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 that, during the public bid negotiation period, institutional investors increase (decrease) their holdings of acquirers in deals that generate positive (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 the acquirer is only -0.9%. The gap widens to 6.3% in deals that deliver volatile returns. We further show how institutional investors' strategic trading and the resulting gap are impacted by deal characteristics such as merger size and stock liquidity as well as institution characteristics such as initial holdings, portfolio weight, and trading skills. Importantly, 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' governance incentives correctly.

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

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1 Introduction

Institutional investors have long been considered a crucial pillar in corporate governance. This view rests on the premise that their interests align with those of other shareholders, as both are presumably affected by changes in a firm's value. Consequently, many studies evaluate institutional investors' motivations by analyzing firm stock returns during corporate events. However, this assumption of aligned interests hinges on institutional investors passively holding the firm's shares throughout such events. In practice, these investors often trade actively during these periods, and thus the firm's stock return (hereafter, the "return to the firm") may not fully capture their economic interests. This issue is particularly relevant for sophisticated institutional investors, or "smart money," who not only possess superior trading abilities but also have significant influence on corporate decisions. As a result, the returns these informed investors earn may diverge considerably from the firm's returns, leading to potential misinterpretations of their incentives in major corporate events.

Our paper aims to measure the gap between the return to the firm and the returns to informed institutional investors in the context of corporate mergers and acquisitions (M&A), and to understand how this disparity influences their support for M&As. We focus on the M&A market for two primary reasons. First, M&As represent significant corporate decisions that can greatly impact firm value while introducing substantial uncertainty, which allows informed investors to leverage their information advantage and trading skills. Second, the M&A literature has predominantly relied on the return to the firm, measured both in the short-run and long-run, to gauge acquirer shareholders' interests in pursuing mergers (see e.g., Andrade, Mitchell, and Stafford, 2001; Betton, Eckbo, and Thorburn, 2008 and references therein). Identifying the gap between firm returns and institutional investor returns offers fresh insights into this literature.[1] While our study focuses on M&As, the implications extend to a broader spectrum of corporate events where institutional investors' information advantage and governance incentives are intertwined. When these investors can profit from their superior information by supporting corporations

[1] If this gap is significant, it suggests a complementary explanation for the long-standing puzzle of why acquirer shareholders allow management to pursue M&As when the average gain to the acquiring firm is small or even negative. Previous studies offer plausible explanations based on the conflict of interest between the manager and shareholders (Jensen, 1986, Harford, 1999, and Roll, 1986), information asymmetry between corporate insiders and outsiders (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004; Rhodes-Kropf, Robinson, and Viswanathan, 2005, Cai, Song, and Walkling, 2011; Bhagat, Dong, Hirshleifer, and Noah, 2005, and Wang, 2018), and institutional cross-holding of acquirer and target stocks in their portfolios (Matvos and Ostrovsky, 2008, and Harford, Jenter, and Li, 2011). Demonstrating the existence of a return gap for informed institutional investors provides a corporate governance based rationale for why these investors may choose to embrace acquisitive firms rather than restrict them from pursuing M&As.

to pursue excessively risky actions, it creates a tension between maximizing firm value and exploiting private information. The return gap we quantify in this paper captures this tension and the resulting distortion in governance incentives.

Two examples help illustrate this concept. On August 4th, 1999, Dow Chemical announced its takeover bid for Union Carbide. At the time, institutional shareholders of Dow Chemical included Putnam Investments, Wellington Management, Vanguard, and T. Rowe Price Group, which collectively held 11% of Dow Chemical's shares before the announcement. The deal closed on February 6th, 2001, and during the public negotiation period (from the bid announcement to deal completion), these institutional investors increased their holdings by purchasing an additional 8% of Dow Chemical's outstanding shares, raising their total ownership to 19% post-merger. Over the next 12 months, Dow Chemical realized a buy-and-hold abnormal return (BHAR) of 18%, generating a substantial profit for these institutional investors. A back-of-the-envelope calculation shows that if these investors had remained passive, they would have earned approximately 593 million dollars (i.e., the BHAR of 18%). However, their active trading produced an additional profit of 418 million dollars (i.e., an additional return of 13%), resulting in a total return of 31% from the merger.

Another example is Sealed Air Corp's acquisition of Diversey, announced on June 1st, 2011, and completed on October 3rd, 2011. Prior to the announcement, twenty institutional investors held 42% of Sealed Air's shares, but they liquidated a significant portion of their holdings during the public negotiation period, selling off 27% of the company's total outstanding shares. Sealed Air subsequently lost 15% of its value over the 12 months following the merger, compared to its matched firm. Had these institutional investors remained passive, they would have incurred losses of 262 million dollars (i.e., BHAR of -15%). However, by actively reducing their holdings, they limited their losses to 73 million dollars, achieving a return of -5%. This active trading highlights that the return to Sealed Air does not accurately reflect the realized loss of these institutional investors.

Building on these examples, we first quantify the prevalence of the gap between the return to acquiring firms and the return to their institutional shareholders, and we assess whether this gap is substantial enough to distort the institutional shareholders' incentives to maximize firm value. Second, we examine how M&A deal characteristics and institutional investor traits influence the size of this gap, emphasizing the empirical contexts in which using firm returns as a proxy for institutional investors' incentives can be

particularly misleading. Finally, we demonstrate how the return gap undermines institutional investors' governance role in M&As, revealing that institutions with a high return gap are associated with weak governance in preventing or rectifying value-destroying mergers.

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 during the public negotiation period (i.e., the period between bid announcement and deal completion). We then relate the trading activity 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.[2]

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 tend to increase their holdings of acquirer stocks in mergers that subsequently demonstrate good performance, while reducing their stakes in those that ultimately underperform. Our estimate suggests that, for every 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. This trading activity results in substantial benefits for institutional investors. We estimate that in an average M&A deal, these investors achieve returns 3.3 percentage points higher than the acquirer's stock return, which averages only -0.9%. This return gap is economically significant, suggesting that even when M&A deals destroy firm value on average, they can still be profitable for informed institutional investors. Furthermore, our findings reveal that this return gap is particularly pronounced in deals with volatile returns. When sorting deals by the *magnitude* of their post-merger 12-month BHAR, we find that institutional

[2]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).

shareholders' returns exceed firm returns by 6.3 percentage points for deals ranking above the median. Conversely, the gap narrows considerably when BHAR approaches zero. This pattern aligns with the notion that institutional investors engage in more aggressive trading in M&A deals characterized by high uncertainty.

We extend our analyses to examine how the return gap varies cross-sectionally with various deal characteristics and institutional investor attributes that influence their trading incentives and capabilities. We investigate five key factors: deal size, stock market liquidity, short-sale constraints and initial holdings, portfolio weight, and investor trading ability.

First, large deals create greater uncertainty about the future value of the combined firms, providing institutional investors with a stronger incentive to collect information and trade. We partition our full sample into two equal-sized subsamples based on the median deal size (measured by the transaction value scaled by acquirer pre-merger market value). The results reveal a more pronounced positive association between institutional investors' trading of acquirer stock and post-merger performance in larger deals. Quantitatively, the gap between the return to the firm and the return to institutional investors expands from 1.3 percentage points for small deals to 4.7 percentage points for large deals, confirming the importance of deal size in determining institutional investors' ability to capitalize on their information advantage.

