



Monitoring: Which institutions matter? [☆]

Xia Chen^a, Jarrad Harford^{b,*}, Kai Li^a

^a*Sauder School of Business, University of British Columbia, 2053 Main Mall, Vancouver, Canada BC V6 T 1Z2*

^b*University of Washington Business School, Seattle, WA 98195-3200, USA*

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Abstract

Within a cost–benefit framework, we hypothesize that independent institutions with long-term investments will specialize in monitoring and influencing efforts rather than trading. Other institutions will not monitor. Using acquisition decisions to reveal monitoring, we show that only concentrated holdings by independent long-term institutions are related to post-merger performance. Further, the presence of these institutions makes withdrawal of bad bids more likely. These institutions make long-term portfolio adjustments rather than trading for short-term gain and only sell in advance of very bad outcomes. Examining total institutional holdings or even concentrated holdings by other types of institutions masks important variation in the subset of monitoring institutions.

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*Corresponding author.

E-mail address: jarrad@u.washington.edu (J. Harford).

1. Introduction

Institutional ownership of common stock has increased substantially over the past 50 years. According to the Federal Reserve Board's Flow of Funds report, institutions owned approximately 7% of US equities in 1950 and 51% by the end of 2004. This increasing dominance in the equity markets contrasts with our limited understanding of the role institutional investors play in corporate governance. In this paper, we examine institutional monitoring, which consists of both information gathering and efforts to influence management.

Theoretical work by Shleifer and Vishny (1986), Maug (1998), and Kahn and Winton (1998) highlights the choice institutions face between exerting monitoring effort for shared gain versus simply trading for private gain. That is, some institutions might focus on information gathering and trading, choosing not to expend effort on influencing management. Reflecting this possibility, empirical work has been mixed on the benefits of institutional ownership in a firm. Researchers such as Brickley, Lease, and Smith (1988), Agrawal and Mandelker (1990), Bushee (1998), Hartzell and Starks (2003), Almazan, Hartzell, and Starks (2005), and Borokhovich, Brunarski, Harman, and Parrino (2006) have shown that certain types of, but not all, institutional investors exert influence on antitakeover amendments, R&D investment decisions, and CEO compensation. However, Parrino, Sias, and Starks (2003) conclude that rather than exerting effort to influence management, some institutional investors vote with their feet by selling their shares when they are dissatisfied with corporate performance. Two recent papers on mergers produce a mixed message as well. Gaspar, Massa and Matos (2005) conclude that institutional investors with high-turnover portfolios exert little influence on managers with regard to acquisition decisions. Qiu (2004) shows that public pension funds are associated with reduced frequency of merger bids, but disagrees with Gaspar et al. about whether portfolio turnover has any effect. The two studies come to different conclusions on merger performance.

Other studies have looked for more general effects of institutional investors and have also found mixed results. Whereas Smith (1996) finds that CalPERS was successful in its performance targeting, studies on larger samples of pension funds are more skeptical. Karpoff, Malatesta, and Walkling (1996), Wahal (1996), Del Guercio and Hawkins (1999), and Gillan and Starks (2000) show some short-term market reaction to the announcement of shareholder activism, but little evidence of long-term improvement in stock or operating performance resulting from activism. Conversely, Cornett, Marcus, Saunders, and Tehranian (2004) conclude that the presence of institutions without potential business relationships with the firm is associated with better firm operating performance. In another strand of the literature, researchers have investigated the relation between firm value and institutional holdings. McConnell and Servaes (1990) detect a positive relation between Tobin's Q and the fraction of shares owned by institutions. However, Woitke (2002) shows that firm value is positively related only to ownership by private pension funds.

In order to better understand institutional monitoring and the sometimes conflicting evidence, we study institutional investors within a framework of the costs and benefits of monitoring vis-à-vis trading. This framework produces the conclusion that the net benefits of monitoring increase with the size of the stake, the length of time invested, and the independence of the institution, where we define independence as the absence of potential business ties following Brickley, Lease, and Smith (1988). We hypothesize that

independent institutional investors that have maintained large stakes in a firm for at least one year (long-term) will specialize in monitoring activities, showing little short-term trading profit. Other institutional investors may trade instead of monitoring. Further, monitoring institutions will benefit through their monitoring efforts, but at least some of this benefit will be shared with other stockholders. Our paper is the first to study institutional monitoring and trading while simultaneously considering the type of institution, the size of its ownership stake, and the length of time invested in a particular firm. Further, we are the first to empirically study whether long-term monitors enjoy private benefits through trading.

