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 public 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 of acquiring firms earn 2.4% from M&A while the return to passive acquirer shareholders is only -0.9%. In deals that deliver volatile returns to acquiring firms, the gap widens 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 deal characteristics such as merger size and stock liquidity as well as institutions' characteristics such as initial holdings, portfolio weight, and trading skills. Institutions that earn a high return gap are associated with weak governance in preempting and correcting value-destroying mergers. 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

Institutional investors have long been considered an important pillar in the governance of corporations. A key ingredient in this consideration is the assumption that institutional investors' interests are aligned with those of other shareholders since all are similarly impacted by changes in a firm's value. Hence, many studies use a firm's stock return in response to corporate events to gauge shareholders' incentives in supporting or opposing such events. The assumption of aligned incentives between institutional and retail investors, however, critically depends on both types of shareholders passively holding the firm's shares throughout the corporate events. But, in practice, shareholders trade actively during corporate events and therefore the changes to the firm's equity value (henceforth the return to the firm) may not necessarily represent the true economic incentives of shareholders who trade dynamically and strategically during such events. This problem is aggravated by the fact that "smart money" (e.g., sophisticated institutional investors) often possess both superior ability in trading and great influence on corporate decisions. Hence firm returns can differ substantially from the return to these informed institutional investors, creating misleading implications on their incentives.

The goal of our paper is to measure the gap between firm returns and returns to informed institutional investors in the setting of corporate mergers and acquisitions (M&A). In particular, we hope to quantify the M&A related returns to institutional shareholders of acquiring firms and compare them to the returns to passive acquirer shareholders, in order to better understand their differential incentives in M&As. We focus on the M&A market for two reasons. First, M&A events represent important corporate decisions, which have a large impact on long-term firm value. Furthermore, M&As create significant uncertainty about firm value which allows informed shareholders to leverage their information collection and trading ability. These potential trading gains are an essential component of our study. Second, the M&A literature has largely relied on the stock 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). Thus, identifying and measuring the existence of a gap between the return to the firm and the return to institutional shareholders can shed new insights to this literature. For example, if this gap is significant, then it suggests a complementary explanation for the long standing puzzle of why acquirer shareholders allow management to pursue M&As when the gain to the firm is small or even negative based on average announcement returns. Previous studies offer plausible explanations

based on the conflict of interest between the manager 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). Demonstrating the existence of a return gap for informed institutional investors provides a corporate governance based explanation for why these investors may choose to embrace acquisitive firms rather than restrict them from pursuing M&As.

Two examples help illustrate the idea. On August 4th, 1999, Dow Chemical announced its takeover bid for Union Carbide. Institutional shareholders of Dow Chemical at the time included Putnam Investment, Wellington Management, Vanguard and Rowe Price Group, which together held 11% of Dow Chemical shares before the announcement. The deal closed on February 6th, 2001, and during the public negotiation period (from bid announcement to deal consummation), these institutional investors purchased another 8% of Dow Chemical shares outstanding for a total holding of 19% post merger. During the next 12 months, Dow Chemical stock realized a buy-and-hold abnormal return (BHAR) of 18%, generating a significant profit to 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 an additional trading profit of 418 million dollars (i.e., additional return of 13%), and thus their return from this merger event was 31%.

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 institutional investors held 42% of Sealed Air Corp before the announcement, and they liquidated most of their holdings during the public 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 (a 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 incentive during this merger event.

In light of these examples, we first quantify how prevalent the gap is between the return to acquiring firms and the return to their informed institutional shareholders, and we examine whether this gap is

sufficient to misalign the incentives of these institutional investors with those of passive shareholders. Second, we explore how M&A deal characteristics and institutional investor characteristics influence the size of this gap, highlighting the empirical settings in which using firm return to proxy institutional investors' incentives can be particularly misleading. Finally, we relate our gap measure to the governance role of institutional investors in M&As, and we demonstrate that the gap is estimated to be particularly large in several settings where previous studies have identified weak governance by certain institutional investors.

We conduct our analysis by constructing a sample of M&A deals with US acquirers and targets announced between 1980 and 2017, and we match this sample to the 13F dataset to obtain institutional holdings of acquirers. We examine institutional investors' trading of acquirer stocks in two stages: before bid announcement and during the period between bid announcement and deal completion, which we term the "public negotiation" period. We then relate the trading activity in each stage to the post-merger deal performance, measured by the buy-and-hold abnormal return (BHAR) over different horizons. We focus on the post-merger BHAR as our measure of the long-term merger performance, because the ultimate success of a merger critically depends on the post-merger integration and the realization of expected synergies, and the market may learn about this information after deal completion. Thus, the 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 several key findings. First, we find that institutional trading during the public 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. 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% on average during the public negotiation period. Due to this trading activity, we estimate that 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 stock, which is only -0.9%, on average.

[1]For 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).

Thus, we find that the return gap is economically sizeable. As a result, even though an 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 institutional shareholders 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 idea that institutional investors trade more aggressively in M&A deals with high uncertainty.

Next, we analyze how the return gap varies cross-sectionally with several deal characteristics and institutional investor characteristics that relate to institutional investors' incentive and ability to trade. 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. We partition the full sample into two equal-sized subsamples based on the median size of the deal (measured by the transaction value scaled by acquirer pre-merger market value), and we find that the positive association between institutional investors' trading on acquirer stock and the post-merger performance is more pronounced for the subsample of large deals, and is 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 become weaker for acquirer stocks with 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 to profit from trading on negative news. Hence, we hypothesize that the positive association between institutional investors' trading and ex post deal performance will be more pronounced in good deals rather than 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 larger initial holdings of acquirer stocks induce more information collection as they help mitigate the effect of short-sale constraints. Motivated by this argument, we examine how our results vary with the institutional investors initial holdings of acquirer stocks, and we find that the results are 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 larger trading profits. 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 to collect information and trade is also shaped by the weight of the acquirer stock in their portfolios (see e.g., Fich, Harford, and Tran, 2015). Partitioning on the weight of acquirer stock 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 stock 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 stock accounts for a greater fraction of institutions' portfolio, and this gap reduces to 1.7 percentage-points when acquirer stock does not carry a significant portfolio weight.

Fifth, since the institutional investors' ability to trade on M&A information is central to our research, we sort institutional investors by their past trading ability and examine how our results differ systematically across investors with differential ability. We measure their ability by their trading performance in past M&A deals with the assumption that this is a persistent skill. We partition investors into quintiles based on their ability measure and show that the association between trading and the ex post deal performance increases monotonically with ability. Specifically, for institutional investors in the top-quintile of ability, their trading exhibits a strong and positive relation with long-run deal performance, while for institutional investor in the bottom-quintile of ability, the relation is negative. 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.

