higher than the return to the acquirer's firm value, which is economically sizable given the average return to acquirers is only -0.9%, and this gap results from the institutional investors' trading profits. As a result, even though an

¹For example, [Lyon, Barber, and Tsai \(1999a\)](#); [Mitchell and Stafford \(2000\)](#); [Ben-David, Drake, and Roulstone \(2015\)](#); [Chen, Harford, and Li \(2007\)](#). Also, CAR is known to be contaminated by bid anticipation and information revelation, and only weakly correlated with the true deal performance (see e.g., [Barraclough, Robinson, Smith, and Whaley \(2013\)](#); [Jacobsen \(2014\)](#), [Ben-David, Bhattacharya, and Jacobsen \(2020\)](#)).

average M&A destroys firm value, they are not necessarily bad events for informed institutional investors. Moreover, we find that the gap is much more striking in deals that deliver volatile returns. Specifically, as we sort deals by the magnitude of their post-merger 12-month BHAR, we find that the return to informed active investors is 6.3 percentage-points higher than the return to the firm for deals that rank above the median. In contrast, the gap is much smaller when BHAR is closer to zero. This is consistent with the fact that institutional investors trade more aggressively in “big” events. In such cases, using the return to the firm to measure the incentives of the informed institutional investors can be particularly misleading.

Next, we analyze how this gap varies cross-sectionally with deal characteristics and institutional investor characteristics that shape these investors’ incentive and ability of trading in M&A. We first compare our results for deals of different size. Large deals create more uncertainty about the future value of the combined firms, which provide institutional investors with a greater incentive to collect information and trade on M&A deals. We partition the full sample into two equal-sized subsamples based on the median of deal size, and we find that the positive association between institutional investors’ trading on acquirer stocks and the post-merger performance is much more pronounced for the subsample of large deals, and the estimated coefficients are economically small and statistically insignificant for small deals. Our measure shows that the gap between the return to the firm and the return to these institutional investors is 1.3 percentage-points for small deals and increases to 4.7 percentage-points for large deals.

Second, we examine our results for acquirers with different stock market liquidity. Liquidity is an important determinant of trading profits, and high liquidity allow informed traders to better camouflage their trades and earn higher profits from trading on their private information (as in [Kyle 1985](#)). Using the bid-ask spread as the proxy of liquidity, we document that our results are much stronger for acquirers with high liquidity, and the results diminish as acquirer stocks are traded with a wide bid-ask spread and thus exhibit low liquidity. The return to these institutional investors is close to the return to the firm in the low-liquidity subsample, compared with a gap of 6.1-percentage points in the high-liquidity subsample.

Third, many institutional investors are subject to short sale constraints, which limit their ability of profiting from trading on negative news. To demonstrate the effect of this channel, we first show that the positive association between institutional investors’ trading and ex post deal performance is largely driven by institutional investors’ purchase of acquirer stocks in good deals rather than their sales of

acquirer stocks in bad deals. The estimated coefficient for good deals is almost four times as large as that for bad deals. Meanwhile, previous studies (e.g., [Edmans \(2014\)](#) and reference therein) also argue that institutional investors' initial holdings of acquirer stocks help mitigate the effect of short-sale constraints. Motivated by this argument, we examine how our results vary with the initial holdings of acquirer stocks by institutional investors across different deals. We find that our results are much more pronounced for deals in which institutional investors hold a large fraction of acquirers' shares before bid announcements. Intuitively, large initial holdings increase investors' capital gains from good deals and decrease the likelihood of binding short-sale constraints in bad deals, leading to a greater sensitivity of institutional investors' trading with respect to deal performance and generating a larger trading profit for these investors in M&A deals. Our measure indicates that in deals with high initial institutional holdings, these institutional investors earn 4.6 percentage-points higher than the return to the acquirers; while in deals with low initial institutional holdings, the gap falls to 0.5 percentage-points.

Fourth, institutional investors' incentive of collecting information and trading in M&A deals is also shaped by the weight of the acquirer stocks in their portfolios. This weight is related to, but different from, the institutional investors' initial holding measure ([Fich, Harford, and Tran \(2015\)](#)). Specifically, the former gauges the holding of acquirer stocks as a fraction of the institutional investors' portfolio while the latter gauges the holding as a fraction of the acquirers' total shares outstanding. For instance, if institutional investors hold 80% of shares outstanding by an acquirer, the initial holding measure is 80%, but if the acquirer is small, this holding may account for less than 1% of these institutional investors' portfolio value and thus a very low portfolio weight. Partitioning on the weight of acquirer stocks in institutional investors' portfolios, we document that institutional investors trade more aggressively and gain greater trading profits from M&A deals in which their holdings of acquirer stocks represent an important component of their portfolios. Our measure shows that the gap between the return to the firm and the return to these institutional investors is 6.2 percentage-points when the acquirers account for a greater fraction of institutions' portfolio, and this gap reduces to 1.7 percentage-points when acquirers do not carry a significant portfolio weight.

Fifth, since the institutional investors' ability of trading on M&A events is center to our research, we sort institutional investors by their ability and examine how our results differ systematically across investors of differential ability. We measure their ability by their trading performance in past M&A

deals, assuming that their ability of identifying deal quality is a persistent skill. We partition investors into quintiles based on their ability measure and show that the association between their trading in the M&A events and the ex post deal performance increases monotonically with ability. Specifically, trading made by institutional investors of top-quintile ability exhibits a strong, positive relation with long-run deal performance, while trading placed by those of bottom-quintile ability consistently exhibits a strong, negative relation with long-run deal performance. The difference between the two groups is economically sizeable and statistically significant. As expected, high-ability institutions earn 5.6 percentage-points higher than the return to the firm, while the gap between the return to low-ability institutions and the return to the firm is -5.2 percentage-points.

Lastly, we leverage the institutional shareholders' investment horizons to analyze how their incentives of engaging in trading and active influence affect our results. We measure institutional shareholders' investment horizons using their average portfolio turnover rate (i.e., the churn ratio), and we partition the full sample into two equal-sized subsamples of short-term investors and long-term investors. We document that the positive association between institutional trading and ex post deal performance is mainly driven by short-term investors, and the results are insignificant for long-term investors. In contrast, when acquirers are mostly held by long-term investors, M&A deals are more likely to be canceled when they are poorly received by the market upon bid announcements, measured by three-day CAR, suggesting that long-term investors may engage in active influence through the back-of-the-scene intervention.

To close our analyses, we finally confirm that institutional investors in our sample do not appear to possess material inside information of M&A deals and they do not front run the market, because their trading of acquirer stocks *prior to* bid announcements is uncorrelated with the ex post deal performance. In other words, they cannot predict deal quality before a deal is publicly announced, suggesting that these investors are likely good at identifying deal quality only after the potential target is known. Despite that they cannot predict deal quality before deal announcements, we find that these institutional investors prefer holding acquisitive firms and before bid announcements, they increase their holdings of acquiring firms with highly dispersed long-run performance. This finding is consistent with the fact that informed institutional investors capture the option value generated by M&A events, and thus higher uncertainty in deal performance increases institutional investors' *expected* trading profits (Goldman and Wang (2021)). This result also implies that the gap between firm return and the return to institutional investors is much

larger for acquirers that pursue highly risky mergers. It is worth noting that in these deals, accurately measuring the shareholders' incentives becomes particularly important in gauging their governance role.

Our paper relates to a few strands of literature. First, it is pertinent to the M&A literature that uses the market reaction around bid announcements (e.g., 3-day CAR) or the long-run post-merger performance (e.g., BHAR) to gauge the value implications of M&A on acquiring firms and target firms. Previous studies debate on the pros and cons of different measures and investigate how they relate to the causes and consequences of M&A (Kaplan and Weisbach (1992); Healy, Palepu, and Ruback (1992); Li (2013); Ben-David, Drake, and Roulstone (2015); Hoberg and Phillips (2018); Dasgupta, Harford, and Ma (2023); Ben-David, Bhattacharya, and Jacobsen (2020)). Our paper does not take a strong stance in this debate, but instead, we emphasize the importance of measuring shareholders' return in M&A from a dynamic perspective. We highlight the fact that smart money trades actively in such corporate events and there exists a large gap between the return to firm value and the return to these informed institutional shareholders. To this end, our paper stresses that the return to firm can be a misleading measure of shareholder incentives in engaging in M&A, and we propose to gauge the shareholders' incentives by taking into account their expected trading profits from these deals.

Second, our paper also contributes to the large empirical literature that documents the governance value of institutional investors. Several studies, for example, investigate how institutional investors impact compensation (e.g. Hartzell and Starks 2003) or anti-takeover provisions (e.g. Brickley, Lease, and Smith 1988). A more closely related stream of research focuses on the effect of institutional investors on acquisition outcomes. For example, Gaspar, Massa, and Matos (2005a) document that acquirers held by institutions with low turnover rates perform better than those held by short-term institutional investors. Qiu (2006) finds that mutual fund holdings are positively associated with firm acquisitiveness and the association is stronger among firms that have large amounts of cash and few growth opportunities. Chen, Harford, and Li (2007) document that long-term independent institutional investors actively monitor corporate acquisition decisions. Matvos and Ostrovsky (2008) and Harford, Jenter, and Li (2011) explore whether institutional investors' cross-holdings of the acquirer and target stocks can explain their lack of opposition to mergers that generate low returns for acquirers; Nain and Yao (2013) show that mutual funds with strong stock picking ability select to hold better acquirers before takeover announcements. Finally, Bae, Kang, and Kim (2002) and Masulis, Wang, and Xie (2007) show that bad governance

leads to more mergers with poor performance. Our paper differs from these studies by showing that institutional investors may benefit from firms pursuing risky M&A that create significant uncertainty, because they capture the option value generated in such events. Their governance incentive to curtail the M&A activities and preserve firm value can be compromised by their trading incentive, and therefore they may choose to tolerate or even promote firms pursuing M&A even if such deals deliver a zero or even slightly negative return to acquiring firms on average. In this regard, these institutional investors benefit from the upward potential of M&A but do not bear the cost of the downward risk.

Third, our paper is related to the vast literature that examines shareholder influence through voice or with feet (e.g., [Maug \(1998\)](#); [Edmans \(2009, 2014\)](#); [McCahery, Sautner, and Starks \(2015\)](#) and references therein). Most papers in this literature study institutional investors' tactics in influencing firm decisions, and our paper differs from them in analyzing their incentives to influence. To see the difference more clearly, it is well understood in the literature that trading by institutional investors can play an important role of disciplining managers (i.e., vote with feet), and thus it is expected that institutional investors' trading pressure fends off value destroying mergers pursued by managers for private benefits. But we show in this paper that institutional investors' trading during the bid negotiation period actually alters their governance incentive ex-ante: as long as they can earn a significantly positive expected trading profit from mergers, they may have no incentive to oppose the mergers even if such mergers destroys firm value on average. We also demonstrate that the return to the acquiring firm is a misleading measure for institutional investors' governance incentives, and we propose a measure to quantify the gap between the return to the firm and the return to institutional investors who trade actively in merger events.

The remainder of the paper is organized as follows: Section 2 describes our data and sample, Section 3 discusses the empirical results, and Section 4 concludes.

2 Sample Formation and Variable Construction

We collect data on mergers and acquisitions and the institutional investors' holdings of acquirer stocks during different stages of the acquisitions. We discuss below the sample selection process and the construction of our dependent and independent variables.