Second, we examine the impact of stock market liquidity, an important determinant of trading profits. As suggested by Kyle (1985), high liquidity allows informed traders to better camouflage their trades and earn higher profits from their private information. Using the bid-ask spread as a proxy for (il)liquidity, we document stronger results for acquirers with high liquidity. The return gap reaches 6.1 percentage points in the high-liquidity subsample, compared to a negligible gap in the low-liquidity subsample.

Third, we consider the effect of short-sale constraints and initial holdings. Many institutional investors are subject to short-sale constraints, which limit their ability to profit from trading on negative news. Consequently, 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. Our findings support this hypothesis, with the estimated coefficient for good deals being almost four times larger than that for bad deals. Additionally, motivated by previous studies (e.g., Edmans, 2014 and references therein) arguing that larger initial holdings of acquirer stocks induce more information collection and mitigate short-sale constraints, we examine how our results vary with institutional investors' initial holdings. We

find more pronounced results for deals where institutional investors hold a large fraction of acquirers' shares before bid announcements. In these cases, institutional investors earn 4.6 percentage points higher returns than acquirers, compared to a 0.5 percentage-point gap for low initial holdings.

Fourth, we analyze how the weight of acquirer stock in institutional investors' portfolios affects their trading behavior. This factor shapes investors' incentive to collect information and trade (see Fich, Harford, and Tran, 2015). We find that investors trade more aggressively and gain greater profits from M&A deals where their holdings of acquirer stock represent a significant component of their portfolios. The return gap is 6.2 percentage points when acquirer stock accounts for a greater fraction of institutions' portfolios, reducing to 1.7 percentage points when it does not carry significant weight.

Fifth, we examine how trading ability affects institutional investors' performance, given its central importance to our research. We sort institutional investors by their past trading ability, measured by their performance in previous M&A deals, assuming this is a persistent skill. Partitioning investors into quintiles based on this ability measure, we find that the association between trading and ex post deal performance increases monotonically with ability. For institutional investors in the top quintile, their trading exhibits a strong positive relation with long-run deal performance. Conversely, for those in the bottom quintile, this relation is negative. The difference between these groups is both economically sizeable and statistically significant. High-ability institutions earn returns 7.4 percentage points higher than the firm's return, compared to negligible gap in low ability subsamples. This contrast highlights the crucial role of trading skill in leveraging information advantages in M&A contexts.

These findings collectively demonstrate that institutional investors can profit from M&A deals through informed trading, even when acquiring firms suffer losses on average. This suggests that institutional investors might favor more acquisitive firms ex ante. To explore this possibility, we analyze institutional investors' trading *before* bid announcements. Interestingly, we find no evidence of their trading during this period correlating systematically with subsequent deal performance, indicating an absence of insider trading or market front-running. However, we do observe that they increase their holdings in firms that subsequently pursue M&As with highly dispersed long-run performance. This last finding aligns with the theoretical model proposed by Goldman and Wang (2021), which predicts that higher uncertainty in deal performance increases institutional investors' expected trading profits. Therefore, investors can capture the option value of M&A by increasing their stake in good deals and divesting in bad ones. The

institutional investors' apparent preference for holding acquisitive firms is also consistent with the greater return gap we observe in highly risky M&A deals, as documented throughout our study.

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, why firms held by high-gap institutions appear more acquisitive and suffer from weaker deal performance. This is because high-gap institutions benefit from trading on M&A events, potentially aligning their interests with the managers' preference for pursuing excessive takeovers (i.e., the agency problem). 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 cancellation 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. This is 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 acquirer managers 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 revealed on deal announcement, 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.

We conduct a few robustness checks to validate our main findings. We demonstrate that our results are robust to different sample selection criteria for excluding serial acquirers and when using alternative measures of merger performance. Additionally, we extend our analysis to examine acquirer shareholders' trading of target stocks during M&A deals. We find that in equity-based deals, where target shares will be converted into the combined firm's shares post-merger, acquirer shareholders' trading of target stocks is positively correlated with post-merger performance. On the contrary, in cash deals where target shares are exchanged for cash, this correlation is weak or non-existent. These findings suggest that informed acquirer shareholders leverage their information advantage in trading both acquirer and target stocks when their interests align with the combined firm's future performance.

Even though it is not surprising that institutional investors may benefit from their information advantage, including in the context of M&A, our contribution lies in examining the broader governance implications of these potential profits. This paper focuses on quantifying and analyzing the gap between institutional investors' returns and firm returns that arises from strategic trading during corporate events. We argue that this gap is not merely a reflection of informed trading gains, but represents a potential distortion in governance incentives. By measuring this gap, investigating its cross-sectional determinants, and exploring its consequences, we demonstrate how these profits can weaken the alignment between institutional investors' interests and firm value maximization. Our study goes beyond simply confirming the existence of informed trading to shed light on how the ability of institutional investors to profit from their information advantage may create tensions with their role as monitors. This novel perspective illuminates the potential impact of trading profits on governance decisions, particularly in the context of M&A, offering new insights into the complex dynamics between institutional ownership and corporate governance.

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 and operating performance) 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.

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. 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

[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.

database (formerly known as CDA/Spectrum). The database includes stock holding data by banks, insurance companies, parents of mutual funds, pension funds, university endowments, and numerous other types of professional investment advisers. We classify institutional investors based on their CDA type codes and focus on investment companies such as mutual funds and other asset management firms. This database has been widely used in previous studies (e.g., Chen, Harford, and Li 2007; Fich, Harford, and Tran 2015; Harford, Jenter, and Li 2011; Matvos and Ostrovsky 2008; Parrino, Sias, and Starks 2003), and it reports holdings information for institutional investors at a quarterly frequency and thus can be used to estimate institutional trading in different stages of M&A. We follow Chen, Harford, and Li (2007) and correct the mapping error of the post-1998 CDA type classification and drop institutions 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-th* quarters post bid completion and ends at *m-th* 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 5 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 closure

quarter (completion or withdrawal). 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 5 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 *total* trading volume is affected by the acquiring firms' institutional ownership: acquirers held by more institutions are likely to experience larger total 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 reflects their collective views.

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 market-to-book ratio measured one year before the bid announcement; $Turnover_{i;(0,cls)}$ denotes the aggregate trading volume during the public negotiation period 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 institutional investors are able to forecast merger performance and make their trading decisions accordingly.[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 investor 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

[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.

deal, then this institutional investor earns a return of 15%. 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.

Our focus on the expected gap is motivated by two main reasons. First, from the theoretical perspective, we consider institutional investors' 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 purge out the effects of these covariates when 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%. These large variations in BHARs provide a strong incentive for institutional investors to actively collect information regarding deal quality 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 5.65% of acquirer stock. They trade more actively than institutions with small initial holdings, evident by the trading volume of 0.37 versus 0.26. Even though the average net trading quantity is similar between institutions with large and small initial holdings, the standard

deviation of net trading quantity for institutions with large initial holdings is much higher. This trading patterns is 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), for deals with a large transaction value relative to the acquirers' size, and for acquiring firms whose stocks are more liquid.