The above results demonstrate that institutional investors profit from M&A deals due to their ex post trading profits (i.e., after M&A deals are announced) even if acquiring firms suffer a loss on average. This would suggests that institutional investors may embrace more acquisitive firms ex ante (i.e., before bid announcement). To examine this last point, we analyze institutional investor's trading *before* bid announcements. Interestingly, we find no evidence that their trading of acquirer stock in this period correlates systematically with subsequent deal performance, indicating that these institutional investors do not engage in insider trading or front run the market before the M&A deal is announced. However, we do find that they increase their holdings in firms that subsequently pursue M&As with highly dispersed long-run performance. This finding is consistent with the theoretical model of Goldman and Wang (2021), which predicts that higher uncertainty in deal performance increases institutional investors' expected trading profits because they can capture the option value of M&A by purchasing more shares in good deals and selling shares in bad deals. The institutional investors' incentive to hold acquisitive firms is also in line with the greater return gap measured in highly risky M&A deals, as we document in the paper.

Finally, we examine how the return gap relates to institutional investors' role of governance in the M&A market. Given that institutional investors who expect to earn a high return gap (hereafter, high-gap institutions) derive significant private returns from M&A, we hypothesize that high-gap institutions are more inclined to support acquisitions even if these deals may destroy firm value on average (i.e., weaker *preemptive governance*). We first estimate the return gap separately for each institutional investor, and then we define the high-gap institutions to be the subgroup of institutions whose estimated return gap is above the median. We find evidence that firms held by high-gap institutions are more likely to engage in acquisitions in the subsequent year and their deal performance is significantly worse. This evidence explains, at least partially, firms held by high-gap institutions appear more acquisitive and suffer from weaker deal performance, because high-gap institutions benefit from trading on M&A events, potentially aligning their interest with managers' preference for pursuing excessive takeovers. Although such takeovers can be value-destroying to the firm on average, high-gap investors are compensated by their expected trading profits, and their total expected gains are significantly positive due to the return gap, confirming that they gain from M&A.

Relatedly, we investigate how the return gap affects institutional investors' *corrective governance*. Luo (2005) documents a possible mechanism of corrective governance by showing that acquirers are more likely

to cancel deals in face of unfavorable reactions to M&A announcements. We build on Luo (2005) to show that the negative association between acquirer announcement returns and the likelihood of deal cancelation is present only when acquirers are held by low-gap institutional investors, and this sensitivity is largely absent for acquirers held by high-gap investors. Because low-gap institutional investors face a negligible return gap and their interests are largely aligned with firm value maximization, they are more likely to pressure acquirers to cancel deals that are poorly received by the market upon announcement. Conversely, high-gap institutional investors may strongly prefer carrying out the deals as long as the information they can leverage is not fully incorporated into the announcement returns, because they cannot realize their expected trading profits (and thus capture the return gap) if the deals are canceled. Overall, by relating the return gap to institutional investors' governance role, we provide evidence suggesting that the return gap indeed distorts institutional investors' incentives in preempting or correcting value-destroying M&A.

Our paper contributes to a few strands of literature. First, the M&A literature has debated between using the market reaction around bid announcements (e.g., 3-day CAR) and the long-run post-merger performance (e.g., BHAR) to gauge the value implications of M&A on acquiring and target firms. Several previous studies demonstrate 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). In our paper, we acknowledge that the long-run deal performance may not be fully incorporated into the announcement return, and this gives rise to the information advantage institutional investors can exploit through trading during the public negotiation period. In this regard, 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 the 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 executive 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 (2005) document that acquirers held by long-term institutions outperform 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 poor corporate governance leads to more mergers with poor performance. Our paper differs from these studies by showing that institutional investors may benefit from firms pursuing M&A that create significant uncertainty, because they capture the option value generated by such events. Our results suggest that 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 activities even if such deals deliver a zero or slightly negative return to acquiring firms.

Finally, our paper is related to the 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' tradeoff between selling shares and voting against management in response to bad corporate proposals. In contrast, we highlight how institutional investors' expected trading profits from M&A activities may compromise their ex ante governance incentive to curtail bad acquisitions. To this end, our quantification of the return gap suggests that the mechanism analyzed in Goldman and Wang (2021) is empirically relevant and important.

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 acquisition. 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

[2]We 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.

[3]Not 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.

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 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) 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 τth 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 stock 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. These holdings are scaled by the total number of shares outstanding, and with 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 stock in different stages of each merger is then measured as the change in holdings:

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

where $N_{i;(t_1,t_2)}$ is the average number of institutions that hold acquirer i's shares during the period (t_1, t_2). 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 during M&A transactions, we start by examining the correlation between institutional investors' trading of acquirer stock during the public 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:

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

The dependent variable, $\Delta Hldg_{i;(0,cls)}$ denotes the average trading of acquire i's stock by institutional investors during the public 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 public 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 public 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 public 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 evidence that institutions' private information about the merger quality affects their trading decisions.[4]

After obtaining the coefficient of interest, β_1, from the regression, we then transform it to an estimate of the expected return gap. 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 the $BHAR_i$ 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 public 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.

[4]Note 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.

Our focus on the expected gap is motivated by two main reasons. First, from the theoretical perspective, institutional investors have to make governance decisions before realizing their trading profits. In the context of M&A, institutional 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, empirically, institutional investors' trading quantity is driven by many factors other than BHAR, and it is therefore paramount to control these covariates in constructing the return gap measure. This can be easily achieved as we estimate the coefficient β_1 in Equation 1. For these reasons, we propose a measure of *expected* gap as:

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

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.

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 stock. Panel A describes the full sample statistics while Panel B provides subsample information.

From Panel A of Table 1, we find that the acquirer 3-day CAR around bid announcement and the 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 stock before bid announcement and during the public negotiation period. Panel A of Table 1 shows that acquirers are held, on average, by 14 institutions prior to an acquisition. The average public 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 stock 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 public 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 public negotiation period lasts only 139 days. After adjusting for this duration difference, the institutional trading during public negotiation period is much larger 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 stock at the beginning of the public negotiation period. Institutions with large initial holdings (i.e., the top half) on average hold 1.61% of acquirer stock. 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

[5]It 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.

more positive. These trading patterns are consistent with the idea that having a large initial position allows institutions to trade in 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

In this section, 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

We first 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.