2.1 Data

We start with a sample of merger and acquisition transactions announced between 1980 and 2017 available from the Thomson Reuters SDC Platinum database. Our sample does not include transactions announced after 2017, because we require two years of post-merger data in order to measure post merger performance and we require the return data to end by 2019 to exclude the pandemic period. To be included in the final sample, we require that the acquirer is a publicly traded U.S. firm with non-missing stock return data during the period of interest. We also apply standard data screening criteria such that the acquiring firm must hold less than 50 percent of target shares before the acquisition and that it seeks to gain the control of the target firm. We require that the deal value is more than one million dollars and that it represents more than one percent of acquirer pre-merger market value. We further limit the sample to transactions in which we can clearly identify the date of deal completion or withdrawal. Following the existing literature we focus on deals classified as a merger and not a tender offer or a block trade.² Finally, we restrict the sample of acquiring firms to those who do not make any preceding bids within three years of the current bid. This criterion is imposed to guarantee that no preceding mergers confound our observations.³

Stock holdings by institutional investors come from the Thomson Reuters Institutional Holdings 13F database (formerly known as CDA/Spectrum). The database includes stock holding data by banks, insurance companies, parents of mutual funds, pension funds, university endowments, and numerous other types of professional investment advisers. We classify institutional investors based on their CDA type codes and focus on investment companies such as mutual funds and other asset management firms. This database has been widely used in previous studies (e.g., [Chen, Harford, and Li 2007](#); [Fich, Harford, and Tran 2015](#); [Harford, Jenter, and Li 2011](#); [Matvos and Ostrovsky 2008](#); [Parrino, Sias, and Starks 2003](#)), and it reports holdings information for institutional investors at a quarterly frequency and thus can be used to estimate institutional trading in different stages of M&A. We follow [Chen, Harford, and Li \(2007\)](#) and correct the mapping error of the post-1998 CDA type classification and drop institutions

²We follow [Betton, Eckbo, and Thorburn \(2008\)](#) in classifying the deal type: If the tender flag is “no” and the deal form is a merger, then the deal is a merger. If the tender flag is “no” and the deal form is “acquisition of majority interest” and the effective date of the deal equals the announcement date, then the deal is classified as a control-block trade. If the tender flag is “yes”, or if the tender flag is “no” and it is not a block trade, then the deal is a tender offer.

³Not surprisingly, it excludes many serial acquirers from our sample. As a robustness check, we rerun the baseline analyses without imposing this sample selection criterion. Removing this criterion significantly increases sample size by almost 60%, but the main results remain similar.

whose CDA type code cannot be accurately determined. Our focus on investment companies builds on the large literature documenting that they are likely to have superior information collecting and processing abilities, and they also play an important role in corporate governance.

We conduct our analyses on the level of institutional investors (e.g. fund families) rather than individual funds, because most governance decisions are made by institutional investors instead of individual holding funds (e.g., mutual funds in the same fund family usually cast the same vote as one entity) and therefore institutional investors' incentives are determined by their aggregate trading profits from all funds they manage. Analyzing investors' incentive at a more disaggregate level (e.g., fund level) loses this important connection among all funds within the same family.

2.2 Measuring Merger Performance

To measure merger performance, we follow [Lyon, Barber, and Tsai \(1999b\)](#); [Chen, Harford, and Li \(2007\)](#) and [Chen, Harford, and Li \(2007\)](#) and compute the acquirers' long-run post-merger buy-and-hold abnormal return (BHAR). As [Lyon, Barber, and Tsai \(1999b\)](#) suggest, this measure controls for size, book-to-market, and pre-acquisition return. Specifically, we first sort all firms in CRSP into NYSE size deciles each month and further partition the bottom decile into quintiles. This procedure generates 14 size groups in total. We simultaneously sort firms into book-to-market (B/M) deciles. The combination of partitioning on size and on B/M creates 140 cells (14 size \times 10 B/M groups) for each month.

For each acquirer in our sample, we identify the cell to which it belongs based on its size and B/M one month before the bid announcement. We then choose from that cell the control firm that is the closest match on prior year stock return and is not involved in any significant acquisition activity in the prior three years. Buy-and-hold returns (BHR) are then calculated for each acquirer and its control firm over the event window which starts from n quarters post bid completion and ends at m quarters post bid completion, $[n, m]$. Finally, an acquirer's buy-and-hold abnormal return (BHAR) in this event window is defined as the difference between the acquirer's buy-and-hold return and its matched firm's contemporaneous buy-and-hold return:

$$\begin{aligned}
 BHR_{j;(n,m)} &= \prod_{\tau=n}^m (1 + r_{j,\tau}) - 1; \quad j \in \{acq, match\} \\
 BHAR_{i;(n,m)} &= BHR_{acq;(n,m)} - BHR_{match;(n,m)}
 \end{aligned}$$

where $BHR_{j;(n,m)}$ is the buy-and-hold return for acquirer, acq , or its matched firm, $match$; $r_{j,\tau}$ is the return in the τ th quarter post bid completion; $BHAR_{i;(n,m)}$ is acquirer i 's buy-and-hold abnormal return from n quarters to m quarters post bid completion.

To capture merger performance over different horizons, we compute acquirer BHAR over a one-year and two-year period post acquisition. We further break down the one-year BHAR into the first two-quarter BHAR and the second two-quarter BHAR. Figure 1 illustrates different horizons over which BHARs are computed.

The acquirer's 3-day abnormal announcement-period return (i.e., 3-day CAR) is computed using the market model and the value-weighted CRSP index, and the estimation window for market beta is (-252, -46) days prior to the bid announcement.

2.3 Measuring Institutional Trading

To measure institutional trading of acquirer stocks over different stages of the merger, we link institutional holdings data to the merger and acquisition transactions. Because institutional holdings are reported quarterly, we match the holdings data at the nearest date to the bid announcement or the bid closure. Thus, for each bid in our sample, we obtain the quarter-end holdings at four points of time: $Hldg_{i;-5}$ is the quarter-end holdings of acquirer i 's shares five quarters before the bid announcement quarter; $Hldg_{i;-1}$ is the quarter-end holdings of the quarter right before the bid announcement quarter; $Hldg_{i;0}$ is the holdings at the end of bid announcement quarter; and $Hldg_{i;cls}$ is the holdings at the end of bid outcome quarter. We further normalize these holdings by the total number of acquirer shares outstanding so as to make for a meaningful cross-sectional comparison. After this normalization, our measure of holdings represents the percent of total acquirer shares held by institutional investors. We then further divide these holdings by the number of institutions holding acquirer i and obtain the average holdings. The average institutional trading of acquirer stocks in different stages of each merger is then measured as the change in holdings:

$$\begin{aligned}\Delta Hldg_{i;(-5,-1)} &= \frac{Hldg_{i;-1}}{N_{i;-1}} - \frac{Hldg_{i;-5}}{N_{i;-5}} \\ \Delta Hldg_{i;(0,cls)} &= \frac{Hldg_{i;cls}}{N_{i;cls}} - \frac{Hldg_{i;0}}{N_{i;0}}\end{aligned}$$

where $N_{i,t}$ is the number of institutions that hold acquirer i 's shares at quarter-end t . Figure 1 illustrates the periods over which the above trading is computed.

The use of an *average* trading measure across all institutions has two empirical advantages. First, the *aggregate* trading volume is affected by the acquiring firms' institutional ownership: acquirers held by more institutions are likely to experience larger aggregate trading volume. Using the *average* trading measure controls for this cross-sectional difference in acquirers' institutional ownership and makes the institutional trading more comparable across different acquisitions. Second, using the *average* trading measure captures the net trading across all institutions and therefore summarizes their views in one simple measure.

After merging the institutional holdings and trading data with the merger and acquisition data, we exclude from our sample all bids for which institutional holdings and trading data is not available. We also exclude the bids whose announcement date and closure date fall into the same quarter, because we cannot observe any trading within quarter. Our final sample includes 1,594 bids, with 1,504 completed and 90 withdrawn transactions.

2.4 Empirical Design

To investigate how institutional investors trade in M&A and how their trading activities create the gap of interest in this paper, we perform our empirical analyses in two steps. First, we examine the correlation between institutional investors' trading of acquirer stocks during the bid negotiation period and the post-merger deal performance measured by the acquiring firm's BHAR over different horizons. To do so, we follow the specification in [Chen, Harford, and Li \(2007\)](#) and run the following regression:

$$\begin{aligned} \Delta Hldg_{i;(0,cls)} = & \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} \\ & + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i \end{aligned} \quad (1)$$

The dependent variable, $\Delta Hldg_{i;(0,cls)}$ denotes the average trading of acquire i 's stocks by institutional investors during the bid negotiation period; $BHAR_i$ is the acquirer's *post-merger* performance measured over different horizons. Control variables follow [Parrino, Sias, and Starks \(2003\)](#) who study the determinants of changes in institutional holdings: $Return_{i;(0,cls)}$ denotes the acquirer's cumulative return

during the bid negotiation period; $FirmSize_{i,-1yr}$ and $FirmMB_{i,-1yr}$ denote the acquirer's size (i.e., the logarithm of market value) and book-to-market ratio measured one year before the bid announcement; $Turnover_{i;(0,cls)}$ denotes the aggregate trading volume during the bid negotiation period and normalized by the number of shares outstanding, EOY_i denotes the year-end dummy, which takes the value of one if the bid negotiation period contains the fourth quarter. We also include the industry fixed effect and year fixed effect in some specifications to make sure that our results are not driven by industry-level shocks or business cycle fluctuations. Since the control variables in Equation 1 are used to explain normal changes in institutional holdings, we interpret a significant coefficient on acquirer post-merger performance as the evidence that institutions' private information about the merger quality affects their trading decisions (e.g. Chen, Harford, and Li (2007)).⁴

After obtaining the coefficient of interest, β_1 , from the regression, we then study how it relates to the gap we hope to measure. Intuitively, a significant, positive estimate of β_1 implies that institutional investors on average trade in the right direction regarding the long-run deal performance and their trading profits equal the quantity they trade times the BHAR they earn on the trade. Instead of earning only the passive return $BHAR_i$ per share, informed institutional investors earn an additional return of $\frac{\Delta Hldg_{i;(0,cls)}}{Hldg_{i;-1}} \times BHAR_i$ per share due to their trading, where $\frac{\Delta Hldg_{i;(0,cls)}}{Hldg_{i;-1}}$ is the fraction of shares actively traded. To see an example, suppose that an institutional investors hold 1% of the acquirer's outstanding shares before the bid announcement (i.e., $Hldg_{i;-1} = 0.01$) and then purchased another 0.5% of acquirer shares during the bid negotiation period (i.e., $\Delta Hldg_{i;(0,cls)} = 0.005$), and also assume that $BHAR_i$ equals 10% for this deal, then this institutional investor earns a return of 15% per initial shares held. We can decompose the total 15% return into a return of 10% coming from his passive holding and a return of 5% return coming from his active trading. The *realized* gap between the return to the firm (i.e., $BHAR = 10\%$) and the return to this institutional investor (15%) then equals 5 percentage-points in this deal.

Even though the realized gap is easy to compute using institutional investors' trading quantity and deal performance observed ex post, it suffers from two limitations. First, institutional investors often have to make governance decisions before realizing their trading profits. In the context of M&A, institutional

⁴Note that deal quality is measured by acquirers' post-merger BHARs and hence the regression specification in Equation 1 is a reverse regression, in which we explain the institutional trading using the ex post merger performance measured within a future period. This specification was employed by Chen, Harford, and Li (2007) among others.

investors have to decide whether to support or oppose a merger before the post-merger BHAR is realized. To this end, institutional investors need to form an expectation of their trading profits, which leads to an expected gap between their return from M&A and the return to the acquiring firm. Second, as Equation 1 suggests, institutional investors' trading quantity is driven by many factors other than BHAR and it is difficult to control these covariates in computing the realized gap. Such covariates, however, can be easily controlled away when we estimate the coefficient β_1 in Equation 1. For these reasons, we propose a measure of *expected* gap as:

$$\begin{aligned}
E(Gap_i) &= E\left(\frac{\Delta Hldg_{i|BHAR}}{Hldg_{i,-1}} \times BHAR_i\right) \\
&= \frac{1}{Hldg_{i,-1}} E(\Delta Hldg_{i|BHAR} \times BHAR_i) \\
&= \frac{1}{Hldg_{i,-1}} \left(Cov(\Delta Hldg_{i|BHAR}, BHAR_i) + E(\Delta Hldg_{i|BHAR})E(BHAR_i) \right) \\
&= \frac{1}{Hldg_{i,-1}} \left(\beta_1 Var(BHAR_i) + E(\Delta Hldg_{i|BHAR})E(BHAR_i) \right) \tag{2}
\end{aligned}$$

where $\Delta Hldg_{i|BHAR}$ is the component of institutional investor trading that is explained by BHAR, after purging out the effect of other covariates, and $Hldg_{i,-1}$ is the institutional investor's pre-announcement holding that is known when computing the expected gap. Notice that a larger, positive coefficient β_1 increases the expected gap, and the uncertainty associated with the deal, measured by the variance of BHAR, also increases the expected gap.

2.5 Sample Overview

Table 1 presents summary statistics of our sample of 1,594 bids with deal level characteristics and institutional holdings and trading of acquirer stocks. Panel A describes the full sample statistics while Panel B provides subsample information.