These subsample summary statistics provide some suggestive evidence that institutional investors' trading is influenced by deal characteristics and investor traits. We explore this cross-sectional variation and relate it to deal performance using multivariate regression analyses in the following section.

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 scenarios in which the return gap is large, and thus using firm returns to gauge institutional investors' incentives in these scenarios 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 and the return to these informed 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 1 suggests that a one-standard deviation increase in the one-year BHAR predicts an about 60% increase in the institutions' net purchase of acquirer stocks on average.[5]

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. 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 term structure of correlation we document here is more consistent with the gradual revelation of information regarding the post-merger integration and the realization of expected synergy, which are critical to deal success. As such information arrives, it gets incorporated into the acquirer's market price and reflected in BHAR.

[5]The magnitude is computed as $\frac{Stdev(BHAR_{1yr})\times\hat{\beta_1}}{\Delta Hldg_{(0,cls)}} = \frac{0.50\times0.176}{0.15} = 0.59$

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%.[6] Given the average return to the firm in M&A events is -0.9%, informed institutional shareholders' return from the M&A is significantly positive.

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.

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

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

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 increase in the ex post merger performance more than doubles the institutional trading of acquirer stock if acquirer stocks are liquid.[7] 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.

[7] The increase is computed as $\frac{Stdev(BHAR_{1yr})\times\hat{\beta}_1}{\Delta Hldg_{(0,cls)}} = \frac{0.50\times0.362}{0.15} = 120\%$

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 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 two subsamples 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. 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 subsamples is economically large and statistically significant at the 1% level. The expected gap for the high-ability institution subsample is 7.4%, while the gap

becomes negligible for the low-ability institutions.

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]

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.

[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.

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 5 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 forces 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 insider 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 a 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.

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 if 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 cancellations, 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.

[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.

Specifically, for each institution j in our sample, we run the following regression:

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

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 the 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 Acquisitions

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:

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

where $Acquisition_{it}$ is a dummy variable that equals one if firm i announces an acquisition in year t; $HighGap_{i,-1yr}$ is a dummy variable that equals one if the deals are held mostly by high-gap institutions

in year $t-1$. To construct this variable, we use the following methodology: For all firms in Compustat and our M&A samples, we calculate the fraction of shares held by high-gap institutions at the end of the previous year, normalized by the shares held by all institutional investors. Annually, firms in the top half based on this measure are assigned a $HighGap_{i,t-1}$ value of one; all others receive a value of zero. The normalized high-gap share captures the proportion of shares held by high-gap institutions relative to all institutional investors, distinguishing it from general institutional ownership effects on acquisitiveness.[10] Control variables include the previous year's acquirer size, market-to-book ratio, ROA, profitability, and leverage. Some specifications also include firm- and year- fixed effects to account for firm-specific unobservables and macroeconomic fluctuations.

Table 9 presents the results of the regression. Columns 1 shows that the holdings of high-gap institutions are positively associated with the probability of a firm becoming an acquirer in the following year in a univariate regression, column 2 show that the result holds after controlling for firm-level covariates. Columns 3 demonstrates that these results are robust to the inclusion of firm- and year- fixed effects. These findings support the notion that institutional investors with a high expected 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.

3.3.2 Return Gap and Deal Performance

Our findings above support the prediction that high-gap institutions prefer firms pursuing acquisitions. A 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

[10] Our results remain robust when using the raw measure, i.e., the fraction of ownership by high-gap institutions without normalized by the total institutional ownership.

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 acquirer is mostly held by high-gap institutions; and X_i is the control variable vector that is commonly used in the literature that includes acquirer size, relative deal size, acquirer market-to-book ratio, 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 7.1 percentage points lower than the performance of acquirers held mostly by low-gap institutions, with the average BHAR for high-gap institutions being -3.5%, while the average BHAR for low-gap institutions is 3.6%. 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 3.5% on average. Columns 2 control for covariates, demonstrating that the difference between the two subgroups even enlarges. Column 3 includes industry- and year- fixed effects, showing that the results are not driven by industry shocks or business cycles.

The above evidence shows 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 benefit 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 favor making more deals and tolerate 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 acquirer managers 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. Specifically, we run the following regression and then explore whether the key coefficient β_1 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, conglomeration dummy, tender offer dummy, hostile dummy, all equity payment dummy, and all cash payment dummy.

Table 11 presents the regression results for our analysis of deal withdrawals. This analysis includes both completed and withdrawn deals and does not require post-merger BHAR information, resulting in a slightly larger sample size. Our findings reveal a notable contrast in deal outcomes based on institutional ownership. For acquirers mainly held by low-gap institutions, the probability of deal withdrawal is negatively correlated with the market reaction to bid announcements (CAR). In contrast, for acquirers mainly held by high-gap institutions, the probability of deal withdrawal shows no significant sensitivity to CAR. While we cannot directly observe institutions' behind-the-scenes influence (McCahery, Sautner, and Starks (2015)), these results suggest that low-gap institutions appear to have a more substantial impact on deal outcomes compared to their high-gap counterparts. The difference between these two subsamples is both statistically significant and economically sizeable.

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 Robustness and Discussion

4.1 Robustness

In this section, we present the results of various robustness tests to confirm the validity and consistency of our findings. These tests evaluate whether our results are robust across different sample restrictions and when employing alternative merger performance measures derived from accounting variables.

Our baseline analysis excludes serial acquirers who made any acquisitions within three years prior the acquisitions. This stringent sample screening criterion reduces confounding mergers in the event window, thus generating a clear estimate. However, one may be concerned that many serial acquirers are consequently excluded from our sample. To address this concern, we conduct a robustness check in which we exclude only serial acquirers who made acquisitions within the year before the acquisitions of interest. Table A.1 presents results from this analysis with the revised definition of serial acquirers. This more lenient definition increases the number of observations in the sample to 2,066. The results confirm that our main findings are robust across different definitions of serial acquirers. Specifically, the coefficients on BHAR and other key variables remain consistent with our baseline results, indicating that institutional trading during the public negotiation period continues to positively correlate with post-merger performance.

Next, we examine whether our primary findings are robust when utilizing alternative measures of merger performance. In our baseline analysis, we use BHAR as the performance measure, as institutional investors arguably care primarily about this metric for their trading profits and gains from M&A. To ensure that our BHAR results are also consistent with the combined firm's long-run performance, we conduct a robustness check by examining its operating performance measured by Return on Equity (ROE). ROE is an accounting-based measure that corresponds to the market-based measure of returns earned by shareholders. To control for industry heterogeneity, we adjust ROE by subtracting the median value of ROE for all firms within the same two-digit SIC code as the acquirer. We then calculate the change in ROE as the difference between the post-merger average over different horizons and the corresponding pre-merger values. The results across various horizons are reported in columns 1-3 and 5-7 of Table A.2. Furthermore,

following Chen, Harford, and Li (2007), we also calculate the abnormal change in ROE by taking the residual from an AR(1) regression of ROE on its lagged value. The results using the abnormal changes in ROE are reported in columns 4 and 8 of Table A.2. The results demonstrate that the relationship between institutional trading and post-merger performance is robust to this alternative measure of merger performance. The positive and significant coefficient implies that institutional investors' trading during the public negotiation period is positively correlated with the changes in post-merger operating performance.