3.1.1 Baseline Results

Table 2 presents the baseline results on how institutional trading during the public negotiation period relates to the ex post acquisition performance. In columns 1 to 5, we report the results without fixed effects, while in columns 6 to 10, we include the industry fixed effect and year fixed effect. The results confirm that institutional trading during the public 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 a one-standard deviation increase in the one-year BHAR predicts almost a 30% increase in the institutions' purchase of acquirer stocks on average.[6]

One possible concern with the empirical specification of this regression is 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 concerns are unlikely, because the impact of price pressure is more likely to happen within the first few months. 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 the acquiring firm. The positive correlation between institutional trading and BHAR during

[6]The magnitude is computed as $\frac{Stdev(BHAR_{1yr})\times\hat{\beta_1}}{|\Delta Hldg_{Nego}|} = \frac{0.50\times0.176}{0.32} = 0.275$

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 public negotiation period.

Employing the baseline regression coefficient of 0.176 from column 1 and the estimated unconditional variance 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 zero for the subsample with less volatile 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 center 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 return gap can be particularly large.

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, will have a larger impact (either positive or negative) on the acquirer's post-merger value which should induce institutional investors to gather more information and

[7] We 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 $E(gap) = \frac{1}{holdings_{-1}} \left(\hat{\beta} \times var(BHAR) + E(Trade)E(BHAR)\right) = 1/1.26 * (0.176 * 0.246 + 0.15 * (-0.009)) \approx 0.033$.

trade more aggressively. To test this, 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 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 correlates more positively with deal quality.

According to our measure of the expected gap, institutional investors are expected to generate a 4.7% higher return in larger deals, but they can 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 average bid-ask spread, expressed as a percentage of the mid-price, over the one year period prior to the bid announcement. 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 a one-standard deviation change in the ex post merger performance changes the institutional trading of acquirer stock by 55% if acquirer stocks are liquid. In contrast, the coefficient is slightly negative for less liquid acquirers and is largely insignificant statistically. The difference between the estimates in the two subsamples is highly significant.

Further note that, in the subsample of liquid acquirers, the average 12-month BHAR is -1.4%. However, our measure suggests that institutional investors are expected to generate a 6.1% higher return than the return to the firm because of their trading. Institutional investors therefore earn an average return of 4.7%, which is significantly higher than the return to the acquiring firm.

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 stock 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 public 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 to collect information and trade during 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 he trades incorrectly 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 public negotiation period. $RmW_{i,t}$ equals zero if investor i does not trade acquirer stock in any deals during year t. Since M&A are rare events, 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. The average ability of institutional investors in each group is reported in the second column. 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 in coefficients between the high and low ability quintile is economically large and statistically significant at the 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 suggests 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 public 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]

[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.

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 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 institutional 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%.

3.1.3 Summary of the Estimated Return Gap

We summarize in Figure 2 the main findings from our analyses above. 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 acquirer stock that is more liquid. Additionally, the gap varies with institutional investors' characteristics: it widens to 4.6% with high initial institutional holdings, 5.6% with strong trading ability, and 6.2% with a high portfolio weight of the acquirer stock in institutional investors' portfolios.

3.2 Ex-ante 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 public negotiation period*. These results suggest that institutional investors' trading profits vary with deal and institution characteristics that relate to the ability and incentive to trade 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 therefore conjecture that, *before* these acquisitions are announced, institutions would increase their holdings in firms that subsequently pursue acquisitions with more dispersed long-run performance. 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 variable and regress it on post-merger BHARs (in Equation 3) and the absolute value of BHARs (in Equation 4), respectively:[9]

$$\begin{aligned} \Delta Hldg_{i;(-5,-1)} &= \alpha + \beta_1 BHAR_i + \beta_2 Return_{i;(-5,-1)} + \beta_3 FirmSize_{i,-1yr} \\ &\quad + \beta_4 FirmMB_{i,-1yr} + \beta_5 Turnover_{i;(-5,-1)} + \beta_6 EOY_i + e_i \qquad (3) \\ \Delta Hldg_{i;(-5,-1)} &= a + b_1 |BHAR_i| + b_2 Return_{i;(-5,-1)} + b_3 FirmSize_{i,-1yr} \\ &\quad + b_4 FirmMB_{i,-1yr} + b_5 Turnover_{i;(-5,-1)} + b_6 EOY_i + e_i \qquad (4) \end{aligned}$$

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) or a treatment effect (i.e., institutional investors explicitly encourage the firms they buy to pursue riskier acquisitions), and both effects lead to a greater gap between the return to institutional investors and the return to the firm.

[9]The 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.

3.3 Return Gap and Governance

Finally, we analyze the relationship between the return gap and institutional investors' role of governance in the M&A market. Given that institutional investors who can expect to earn a high return gap (hereafter referred to as high-gap institutions) derive significant private returns from M&A, we hypothesize that high-gap institutions are more inclined to support acquisitions even though such deals may destroy firm value. Additionally, we posit that these institutions are also less likely to carry out strong corrective actions, such as deal cancelations, even when the M&A deals are unfavorably received by the market upon announcements.

To investigate these hypotheses, we begin by constructing a measure of the institution-specific return gap. Specifically, for each institution j in our sample, we run the following regression:

$$\begin{aligned} \Delta Hldg_{ij;(0,cls)} &= \alpha_j + \beta_{1j} BHAR_i + \beta_{2j} Return_{i;(0,cls)} + \beta_{3j} FirmSize_{i,-1yr} \\ &\quad + \beta_{4j} FirmMB_{i,-1yr} + \beta_{5j} Turnover_{i;(0,cls)} + \beta_{6j} EOY_i + e_i. \end{aligned} \tag{5}$$

The dependent variable, $\Delta Hldg_{ij;(0,cls)}$, represents the change in holdings of institutional investor j for acquirer i during the public negotiation period. The independent variables and control variables align with those in our main regression specification. Conducting separate regressions for each institution is feasible because most institutions in our sample are involved in multiple M&A deals as shareholders of the acquirers. We restrict our regression sample to institutions that have participated in at least 10 deals to ensure adequate statistical power. This criterion allows us to estimate β_{1j} for approximately 70 percent of the institutional investors in our sample. Once we obtain β_{1j}, we calculate the institution-specific expected gap according to the equation 2. Subsequently, we categorize all institutional investors in our sample into two groups: *high-gap institutions* and *low-gap institutions*, based on their institution-specific gap measure. Institutions involved in fewer than 10 deals are automatically classified to the low-gap institutions group.