From Panel A of Table 1, we find that the post-merger performance of our sample firms, as measured by acquirer 3-day CAR around bid announcement and their long-run post-merger BHARs, are both slightly negative on average. This is consistent with previous studies and is indicative of the fact that acquiring firm value drops, on average, due to M&A events. Interestingly, deal performance is also highly dispersed, as indicated by the large standard deviation of CAR and BHAR. Specifically, the annualized standard

deviation of BHARs over different horizons is about 50%; the top 10% of deal performance generates an annualized BHAR of about 61% while the bottom 10% of deals lose more than 62%.⁵ These large variations in BHARs provide a strong incentive for institutional investors to actively collect information regarding the quality of the acquisition and trade the acquirer stock accordingly.

In our analysis, we examine the institutional trading of acquirer stocks before bid announcement and during the bid negotiation period. Panel A of Table 1 shows that acquirers are held, on average, by 14 institutions prior to an acquisition. The average bid negotiation period, starting from the date of bid announcement and ending at the date of bid closure, lasts for 139 days. This allows sufficient time for institutional investors to collect information regarding deal quality and trade on their private information.

Institutional ownership of acquirer stocks before bid announcements is, on average, 1.26 percent of the total shares outstanding of the acquiring firm for *each* institution. Given that there are on average 14 holding institutions, the average institutional ownership is around 20% across all acquiring firms throughout the sample period. During the bid negotiation period, the average trading volume by each institution (i.e., the absolute value of its changes in holdings) is 0.33 percent. The net trading by each institution averages 0.15 percent because some institutions buy while others sell. The trading volume appears larger for the pre-acquisition period, but this is driven by the fact that the pre-acquisition period contains four quarters while the average bid negotiation period lasts only 139 days. After adjusting for this duration difference, the institutional trading during bid negotiation period is much more active than that in the pre-announcement period.

Panel B of Table 1 provides more guidance to our subsample tests. In this panel, we compute summary statistics for various subsamples. We first divide the sample based on the institutions' initial holdings of acquirer stocks at the beginning of the bid negotiation period. Institutions with large initial holdings (i.e., the top half) on average hold 1.61% of acquirer stocks. They trade more actively than institutions with small initial holdings, evident by the trading volume of 0.40 versus 0.29. Net trading by institutions with large initial holdings is close to zero while net trading by institutions with small initial holdings is more positive. These trading patterns are consistent with the idea that having a large initial position allows

⁵It is worth noting that BHARs measure the relative performance of an acquirer benchmarked against its stand-alone peers, so the variation of BHARs captures not only the dispersion in merger gains but also the measurement errors induced by the peer firms' idiosyncratic risks. One way to correct for the measurement errors is to subtract from the variance of BHARs the idiosyncratic variance of the peer firms. This correction reduces the variance of BHARs to about 30%, which is still large.

institutions to trade on both directions (buy or sell) depending on the private information they collect. In contrast, institutions with small initial holdings are limited in their ability to sell if they identify negative information due to short sale constraints.

Panel B of Table 1 also shows that trading activity is much more pronounced for institutions whose holdings of acquirer stocks carry a larger weight relative to other stocks in their portfolios (see for example, [Fich, Harford, and Tran 2015](#)). The panel also shows that institutional investors' trading are affected by deal and firm characteristics: trading activity is larger when the transaction value is large relative to the acquirers' size and for acquiring firms whose stocks are more liquid.

These subsample summary statistics provide some suggestive evidence that is consistent with our main hypothesis and the derived empirical predictions. In what follows we explore these predictions in more detail using multivariate regression analyses.

3 Empirical Results

We examine how institutional trading of acquirer stocks correlates with long run deal performance, which is the fundamental driver of the gap between the return to firm value and the return to these informed active shareholders. We document a strong, positive correlation between institutional trading and deal quality for the full sample, suggesting that these institutions indeed trade in the right direction and earn positive trading profits. We further demonstrate that the correlation varies significantly with deal and institution characteristics that affect the institutional investors' incentive or ability to trade in these M&A deals. To this end, we identify the cases in which the return gap is the largest. Using the return to firm value to gauge institutional investors' incentive in engaging these M&A deals can be particularly misleading. Our empirical specifications follow what laid out in Section 2.4.

3.1 Institutional Trading and Merger Performance

3.1.1 Baseline Results

Table 2 presents the baseline results on how institutional trading during the bid negotiation period relates to the ex post acquisition performance. Column 1 to 5 reports the results without fixed effects,

while column 6 to 10 include the industry fixed effect and year fixed effect. The results confirm that institutional trading during the bid negotiation period is positively correlated with acquirers' long-run BHARs up to two years after bid closure. Specifically, the coefficient on deal quality is positive and significant for both the one-year BHAR and two-year BHAR. The magnitude is economically large. For example, the coefficient estimate in column 6 suggests that one standard deviation increase in the one-year BHAR predicts almost 30% increase in the institutions' purchase of acquirer stocks on average.⁶

One possible concern with this regression is the reverse causality. For example, a positive correlation between institutional trading and acquirers' post-merger BHARs may simply result from the impact of institutions' large trades on the market price of acquirer stocks when the market reacts slowly. This can occur if uninformed traders follow institutional investors' trades after they are publicly disclosed and thus move market prices towards the direction of the institutional investors' trades, at least temporarily. To address this concern, we break down the two-year post-merger period into different subperiods and examine the correlation between institutional trading and BHARs accumulated within each subperiod. As columns 3 to 5 and 8 to 10 show, institutional trading is positively correlated with BHARs accumulated in all subperiods, however, the positive correlation is only economically large and statistically significant for BHARs accumulated from 6 months post merger to 12 months post merger. The *insignificant* coefficient for BHAR during the first 6 months post merger suggests that reverse causality concern is unlikely, because the impact of price pressure is more likely to happen within the first few months even if the market reacts slowly. In addition, since institutional holdings are made public every quarter, the effect from uninformed traders who follow institutional investors' trades would have implied a price effect within the first few months post merger as well.

The correlation pattern we document above suggests that institutional investors are able to earn trading profits from M&A and their gains from such corporate events are likely much larger than the return to acquiring firm. The positive correlation between institutional trading and BHAR during the [6m, 12m] period, implies that institutions are able to learn about the true deal quality before this information is fully incorporated into the market price and trade in the right direction during the bid negotiation period.

Employing the baseline regression coefficient 0.176 at column 1 and the estimated unconditional vari-

⁶The magnitude is computed as $\frac{Stdev(BHAR_{1yr}) \times \hat{\beta}_1}{|\Delta Hldg_{Nego}|} = \frac{0.50 \times 0.176}{0.32} = 0.275$

ance of 12-month BHAR of 0.25 at the full sample, our estimate of the expected gap is 3.3%.⁷ Given the average return to the firm in M&A events is -0.9%, active informed shareholders' return is significantly different from the average return to the firm. We also compute the realized gap based on the definition provided in Section 2.4, and we verify that the realized gap averages 3.5%, which is very close to the expected gap we obtain.

Equation 2 also suggests that the expected gap is larger in deals with more volatile BHAR. To confirm this prediction, we divide our full sample into two subsamples using the median of the absolute value of BHAR. We find the the expected gap is 6.3% for the subsample with more volatile BHAR while it shrinks to almost for the subsample with small BHAR. We also verify that they are close to the average realized gap of 7.6% and -0.7%.

3.1.2 Subsample Evidence

After documenting a positive, significant correlation between institutional trading and long-run deal performance in the full sample, we explore how the results vary in subsamples with different deal and institution characteristics. Our analyses leverage on the characteristics that shape the institutional investors' incentive and ability to trade and profit from the M&A deals. Our results shed light on where the gap can be particularly large and thus call for extra attention to such cases.

Deal size

We start by exploring cross-sectional variation related to deal size. Intuitively, a larger deal, relative to the acquirer's pre-merger market value, often has a larger impact (either positive or negative) on the acquirer's post-merger value which should induce institutional investors to gather more information and trade more aggressively. Therefore, we divide the full sample of deals into two subsamples based on the relative deal size, which we measure as the transaction value divided by the acquirer's market value 22 trading days before the bid announcement. We then run our baseline regression separately for the two subsamples. We report the results in Table 3. In the subsample of large deals, the coefficient of interest

⁷We use the average initial holdings of 1.26% per institution, unconditional variance of BHAR 24.6%, the average trading quantity of institutional investors around M&A of 0.15% of shares outstanding, and the average BHAR of -0.9% in Equation 2. It suggests that $E(gap) = \frac{1}{holdings_{-1}} (\hat{\beta} \times var(BHAR) + E(Trade)E(BHAR)) = 1/1.26 * (0.176 * 0.246 + 0.15 * (-0.009)) \approx 0.033$.

is statistically significant and economically large. For example, the coefficient on 12-month BHAR in the large deal subsample is 0.298, which is 57% higher than that in the full sample. The coefficient on 24-month BHAR is almost 80% larger than that in the full sample and remains highly significant despite of the smaller sample size. In the small deal subsample, we observe much weaker results with an insignificant loading of tiny magnitude. These findings suggest that, when the deal has a potentially larger impact on firm value, institutions trade more aggressively and their trading correlated more positively with deal quality.

As the formula for the expected gap suggests, the high covariance of institutional investors' trading and the following BHAR both lead to the high gap between returns to institutional investors and returns to the firm value. According to our measure, institutional investors are expected to extract 4.7% higher returns in larger deals, but they are expected to earn only 1.3% more in small deals. Nevertheless, given that average 12-month BHAR are -0.94% and -0.84% for large and small deals respectively, the returns to these institutional investors remain positive while the return to the firm is strictly negative.

Stock liquidity

As demonstrated in Kyle (1985), the expected trading profits of informed investors increase with stock liquidity, because informed trades generate small price impacts in a liquid market. We measure the stock liquidity for each acquirer in our sample using its bid-ask spread expressed as a percentage of the mid-price. We then sort acquirers into two subsamples based on their liquidity ranks among all their peers in the same year. We rerun our baseline regression and report the results for the two subsamples in Table 4. The findings suggest that institutions trade more aggressively in accordance with the deal performance when acquirer stocks are more liquid. Specifically, the coefficient on 12-month BHAR is 0.362 for the subsample of high liquidity acquirers, which almost doubles that in the full sample. This finding suggests that one standard deviation increase in the ex post merger performance increases the institutional purchase of acquirer stocks by 55% if acquirer stocks are liquid. In contrast, the coefficient is slightly negative for illiquid acquirers and is largely insignificant statistically. The difference between the estimates in the two subsamples is highly significant. This large regression coefficients for deals with high liquidity yields economically sizeable returns to institutional investors. In the subsample of liquid acquirers, the average 12-month BHAR is -1.4%. However, our measure suggests that institutional investors are expected to

extract 6.1% higher returns than the returns to the firm because of their tradings. Institutional investors therefore earn an average return of 4.7%, which is significantly higher than the return to the acquiring firms.

Short sale constraints

A large number of institutions in our sample are mutual funds who are subject to short-sale constraints. Since in theory an informed investor can make profits by trading in both good and bad mergers, constraints from short selling imply that investors may trade more aggressively in good deals and less so in bad deals when short sale constraints are likely to bind. To test this prediction, we follow [Chen, Harford, and Li \(2007\)](#) and define a new variable $[BHAR]^+$ ($[BHAR]^-$) which equals $BHAR$ when $BHAR$ is positive (negative) and zero otherwise. Replacing the regressor $BHAR$ in Equation 1 with either $[BHAR]^+$ or $[BHAR]^-$, we repeat our analysis and report our results in Panel A of Table 5. The table shows that the coefficients on $[BHAR]^+$ and $[BHAR]^-$ are both positive and statistically significant, indicating that institutions trade in the right direction in both good and bad deals. In addition, the coefficient is much larger and more statistically significant for deals with good ex post performance. This implies that institutions purchase acquirer stocks more aggressively in good deals than they sell shares in bad deals. This is indicative of the potential short sale constraints that they face.