These robustness checks reinforce the validity of our main findings, demonstrating their consistency across different sample specifications and performance measures.

4.2 Acquirer Shareholder's Trading of Target Stocks

The primary findings of our paper suggest that institutional investors of the acquirer have a better understanding of post-merger performance in M&A deals, which allows them to earn significantly positive profits by trading acquirer stocks. The evidence supports the information advantage of acquirer shareholders. While our analysis primarily focuses on the trading of acquirer stocks, Matvos and Ostrovsky (2008) document that institutional investors often hold both acquirers and targets in their portfolios. As a result, it is worth exploring whether these informed investors might also leverage their information advantage in trading target stocks.

This analysis critically depends on the method of payment used in the M&A deal. If a M&A deal is settled in cash, acquirer shareholders have little incentive to purchase target stocks after bid announcements even if they possess positive information about the combined firm's post-merger performance. This is because target shares will be exchanged for cash and delisted after the merger, and thus the future of the combined firm becomes irrelevant after the offer premium is mostly incorporated into target stock price after the announcement. Conversely, if a M&A deal involves the payment through equity of the combined firm, institutional investors of acquirer may trade target stocks in a manner similar to how they trade acquirer stocks during the public negotiation period, because their holdings of target shares will be converted to shares in the combined firm post-merger.

We construct a sample of M&A deals with specific criteria: (1) both acquirers and targets must be publicly traded firms; (2) detailed information on the payment method must be available; (3) at least one acquirer shareholder must have held shares in the target firm at some point during the M&A process.

This selection reduces our dataset to 559 M&A deals from the 1,594 deals analyzed in our main study. We define acquirer shareholders as institutional investors who held shares in the acquirer at any point during the quarter preceding the deal announcement, the quarter of the deal announcement, or the quarter of deal completion. We then calculate the average trading activity of acquirer shareholders on target stock during the public bid negotiation period, $\Delta TarHldg_{i;(0,cls)}$, using a method similar to how we determine the average trading of acquirer stocks, $\Delta Hldg_{i;(0,cls)}$. Table A.3 presents the summary statistics for the specific sample.

To test the hypothesis that the correlation between acquirer's trading of target stocks and the post-merger BHAR is weak in cash deal but positive and strong in equity deals, we run a regression with an interaction term:

$$\begin{aligned}\Delta TarHldg_{i;(0,cls)} &= \alpha + \beta_1 BHAR_i \cdot I(Equity_i) + \beta_2 I(Equity_i) + \beta_3 BHAR_i + \beta_4 Return_{i;(0,cls)} \\ &\quad + \beta_5 FirmSize_{i,-1yr} + \beta_6 FirmMB_{i,-1yr} + \beta_7 Turnover_{i;(0,cls)} + \beta_8 EOY_i + e_i\end{aligned}$$

where $\Delta TarHldg_{i;(0,cls)}$ represents the acquirer's trading of target stocks; $BHAR_i$ is the combined firm's post-merger buy-and-hold abnormal return over a 12-month period; $I(Equity_i)$ is a dummy equals one if the M&A deal is paid with equity beyond a specified threshold; $BHAR_i \cdot I(Equity_i)$ is an interaction term of $BHAR_i$ and $Equity_i$ dummy. The other control variables are defined similarly to those in the main analysis.

Table A.4 presents the regression results, where each column indicates the threshold used to define $Equity_i$ dummy. In columns 1 to 3, we present the results without fixed effects, while in columns 4 to 6, we include fixed effects for target firm's industry and year. The results confirm that acquirer shareholders' trading on target stock is more positively correlated with the post-merger BHAR in equity deals compared to cash deals. The distinction between cash and equity deals grows more significant and economically substantial as the fraction of payment in equity increases, reinforcing that equity payments encourage acquirer shareholders to trade target stocks similarly to acquirer stocks.

Overall, by relating the acquirer's trading on the target side with post-merger performance, we provide evidence suggesting that acquirer shareholders leverage their information advantage about post-merger performance in trading target stocks, especially when the payment involves a high fraction of equity of

the combined firm.

4.3 Information Asymmetry and Agency Costs

In this section, we discuss the role of information asymmetry and agency costs in driving our main findings. Specifically, we consider three scenarios – agency costs without information asymmetry, information asymmetry without agency costs, and information asymmetry with agency costs – to better understand the underlying mechanism and uncover the driving forces.

First, if firms face agency costs that affect the performance of their M&A and this information is public, then the effect of agency costs would be fully reflected in acquirers' announcement returns (i.e., 3-day CAR). In this case, institutions have no information advantage regarding the deal's post-merger BHAR and thus their trading during the public negotiation period, if any, would not correlate with the long-run deal performance. As a result, agency costs without information asymmetry cannot explain our results.

The above analysis suggests that information asymmetry is essential for driving our findings. The origin of such asymmetric information, however, can be resulted from various sources. One example is the agency costs. For instance, firms may face heterogeneous agency costs that may affect their M&A performance and this information is not fully revealed upon bid announcement. Institutional investors may have private information regarding their holding firms' agency costs, and thus they can leverage this information advantage and trade accordingly during the public bid negotiation period (e.g., hold firms with low agency costs and sell firms with high agency costs). As the effect of agency costs on M&A gradually unfold, it drives the post-merger BHAR to move, in a way consistent with institutional investors' trading. Our results, therefore, are consistent with the setting in which both information asymmetry and agency costs present.

Though agency costs can give rise to institutional investors' information advantage, they are not necessarily the mere source of information asymmetry. Even with the absence of agency costs, institutional investors can still be more informed regarding a deal's prospect (e.g., deal-specific synergies) than other market participants. In this case, institutional investors still benefit from trading on their private information in M&A and generate the return gap. As a result, our findings can be consistent with a setting in which information asymmetry exists without the presence of agency costs.[11]

[11] In such a setting, firm managers' propensity to pursue M&A can be driven by them being less informed than institutional

4.4 Who Are Counterparts

Since institutional investors covered in our study make positive trading profits from M&A, a natural question is who act as their counterparts and clear the market. One challenge of carrying out a comprehensive analysis to answer this question is the data limitation: we do not observe trades made by retail investors and other market participants who are not covered by 13F database.

In this subsection, we shed some light on this question by analyzing how other types of investors, covered by 13F database, trade in M&A. These investors include banks, insurance companies, investment advisors, pension funds, university endowments, and other investors based on their type code in 13F. We perform our baseline regression analysis for each type of investors separately, and Table A.5 shows the results. In this table, Type 3 includes the institutional investors that we focus on in our paper, mainly representing the investment companies (mutual funds, hedge funds). Type 1 investors include banks, type 2 includes insurance companies, type 4 includes investment advisors, and type 5 includes all others (e.g., pension funds, endowments, foundations). As evident in the table, only type 3 institutional investors are found to trade in the right direction in M&A deals regarding the long-run deal performance, while trades made by other types of investors are either uncorrelated or, if any, slightly negatively correlated with deal performance. This finding suggests that there is no certain type of investors covered by 13F database that consistently trade as the counterpart to the institutional investors we study in this paper.[12] As a result, it is likely that the institutional investors we focus on in this paper trade against retail investors or investors who are not covered by 13F holding data.