3.3.1 Return Gap and Preference of Acquisition

Institutional investors with a high return gap expect to earn greater profits if their portfolio firms engage in more acquisitions. Therefore, we hypothesize that firms held by high-gap institutions are more

likely to become acquirers. To test this hypothesis, we collect data on a panel of all firm-year observations in Compustat from 1980 to 2017 and investigate whether a firm's ownership by high-gap institutions is positively associated with its probability of engaging in acquisitions in the subsequent year. Specifically, we run the following regression:

$$\begin{aligned} Acquisition_{it} &= \beta_1 HighGapShare_{i,t-1} + \beta_2 FirmSize_{i,t-1} + \beta_3 FirmMB_{i,t-1} \\ &\quad + \beta_4 ROA_{i,-1yr} + \beta_5 Profitability_{i,-1yr} + \beta_6 Leverage_{i,-1yr} + \alpha_i + \lambda_t + e_{it} \end{aligned} \quad (6)$$

where $Acquisition_{it}$ is a dummy variable that equals one if firm i announces an acquisition in year t; $HighGapShare_{i,t-1}$ is the fraction of shares held by high-gap institutions at the end of the previous year normalized by the total number of shares outstanding. Control variables include the previous year's acquirer size, market-to-book ratio, ROA, profitability, and leverage. In some specifications, we also include firm fixed effects and year fixed effects to ensure our results are not driven by firm-specific unobservables or macroeconomic fluctuations.

Table 9 presents the results of the regression. Columns 1 and 2 show that the holdings of high-gap institutions are positively associated with the probability of a firm becoming an acquirer in the following year, controlling for firm-level covariates. Columns 3 and 4 demonstrate that these results are robust to the inclusion of firm and year fixed effects. These findings support the notion that institutional investors who earn a high return gap prefer acquisitive firms. Our results can be driven by a selection effect (i.e., high-gap institutions select acquisitive firms) and/or a treatment effect (i.e., high-gap institutions encourage holding firms to pursue acquisitions). Both effects are consistent with the high-gap institutions' preference for acquisitive firms.

One possible concern is that the high-gap share may simply reflect a firm's institutional ownership in general, without carrying additional information of the return gap. If this is the case, the positive association between the high-gap share and the likelihood of acquisitions is simply a manifestation of high institutional ownership being positively correlated with a firm's acquisitiveness. To address this concern, we construct a *scaled* high-gap share measure by dividing the high-gap institutions' shares by the shares held by *all* institutional investors rather than the total number of shares outstanding. Therefore, the scaled high-gap share captures the proportion of shares held by high-gap institutions among all institutional

investors. Columns 5 to 8 present the results of the same analysis using the scaled high-gap share. The results are consistent with our main specification, reinforcing our findings.

3.3.2 Return Gap and Deal Performance

Our findings above support the prediction that high-gap institutions prefer firms pursuing acquisitions. Our follow-up question is whether high-gap institutions are more tolerant of firm pursuing bad acquisitions, given that they can earn the return gap that may more than offset their loss from firm value decline. Specifically, we compare the post-merger performance between acquirers predominantly held by high-gap institutions and those that are not. Since high-gap institutions have greater incentives to permit bad deals, we conjecture that acquirers held by high-gap institutions will exhibit weaker post-merger performance on average. To compare the differences, we first partition our sample into two subsamples based on high-gap institutions' share. We then run the following regression:

$$BHAR_i = \alpha + \beta_1 HighGap_i + \beta_2 X_i + e_i \quad (7)$$

where $HighGap_i$ is a dummy variable that equals one if the deal is included in the top half of the partition (i.e., acquirers held heavily by high-gap institutions); and X_i is the control variable vector that is commonly used in the literature and includes acquirer size, relative deal size, acquirer Tobin's Q, leverage, conglomeration dummy, all equity payment dummy, all cash payment dummy, and acquirer operating cash flow.

Table 10 presents the results. Column 1 shows that the BHAR of acquirer firms held mostly by high-gap institutions is 6.5 percentage points lower than the performance of acquirers held mostly by low-gap institutions, with the average BHAR for high-gap institutions being -4%, while the average BHAR for low-gap institutions is 2.5%. This difference is economically significant, given that the average BHAR of the entire sample is -0.9 percent. It is also worth noting that the estiamted return gap ranges from 3.3% to 6% for institutional investors in various subsamples, and therefore the high-gap institutions are likely to earn a positive gain from M&A even if these deals destroy firm value by 4% on average. Columns 2 and 3 control for covariates, demonstrating that the difference between the two subgroups even enlarges. Column 4 includes industry and year fixed effects, showing that the results are not driven by industry

shocks or business cycles.

The above evidence show that firms held by high-gap institutions appear more acquisitive and suffer from weaker deal performance compared to those held by low-gap institutions. High-gap institutional investors benefit from actively trading on M&A events, potentially aligning with managers' preference for pursuing excessive takeovers. Although such takeovers can be value-destroying to the firm on average, high-gap investors are compensated by their expected trading profits, and their total expected gains from M&A are positive due to the return gap, confirming that they indeed gain from M&A.

3.3.3 Return Gap and Corrective Governance

The above findings suggest that the return gap may impair institutional investors' *preemptive governance* by leading to lax screening in M&A deals. High-gap institutions tend to tolerate more deals and lower-quality deals.

Lastly, we investigate how the return gap affects institutional investors' *corrective governance*. The differential in return gap suggests that institutional investors may respond differently to bid announcements. Since low-gap institutional investors face a negligible return gap and their interests are largely aligned with firm value maximization, they are more likely to pressure acquirers to cancel deals that are poorly received by the market upon announcement. Conversely, high-gap institutional investors may strongly prefer carrying out the deals as long as the information they can leverage is not fully incorporated into the announcement returns, because they cannot realize their expected trading profits (and thus capture the return gap) if the deals are canceled. We expand the setting in Luo (2005) and examine how the likelihood of deal withdrawal in face of negative market reaction is influenced by the return gap of institutional investors of the acquirers. Specifically, 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; and X_i is the control variable vector that is commonly used in the literature and includes acquirer size, relative deal size, acquirer Tobin's Q, leverage,

operating cash flow, conglomeration dummy, tender offer dummy, all equity payment dummy, and all cash payment dummy.