Meanwhile, institutions' initial holding of the acquirer's stocks, X_0 , plays an important role in determining whether short sale constraints may bind: a large initial holding implies that institutional investors can benefit more from stock price appreciation in good deals and are less subject to short-sale constraints in bad deals. As a result, our baseline results should be stronger for institutions with higher initial holdings. This implication is also consistent with the theoretical results in [Edmans \(2009\)](#). To test this implication, we measure the institution's initial holdings of the acquirer's stocks at the beginning of the bid negotiation period. We then sort deals based on their initial institutional holdings and partition them into two subsamples of equal size. We rerun the regression in Equation 1 separately for the two subsamples. Panel B of Table 5 presents the regression results. For the subsample of deals with high initial institutional holdings, the coefficient on deal quality is highly significant and the magnitude doubles our baseline estimates. However, for the subsample of deals with low initial holdings, the coefficients are close to zero and statistically insignificant. The difference between the two subsamples is significant and

economically large. The expected gap is 4.6% for deals with high initial institutional holdings while it shrinks to 0.5% for deals with low initial institutional holdings.

Institutional investor ability

Institutional investors differ in their ability of collecting information and trading on corporate merger events. This differential ability may arise from their expertise and resource, which can persist over time. We measure an institutional investor's *specific* ability of trading on M&A events using its trading performance in past M&A deals. To construct this measure, we first define a variable *Right-minus-Wrong*, or $RmW_{i,t}$, for institutional investor i in year t . $RmW_{i,t}$ equals the total number of M&A deals in which investor i trades correctly minus the total number of deals in which it trades wrong during year t . We assign a deal to a year based on the date of deal closure, and we define investor i trading correctly in a deal if the deal ends up with positive (negative) post-merger BHAR and investor i increases (decreases) its holdings of the acquirer stocks during the bid negotiation period. $RmW_{i,t}$ equals zero if investor i does not trade acquirer stocks in any deals during year t . Since M&A are rare events, only less than 20% of investors trade in M&A events each year in our sample and thus $RmW_{i,t}$ is very lumpy for most investors in a single year. To obtain a smooth measure, we define investor i 's ability of trading on M&A events by year t using the weighted average of $RmW_{i,t-n}$ during the past N years

$$ability_{i,t}^{M\&A} = \sum_{n=1}^N w_n \cdot RmW_{i,t-n}$$

We use a window of $N = 10$ years and choose a series of exponentially declining weights with $w_{n+1} = 0.9w_n$. The declining weights capture the idea that an investor's recent trades contain more information regarding his current ability. Our results are robust to using alternative declining weighting schedules or simply an equal weighting schedule. Using a long window of 10 years also allows us to capture the persistent component of institutional investors' ability in trading in M&A events, averaging out the effect of luck.

We then sort the M&A deals into quintiles based on the average ability of the institutional investors who hold the acquirer before bid announcement. We then perform the baseline regression analysis in each group and report the coefficients of interest in Table 6. Due to limited space, we omit the coefficients on other

control variables in the table, which are close to those reported in our baseline results. Consistent with the model predictions, our results are much stronger for deals in which acquirers are held by institutions with high ability. The difference of coefficients between the high and low ability quintile is economically large and statistically significant at 1% level. The expected gap for the high-ability institution subsample (top quintile) is 5.6%, while the gap becomes -5.2% for the low-ability institutions (bottom quintile). This sharp contrast indicates that high-ability institutions trade against low-ability institutions in M&A deals.

Portfolio weights

Institutions in our sample hold a large portfolio of stocks. [Fich, Harford, and Tran \(2015\)](#) show that such institutions often allocate more time and efforts to monitor firms that account for a large fraction of their portfolios. Thus, we conjecture that if an acquirer's stock carry a large weight in an institution's portfolio, the institution has more incentive to collect information about the acquisition and therefore trade more aggressively.

To test this implication, we first compute the market value of acquirer stock in each institution's portfolio at the beginning of the bid negotiation period as well as the total market value of each institution's portfolio. The portfolio weight of the acquirer is then calculated as the total market value of acquirer's stock in the institution's portfolio divided by the total market value of the portfolio. We further adjust the portfolio weight by a benchmark weight that equals one over the total number of stocks in an institution's portfolio. This benchmark weight represents the weight a stock would receive if the institution allocated its capital equally to each stock in its portfolio. This adjustment is made to account for the fact that institutions differ in size and in the number of stocks they hold. Our measure of relative portfolio weight means that a positive (negative) relative weight on a stock represents a stock that receives a higher (lower) weight than the average stock in the institution's portfolio. This measure is consistent with the measure used in [Fich, Harford, and Tran \(2015\)](#) in the sense that both measures adjust for the number of stocks in an institution's portfolio.⁸

Using this measure, we sort all deals based on the average portfolio weights of holding institutions and partition them into two subsamples with equal size. We then run the baseline regressions in Equation

⁸[Fich, Harford, and Tran \(2015\)](#) define monitoring institutions of a firm as those whose holding value in the firm is in the top 10% of their portfolios. This measure effectively captures the relative importance of the firm to the institutional investors.

1 separately for the two subsamples. We report the results in Table 7. Consistent with our conjecture, we find that for deals in which institutions on average have a larger fraction of their capital invested in acquirers, institutions are more likely to trade in accordance with the ex post quality of the acquisition. In contrast, for deals in which holding institutions invest only a small fraction of their capital in acquirer stocks, our results are much weaker in economic magnitude and statistical significance.

We compute the expected gap to be 6.2% when institution investors place a high weight on the acquiring firm in their portfolio. In contrast, for acquirers that carry a low weight in institutional investors' portfolio, the expected gap is only 1.7%.

3.2 Institutional Trading and Expected Profits

Our findings above lend support to our predictions that institutional investors benefit from acquisitions through their ability to trade *during the bid negotiation period*. These results suggest that institutional investors' trading profits vary with deal and institution characteristics that determine the ability and incentive of trading in M&A.

Next we investigate how institutional investors' profits are affected by several economic measures that exist *before bid announcement*. Specifically, since institutional investors can capture the upward potential of good deals and are also able to mitigate the downward risk of bad deals, their expected trading profits are increasing with the dispersion of deal quality and with the initial ownership stake in the acquirer. We conjecture that institutions would increase their holdings in firms that subsequently pursue acquisitions with more dispersed long-run performance *before* these acquisitions are announced. In other words, institutional investors may actively chase a high expected gap even before a takeover is announced.

To test this prediction, we take the institutional trading during the one-year period *before* bid announcements as the dependent variable⁹ and regress it on post-merger BHARs (in Equation 3) and the

⁹The time subscript (-5,-1) represents the one year period that starts from five quarters before the bid announcement and ends at one quarter before the announcement.

absolute value of BHARs (in Equation 4), respectively:

$$\begin{aligned} \Delta Hldg_{i;(-5,-1)} &= \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(-5,-1)} + \beta_3 FirmSize_{i,-1yr} \\ &\quad + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(-5,-1)} + \beta_6 EOY_i + e_i \end{aligned} \quad (3)$$

$$\begin{aligned} \Delta Hldg_{i;(-5,-1)} &= a + b_1 |BHAR_i| + b_2 Return_{i;(-5,-1)} + b_3 FirmSize_{i,-1yr} \\ &\quad + b_4 FirmMB_{i,-1yr} + b_5 Turnover_{i;(-5,-1)} + b_6 EOY_i + e_i \end{aligned} \quad (4)$$

Table 8 presents the results of the above regressions. The results in column 1 to 2 and 5 to 6 indicate that institutional trading *prior to* bid announcement is uncorrelated with the ex post deal performance, which is consistent with the idea that institutions do not possess inside information regarding the deal quality prior to the bid announcement. In contrast, the regression results in column 3 to 4 and 7 to 8 indicate that before the bid is announced, institutional investors tend to increase their holdings of acquirers that subsequently pursue mergers with more dispersed outcomes. This finding suggests that a high ex ante dispersion in deal performance and a high initial holding increase the institutions' expected trading profits and thus enlarge the gap. Note that this result can be driven by either a selection effect (i.e., institutional investors select more risk-taking acquirers without intervention and therefore side with bad managers) or a treatment effect (i.e., institutional investors explicitly encourage the firms they buy to pursue riskier acquisitions and therefore actively promote the takeover policy), and both effects lead to a greater gap between the return to institutional investors and the return to the firm.

3.3 The Effect of Voice on the Gap

Our paper differs from the vast literature that studies institutional investors' choice between voting with voice or with feet, because we focus on examining their incentive in influencing corporate decisions, rather than their tactics of intervention. But since the power of voice declines if institutional investors sell off their shares in M&A, their intention to voice ex post may interact with their trading activity in the bid negotiation period. As a result, our measure of expected gap may also depend on the institutional investors' intention to voice. We expect the positive correlation between institutional trading and deal performance to be weaker for institutional investors who are more likely to commit to vote with voice, and thus a smaller gap between firm return and the return to these investors.

Since it is hard to measure directly the institutional investors' intention to vote with voice, we proxy for it using institutions' investment horizon. Previous studies document that long-horizon investors have stronger incentive and ability to influence managerial decisions due to their long-term relationship with the firm (e.g., [Chen, Harford, and Li 2007](#); [Qiu 2006](#)), while short-horizon investors lack influence power due to their transitory holdings ([Parrino, Sias, and Starks 2003](#); [Gaspar, Massa, and Matos 2005b](#)). Following [Gaspar, Massa, and Matos \(2005b\)](#) and [Cella, Ellul, and Giannetti \(2013\)](#), we capture an investor's investment horizon using a proxy for his portfolio turnover. The investor portfolio turnover ratio we measure here is not firm-specific but rather a characteristics of the institutional investor.

The portfolio turnover ratio, or the churn ratio, of institutional investor i holding an investment set of firms denoted as Q is calculated as follows:

$$ICR_{i,t} = \frac{\sum_{j \in Q} |N_{j,i,t}P_{j,t} - N_{j,i,t-1}P_{j,t-1} - N_{j,i,t-1}\Delta P_{j,t}|}{\frac{\sum_{j \in Q} N_{j,i,t}P_{j,t} + N_{j,i,t-1}P_{j,t-1}}{2}}$$

where $ICR_{i,t}$ denotes the *institution churn ratio*, $P_{j,t}$ and $N_{j,i,t}$ are the price and number of shares of stock j held by institution i in quarter t . For each institutional investor, we remove the year-quarter fixed effect from the raw measure of churn ratio and then measure the institution's investment horizon in quarter t as the average adjusted churn ratio over the past one-year period.¹⁰

For each acquirer j in our sample, we also compute the average churn ratio of institutional investors who hold the acquiring firm:

$$FCR_{j,t} = \frac{\sum_{i \in I} w_{j,i} \cdot ICR_{i,t}}{\sum_{i \in I} w_{j,i}}$$

where $FCR_{j,t}$ denotes the *firm churn ratio*, $w_{j,i}$ is the fraction of acquirer j 's shares outstanding that are held by institutional investor i and $ICR_{i,t}$ is the institutional investor i 's churn ratio.

We first examine whether institutions with long (short) investment horizon and thus with strong (weak) intention to vote with voice, choose to trade less (more) with respect to deal performance. To do so, we partition our sample into two subsamples based on acquirers' FCR measure. FCR captures the average churn ratio of institutions that hold the acquirer. The subsample of deals with low $FCRs$ represents the

¹⁰Using unadjusted churn ratio or alternative window of moving average produces quantitatively similar results for the tests below.

deals in which acquirers are mainly held by investors with strong intention to voice. We rerun our baseline analysis in Equation 1 separately for the two subsamples of institutions. We then explore whether the coefficient on our main variable of interest varies across the two subsamples.

Table 9 presents the regression results. For institutions with weak intention to voice, the coefficient on deal performance is positive and highly significant. The magnitude is also much larger than that in the baseline results. However, for institutions with strong intention to voice, the coefficient is small and insignificant. The difference between the two subsamples is statistically significant and economically large. These findings suggest that institutions with weak intention to voice are trading more aggressively than institutions with strong intention to voice. It is worth noting that our findings here are not mechanical. This is because even though short-horizon institutions, by definition, trade more frequently than long-horizon institutions, it only means a larger trading volume and it does not suggest any mechanical correlation between institutional trading and deal performance. Therefore, our finding that short-horizon institutions trade more aggressively in accord with deal performance indicates that they possess the ability to collect private information and they indeed trade on their information. We compute the expected gap to be 6.8% when institution investors have weak intention to vote. In contrast, for acquirers whose shareholders have high intention to vote, the expected gap is only 0.2%.