5 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

investors, and institutional investors lack incentives to deliver their private information to the managers or incur large cost of doing so.

[12] If there is a group of investors who consistently trade as the counterpart to the type 3 institutional investors, then the estimated coefficient for that group of investors should be significantly negative.

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; $Hldg_{-1}$ is the average institutional holdings of the acquirer stock one quarter before the bid announcement, expressed as a percent of total shares outstanding; $\Delta Hldg_{(-5,-1)}$ is the change in institutional holdings of the acquirer's stocks during the one year period before bid announcement (i.e., from five quarters to one quarter before the announcement); $\Delta Hldg_{(0,cls)}$ is the change in institutional holdings of the acquirer's stocks during the public negotiation period; $\left|\Delta Hldg_{(-5,-1)}\right|$ and $\left|\Delta Hldg_{(0,cls)}\right|$ are the absolute value of $\Delta Hldg_{(-5,-1)}$ and $\Delta Hldg_{(0,cls)}$ 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
$Hldg_0$	1.26	1.26	0.31	0.93	2.40
$\Delta Hldg_{(-5,-1)}$	0.25	0.88	-0.34	0.11	1.07
$\Delta Hldg_{(0,cls)}$	0.15	1.13	-0.24	0.04	0.57
$\left\|\Delta Hldg_{(-5,-1)}\right\|$	0.51	0.75	0.03	0.25	1.30
$\left\|\Delta Hldg_{(0,cls)}\right\|$	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. $\Delta Hldg_{(0,cls)}$ is the average change in institutional holdings of the acquirer's stocks during the public negotiation period; $\left|\Delta Hldg_{(0,cls)}\right|$ is the absolute value of $\Delta Hldg_{(0,cls)}$ and capture the trading volume of acquirer stock in the public negotiation period.

	Mean	**Stdev**	**Mean**	**Stdev**
Initial Holdings X_0				
	High		Low	
$X_0(\%)$	2.09	1.48	0.49	0.27
$BHAR_{1y}(\%)$	-2.22	53.04	0.44	45.90
$\Delta Hldg_{(0,cls)}$	0.16	1.53	0.14	0.47
$\left\|\Delta Hldg_{(0,cls)}\right\|$	0.41	1.48	0.22	0.44
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
$\Delta Hldg_{(0,cls)}$	0.20	1.43	0.10	0.72
$\left\|\Delta Hldg_{(0,cls)}\right\|$	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
$\Delta Hldg_{(0,cls)}$	0.25	1.49	0.05	0.57
$\left\|\Delta Hldg_{(0,cls)}\right\|$	0.40	1.45	0.23	0.52
Liquidity				
	High		Low	
$BA\,Sprd\,(\%)$	0.16	0.19	2.11	1.71
$BHAR_{1y}(\%)$	-1.44	57.28	-1.20	42.98
$\Delta Hldg_{(0,cls)}$	0.23	1.69	0.08	0.34
$\left\|\Delta Hldg_{(0,cls)}\right\|$	0.43	1.65	0.21	0.29
Investor Ability				
	High		Low	
$AbilityScore$	0.43	0.33	-0.24	0.28
$BHAR_{1y}(\%)$	-2.26	48.92	0.77	50.11
$\Delta Hldg_{(0,cls)}$	0.16	1.50	0.14	0.55
$\left\|\Delta Hldg_{(0,cls)}\right\|$	0.34	1.48	0.30	0.48

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	0.316***	0.176***	-0.024	-0.025	0.340***	0.201***	0.361***	0.229***	-0.027	-0.029	0.388***	0.258***
	(0.102)	(0.067)	(0.036)	(0.025)	(0.108)	(0.072)	(0.105)	(0.070)	(0.037)	(0.025)	(0.111)	(0.074)
Return	0.460**	0.494***	0.116**	0.117**	0.344*	0.377**	0.430**	0.458**	0.118**	0.119**	0.312	0.339*
	(0.182)	(0.181)	(0.056)	(0.056)	(0.190)	(0.189)	(0.190)	(0.189)	(0.059)	(0.059)	(0.199)	(0.198)
Size	-0.137***	-0.134***	-0.036***	-0.037***	-0.101***	-0.097***	-0.141***	-0.138***	-0.038***	-0.038***	-0.103***	-0.100**
	(0.039)	(0.039)	(0.009)	(0.009)	(0.040)	(0.040)	(0.043)	(0.043)	(0.010)	(0.010)	(0.044)	(0.044)
M/B	0.029	0.029	-0.011	-0.011	0.040	0.040	0.033	0.035	-0.001	-0.002	0.034	0.037
	(0.042)	(0.043)	(0.012)	(0.012)	(0.044)	(0.045)	(0.047)	(0.047)	(0.013)	(0.013)	(0.049)	(0.049)
EOY	0.109	0.119	-0.062*	-0.062*	0.171	0.181	0.151	0.168	-0.069*	-0.069*	0.220*	0.237*
	(0.111)	(0.111)	(0.034)	(0.034)	(0.116)	(0.116)	(0.117)	(0.117)	(0.035)	(0.035)	(0.122)	(0.122)
Vol	-0.018	-0.029	0.069***	0.069***	-0.087*	-0.098*	-0.029	-0.042	0.073***	0.074***	-0.102*	-0.116**
	(0.047)	(0.047)	(0.020)	(0.020)	(0.051)	(0.051)	(0.050)	(0.050)	(0.022)	(0.022)	(0.055)	(0.055)
Cons.	0.903***	0.894***	0.393***	0.395***	0.510**	0.499**	0.917***	0.903***	0.383***	0.386***	0.534*	0.517*
	(0.242)	(0.243)	(0.071)	(0.071)	(0.252)	(0.253)	(0.266)	(0.266)	(0.075)	(0.075)	(0.276)	(0.276)
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 in two subsamples that are constructed based on the abilities of mutual funds measured by their trading performance in past M&As.

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

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		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	0.385***	0.196***	0.002	0.014	0.383***	0.182***	0.404***	0.197***	-0.004	-0.002	0.408***	0.199***
	(0.108)	(0.072)	(0.039)	(0.026)	(0.115)	(0.077)	(0.112)	(0.075)	(0.040)	(0.027)	(0.119)	(0.080)
Return	0.439**	0.451**	0.219***	0.216***	0.220	0.235	0.465**	0.482**	0.249***	0.248***	0.216	0.234
	(0.186)	(0.187)	(0.064)	(0.063)	(0.197)	(0.197)	(0.197)	(0.197)	(0.067)	(0.066)	(0.208)	(0.208)
Size	-0.092***	-0.089***	-0.045***	-0.045***	-0.047	-0.044	-0.106***	-0.101***	-0.046***	-0.046***	-0.060*	-0.055
	(0.030)	(0.030)	(0.012)	(0.012)	(0.032)	(0.032)	(0.034)	(0.034)	(0.013)	(0.013)	(0.036)	(0.036)
M/B	0.003	0.006	0.003	0.004	0.000	0.002	0.023	0.028	0.006	0.006	0.017	0.022
	(0.041)	(0.041)	(0.014)	(0.014)	(0.043)	(0.043)	(0.045)	(0.045)	(0.015)	(0.015)	(0.047)	(0.047)
EOY	0.069	0.080	-0.028	-0.028	0.097	0.108	0.106	0.117	-0.035	-0.035	0.141	0.152
	(0.110)	(0.111)	(0.039)	(0.039)	(0.117)	(0.118)	(0.116)	(0.117)	(0.042)	(0.042)	(0.123)	(0.124)
Vol	-0.034	-0.049	0.023	0.023	-0.057	-0.072	-0.051	-0.069	0.025	0.025	-0.076	-0.094
	(0.057)	(0.057)	(0.018)	(0.018)	(0.060)	(0.060)	(0.060)	(0.060)	(0.020)	(0.020)	(0.063)	(0.063)
Cons.	0.759***	0.728***	0.411***	0.412***	0.348	0.316	0.810***	0.770***	0.413***	0.413***	0.397	0.357
	(0.217)	(0.217)	(0.084)	(0.084)	(0.233)	(0.233)	(0.237)	(0.238)	(0.092)	(0.092)	(0.254)	(0.255)
Fixed Effects	No	No	No	No			Yes	Yes	Yes	Yes		
# Obs	790	790	790	790			789	789	789	789		