Table 11 presents the regression results. For deals where acquirers are mainly held by low-gap institutions, the probability of deal withdrawal is negatively correlated with the market reaction to bid announcements. However, for deals where acquirers are mainly held by high-gap institutions, the probability of deal withdrawal is insensitive to CAR. Although we cannot directly observe institutions' behind-the-scenes influence (McCahery, Sautner, and Starks (2015)), this result suggests that institutions with low return gap seem to affect deal outcomes while institutions with high return gap do not. The difference between the two subsamples is statistically significant and economically large.

Overall, by relating the return gap to institutional investors' governance role studied in previous work, we provide evidence suggesting that the return gap indeed distorts institutional investors' role of incentives in preempting or correcting value-destroying M&A.

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 public 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. We further highlight that the return gap distorts institutional investors' preemptive and corrective governance incentives in firms' acquisition decisions. 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.

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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 public 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
$\lvert\Delta Hldg_{PreAnn}\rvert$	0.51	0.75	0.03	0.25	1.30
$\lvert\Delta Hldg_{Nego}\rvert$	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 public 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 public negotiation period;$|\Delta Hldg_{Nego}|$ is the absolute value of $\Delta Hldg_{Nego}$ and capture the trading volume of acquirer stock in the public 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
$\lvert\Delta Hldg_{Nego}\rvert$	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
$\lvert\Delta Hldg_{Nego}\rvert$	0.29	1.41	0.34	0.64
Transaction Value				
	High		Low	
$Deal\,Size$	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
$\lvert\Delta Hldg_{Nego}\rvert$	0.40	1.45	0.23	0.52
Liquidity				
	High		Low	
$BA\,Sprd\,(\%)$	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
$\lvert\Delta Hldg_{Nego}\rvert$	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:

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

The dependent variable, $\Delta Hldg_{i;(0,cls)}$ denotes the average trading of acquire i's stocks by institutional investors during the public 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 public 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 public negotiation period normalized by the shares outstanding, EOY_i denotes the year-end dummy, which takes the value of one if the public 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]
BHAR	0.176***	0.096**	0.108	0.239***	0.030	0.192***	0.108***	0.146*	0.236***	0.040
	(0.057)	(0.038)	(0.083)	(0.078)	(0.052)	(0.057)	(0.039)	(0.085)	(0.080)	(0.053)
Return	0.322***	0.327***	0.331***	0.338***	0.341***	0.313***	0.318***	0.322***	0.331***	0.334***
	(0.095)	(0.095)	(0.096)	(0.095)	(0.095)	(0.098)	(0.098)	(0.099)	(0.098)	(0.098)
Size	-0.067***	-0.067***	-0.065***	-0.069***	-0.066***	-0.073***	-0.072***	-0.070***	-0.074***	-0.071***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
M/B	0.002	0.004	0.002	0.004	0.004	0.010	0.013	0.010	0.011	0.012
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
EOY	0.029	0.032	0.029	0.031	0.031	0.050	0.053	0.049	0.052	0.051
	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)
Vol	0.002	-0.004	-0.001	-0.002	-0.005	0.002	-0.005	-0.001	-0.003	-0.006
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Cons.	0.563***	0.559***	0.547***	0.576***	0.552***	0.576***	0.572***	0.558***	0.589***	0.565***
	(0.118)	(0.118)	(0.118)	(0.118)	(0.118)	(0.124)	(0.125)	(0.125)	(0.125)	(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, $\frac{TranVal}{MV_{Acq}}$:

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

where $\triangle Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the public 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 public 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 public 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]
BHAR	0.266**	0.160**	0.062	0.033	0.204*	0.127*	0.298***	0.186**	0.066	0.033	0.232**	0.153*
	(0.104)	(0.071)	(0.041)	(0.027)	(0.112)	0.076	(0.107)	(0.073)	(0.042)	(0.028)	(0.115)	(0.078)
Return	0.315**	0.331**	0.284***	0.281***	0.031	0.050	0.312*	0.332**	0.262***	0.260***	0.050	0.072
	(0.158)	(0.157)	(0.080)	(0.080)	(0.177)	(0.176)	(0.165)	(0.165)	(0.084)	(0.084)	(0.185)	(0.185)
Size	-0.085***	-0.085***	-0.035***	-0.035***	-0.050	-0.050	-0.097***	-0.097***	-0.036***	-0.035***	-0.061*	-0.062*
	(0.031)	(0.031)	(0.012)	(0.012)	(0.033)	(0.033)	(0.034)	(0.034)	(0.013)	(0.013)	(0.036)	(0.036)
M/B	0.046	0.055	-0.018	-0.018	0.064	0.073	0.078	0.088*	-0.020	-0.020	0.098*	0.108**
	(0.044)	(0.044)	(0.014)	(0.014)	(0.046)	(0.046)	(0.048)	(0.048)	(0.015)	(0.015)	(0.050)	(0.050)
EOY	0.115	0.116	-0.099**	-0.097**	0.214*	0.213*	0.145	0.144	-0.091**	-0.090**	0.236*	0.234*
	(0.107)	(0.107)	(0.042)	(0.042)	(0.115)	(0.115)	(0.113)	(0.114)	(0.044)	(0.044)	(0.121)	(0.122)
Vol	-0.023	-0.033	0.033	0.031	-0.056	-0.064	-0.022	-0.033	0.035	0.032	-0.057	-0.065
	(0.045)	(0.045)	(0.026)	(0.026)	(0.052)	(0.052)	(0.048)	(0.048)	(0.028)	(0.028)	(0.056)	(0.056)
Cons.	0.654***	0.648***	0.339***	0.337***	0.315	0.311	0.656***	0.653***	0.342***	0.340***	0.314	0.313
	(0.208)	(0.208)	(0.091)	(0.091)	(0.227)	(0.227)	(0.224)	(0.224)	(0.099)	(0.099)	(0.245)	(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:

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

where $\triangle Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the public 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 public 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 public 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]
BHAR	0.301**	0.176**	-0.038	-0.036*	0.339***	0.212***	0.362***	0.228***	-0.051	-0.041*	0.413***	0.269***
	(0.117)	(0.079)	(0.032)	(0.021)	(0.121)	(0.082)	(0.120)	(0.082)	(0.033)	(0.022)	(0.124)	(0.085)
Return	0.342*	0.356*	0.182***	0.182***	0.160	0.174	0.367*	0.378*	0.161***	0.160***	0.206	0.218
	(0.189)	(0.189)	(0.057)	(0.057)	(0.197)	(0.197)	(0.197)	(0.197)	(0.061)	(0.061)	(0.206)	(0.206)
Size	-0.111***	-0.114***	-0.016*	-0.016*	-0.095**	-0.098***	-0.169***	-0.176***	-0.015	-0.016	-0.154***	-0.160***
	(0.041)	(0.041)	(0.009)	(0.009)	(0.042)	(0.042)	(0.048)	(0.049)	(0.010)	(0.010)	(0.049)	(0.050)
M/B	0.011	0.015	0.010	0.010	0.001	0.005	0.047	0.055	0.014	0.014	0.033	0.041
	(0.049)	(0.049)	(0.009)	(0.009)	(0.050)	(0.050)	(0.054)	(0.054)	(0.011)	(0.011)	(0.055)	(0.055)
EOY	0.109	0.114	0.012	0.011	0.097	0.103	0.161	0.169	0.020	0.019	0.141	0.150
	(0.136)	(0.136)	(0.028)	(0.028)	(0.139)	(0.139)	(0.145)	(0.145)	(0.031)	(0.030)	(0.148)	(0.148)
Vol	0.019	-0.002	-0.018	-0.017	0.037	0.015	0.020	-0.003	-0.017	-0.016	0.037	0.013
	(0.086)	(0.086)	(0.011)	(0.011)	(0.087)	(0.087)	(0.090)	(0.090)	(0.012)	(0.012)	(0.091)	(0.091)
Cons.	0.783***	0.806***	0.188***	0.191***	0.595**	0.615**	1.034***	1.075***	0.174**	0.179**	0.860***	0.896***
	(0.262)	(0.262)	(0.069)	(0.069)	(0.271)	(0.271)	(0.295)	(0.296)	(0.074)	(0.074)	(0.304)	(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:

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

where $\triangle Hldg_{i;(0,cls)}$ is the change in institutional holdings of acquirer i's stocks during the public 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 public negotiation period, $FirmSize_{i,-yr}$ 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 public 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***	0.165**			0.404***	0.175***		
	(0.099)	(0.065)			(0.101)	(0.067)		
$[BHAR]^-$			0.143	0.104*			0.169*	0.133**
			(0.093)	(0.062)			(0.095)	(0.064)
Return	0.320***	0.329***	0.334***	0.334***	0.314***	0.324***	0.325***	0.323***
	(0.095)	(0.095)	(0.095)	(0.095)	(0.098)	(0.098)	(0.098)	(0.098)
Size	-0.058***	-0.062***	-0.070***	-0.069***	-0.064***	-0.068***	-0.075***	-0.075***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)
M/B	-0.002	0.002	0.004	0.005	0.008	0.012	0.012	0.013
	(0.021)	(0.021)	(0.021)	(0.021)	(0.023)	(0.023)	(0.023)	(0.023)
EOY	0.030	0.034	0.029	0.030	0.049	0.053	0.051	0.051
	(0.058)	(0.058)	(0.058)	(0.058)	(0.059)	(0.060)	(0.060)	(0.060)
Vol	-0.001	-0.003	-0.000	-0.004	-0.001	-0.004	-0.001	-0.005
	(0.028)	(0.028)	(0.028)	(0.028)	(0.029)	(0.030)	(0.030)	(0.030)
Cons.	0.445***	0.487***	0.601***	0.600***	0.445***	0.497***	0.624***	0.625***
	(0.121)	(0.121)	(0.123)	(0.122)	(0.128)	(0.127)	(0.129)	(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 public negotiation period:

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

where $\triangle Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the public 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 public 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 public 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]
BHAR	0.347***	0.178**	0.007	0.006	0.340***	0.172**	0.395***	0.224***	0.003	0.004	0.392***	0.220***
	(0.105)	(0.070)	(0.038)	(0.026)	(0.112)	(0.075)	(0.108)	(0.072)	(0.039)	(0.027)	(0.115)	(0.077)
Return	0.371**	0.402**	0.201***	0.201***	0.170	0.201	0.302	0.330*	0.194***	0.194***	0.108	0.136
	(0.185)	(0.184)	(0.061)	(0.061)	(0.195)	(0.194)	(0.191)	(0.191)	(0.065)	(0.065)	(0.202)	(0.202)
Size	-0.123***	-0.118***	-0.030***	-0.030***	-0.093***	-0.088***	-0.147***	-0.141***	-0.032***	-0.032***	-0.115***	-0.109***
	(0.034)	(0.034)	(0.010)	(0.010)	(0.035)	(0.035)	(0.038)	(0.038)	(0.011)	(0.011)	(0.040)	(0.040)
M/B	0.024	0.023	-0.014	-0.014	0.038	0.037	0.034	0.035	-0.007	-0.006	0.041	0.041
	(0.039)	(0.039)	(0.014)	(0.014)	(0.041)	(0.041)	(0.043)	(0.043)	(0.016)	(0.016)	(0.046)	(0.046)
EOY	0.109	0.116	-0.047	-0.047	0.156	0.163	0.198*	0.204*	-0.047	-0.047	0.245**	0.251**
	(0.110)	(0.110)	(0.037)	(0.037)	(0.116)	(0.116)	(0.115)	(0.115)	(0.040)	(0.040)	(0.122)	(0.122)
Vol	-0.032	-0.041	0.094***	0.093***	-0.126***	-0.134***	-0.035	-0.046	0.094***	0.094***	-0.129***	-0.140***
	(0.045)	(0.045)	(0.024)	(0.024)	(0.051)	(0.051)	(0.048)	(0.048)	(0.026)	(0.026)	(0.055)	(0.055)
Cons.	0.910***	0.881***	0.317***	0.317***	0.593***	0.564***	1.021***	0.985***	0.315***	0.315***	0.706***	0.670***
	(0.229)	(0.230)	(0.075)	(0.075)	(0.241)	(0.242)	(0.254)	(0.254)	(0.081)	(0.081)	(0.267)	(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, and the average ability of mutual funds in each group is reported in the second column $ability_{i,t}^{M\&A}$.