Last, we examine whether institutions with strong intention to voice indeed attempt to influence deal outcomes after the deal is announced (i.e., try to block bad deals). Previous studies document that acquirers may withdraw bids that are perceived as bad by the market (e.g., Luo 2005), and we test whether a deal that is not well received by the market on its announcement is more likely to be withdrawn when the acquirer is held by institutions with strong intention to voice.

We run the following regression and then explore whether the key coefficient varies across the two subsamples.

$$I_i = \alpha + \beta_1 CAR_i + \beta_2 X_i + e_i$$

where I_i is a dummy variable that equals one if deal i is withdrawn and zero otherwise; CAR_i is the acquirer 3-day cumulative abnormal announcement return;¹¹ and X_i is the control variable vector that

¹¹Strictly speaking, to test the model implications, we shall use BHAR as the measure of deal quality in the regression. However, for deals that are withdrawn subsequently, we cannot observe their hypothetical performance. As a result, we

are commonly used in the literature, including acquirer size, relative deal size, acquirer Tobin's Q, leverage, operating cash flow, conglomeration dummy, tender offer dummy, hostile bid dummy, all equity payment dummy, and all cash payment dummy. We do not control for target firm's Q, leverage, and operating cash flow because some targets are private firms in our sample and including these controls for targets would exclude the observations with private targets.

Table 10 presents the regression results. For deals in which acquirers are mainly held by institutions with strong intention to voice, the probability of deal withdrawal is negatively correlated with the market perceived deal quality (i.e., CAR), but for deals in which acquirers are mainly held by institutions with weak intention to voice, the probability of deal withdrawal is insensitive to CAR. Though we cannot directly observe institutions' behind-the-scenes influence, this result suggests that institutions with strong intention to voice seem to affect deal outcomes. The difference between the two subsamples is statistically significant and economically large. Our finding is consistent with [McCahery, Sautner, and Starks \(2015\)](#) who use the survey data of institutional investors and document that long-term investors and investors that are less concerned about stock liquidity intervene more intensively behind-the-scenes.

Overall, we find that institutional investors' intention to voice has a significant effect on the return gap we quantify in this paper. As institutional investors' intention to voice strengthens, they sell fewer shares during the bid negotiation period in face of a bad deal in order to retain their control. In this case, the return gap is reduced and the interest of institutional investors becomes more aligned with the interest of the firm.

Figure 2 summarizes the findings from our analyses. In the full sample analysis, we report a strong positive correlation between institutional trading and subsequent BHAR, resulting in a 3.3% return gap. This correlation is significantly influenced by deal characteristics. Notably, the gap widens to 6.3% for highly uncertain deals, 4.7% for large deals, and 6.1% for deals with liquid acquirer stocks. Additionally, the gap varies with institutional investors' characteristics: it widens to 4.6% with high initial institutional holdings, 5.6% with strong trading ability, 6.2% with a high portfolio weight of the acquirer stock in institutional investors' portfolios, and 6.8% when institutional investors have a weak intention to voice.

follow the literature and use the 3-day CAR to measure the market reaction to the announced deal that affects the likelihood of deal withdrawal (e.g., [Luo \(2005\)](#)).

4 Conclusion

If investors trade actively during corporate events, the return to the firm, induced by such events, is not equal to the return to these investors. This gap renders firm return a misleading measure for these investors' incentives in corporate decisions. In this paper, we document in the context of M&A that top institutional investors increase their holdings of acquirers in good deals and decrease their holdings in bad deals before the market fully realizes the deal outcome. This positive correlation between institutional investors' trading during the bid negotiation period and the long-run performance of M&A deals implies significant trading profits for these investors. We propose a new measure to incorporate the trading profits in order to gauge their incentives more accurately in M&A. On average, institutional investors earn 2.4% from M&A while the return to acquirers is only -0.9%. As a result, even though M&A on average destroy firm value, institutional investors benefit from embracing acquisitive firms, because the high uncertainty created by merger events allow them to capture the option value of these events. Institutional investors leverage their information advantage in trading to capture the upward potential of these deals but meanwhile mitigate the downward risk. To this end, our paper offers a complementary explanation to the puzzle why acquirer shareholders, even the large institutional investors, rarely oppose M&A even if the firms do not overtly benefit from these deals.

We examine the magnitude of the gap cross-sectionally, and we find that in deals that deliver volatile returns to the firm, the gap is enlarged to 6.3%. We also show that this gap widens with merger size, stock liquidity, institutional investors' initial holding, their portfolio weight on the acquirer, and their skill of trading in past mergers, because these deal and institution characteristics affect the active investors' ability or incentive to collect information and trade in M&A. Our study contributes to the literature by highlighting the fact that the group of investors who have a say on corporate events do not necessarily bear the full consequences of such events, and therefore accounting for the dynamics of shareholder composition is critical in measuring investors' incentives correctly.

References

- Andrade, G., Mitchell, M., Stafford, E., 2001. New evidence and perspectives on mergers. *Journal of economic perspectives* 15(2), 103–120.
- Bae, K.-H., Kang, J.-K., Kim, J.-M., 2002. Tunneling or value added? evidence from mergers by Korean business groups. *Journal of Finance* 57(6), 2695–2740.
- Barraclough, K., Robinson, D. T., Smith, T., Whaley, R. E., 2013. Using option prices to infer overpayments and synergies in m&a transactions. *The Review of Financial Studies* 26(3), 695–722.
- Ben-David, I., Bhattacharya, U., Jacobsen, S. E., 2020. The (missing) relation between announcement returns and value creation. Unpublished working paper. National Bureau of Economic Research.
- Ben-David, I., Drake, M. S., Roulstone, D. T., 2015. Acquirer valuation and acquisition decisions: Identifying mispricing using short interest. *Journal of Financial and Quantitative Analysis* 50(1-2), 1–32.
- Betton, S., Eckbo, B. E., Thorburn, K. S., 2008. Corporate takeovers. Elsevier/North-Holland Handbook of Finance Series.
- Bhagat, S., Dong, M., Hirshleifer, D., Noah, R., 2005. Do tender offers create value? new methods and evidence. *Journal of Financial Economics* 76(1), 3–60.
- Brickley, J. A., Lease, R. C., Smith, C. W., 1988. Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics* 20, 267–291.
- Cai, J., Song, M. H., Walkling, R. A., 2011. Anticipation, acquisitions, and bidder returns: Industry shocks and the transfer of information across rivals. *The Review of Financial Studies* 24(7), 2242–2285.
- Cella, C., Ellul, A., Giannetti, M., 2013. Investors' horizons and the amplification of market shocks. *Review of Financial Studies* p. hht023.
- Chen, X., Harford, J., Li, K., 2007. Monitoring: Which institutions matter?. *Journal of Financial Economics* 86(2), 279–305.
- Dasgupta, S., Harford, J., Ma, F., 2023. Eps-sensitivity and mergers. *Journal of Financial and Quantitative Analysis* pp. 1–61.

- Edmans, A., 2009. Blockholder trading, market efficiency, and managerial myopia. *Journal of Finance* 64(6), 2481–2513.
- , 2014. Blockholders and corporate governance. *Annual Review of Financial Economics* 6, 23–50.
- Fich, E. M., Harford, J., Tran, A. L., 2015. Motivated monitors: The importance of institutional investors? portfolio weights. *Journal of Financial Economics* 118(1), 21–48.
- Gaspar, J.-M., Massa, M., Matos, P., 2005a. Shareholder investment horizons and the market for corporate control. *Journal of Financial Economics* 76(1), 135–165.
- , 2005b. Shareholder investment horizons and the market for corporate control. *Journal of financial economics* 76(1), 135–165.
- Goldman, E., Wang, W., 2021. Weak governance by informed active shareholders. *The Review of Financial Studies* 34(2), 661–699.
- Harford, J., 1999. Corporate cash reserves and acquisitions. *The journal of finance* 54(6), 1969–1997.
- Harford, J., Jenter, D., Li, K., 2011. Institutional cross-holdings and their effect on acquisition decisions. *Journal of Financial Economics* 99(1), 27–39.
- Hartzell, J. C., Starks, L. T., 2003. Institutional investors and executive compensation. *Journal of Finance* 58(6), 2351–2374.
- Healy, P. M., Palepu, K. G., Ruback, R. S., 1992. Does corporate performance improve after mergers?. *Journal of financial economics* 31(2), 135–175.
- Hoberg, G., Phillips, G. M., 2018. Product integration and merger success. *Tuck School of Business Working Paper (2933283)*, 17–21.
- Jacobsen, S., 2014. The death of the deal: Are withdrawn acquisition deals informative of ceo quality?. *Journal of Financial Economics* 114(1), 54–83.
- Jensen, M. C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review* 76(2), 323–329.

- Kaplan, S. N., Weisbach, M. S., 1992. The success of acquisitions: Evidence from divestitures. *The Journal of Finance* 47(1), 107–138.
- Kyle, A. S., 1985. Continuous auctions and insider trading. *Econometrica* 53, 1315–1335.
- Li, X., 2013. Productivity, restructuring, and the gains from takeovers. *Journal of Financial Economics* 109(1), 250–271.
- Luo, Y., 2005. Do insiders learn from outsiders? evidence from mergers and acquisitions. *The Journal of Finance* 60(4), 1951–1982.
- Lyon, J. D., Barber, B. M., Tsai, C.-L., 1999a. Improved methods for tests of long-run abnormal stock returns. *The Journal of Finance* 54(1), 165–201.
- , 1999b. Improved methods for tests of long-run abnormal stock returns. *Journal of Finance* 54(1), 165–201.
- Masulis, R. W., Wang, C., Xie, F., 2007. Corporate governance and acquirer returns. *Journal of Finance* 62(4), 1851–1889.
- Matvos, G., Ostrovsky, M., 2008. Cross-ownership, returns, and voting in mergers. *Journal of Financial Economics* 89(3), 391–403.
- Maug, E., 1998. Large shareholders as monitors: is there a trade-off between liquidity and control?. *Journal of Finance* 53(1), 65–98.
- McCahery, J. A., Sautner, Z., Starks, L. T., 2015. Behind the scenes: The corporate governance preferences of institutional investors. *Journal of Finance*, forthcoming.
- Mitchell, M. L., Stafford, E., 2000. Managerial decisions and long-term stock price performance. *The Journal of Business* 73(3), 287–329.
- Nain, A., Yao, T., 2013. Mutual fund skill and the performance of corporate acquirers. *Journal of Financial Economics* 110(2), 437–456.
- Parrino, R., Sias, R. W., Starks, L. T., 2003. Voting with their feet: Institutional ownership changes around forced ceo turnover. *Journal of Financial Economics* 68(1), 3–46.

- Qiu, L. X., 2006. Which institutional investors monitor? evidence from acquisition activity. .
- Rhodes-Kropf, M., Robinson, D. T., Viswanathan, S., 2005. Valuation waves and merger activity: The empirical evidence. *Journal of financial Economics* 77(3), 561–603.
- Rhodes-Kropf, M., Viswanathan, S., 2004. Market valuation and merger waves. *The Journal of Finance* 59(6), 2685–2718.
- Roll, R., 1986. The hubris hypothesis of corporate takeovers. *Journal of business* pp. 197–216.
- Shleifer, A., Vishny, R. W., 2003. Stock market driven acquisitions. *Journal of financial Economics* 70(3), 295–311.
- Wang, W., 2018. Bid anticipation, information revelation, and merger gains. *Journal of Financial Economics* 128(2), 320–343.

Table 1: Summary Statistics

Panel A. The Full Sample

Panel A reports summary statistics of M&A deal characteristics and the institutional holdings and trading of acquirer stocks in the full sample. $Ln(MV_{Acq})$ is the logarithm of the acquirer's pre-acquisition market value measured 22 trading days before the bid announcement; Q_{Acq} is the acquirer's pre-acquisition market-to-book ratio; $Deal\ Size$ is the relative deal size measured as the transaction value divided by the acquirer's pre-acquisition market value; $Bid\ Len$ is the total number of calendar days between bid announcement and bid completion or withdrawal; CAR_{3d} is the acquirer's 3-day cumulative abnormal return around the bid announcement date computed using the market model; $BHAR_{1y}$ and $BHAR_{2y}$ are the acquirer's post-merger 1-year and 2-year buy-and-hold abnormal return; $Num\ Inst$ is the total number of institutions that hold the acquirer's stock before bid announcement; $BA\ Sprd$ is the bid-ask spread of the acquirer's stock expressed as a percentage of the mid-price; $Hldg_{PreAnn}$ is the average institutional holdings of the acquirer stock expressed as a percent of total shares outstanding; $\Delta Hldg_{PreAnn}$ is the change in institutional holdings of the acquirer's stocks during the one year period before bid announcement; $\Delta Hldg_{Nego}$ is the change in institutional holdings of the acquirer's stocks during the bid negotiation period; $|\Delta Hldg_{PreAnn}|$ and $|\Delta Hldg_{Nego}|$ are the absolute value of $\Delta Hldg_{PreAnn}$ and $\Delta Hldg_{Nego}$ respectively and capture the trading volume of acquirer stock in the corresponding periods.