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:

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

$\triangle Hldg_{i;(-5,-1)}$ 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:

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

$Acquisition_{it}$ is the dummy variable that equals one if firm i announced an acquisition in year t and zero otherwise. $HighGap_i$ is a dummy that equals one if the deals are held more by institutional investors that earn high return gap; $FirmSize_{i,-1yr}$ 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.

HighGap	0.022***	0.062***	0.026***
	(0.002)	(0.001)	(0.001)
Size		0.006***	0.010***
		(0.000)	(0.001)
M/B		0.000***	0.000***
		(0.000)	(0.000)
ROA		0.002*	0.001
		(0.001)	(0.001)
Profitability		-0.003**	-0.001
		(0.001)	(0.001)
Leverage		-0.037***	-0.039***
		(0.002)	(0.004)
Constant	0.125***	0.003**	-0.002
	(0.001)	(0.001)	(0.003)
Fixed Effects	No	No	Yes
# Obs	228,717	201,643	199,679

Table 10: Return Gap and Governance: Deal Performance

This table presents the results for the following regression:

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

where $BHAR_i$ is the post-merger buy-and-hold abnormal return over a 12-month period; $HighGap_i$ is a dummy that equals one if the deals are held more by institutional investors that earn high return gap; and X_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.

$HighGap$	-0.071***	-0.075**	-0.058*
	(0.026)	(0.033)	(0.035)
$Size_{Acq}$		0.017*	0.013
		(0.010)	(0.011)
$TranVal$		0.052*	0.058*
		(0.030)	(0.031)
MB_{Acq}		0.003	0.002
		(0.012)	(0.013)
Lev_{Acq}		0.042	0.059
		(0.062)	(0.065)
$Conglom$		0.029	0.018
		(0.032)	(0.033)
$All\ Equity$		0.018	0.025
		(0.036)	(0.039)
$All\ Cash$		0.036	0.046
		(0.037)	(0.038)
OCF/AT_{Acq}		0.111	0.895
		(2.603)	(2.658)
$Cons.$	0.036*	-0.144**	-0.136*
	(0.020)	(0.069)	(0.073)
Fixed Effects	No	No	Yes
$\#\ Obs$	1,594	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, hostile 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	-0.274***	0.035	-0.309**	-0.266***	-0.019	-0.247*
	(0.081)	(0.111)	(0.137)	(0.084)	(0.114)	(0.142)
$Size_{Acq}$	-0.022***	-0.003	-0.019***	-0.025***	-0.003	-0.022***
	(0.005)	(0.005)	(0.007)	(0.006)	(0.006)	(0.008)
$TranVal$	0.021***	0.084***	-0.063***	0.018***	0.077***	-0.059***
	(0.006)	(0.019)	(0.020)	(0.006)	(0.020)	(0.021)
MB_{Acq}	0.001	0.006	-0.005	0.001	0.003	-0.002
	(0.005)	(0.006)	(0.008)	(0.006)	(0.006)	(0.008)
Lev_{Acq}	0.184***	0.060	0.124*	0.197***	0.090*	0.107
	(0.046)	(0.050)	(0.068)	(0.050)	(0.053)	(0.073)
$Conglom$	0.016	0.017	-0.001	0.032*	0.021	0.011
	(0.017)	(0.017)	(0.024)	(0.018)	(0.018)	(0.025)
$Tender$	0.022	-0.033	0.055	0.031	-0.035	0.066*
	(0.025)	(0.024)	(0.035)	(0.027)	(0.025)	(0.037)
$Hostile$	0.195***	0.633***	-0.438***	0.220***	0.608***	-0.388***
	(0.072)	(0.075)	(0.104)	(0.074)	(0.076)	(0.106)
All Equity	0.088***	0.040**	0.048*	0.059***	0.039*	0.020
	(0.019)	(0.020)	(0.028)	(0.022)	(0.021)	(0.030)
All Cash	0.029	0.056***	-0.027	0.022	0.043**	-0.021
	(0.022)	(0.021)	(0.030)	(0.024)	(0.022)	(0.033)
Cons.	0.408***	0.050	0.358***	0.471***	0.065	0.406***
	(0.096)	(0.101)	(0.139)	(0.107)	(0.116)	(0.158)
Fixed Effects	No	No		Yes	Yes	
# Obs	945	944		945	944	

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.

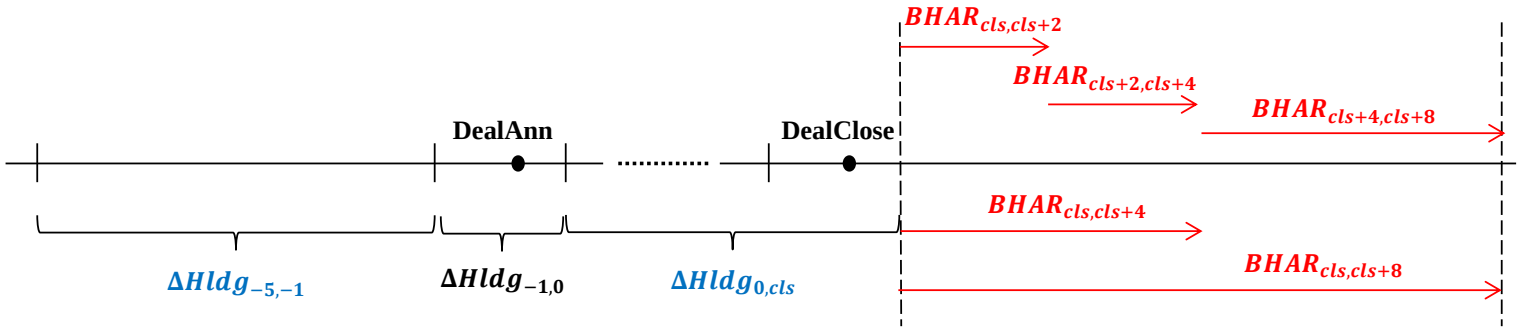

Figure 2: Expected Gap

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.