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

where $\triangle Hldg_{i;(0,cls)}$ is the change in mutual fund holdings during the public 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 public 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 public 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***	0.056***	0.028***	0.051***	0.027***
	(0.005)	(0.015)	(0.010)	(0.015)	(0.010)
2	0.427***	0.050*	-0.010	0.052*	-0.010
	(0.003)	(0.027)	(0.019)	(0.028)	(0.019)
3	0.018***	-0.007	-0.034**	-0.011	-0.040**
	(0.001)	(0.026)	(0.017)	(0.026)	(0.017)
4	-0.339***	-0.037*	-0.025*	-0.039*	-0.028*
	(0.003)	(0.021)	(0.014)	(0.022)	(0.014)
5 (Low)	-1.131***	-0.052**	-0.024	-0.049*	-0.021
	(0.005)	(0.026)	(0.016)	(0.026)	(0.017)
Difference (1 - 5)	2.427***	0.108***	0.052***	0.100***	0.048***
	(0.007)	(0.030)	(0.019)	(0.030)	(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:

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

where $\triangle Hldg_{i;(0,cls)}$ is the changes in institutional holdings during the public 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 public 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 public 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]
BHAR	0.358***	0.164**	0.081*	0.056*	0.277**	0.108	0.400***	0.196**	0.091*	0.073**	0.309***	0.123
	(0.116)	(0.076)	(0.045)	(0.031)	(0.124)	(0.082)	(0.120)	(0.079)	(0.047)	(0.032)	(0.129)	(0.085)
Return	0.274	0.265	0.314***	0.318***	-0.040	-0.053	0.316	0.307	0.269***	0.271***	0.047	0.036
	(0.186)	(0.186)	(0.079)	(0.079)	(0.202)	(0.202)	(0.196)	(0.197)	(0.084)	(0.083)	(0.213)	(0.214)
Size	-0.163***	-0.160***	-0.060***	-0.061***	-0.103***	-0.099***	-0.187***	-0.185***	-0.061***	-0.061***	-0.126***	-0.124***
	(0.033)	(0.033)	(0.020)	(0.020)	(0.039)	(0.039)	(0.036)	(0.036)	(0.021)	(0.021)	(0.042)	(0.042)
M/B	0.019	0.020	-0.023	-0.021	0.042	0.041	0.043	0.047	-0.027	-0.024	0.070	0.071
	(0.034)	(0.034)	(0.021)	(0.021)	(0.040)	(0.040)	(0.039)	(0.039)	(0.023)	(0.023)	(0.045)	(0.045)
EOY	0.101	0.119	-0.009	-0.011	0.110	0.130	0.145	0.167	0.009	0.008	0.136	0.159
	(0.104)	(0.104)	(0.051)	(0.051)	(0.116)	(0.116)	(0.110)	(0.110)	(0.054)	(0.054)	(0.123)	(0.123)
Vol	-0.038	-0.047	0.019	0.016	-0.057	-0.063	-0.033	-0.044	0.014	0.011	-0.047	-0.055
	(0.054)	(0.054)	(0.023)	(0.023)	(0.059)	(0.059)	(0.060)	(0.060)	(0.025)	(0.025)	(0.065)	(0.065)
Cons.	1.381***	1.350***	0.465***	0.467***	0.916***	0.883***	1.494***	1.464***	0.472***	0.472***	1.022***	0.992***
	(0.260)	(0.261)	(0.118)	(0.118)	(0.286)	(0.286)	(0.287)	(0.288)	(0.126)	(0.126)	(0.313)	(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:

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

$\triangle Hldg_{i;(-5,-1)}$ 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]
BHAR	-0.043	-0.033			-0.040	-0.025		
	(0.046)	(0.031)			(0.047)	(0.031)		
|BHAR|			0.214***	0.122***			0.204***	0.092*
			(0.073)	(0.046)			(0.076)	(0.048)
Return	0.357***	0.361***	0.372***	0.370***	0.337***	0.340***	0.350***	0.345***
	(0.045)	(0.045)	(0.045)	(0.045)	(0.047)	(0.047)	(0.047)	(0.047)
Size	-0.087***	-0.087***	-0.076***	-0.080***	-0.077***	-0.077***	-0.067***	-0.072***
	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
M/B	0.026	0.026	0.021	0.022	0.011	0.011	0.009	0.010
	(0.017)	(0.017)	(0.017)	(0.017)	(0.019)	(0.019)	(0.019)	(0.019)
EOY	-0.044	-0.045	-0.047	-0.043	-0.007	-0.008	-0.012	-0.008
	(0.046)	(0.045)	(0.045)	(0.045)	(0.046)	(0.046)	(0.046)	(0.046)
Vol	-0.010	-0.010	-0.013	-0.011	0.009	0.009	0.007	0.009
	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)
Cons.	0.742***	0.739***	0.602***	0.630***	0.657***	0.656***	0.522***	0.576***
	(0.103)	(0.103)	(0.113)	(0.111)	(0.107)	(0.107)	(0.118)	(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: Return Gap and Governance: Acquisitiveness

This table presents the results for the following regression:

$$\begin{aligned} Acquisition_{it} &= \beta_1 HighGapShare_{i,-1yr} + \beta_2 FirmSize_{i,-1yr} + \beta_3 FirmMB_{i,-1yr} \\ &\quad + \beta_4 ROA_{i,-1yr} + \beta_5 Profitability_{i,-1yr} + \beta_6 Leverage_{i,-1yr} + \alpha_i + \lambda_t + e_{it}. \end{aligned}$$

$Acquisition_{it}$ is the dummy variable that equals one if firm i announced an acquisition in year t and zero otherwise. $HighGapShare_{i,-1yr}$ is the shares held by institutional investors that earn high return gap measured in the previous year divided by total shares outstanding. Columns 5 to 8 report results with $HighGapShare_{i,-1yr}$ scaled by the shares held by entire institutional investors. $FirmSize_{i,-1yr}$ 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. Other control variables include acquirers' ROA, profitability, and leverage one year before the bid. The analyses with firm and year fixed effects are also reported.

	HighGapShare				Scaled HighGapShare			
	OLS	OLS	FE	FE	OLS	OLS	FE	FE
HighGapShare	0.235***	0.117***	0.092***	0.063***	0.031***	0.021***	0.051***	0.014*
	(0.013)	(0.014)	(0.018)	(0.019)	(0.006)	(0.006)	(0.008)	(0.008)
Size		0.000	0.000***	0.000***		0.000	0.000***	0.000***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
M/B		0.011***	0.006***	0.016***		0.013***	0.007***	0.017***
		(0.000)	(0.001)	(0.001)		(0.000)	(0.001)	(0.001)
ROA		0.000	0.001	0.001		0.000	0.001	0.001
		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Profitability		-0.001	-0.000	-0.000		-0.001	-0.000	-0.000
		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Leverage		-0.044***	-0.107***	-0.091***		-0.048***	-0.110***	-0.094***
		(0.004)	(0.008)	(0.008)		(0.004)	(0.008)	(0.008)
Constant	0.056***	0.003			0.065***	-0.001		
	(0.001)	(0.002)			(0.001)	(0.003)		
Fixed Effects	No	No	Firm	Firm + Year	Yes	Yes	Firm	Firm + Year
# Obs	116,290	111,800	109,336	109,336	106,543	102,367	99,761	99,761

Table 10: Return Gap and Governance: Deal Performance

This table presents the results for the following regression:

$$BHAR_i \quad = \quad \alpha + \beta_1 HighGap_i + \beta_2 X_i + e_i$$

where $BHAR_i$ is the post-merger buy-and-hold abnormal return over different horizons; $HighGap_i$ is a dummy that equals one if the deals are held more by institutional investors that earn high return gap; andX_i is the control variable vector that includes acquirer size, relative deal size, acquirer Tobin's Q, leverage, conglomeration dummy, all equity payment dummy, and operating cash flow. The analyses with industry and year fixed effects are also reported.