Deal Characteristics					
	Mean	Stdev	P10	P50	P90
$Ln(MV_{Acq})$	20.50	1.76	18.31	20.41	22.84
Q_{Acq}	1.91	1.37	0.96	1.44	3.42
$Deal\ Size$	0.33	0.51	0.03	0.16	0.83
$Bid\ Len$	139.17	126.92	43.00	108.50	253.00
$CAR_{3d}(\%)$	-0.04	7.40	-7.52	-0.10	7.27
$BHAR_{1y}(\%)$	-0.89	49.60	-58.20	-0.31	61.00
$BHAR_{2y}(\%)$	-1.73	73.76	-89.67	-1.90	89.27
$Num\ Inst$	13.90	11.59	2.00	11.00	31.00
$BA\ Sprd(\%)$	1.16	1.55	0.04	0.58	2.94

Mutual Fund Holding and Trading					
	Mean	Stdev	P10	P50	P90
$Hldg_{PreAnn}$	1.26	1.26	0.31	0.93	2.40
$\Delta Hldg_{PreAnn}$	0.25	0.88	-0.34	0.11	1.07
$\Delta Hldg_{Nego}$	0.15	1.13	-0.24	0.04	0.57
$ \Delta Hldg_{PreAnn} $	0.51	0.75	0.03	0.25	1.30
$ \Delta Hldg_{Nego} $	0.32	1.09	0.01	0.13	0.72

Panel B. The Subsamples

Panel B reports summary statistics for different subsamples. Initial holding X_0 is the average institutional holdings of acquirer stocks in the subsample at the beginning of bid negotiation period, expressed as a percent of total acquirer stock outstanding. The relative portfolio weight Wts is the weight of the acquirer's stocks in the institutions' portfolios minus the benchmark weight (the benchmark weight is one over the total number of stocks an institution holds). Transaction value *Deal Size* is measured as the transaction value divided by the acquirer's pre-acquisition market value. Liquidity is measured by the acquirer stock's percent bid-ask spread, and the subsample with high liquidity contains acquirers with low percent bid-ask spread. $BHAR_{1y}$ is the acquirer's post-merger 1-year buy-and-hold abnormal return. $\Delta Hldg_{Nego}$ is the average change in institutional holdings of the acquirer's stocks during the bid negotiation period; $|\Delta Hldg_{Nego}|$ is the absolute value of $\Delta Hldg_{Nego}$ and capture the trading volume of acquirer stock in the bid negotiation period.

	Mean	Stdev	Mean	Stdev
Initial Holdings X_0				
	High		Low	
$X_0(\%)$	5.65	2.52	1.32	0.83
$BHAR_{1y}(\%)$	-2.88	50.82	1.10	48.30
$\Delta Hldg_{Nego}$	0.16	1.51	0.14	0.52
$ \Delta Hldg_{Nego} $	0.37	1.47	0.26	0.47
Relative Portfolio Weights Wts				
	High		Low	
$Wts(\%)$	0.15	0.20	-0.09	0.10
$BHAR_{1y}(\%)$	-1.40	43.10	-0.38	55.36
$\Delta Hldg_{Nego}$	0.20	1.43	0.10	0.72
$ \Delta Hldg_{Nego} $	0.29	1.41	0.34	0.64
Transaction Value				
	High		Low	
<i>Deal Size</i>	0.61	0.62	0.07	0.04
$BHAR_{1y}(\%)$	-0.94	50.65	-0.84	48.57
$\Delta Hldg_{Nego}$	0.25	1.49	0.05	0.57
$ \Delta Hldg_{Nego} $	0.40	1.45	0.23	0.52
Liquidity				
	High		Low	
<i>BA Sprd</i> (%)	2.11	1.71	0.16	0.19
$BHAR_{1y}(\%)$	-1.44	57.28	-1.20	42.98
$\Delta Hldg_{Nego}$	0.23	1.69	0.08	0.34
$ \Delta Hldg_{Nego} $	0.43	1.65	0.21	0.29

Table 2: Institutional Trading and Merger Performance: The Full Sample

This table presents the results for the baseline analysis:

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

The dependent variable, $\Delta Hldg_{i;(0,cls)}$ denotes the average trading of acquire i 's stocks by institutional investors during the bid negotiation period; $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons. Control variables follow Parrino, Sias, and Starks (2003) who study the determinants of changes in institutional holdings: $Return_{i;(0,cls)}$ denotes the acquirer's cumulative return in bid negotiation period; $FirmSize_{i,-1yr}$ and $FirmMB_{i,-1yr}$ denote the acquirer's size (i.e., the logarithm of market value) and book-to-market ratio measured one year before the bid announcement; $Turnover_{i;(0,cls)}$ denotes the aggregate trading volume in bid negotiation period normalized by the shares outstanding, EOY_i denotes the year-end dummy, which takes the value of one if the bid negotiation period contains the fourth quarter. The analyses with industry and year fixed effects are also reported.

	[0, 12m]	[0, 24m]	[0, 6m]	[6m,12m]	[12m, 24m]	[0, 12m]	[0, 24m]	[0, 6m]	[6m,12m]	[12m, 24m]
<i>BHAR</i>	0.176*** (0.057)	0.096** (0.038)	0.108 (0.083)	0.239*** (0.078)	0.030 (0.052)	0.192*** (0.057)	0.108*** (0.039)	0.146* (0.085)	0.236*** (0.080)	0.040 (0.053)
<i>Return</i>	0.322*** (0.095)	0.327*** (0.095)	0.331*** (0.096)	0.338*** (0.095)	0.341*** (0.095)	0.313*** (0.098)	0.318*** (0.098)	0.322*** (0.099)	0.331*** (0.098)	0.334*** (0.098)
<i>Size</i>	-0.067*** (0.017)	-0.067*** (0.017)	-0.065*** (0.017)	-0.069*** (0.017)	-0.066*** (0.017)	-0.073*** (0.018)	-0.072*** (0.018)	-0.070*** (0.018)	-0.074*** (0.018)	-0.071*** (0.018)
<i>M/B</i>	0.002 (0.021)	0.004 (0.021)	0.002 (0.021)	0.004 (0.021)	0.004 (0.021)	0.010 (0.023)	0.013 (0.023)	0.010 (0.023)	0.011 (0.023)	0.012 (0.023)
<i>EOY</i>	0.029 (0.058)	0.032 (0.058)	0.029 (0.058)	0.031 (0.058)	0.031 (0.058)	0.050 (0.060)	0.053 (0.060)	0.049 (0.060)	0.052 (0.060)	0.051 (0.060)
<i>Vol</i>	0.002 (0.028)	-0.004 (0.028)	-0.001 (0.028)	-0.002 (0.028)	-0.005 (0.028)	0.002 (0.030)	-0.005 (0.030)	-0.001 (0.030)	-0.003 (0.030)	-0.006 (0.030)
<i>Cons.</i>	0.563*** (0.118)	0.559*** (0.118)	0.547*** (0.118)	0.576*** (0.118)	0.552*** (0.118)	0.576*** (0.124)	0.572*** (0.125)	0.558*** (0.125)	0.589*** (0.125)	0.565*** (0.125)
Fixed Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
# Obs	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594
Adj-R2	0.021	0.019	0.016	0.021	0.015	0.019	0.017	0.014	0.017	0.012

Table 3: Institutional Trading and Merger Performance: Deal Size

This table presents the results for the following regression in two subsamples that are constructed based on the relative deal size, $\frac{TranVal}{MVAcq}$:

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid completion or withdrawal. $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(0,cls)}$ is the total trading volume as a percentages of the acquirer's shares outstanding during bid negotiation period, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

	Large		Small		Difference		Large		Small		Difference	
	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
<i>BHAR</i>	0.266** (0.104)	0.160** (0.071)	0.062 (0.041)	0.033 (0.027)	0.204* (0.112)	0.127* (0.076)	0.298*** (0.107)	0.186** (0.073)	0.066 (0.042)	0.033 (0.028)	0.232** (0.115)	0.153* (0.078)
<i>Return</i>	0.315** (0.158)	0.331** (0.157)	0.284*** (0.080)	0.281*** (0.080)	0.031 (0.177)	0.050 (0.176)	0.312* (0.165)	0.332** (0.165)	0.262*** (0.084)	0.260*** (0.084)	0.050 (0.185)	0.072 (0.185)
<i>Size</i>	-0.085*** (0.031)	-0.085*** (0.031)	-0.035*** (0.012)	-0.035*** (0.012)	-0.050 (0.033)	-0.050 (0.033)	-0.097*** (0.034)	-0.097*** (0.034)	-0.036*** (0.013)	-0.035*** (0.013)	-0.061* (0.036)	-0.062* (0.036)
<i>M/B</i>	0.046 (0.044)	0.055 (0.044)	-0.018 (0.014)	-0.018 (0.014)	0.064 (0.046)	0.073 (0.046)	0.078 (0.048)	0.088* (0.048)	-0.020 (0.015)	-0.020 (0.015)	0.098* (0.050)	0.108** (0.050)
<i>EOY</i>	0.115 (0.107)	0.116 (0.107)	-0.099** (0.042)	-0.097** (0.042)	0.214* (0.115)	0.213* (0.115)	0.145 (0.113)	0.144 (0.114)	-0.091** (0.044)	-0.090** (0.044)	0.236* (0.121)	0.234* (0.122)
<i>Vol</i>	-0.023 (0.045)	-0.033 (0.045)	0.033 (0.026)	0.031 (0.026)	-0.056 (0.052)	-0.064 (0.052)	-0.022 (0.048)	-0.033 (0.048)	0.035 (0.028)	0.032 (0.028)	-0.057 (0.056)	-0.065 (0.056)
<i>Cons.</i>	0.654*** (0.208)	0.648*** (0.208)	0.339*** (0.091)	0.337*** (0.091)	0.315 (0.227)	0.311 (0.227)	0.656*** (0.224)	0.653*** (0.224)	0.342*** (0.099)	0.340*** (0.099)	0.314 (0.245)	0.313 (0.245)
Fixed Effects	No	No	No	No			Yes	Yes	Yes	Yes		
# Obs	797	797	797	797			797	797	797	797		

Table 4: Institutional Trading and Merger Performance: Liquidity

This table presents the results for the following regression in two subsamples that are constructed based on the acquirer stock liquidity:

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid completion or withdrawal. $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(0,cls)}$ is the total trading volume as a percentage of the acquirer's shares outstanding during bid negotiation period, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