We choose acquisitions as the setting for empirical tests of our hypotheses. Aside from being large and visible investments, acquisition decisions have the potential for wide disparity between shareholder and manager interests. We examine the degree to which independent long-term institutions (ILTIs) with large ownership stakes mitigate this conflict. Specifically, we hypothesize the following: total institutional holdings will have mixed or no predictive power for merger performance or bid withdrawal; concentrated holdings by ILTIs will be associated with better mergers and withdrawal of bad mergers; ILTIs with concentrated holdings will expend effort to have a bad bid withdrawn rather than selling their shares after the announcement; grey institutions, defined as those whose monitoring abilities might be compromised due to business interests, and institutions invested for the short term will not be associated with better merger performance or withdrawal of bad deals; and ILTIs will show little evidence of short-term trading gains, but they will increase their holdings over time in better firms and decrease them only in advance of large, negative acquisition outcomes.

In our empirical analysis, we relate our measures of institutional presence to bid announcement returns, three-year buy-and-hold post-merger abnormal returns (BHARs), the post-merger change in industry-adjusted return on assets (Δ ROA), and post-merger changes in analyst earnings forecasts (Δ EPS). We find results broadly consistent with our predictions. Specifically, the presence of large holdings by ILTIs predicts better post-merger BHARs, Δ ROA, and Δ EPS. High total institutional holdings or large holdings by grey or short-term institutions do not predict post-merger performance. Similarly, firms with large ILTI holdings are less likely to announce the worst deals (mergers with announcement returns in the bottom quintile) than are firms with only large grey or short-term holdings. Further, firms that announce the worst deals are more likely to withdraw their bids if they have large holdings by ILTIs, but not if they only have large grey or short-term holdings.

Our examination of the trading activity of ILTIs with large holdings shows that they do not make beneficial portfolio adjustments immediately prior to a bid. However, looking at the entire year prior to the bid announcement, we find that ILTIs reduce their stakes in advance of the worst (bottom quintile) acquisition announcements and increase their stakes in advance of acquisitions with positive announcement returns. We interpret this evidence as implying that they benefit from the information generated through their monitoring efforts, but only through long-term portfolio adjustments rather than by trading on event-specific knowledge. The fact that they sell only prior to the worst acquisitions suggests a desire to monitor and influence in all but the worst cases, rather than to sell a large position and walk away.

In subperiod analysis, we find that institutions have a stronger monitoring presence in the second half of our sample period. While our inferences are similar for the 1984–1989

subperiod, the monitoring effects are stronger and more significant in the 1990–2001 subperiod. This is consistent with increased institutional shareholder activism beginning in the late 1980s.

Both institutional presence and acquisitions are endogenous, suggesting an alternative hypothesis that institutions are good at picking and investing in better-managed firms, leading to the observed relation without any active monitoring. Under the assumption that all institutions have equal stock-picking ability, we would not expect the monitoring effect to be observed only for ILTIs with concentrated holdings. Further, even if we relax this assumption and assume that ILTIs specialize in identifying and staying invested in better-governed firms, our results on the likelihood of withdrawing bad deals suggest an active monitoring role of ILTIs rather than a passive stock-picking strategy. The fact that the strength of the monitoring effect increases in the 1990s along with a general increase in institutional activism is also suggestive of an active role. Finally, we conduct additional tests that increase our confidence in the monitoring hypothesis. The monitoring effect remains even if we control for firm performance and governance as determinants of institutional holdings, and the effect is strongest among institutions that would most be expected to attempt to influence management (public pension funds) and weakest among those that would put relatively more weight on information gathering and trading (investment companies). Nonetheless, we cannot completely rule out alternative explanations, which we explore further in Section 6.

Our overall assessment of the results is that independent institutions with large shareholdings and a long-term orientation clearly benefit from their efforts as monitors, as suggested by Shleifer and Vishny (1986) and Maug (1998) and as confirmed by the superior post-merger performance of the firms in our sample. However, there is no evidence that they are able to, or attempt to, profit from strategic trading immediately surrounding merger announcements. Rather, their monitoring effort allows them to make favorable portfolio adjustments such as selling their stakes in firms that are likely to make very bad decisions in the year leading up to the actual bids. Thus, while most of the benefits of their monitoring efforts are shared by other investors in the firm, they do reap some private gain from their information. We reach the conclusion that, in light of the costs and benefits of trading versus monitoring, only ILTIs specialize in providing a monitoring role and that their efforts generate positive externalities to all shareholders of the bidding firm.