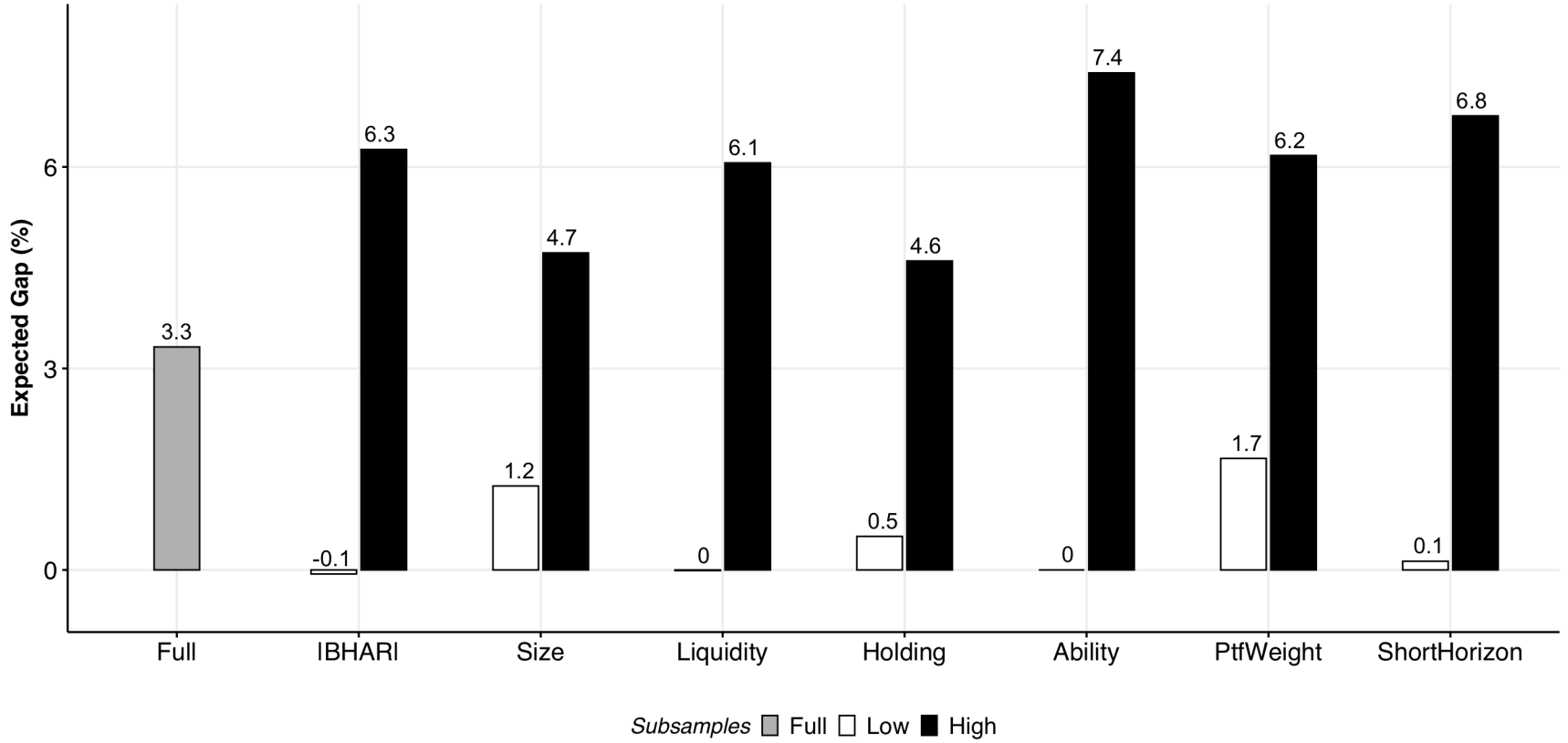

Table A.1: Robustness: Sample Screening with Serial Acquirers

This table presents the results for the baseline analysis:

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

In the analysis, we restrict the sample to acquiring firms to those who do not make any bids within *one year* around the current bid, instead of the three-year window used in our main specification. 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	0.146***	0.078**	0.102	0.189***	0.027	0.158***	0.091***	0.129*	0.188***	0.041
	(0.046)	(0.031)	(0.068)	(0.064)	(0.042)	(0.047)	(0.031)	(0.069)	(0.065)	(0.043)
Return	0.287***	0.291***	0.290***	0.303***	0.300***	0.288***	0.291***	0.289***	0.305***	0.301***
	(0.078)	(0.078)	(0.078)	(0.078)	(0.078)	(0.080)	(0.080)	(0.080)	(0.079)	(0.080)
Size	-0.063***	-0.063***	-0.062***	-0.065***	-0.063***	-0.065***	-0.064***	-0.063***	-0.066***	-0.064***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
M/B	0.003	0.004	0.004	0.004	0.005	0.007	0.009	0.008	0.008	0.009
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
EOY	0.030	0.033	0.031	0.032	0.033	0.040	0.043	0.040	0.042	0.043
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Vol	0.012	0.009	0.010	0.010	0.008	0.014	0.009	0.012	0.012	0.008
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Cons.	0.532***	0.530***	0.522***	0.543***	0.527***	0.529***	0.526***	0.516***	0.541***	0.523***
	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.101)	(0.101)	(0.101)	(0.101)	(0.101)
Fixed Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
# Obs	2,066	2,066	2,066	2,066	2,066	2,066	2,066	2,066	2,066	2,066
Adj-R2	0.021	0.019	0.017	0.020	0.016	0.028	0.027	0.024	0.027	0.023

Table A.2: Robustness: Accounting Measure (Return on Equity)

Panel A presents the results for the baseline analysis:

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

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; $\Delta ROE_{i;(-1yr,nyr)}$ is calculated as the difference between one-year industry-adjusted pre-merger ROE and the average industry-adjusted ROE across n years post-merger. Following Chen, Harford, and Li (2007), abnormal ROE is defined as the residual from a cross-sectional regression of post-merger three-year average industry-adjusted ROE on the corresponding pre-merger measure. 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.

	[-1yr, 1yr]	[-1yr, 2yr]	[-1yr, 3yr]	Abnormal	[-1yr, 1yr]	[-1yr, 2yr]	[-1yr, 3yr]	Abnormal
ΔROE	0.060**	0.030**	0.027**	0.028**	0.059**	0.030**	0.026*	0.028**
	(0.029)	(0.014)	(0.013)	(0.014)	(0.029)	(0.014)	(0.014)	(0.014)
Return	0.210***	0.214***	0.216***	0.219***	0.202***	0.205***	0.208***	0.211***
	(0.050)	(0.050)	(0.050)	(0.050)	(0.052)	(0.051)	(0.051)	(0.051)
Size	-0.033***	-0.033***	-0.033***	-0.033***	-0.035***	-0.035***	-0.035***	-0.035***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)
M/B	-0.005	-0.004	-0.004	-0.004	-0.000	0.000	0.000	0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
EOY	-0.007	-0.005	-0.005	-0.005	-0.011	-0.009	-0.009	-0.009
	(0.030)	(0.030)	(0.030)	(0.030)	(0.031)	(0.031)	(0.031)	(0.031)
Vol	0.038**	0.037**	0.037**	0.037**	0.041**	0.041**	0.041**	0.041**
	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
Cons.	0.319***	0.318***	0.318***	0.318***	0.324***	0.322***	0.322***	0.322***
	(0.059)	(0.059)	(0.059)	(0.059)	(0.063)	(0.063)	(0.063)	(0.063)
Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes
# Obs	1,389	1,390	1,390	1,390	1,388	1,389	1,389	1,389