	High		Low		Difference		High		Low		Difference	
	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
<i>BHAR</i>	0.301** (0.117)	0.176** (0.079)	-0.038 (0.032)	-0.036* (0.021)	0.339*** (0.121)	0.212*** (0.082)	0.362*** (0.120)	0.228*** (0.082)	-0.051 (0.033)	-0.041* (0.022)	0.413*** (0.124)	0.269*** (0.085)
<i>Return</i>	0.342* (0.189)	0.356* (0.189)	0.182*** (0.057)	0.182*** (0.057)	0.160 (0.197)	0.174 (0.197)	0.367* (0.197)	0.378* (0.197)	0.161*** (0.061)	0.160*** (0.061)	0.206 (0.206)	0.218 (0.206)
<i>Size</i>	-0.111*** (0.041)	-0.114*** (0.041)	-0.016* (0.009)	-0.016* (0.009)	-0.095** (0.042)	-0.098*** (0.042)	-0.169*** (0.048)	-0.176*** (0.049)	-0.015 (0.010)	-0.016 (0.010)	-0.154*** (0.049)	-0.160*** (0.050)
<i>M/B</i>	0.011 (0.049)	0.015 (0.049)	0.010 (0.009)	0.010 (0.009)	0.001 (0.050)	0.005 (0.050)	0.047 (0.054)	0.055 (0.054)	0.014 (0.011)	0.014 (0.011)	0.033 (0.055)	0.041 (0.055)
<i>EOY</i>	0.109 (0.136)	0.114 (0.136)	0.012 (0.028)	0.011 (0.028)	0.097 (0.139)	0.103 (0.139)	0.161 (0.145)	0.169 (0.145)	0.020 (0.031)	0.019 (0.030)	0.141 (0.148)	0.150 (0.148)
<i>Vol</i>	0.019 (0.086)	-0.002 (0.086)	-0.018 (0.011)	-0.017 (0.011)	0.037 (0.087)	0.015 (0.087)	0.020 (0.090)	-0.003 (0.090)	-0.017 (0.012)	-0.016 (0.012)	0.037 (0.091)	0.013 (0.091)
<i>Cons.</i>	0.783*** (0.262)	0.806*** (0.262)	0.188*** (0.069)	0.191*** (0.069)	0.595** (0.271)	0.615** (0.271)	1.034*** (0.295)	1.075*** (0.296)	0.174** (0.074)	0.179** (0.074)	0.860*** (0.304)	0.896*** (0.305)
Fixed Effects	No	No	No	No			Yes	Yes	Yes	Yes		
# Obs	641	641	641	641			639	639	638	638		

Table 5: Institutional Trading and Merger Performance: Short Sale Constraints

Panel A. Institutional Trading in Good and Bad Deals

This panel presents the following regression:

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 [BHAR_i]^{+(-)} + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the change in institutional holdings of acquirer i 's stocks during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid closure (completed or withdrawn). $[BHAR_i]^{+(-)}$ equals $BHAR_i$ when $BHAR_i$ is positive (negative) and zero otherwise, $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(0,cls)}$ denotes the aggregate trading volume in bid negotiation period normalized by the shares outstanding, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
$[BHAR]^+$	0.374*** (0.099)	0.165** (0.065)			0.404*** (0.101)	0.175*** (0.067)		
$[BHAR]^-$			0.143 (0.093)	0.104* (0.062)			0.169* (0.095)	0.133** (0.064)
<i>Return</i>	0.320*** (0.095)	0.329*** (0.095)	0.334*** (0.095)	0.334*** (0.095)	0.314*** (0.098)	0.324*** (0.098)	0.325*** (0.098)	0.323*** (0.098)
<i>Size</i>	-0.058*** (0.017)	-0.062*** (0.017)	-0.070*** (0.017)	-0.069*** (0.017)	-0.064*** (0.018)	-0.068*** (0.018)	-0.075*** (0.018)	-0.075*** (0.018)
<i>M/B</i>	-0.002 (0.021)	0.002 (0.021)	0.004 (0.021)	0.005 (0.021)	0.008 (0.023)	0.012 (0.023)	0.012 (0.023)	0.013 (0.023)
<i>EOY</i>	0.030 (0.058)	0.034 (0.058)	0.029 (0.058)	0.030 (0.058)	0.049 (0.059)	0.053 (0.060)	0.051 (0.060)	0.051 (0.060)
<i>Vol</i>	-0.001 (0.028)	-0.003 (0.028)	-0.000 (0.028)	-0.004 (0.028)	-0.001 (0.029)	-0.004 (0.030)	-0.001 (0.030)	-0.005 (0.030)
<i>Cons.</i>	0.445*** (0.121)	0.487*** (0.121)	0.601*** (0.123)	0.600*** (0.122)	0.445*** (0.128)	0.497*** (0.127)	0.624*** (0.129)	0.625*** (0.128)
Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes
# Obs	1,594	1,594	1,594	1,594	1,594	1,594	1,594	1,594

Panel B. Initial Holding X_0

This panel presents the results for the following regression in two subsamples that are constructed based on the institutions' initial holdings, X_0 , of the acquirer stocks at the beginning of bid negotiation period:

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid completion or withdrawal. $BHAR_i$ is the the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(0,cls)}$ is the total trading volume as percent of the acquirer's share outstanding during bid negotiation period, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

	High X_0		Low X_0		Difference		High X_0		Low X_0		Difference	
	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
<i>BHAR</i>	0.347*** (0.105)	0.178** (0.070)	0.007 (0.038)	0.006 (0.026)	0.340*** (0.112)	0.172** (0.075)	0.395*** (0.108)	0.224*** (0.072)	0.003 (0.039)	0.004 (0.027)	0.392*** (0.115)	0.220*** (0.077)
<i>Return</i>	0.371** (0.185)	0.402** (0.184)	0.201*** (0.061)	0.201*** (0.061)	0.170 (0.195)	0.201 (0.194)	0.302 (0.191)	0.330* (0.191)	0.194*** (0.065)	0.194*** (0.065)	0.108 (0.202)	0.136 (0.202)
<i>Size</i>	-0.123*** (0.034)	-0.118*** (0.034)	-0.030*** (0.010)	-0.030*** (0.010)	-0.093*** (0.035)	-0.088*** (0.035)	-0.147*** (0.038)	-0.141*** (0.038)	-0.032*** (0.011)	-0.032*** (0.011)	-0.115*** (0.040)	-0.109*** (0.040)
<i>M/B</i>	0.024 (0.039)	0.023 (0.039)	-0.014 (0.014)	-0.014 (0.014)	0.038 (0.041)	0.037 (0.041)	0.034 (0.043)	0.035 (0.043)	-0.007 (0.016)	-0.006 (0.016)	0.041 (0.046)	0.041 (0.046)
<i>EOY</i>	0.109 (0.110)	0.116 (0.110)	-0.047 (0.037)	-0.047 (0.037)	0.156 (0.116)	0.163 (0.116)	0.198* (0.115)	0.204* (0.115)	-0.047 (0.040)	-0.047 (0.040)	0.245** (0.122)	0.251** (0.122)
<i>Vol</i>	-0.032 (0.045)	-0.041 (0.045)	0.094*** (0.024)	0.093*** (0.024)	-0.126*** (0.051)	-0.134*** (0.051)	-0.035 (0.048)	-0.046 (0.048)	0.094*** (0.026)	0.094*** (0.026)	-0.129*** (0.055)	-0.140*** (0.055)
<i>Cons.</i>	0.910*** (0.229)	0.881*** (0.230)	0.317*** (0.075)	0.317*** (0.075)	0.593*** (0.241)	0.564*** (0.242)	1.021*** (0.254)	0.985*** (0.254)	0.315*** (0.081)	0.315*** (0.081)	0.706*** (0.267)	0.670*** (0.267)
Fixed Effects	No	No	No	No			Yes	Yes	Yes	Yes		
# Obs	797	797	797	797			794	794	795	795		

Table 6: Institutional Trading and Merger Performance: Ability

This table presents the results for the following regression for mutual funds with different abilities measured by their trading performance in past M&As. The coefficients of interest, β_1 , together with the standard errors, are reported in the table. Funds are classified into quintiles based on their abilities before bid announcements.

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the change in mutual fund holdings during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid closure (completed or withdrawn). $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the company market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the company one year before the bid, $Turnover_{i;(0,cls)}$ is the total trading volume as a percentage of the company's shares outstanding during bid negotiation period, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

Ability Rank	$ability_{i,t}^{M\&A}$	BHAR Over Different Horizons		BHAR Over Different Horizons	
		[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
1 (High)	1.296*** (0.005)	0.056*** (0.015)	0.028*** (0.010)	0.051*** (0.015)	0.027*** (0.010)
2	0.427*** (0.003)	0.050* (0.027)	-0.010 (0.019)	0.052* (0.028)	-0.010 (0.019)
3	0.018*** (0.001)	-0.007 (0.026)	-0.034** (0.017)	-0.011 (0.026)	-0.040** (0.017)
4	-0.339*** (0.003)	-0.037* (0.021)	-0.025* (0.014)	-0.039* (0.022)	-0.028* (0.014)
5 (Low)	-1.131*** (0.005)	-0.052** (0.026)	-0.024 (0.016)	-0.049* (0.026)	-0.021 (0.017)
Difference (1 - 5)	2.427*** (0.007)	0.108*** (0.030)	0.052*** (0.019)	0.100*** (0.030)	0.048*** (0.020)
Fixed Effects		No	No	Yes	Yes

Table 7: Institutional Trading and Merger Performance: Portfolio Weights

This table presents the results for the following regression in two subsamples that are constructed based on the relative weights of acquirer stock in mutual funds' portfolios, Wts :

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid completion or withdrawal. $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(0,cls)}$ is the total trading volume as a percentage of the acquirer's share outstanding during bid negotiation period, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

	High Wts		Low Wts		Difference		High Wts		Low Wts		Difference	
	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
<i>BHAR</i>	0.358*** (0.116)	0.164** (0.076)	0.081* (0.045)	0.056* (0.031)	0.277** (0.124)	0.108 (0.082)	0.400*** (0.120)	0.196** (0.079)	0.091* (0.047)	0.073** (0.032)	0.309*** (0.129)	0.123 (0.085)
<i>Return</i>	0.274 (0.186)	0.265 (0.186)	0.314*** (0.079)	0.318*** (0.079)	-0.040 (0.202)	-0.053 (0.202)	0.316 (0.196)	0.307 (0.197)	0.269*** (0.084)	0.271*** (0.083)	0.047 (0.213)	0.036 (0.214)
<i>Size</i>	-0.163*** (0.033)	-0.160*** (0.033)	-0.060*** (0.020)	-0.061*** (0.020)	-0.103*** (0.039)	-0.099*** (0.039)	-0.187*** (0.036)	-0.185*** (0.036)	-0.061*** (0.021)	-0.061*** (0.021)	-0.126*** (0.042)	-0.124*** (0.042)
<i>M/B</i>	0.019 (0.034)	0.020 (0.034)	-0.023 (0.021)	-0.021 (0.021)	0.042 (0.040)	0.041 (0.040)	0.043 (0.039)	0.047 (0.039)	-0.027 (0.023)	-0.024 (0.023)	0.070 (0.045)	0.071 (0.045)
<i>EOY</i>	0.101 (0.104)	0.119 (0.104)	-0.009 (0.051)	-0.011 (0.051)	0.110 (0.116)	0.130 (0.116)	0.145 (0.110)	0.167 (0.110)	0.009 (0.054)	0.008 (0.054)	0.136 (0.123)	0.159 (0.123)
<i>Vol</i>	-0.038 (0.054)	-0.047 (0.054)	0.019 (0.023)	0.016 (0.023)	-0.057 (0.059)	-0.063 (0.059)	-0.033 (0.060)	-0.044 (0.060)	0.014 (0.025)	0.011 (0.025)	-0.047 (0.065)	-0.055 (0.065)
<i>Cons.</i>	1.381*** (0.260)	1.350*** (0.261)	0.465*** (0.118)	0.467*** (0.118)	0.916*** (0.286)	0.883*** (0.286)	1.494*** (0.287)	1.464*** (0.288)	0.472*** (0.126)	0.472*** (0.126)	1.022*** (0.313)	0.992*** (0.314)
Fixed Effects	No	No	No	No			Yes	Yes	Yes	Yes		
# Obs	797	797	797	797			796	796	795	795		

Table 8: Pre-announcement Institutional Trading and Expected Profits

This table presents the results for the following two regressions:

$$\begin{aligned} \Delta Hldg_{i;(-5,-1)} &= \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(-5,-1)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(-5,-1)} + \beta_6 EOY_i + e_i \\ \Delta Hldg_{i;(-5,-1)} &= \alpha + \beta_1 |BHAR_i| + \beta_2 Return_{i;(-5,-1)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(-5,-1)} + \beta_6 EOY_i + e_i \end{aligned}$$

$\Delta Hldg_{i;(-5,-1)}$ is the change in institutional holdings of acquirer i 's stocks during an one-year window before the quarter of bid announcement. $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, and $|BHAR_i|$ is the absolute value of $BHAR_i$. $Return_{i;(-5,-1)}$ is the total return of the acquirer stock during the one-year pre-announcement window, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid, $FirmMB_i$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(-5,-1)}$ is the total trading volume as the percentage of the acquirer's shares outstanding during the one-year pre-announcement window. The end-of-year dummy EOY_i is not included in the regression because the one-year trading period must contain at least one fourth quarter, so $EOY_i = 1$ for all observations. The analyses with industry and year fixed effects are also reported.