The plan of the paper is as follows. We develop our hypotheses and empirical predictions in the next section. Section 3 describes the merger sample and model variables. Section 4 presents the empirical results on institutional monitoring and our interpretation, and Section 5 examines trading around acquisitions by institutional investors. Section 6 discusses alternative explanations and Section 7 concludes.

2. Hypothesis development and empirical predictions

All institutions face a cost–benefit analysis of monitoring versus trading, where monitoring includes both information gathering and efforts to influence management. Monitoring is distinguished from trading by both the type of information gathered (long-term versus short-term) and the effort to influence management rather than to simply trade on that information. As we argue below, an institution that chooses to monitor is taking an active role in governance but a passive trading position. Alternatively, institutions that choose not to monitor can be active traders but are passive in firm governance. In the

following, we establish a framework of the costs and benefits of monitoring, from which we develop specific hypotheses.

2.1. *Costs of monitoring*

We argue that monitoring costs decrease with the size of the institutional stake, the independence of the institution, and the length of time the institution has been invested in the firm.

As long as there is a fixed component to the cost of gathering and analyzing information, there will be economies of scale in monitoring technology. The larger the holdings of an institution, the smaller will be the proportional cost of monitoring. In fact, larger holdings can reduce the total costs of monitoring by giving the institution easier access to management and the board; Carleton, Nelson, and Weisbach (1998) show that institutions with large ownership positions often have access to board members and senior managers.

Brickley, Lease, and Smith (1988) establish that some institutional investors (e.g., insurance companies and banks through their trust departments) might want to protect existing or potential business relationships with firms and are therefore less willing to challenge management decisions. We call these “grey” institutional investors. In contrast, institutions such as investment companies, independent investment advisors, and public pension funds do not seek business relationships with the firms in which they invest; we call these “independent” institutional investors. Grey institutions face high costs of monitoring because they could damage their relationship with firm management and lose existing or potential business. Thus, independent institutions without potential business ties face lower costs of monitoring.

Finally, the longer an institution has been invested in a firm, the better is its existing knowledge of the firm and its managers and the better the institution is processing new information about that firm. Thus, institutions with long-term investments in a firm will have naturally lower monitoring cost functions.

2.2. *Benefits of monitoring*

Monitoring benefits include the ability to influence management, the potential financial gain from executing such influence, and better information. We argue that monitoring benefits increase with the size of the investment stake and the length of time invested. The longer an institution has been invested and the larger its stake in the firm, the more influence it will have with management and the larger will be the financial benefit to the institution from successfully influencing management. The other product of monitoring is information. Again, the longer the institution has been invested in the firm, the better its information is likely to be. Information that leads an institution to buy additional shares will be of the same value regardless of its initial stake, but information that leads it to sell its investment to avoid a potential loss is more valuable the greater is its stake.

2.3. *Trading*

The costs of trading include direct transaction costs, price effects if the stake in the firm is large, suboptimal tax timing, and the costs of identifying and investing in a new firm. Institutions benefit from trading only if they have superior information. This information

can be either specific to an event or action that management will take (short-term in nature) or general to the firm, its management, and management's receptiveness to institutional influence (long-term in nature). The latter type of information is a natural product of the monitoring efforts of institutions invested over the long term. However, such efforts might not produce tradable short-term event-specific information.

We have argued that the net benefits of monitoring are highest for ILTIs with large stakes. Further, the costs of selling increase with the size of the stake in the firm and the length of time invested (due to lower cost bases). Thus, as the length of time invested and the size of the stake increase, trading costs increase while monitoring costs decrease and benefits increase, such that the net benefits of monitoring will usually dominate those of trading for ILTIs with large stakes. These institutions will specialize in monitoring, showing little short-term trading gains.

Over time, as monitoring institutions gather general information about the firm, they will make beneficial adjustments to their portfolios based on such information. On the buying side, ILTIs will increase their stakes in firms where their information is positive. Because of the high costs of selling a large stake, the adjustments will be more discrete on the sell side; they will only sell if continuing to hold has the potential for a large loss. In contrast, long-term, grey institutions might compromise investment gain (e.g., choosing not to sell in advance of poor acquisition outcomes) in return for more business with the firm.

2.4. Hypotheses

Based on the above arguments, we have the following hypotheses about institutional monitoring and trading:

- H1: ILTIs with large stakes will engage in monitoring and influencing.
- H2: Grey institutions and institutions with small or short-term holdings will not engage in monitoring efforts (or such efforts will be unsuccessful).
- H3: ILTIs with large stakes will choose to exert effort to influence management rather than sell their stakes after bad management decisions.
- H4: Through monitoring, ILTIs with large stakes will generate information that allows them to adjust their portfolios for private benefit.