Table A.3: Acquirer Shareholder's Target Trading: Summary Statistics

The table presents summary statistics for institutional investors holding stocks of both acquirer and target firms in the quarter preceding the M&A deal announcement (Q-1). The sample is limited to deals with publicly traded acquirer and target firms. *NumAcqInst* represents the number of institutional investors holding acquirer stocks at Q-1. *NumAcqInstTar* indicates the number of these acquirer's institutional shareholders who also hold target stocks at Q-1. *ShrAcq* denotes the percentage of the acquirer firm owned by its institutional shareholders. *ShrAcqTar* shows the percentage of the target firm owned by the acquirer's institutional shareholders. *ProbAcqTar* represents the probability that the acquirer's institutional shareholders simultaneously hold target stocks at Q-1.

Summary Statistics						
	Mean	Sd	Min	Median	Max	N
NumAcqInst	16.14	12.55	0	13	66	740
NumAcqInstTar	5.08	6.71	0	2	53	740
ShrAcq (%)	13.53	10.64	0	11.49	52.82	740
ShrAcqTar (%)	5.94	7.97	0	2.63	54.12	740
ProbAcqTar (%)	25.18	24.58	0	20	100	740

Table A.4: **Acquirer Shareholder's Trading of Target Stock and Post-Merger Performance: Method of Payment**

This table presents the results for the following regression:

$$\begin{aligned}\Delta TarHldg_{i;(0,cls)} &= \alpha + \beta_1 BHAR_i \cdot I(Equity_i) + \beta_2 I(Equity_i) + \beta_3 BHAR_i + \beta_4 Return_{i;(0,cls)} \\ &\quad + \beta_5 FirmSize_{i,-1yr} + \beta_6 FirmMB_{i,-1yr} + \beta_7 Turnover_{i;(0,cls)} + \beta_8 EOY_i + e_i\end{aligned}$$

The dependent variable, $\Delta TarHldg_{i;(0,cls)}$, represents the average trading of corresponding target stocks by institutional investors of acquirer i during the public negotiation period. $BHAR_i$ is the post-merger buy-and-hold abnormal return over a 12-month period. $I(Equity_i)$ is a dummy that equals one if the M&A deal is paid with equity exceeding certain thresholds. The specific thresholds are reported in each columns. $BHAR_i \cdot I(Equity_i)$ is an interaction term of $BHAR_i$ and $Equity_i$ dummy. 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.

	Equity Dummy Percentile Threshold			Equity Dummy Percentile Threshold		
	10%	50%	100%	10%	50%	100%
*BHAR*I(Equity)*	0.170	0.298*	0.415**	0.192	0.341**	0.504***
	(0.170)	(0.162)	(0.168)	(0.180)	(0.172)	(0.178)
BHAR	-0.173	-0.222*	-0.207**	-0.171	-0.232*	-0.220**
	(0.138)	(0.117)	(0.102)	(0.147)	(0.127)	(0.110)
I(Equity)	-0.283***	-0.278***	-0.228***	-0.313***	-0.308***	-0.267***
	(0.075)	(0.074)	(0.081)	(0.083)	(0.082)	(0.089)
Return	-0.104	-0.078	-0.101	-0.065	-0.034	-0.054
	(0.124)	(0.124)	(0.124)	(0.134)	(0.134)	(0.133)
Size	0.050**	0.052**	0.059**	0.047*	0.051*	0.058**
	(0.024)	(0.024)	(0.024)	(0.027)	(0.027)	(0.027)
M/B	0.003	0.014	0.011	0.020	0.032	0.030
	(0.027)	(0.027)	(0.027)	(0.031)	(0.031)	(0.031)
EOY	0.110	0.110	0.093	0.124	0.125	0.104
	(0.073)	(0.073)	(0.073)	(0.079)	(0.078)	(0.079)
Vol	-0.023	-0.037	-0.045	-0.001	-0.017	-0.027
	(0.035)	(0.034)	(0.034)	(0.039)	(0.038)	(0.038)
Cons.	-0.582***	-0.645***	-0.734***	-0.603***	-0.691***	-0.788***
	(0.195)	(0.191)	(0.190)	(0.213)	(0.208)	(0.206)
Fixed Effects	No	No	No	Yes	Yes	Yes
# Obs	559	559	559	557	557	557

Table A.5: **Institutional Trading and Merger Performance: Institution Types**

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 of various types during the public negotiation period. The institution types are classified as follows: type 1 refers to banks; type 2 to insurance companies; type 3 to investment companies (e.g., mutual fund management firms); type 4 to independent investment advisors; and type 5 to all other institutions (including pension funds and university endowment). $BHAR_i$ is the post-merger buy-and-hold abnormal return over 12 months. 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.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 1	Type 2	Type 3	Type 4	Type 5
BHAR	-0.023	-0.014	0.176***	-0.008	0.030	-0.021	-0.010	0.192***	-0.007	0.019
	(0.017)	(0.021)	(0.057)	(0.017)	(0.052)	(0.017)	(0.021)	(0.057)	(0.017)	(0.019)
Return	0.083***	0.052	0.322***	0.109***	0.341***	0.086***	0.048	0.313***	0.106***	-0.040
	(0.028)	(0.036)	(0.095)	(0.028)	(0.095)	(0.029)	(0.036)	(0.098)	(0.029)	(0.033)
Size	-0.013***	-0.021***	-0.067***	-0.032***	-0.066***	-0.014***	-0.019***	-0.073***	-0.028***	-0.013**
	(0.005)	(0.006)	(0.017)	(0.005)	(0.017)	(0.005)	(0.007)	(0.018)	(0.005)	(0.006)
M/B	-0.003	0.008	0.002	-0.000	0.004	-0.006	0.008	0.010	-0.004	-0.002
	(0.006)	(0.008)	(0.021)	(0.006)	(0.021)	(0.007)	(0.008)	(0.023)	(0.007)	(0.008)
EOY	-0.001	-0.005	0.029	-0.010	0.031	-0.005	0.007	0.050	-0.004	0.025
	(0.017)	(0.022)	(0.058)	(0.017)	(0.058)	(0.017)	(0.022)	(0.060)	(0.017)	(0.020)
Vol	0.011	0.013	0.002	0.013	-0.005	0.006	0.018*	0.002	0.017**	0.006
	(0.008)	(0.010)	(0.028)	(0.008)	(0.028)	(0.009)	(0.011)	(0.030)	(0.009)	(0.010)
Cons.	0.119***	0.165***	0.563***	0.274***	0.552***	0.130***	0.142***	0.576***	0.251***	0.115***
	(0.034)	(0.044)	(0.118)	(0.034)	(0.118)	(0.036)	(0.046)	(0.124)	(0.036)	(0.042)
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	0.009	0.006	0.021	0.034	0.002	0.007	0.029	0.019	0.036	0.006