	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
<i>BHAR</i>	-0.043 (0.046)	-0.033 (0.031)			-0.040 (0.047)	-0.025 (0.031)		
$ BHAR $			0.214*** (0.073)	0.122*** (0.046)			0.204*** (0.076)	0.092* (0.048)
<i>Return</i>	0.357*** (0.045)	0.361*** (0.045)	0.372*** (0.045)	0.370*** (0.045)	0.337*** (0.047)	0.340*** (0.047)	0.350*** (0.047)	0.345*** (0.047)
<i>Size</i>	-0.087*** (0.014)	-0.087*** (0.014)	-0.076*** (0.015)	-0.080*** (0.015)	-0.077*** (0.015)	-0.077*** (0.015)	-0.067*** (0.015)	-0.072*** (0.015)
<i>M/B</i>	0.026 (0.017)	0.026 (0.017)	0.021 (0.017)	0.022 (0.017)	0.011 (0.019)	0.011 (0.019)	0.009 (0.019)	0.010 (0.019)
<i>EOY</i>	-0.044 (0.046)	-0.045 (0.045)	-0.047 (0.045)	-0.043 (0.045)	-0.007 (0.046)	-0.008 (0.046)	-0.012 (0.046)	-0.008 (0.046)
<i>Vol</i>	-0.010 (0.013)	-0.010 (0.013)	-0.013 (0.013)	-0.011 (0.013)	0.009 (0.014)	0.009 (0.014)	0.007 (0.014)	0.009 (0.014)
<i>Cons.</i>	0.742*** (0.103)	0.739*** (0.103)	0.602*** (0.113)	0.630*** (0.111)	0.657*** (0.107)	0.656*** (0.107)	0.522*** (0.118)	0.576*** (0.115)
Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes
# Obs	1,402	1,402	1,402	1,402	1,402	1,402	1,402	1,402

Table 9: Intention to Voice and Trading for Profits

This table presents the results for the following regression in two subsamples that are constructed based on the institutions' investment horizon:

$$\Delta Hldg_{i;(0,cls)} = \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(0,cls)} + \beta_3 FirmSize_{i,-1yr} + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(0,cls)} + \beta_6 EOY_i + e_i$$

where $\Delta Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the bid negotiation period that starts from the quarter end of bid announcement and lasts until the quarter end of bid completion or withdrawal. $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons, $Return_{i;(0,cls)}$ is the total return of the company stock during the bid negotiation period, $FirmSize_{i,-1yr}$ is the logarithm of the acquirer's market value one year before the bid announcement, $FirmMB_{i,-1yr}$ is the market-to-book equity ratio of the acquirer one year before the bid, $Turnover_{i;(0,cls)}$ is the total trading volume as percent of the acquirer's share outstanding during bid negotiation period, and EOY_i is an end-of-year dummy. The analyses with industry and year fixed effects are also reported.

	Weak Intention		Strong Intention		Difference		Weak Intention		Strong Intention		Difference	
	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]	[0, 12m]	[0, 24m]
<i>BHAR</i>	0.325*** (0.101)	0.179*** (0.068)	0.004 (0.034)	-0.002 (0.022)	0.321*** (0.107)	0.181*** (0.071)	0.350*** (0.104)	0.217*** (0.070)	0.011 (0.034)	0.008 (0.022)	0.339*** (0.109)	0.209*** (0.073)
<i>Return</i>	0.475** (0.188)	0.472** (0.188)	0.254*** (0.050)	0.256*** (0.050)	0.221 (0.195)	0.216 (0.195)	0.497** (0.197)	0.484** (0.197)	0.229*** (0.051)	0.229*** (0.051)	0.268 (0.203)	0.255 (0.203)
<i>Size</i>	-0.127*** (0.034)	-0.126*** (0.034)	-0.015* (0.009)	-0.015* (0.009)	-0.112*** (0.035)	-0.111*** (0.035)	-0.139*** (0.037)	-0.138*** (0.037)	-0.012 (0.009)	-0.012 (0.009)	-0.127*** (0.038)	-0.126*** (0.038)
<i>M/B</i>	-0.002 (0.040)	-0.001 (0.040)	0.006 (0.012)	0.006 (0.012)	-0.008 (0.042)	-0.007 (0.042)	0.012 (0.043)	0.015 (0.043)	0.010 (0.013)	0.010 (0.013)	0.002 (0.045)	0.005 (0.045)
<i>EOY</i>	0.013 (0.109)	0.030 (0.110)	0.027 (0.032)	0.027 (0.032)	-0.014 (0.114)	0.003 (0.115)	0.047 (0.115)	0.071 (0.115)	0.019 (0.033)	0.019 (0.033)	0.028 (0.120)	0.052 (0.120)
<i>Vol</i>	0.020 (0.063)	0.005 (0.063)	-0.017 (0.014)	-0.017 (0.014)	0.037 (0.065)	0.022 (0.065)	0.016 (0.069)	0.001 (0.069)	-0.009 (0.014)	-0.009 (0.014)	0.025 (0.070)	0.010 (0.070)
<i>Cons.</i>	1.000*** (0.236)	0.992*** (0.236)	0.167*** (0.063)	0.167*** (0.063)	0.833*** (0.244)	0.825*** (0.244)	1.039*** (0.252)	1.024*** (0.252)	0.136** (0.066)	0.136** (0.066)	0.903*** (0.260)	0.888*** (0.260)
Fixed Effects	No	No	No	No			Yes	Yes	Yes	Yes		
# Obs	797	797	797	797			795	795	795	795		

Table 10: Intention to Voice and Deal Outcome

This table presents the results for the following regression in two subsamples that are constructed based on the average investment horizon of institutions that hold the acquirer:

$$I_i = \alpha + \beta_1 CAR_i + \beta_2 X_i + e_i$$

where I_i is a dummy variable that equals one if deal i is withdrawn and zero otherwise; CAR_i is the acquirer 3-day cumulative abnormal announcement return; and X_i is the control variable vector that includes acquirer size, relative deal size, acquirer Tobin's Q, leverage, operating cash flow, conglomeration dummy, tender offer dummy, hostile bid dummy, all equity payment dummy, and all cash payment dummy. The analyses with industry and year fixed effects are also reported.

	Weak Intention	Strong Intention	Difference	Weak Intention	Strong Intention	Difference
<i>CAR</i>	0.085 (0.106)	-0.234*** (0.069)	0.319*** (0.126)	0.067 (0.109)	-0.205*** (0.071)	0.272** (0.130)
<i>Size_{Acq}</i>	-0.009 (0.006)	-0.011*** (0.004)	0.002 (0.007)	-0.011* (0.006)	-0.009** (0.004)	-0.002 (0.007)
<i>TranVal</i>	0.014 (0.013)	0.020*** (0.006)	-0.006 (0.014)	0.009 (0.013)	0.018*** (0.006)	-0.009 (0.014)
<i>MB_{Acq}</i>	-0.001 (0.006)	-0.000 (0.005)	-0.001 (0.008)	-0.003 (0.006)	-0.005 (0.005)	0.002 (0.008)
<i>Lev_{Acq}</i>	0.040 (0.036)	0.023 (0.018)	0.017 (0.040)	0.012 (0.037)	0.024 (0.019)	-0.012 (0.042)
<i>Conglom</i>	0.009 (0.017)	0.012 (0.015)	-0.003 (0.023)	0.022 (0.018)	0.009 (0.016)	0.013 (0.024)
<i>Tender</i>	-0.015 (0.025)	0.047** (0.022)	-0.062* (0.033)	-0.008 (0.026)	0.031 (0.023)	-0.039 (0.035)
<i>Hostile</i>	0.250*** (0.053)	0.727*** (0.065)	-0.477*** (0.084)	0.261*** (0.054)	0.708*** (0.068)	-0.447*** (0.087)
<i>All Equity</i>	0.084*** (0.019)	0.042** (0.017)	0.042* (0.025)	0.068*** (0.021)	0.043** (0.018)	0.025 (0.028)
<i>All Cash</i>	0.017 (0.026)	0.022 (0.017)	-0.005 (0.031)	-0.006 (0.028)	0.024 (0.017)	-0.030 (0.033)
<i>Cons.</i>	0.221* (0.115)	0.264*** (0.078)	-0.043 (0.139)	0.269** (0.124)	0.238*** (0.086)	0.031 (0.151)
Fixed Effects	No	No		Yes	Yes	
# Obs	1,188	1,482		1,182	1,480	

Figure 1: **Timeline of Trading and Merger Performance**

This figure illustrates three time periods for measuring institutional investors' trading of acquirer stock before, around, and after bid announcements. It also shows the different horizons over which merger performance is measured. $\Delta Hldg_{-5,-1}$ is the change of institutional investors' holding of the acquirer stock during 4 quarter periods before the quarter of bid announcement; $\Delta Hldg_{-1,0}$ is the change of institutional investors' holding of the acquirer stock during the quarter of bid announcement; $\Delta Hldg_{0,cls}$ is the change of institutional investors' holding of the acquirer stock from the quarter end of bid announcement to the quarter end of bid outcome. $BHAR_{cls+n,cls+m}$ is the acquirer's buy-and-hold abnormal return measured in the event window that starts from n quarters after bid outcome and covers up to m quarters after bid outcome. DateAnn and DateClose are the exact date of bid announcement and bid outcome.

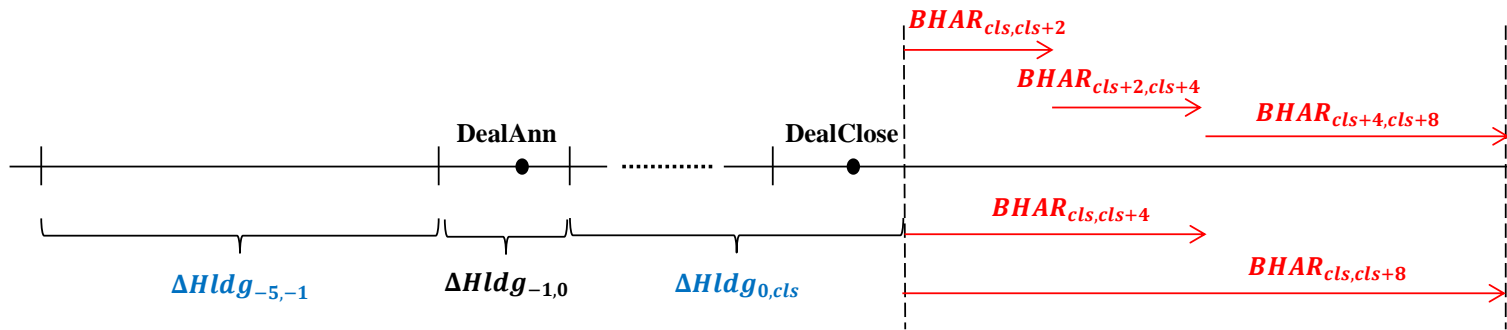


Figure 2: **Expected Gap**

This figure provides a summary of the expected gap presented in our analyses. The expected gap is calculated using the formula:

$$E(gap_i) = \frac{1}{Hldg_{i,-1}} (\beta_1 Var(BHAR_i) + E(\Delta Hldg_{i|BHAR})E(BHAR_i)).$$

Here, $Hldg_{i,-1}$ corresponds to the institutional investors' pre-announcement holding on the acquirer stock. $BHAR$ is 1-year buy-and-hold abnormal return (BHAR) of the acquirer stock post-merger. β_1 is the coefficient estimated from the regression of $\Delta Hldg_{i|BHAR}$ onto $BHAR_i$ and other covariates. $\Delta Hldg_{i|BHAR}$ represents the portion of institutional investor trading explained by BHAR after accounting for the effects of other covariates. The subgroups are categorized based on the respective variables. $|BHAR|$ represents the absolute value of BHAR. $Size$ measures the size of the M&A deal relative to the acquirer firm's market capitalization before announcement. $Liquidity$ is measured by the bid-ask spread of the acquirer stock. $Holding$ represents institutions' initial holdings X_0 . $Ability$ is measured by institutional investors' trading performance in past M&As. $PtfWeight$ is indicative of the relative weights of the acquirer stock in mutual funds' portfolios. $WeakVoice$ is measured by institutions' investment horizon, where a shorter investment horizon implies weaker influence.