	OLS	OLS	OLS	FE
HighGap	-0.065***	-0.086***	-0.099***	-0.110***
	(0.025)	(0.028)	(0.032)	(0.036)
$Size_{Acq}$		0.019**	0.022**	0.021**
		(0.009)	(0.010)	(0.011)
TranVal		0.043	0.055*	0.053*
		(0.027)	(0.030)	(0.031)
MB_{Acq}		0.003	0.002	0.002
		(0.010)	(0.012)	(0.013)
Lev_{Acq}			0.030	0.051
			(0.062)	(0.065)
Conglom			0.023	0.019
			(0.031)	(0.033)
All Equity			0.011	0.026
			(0.036)	(0.039)
All Cash			0.038	0.040
			(0.037)	(0.038)
OCF/AT_{Acq}			-0.096	0.386
			(2.598)	(2.650)
Cons.	0.024	-0.121**	-0.156**	-0.155**
	(0.018)	(0.059)	(0.069)	(0.073)
Fixed Effects	No	No	No	Yes
# Obs	1,594	1,419	1,222	1,222

Table 11: Return Gap and Governance: Deal Withdrawal

This table presents the results for the following regression in two subsamples that are constructed based on the return gap of institutional investors that hold the acquirer:

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

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, all equity payment dummy, and all cash payment dummy. The analyses with industry and year fixed effects are also reported.

	Low Gap	High Gap	Difference	Low Gap	High Gap	Difference
CAR	-0.239***	-0.037	-0.202*	-0.253***	-0.045	-0.208*
	(0.085)	(0.084)	(0.120)	(0.087)	(0.086)	(0.122)
$Size_{Acq}$	-0.011**	-0.006	-0.005	-0.009*	-0.007	-0.002
	(0.005)	(0.005)	(0.007)	(0.005)	(0.005)	(0.007)
TranVal	0.046***	0.007	0.039***	0.045***	0.002	0.043***
	(0.009)	(0.007)	(0.011)	(0.010)	(0.008)	(0.013)
MB_{Acq}	-0.003	0.000	-0.003	-0.006	-0.003	-0.003
	(0.005)	(0.005)	(0.007)	(0.006)	(0.006)	(0.008)
Lev_{Acq}	0.025	0.033	-0.008	0.022	0.038	-0.016
	(0.021)	(0.029)	(0.036)	(0.022)	(0.030)	(0.037)
Conglom	0.001	0.015	-0.014	-0.001	0.025	-0.026
	(0.016)	(0.016)	(0.023)	(0.018)	(0.017)	(0.025)
Tender	0.041*	0.035	0.006	0.016	0.032	-0.016
	(0.024)	(0.022)	(0.033)	(0.026)	(0.023)	(0.035)
All Equity	0.069***	0.060***	0.009	0.050**	0.061***	-0.011
	(0.019)	(0.018)	(0.026)	(0.020)	(0.019)	(0.028)
All Cash	0.043**	0.022	0.021	0.042*	0.024	0.018
	(0.020)	(0.021)	(0.029)	(0.022)	(0.022)	(0.031)
Cons.	0.253***	0.163*	0.09	0.229**	0.191*	0.038
	(0.095)	(0.096)	(0.135)	(0.106)	(0.104)	(0.148)
Fixed Effects	No	No		Yes	Yes	
# Obs	1,293	1,377		1,293	1,377	

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. $\triangle Hldg_{-5,-1}$ is the change of institutional investors' holding of the acquirer stock during 4 quarter periods before the quarter of bid announcement; $\triangle Hldg_{-1,0}$ is the change of institutional investors' holding of the acquirer stock during the quarter of bid announcement; $\triangle Hldg_{0,cls}$ 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.

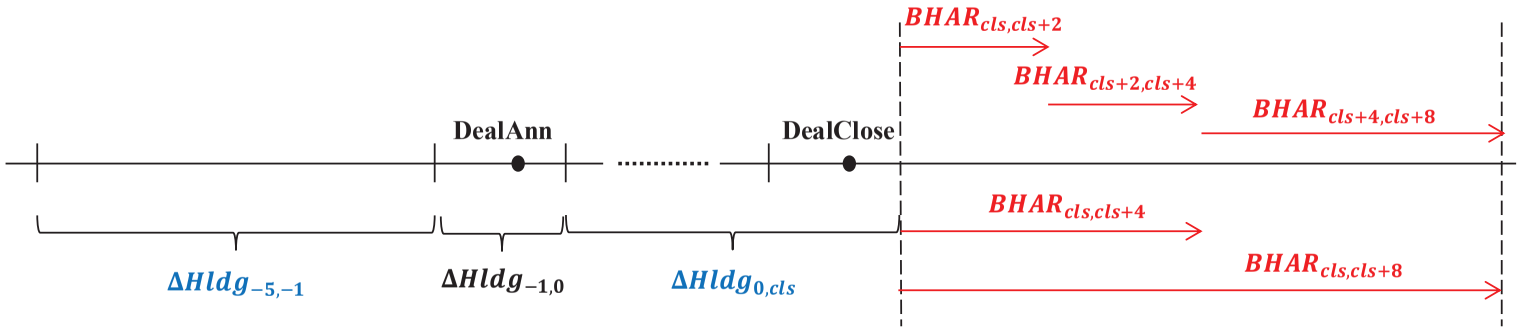

Figure 2: **Expected Gap**

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

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

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 as low group (represented by white bars) and high group (represented by black bars) based on the respective variables. */BHAR/* represents the absolute value of BHAR. *TransVal* 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. *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. *ShortHorizon* is measured by institutions' investment turnover ratio.