Empirically, these hypotheses have the following predictions when applied to acquisitions:

1. Total institutional holdings will have mixed or no predictive power for merger performance or bid withdrawal.
2. Concentrated holdings by ILTIs will be associated with better mergers and the withdrawal of bad mergers.
3. ILTIs with concentrated holdings will expend effort to get a bad bid withdrawn rather than sell their shares after the announcement.
4. Institutions with small holdings, institutions invested for the short-term, and grey institutions will not be associated with better merger performance or withdrawal of bad deals.

5. ILTIs with large stakes will show little evidence of short-term trading gains. However, they will increase their holdings over time in good firms and decrease them only in advance of large, negative outcomes.

3. Sample formation and variable construction

We begin with all announced (both completed and canceled) US mergers with announcement dates between January 1, 1984 and December 31, 2001 as identified by the Mergers and Acquisitions database of Securities Data Company (SDC) (11,043 deals). We identify all deals where the bidder is a public firm and the deal is coded as a stock swap, tender offer, or tender/merger. We specifically exclude divestitures, repurchases, self-tenders, and deals that are only rumored. The above time frame is chosen because the information in SDC might not be reliable before 1984. We use 2001 as the base year to make inflation adjustments where appropriate.

We require bidders to have available data from the Center for Research in Security Prices (CRSP) and accounting information from Compustat (5,760 deals). To focus on deals that are large enough to have detectable performance and value effects on the bidder, we further require the ratio of the transaction value relative to the equity market capitalization of the bidder at the quarter-end prior to the acquisition announcement to be at least 5% (2,483 deals). All institutions with greater than \$100 million of equity securities under discretionary management report their holdings quarterly using the SEC's Form 13F; common stock positions greater than 10,000 shares or \$200,000 must be disclosed. These reports are available in electronic form back to 1980 from CDA/Spectrum. We eliminate deals where the bidder is not covered in the CDA/Spectrum institutional holding database, resulting in a final sample of 2,150 bids.¹

3.1. Measures of institutional presence

We consider three measures of concentrated holdings by institutions, all measured as of the quarter-end prior to the deal announcement: ownership controlled by the five largest institutional investors (*top5*), controlled by the single largest institutional investor (*top1*), and ownership controlled by blockholders (defined as holdings by institutions with at least 5% of the shares). We further categorize these by length of holding (greater or less than one year) and by type of investor (independent or grey). In the interests of space, we only present our results based on the first measure of concentration (*top5*), although all of our results are qualitatively unchanged if we use either of the other two measures. The cross-sectional correlation is 0.87 between *top5* and *top1* and 0.91 between *top5* and block holdings. The cross-sectional correlation is 0.72 between independent long-term *top5* holdings and independent long-term *top1* holdings and 0.86 between independent long-term *top5* holdings and independent long-term block holdings.

Following Brickley, Lease, and Smith (1988), Cornett, Marcus, Saunders, and Jehranian (2004), and Almazan, Hartzell, and Starks (2005), we refine the CDA/Spectrum institutional classification into two groups according to the institution's potential business

¹We have also conducted all our analyses including these 300+ deals with no Spectrum data by assuming zero institutional holdings in the bidders, with no effect on any of our main results, suggesting that these firms are not materially different from our sample of bidders with (nontrivial) institutional holdings.

ties with the invested firm. We group the CDA type 1 (banks) and type 2 (insurance companies) institutions into the grey investor group, and type 3 (investment companies) and type 4 (independent investment advisors) institutions into the independent investor group. The CDA type 5 institutions are a mix of ESOPs, university endowments, foundations, and private and public pension funds. Because this group has a combination of potentially independent and potentially grey institutions, based on earlier research on shareholder activism (e.g., Del Guercio and Hawkins, 1999), we manually identify and classify public pension funds into the independent investor group, and the remaining institutions in type 5 into the grey investor group.

Due to a mapping error, CDA/Spectrum's type classification is not accurate beyond 1998. Many of the institutions are improperly classified as type 5 institutions. We rely on the pre-1998 CDA classification of each particular institution and apply it to the institutional holdings data in year 1998 and after. While endowments and foundations might be compromised by their desire to elicit donations from the company or its CEO, one could also argue that they are independent. Despite the relatively small size of such types in the CDA/Spectrum universe, we check the sensitivity of our results to their classification and note that putting endowments and foundations into either grey or independent investor groups does not materially affect our results.

After identifying each bidder's five largest institutional investors as of the quarter-end prior to the bid announcement (Q-1), we separate them into two groups: investors that are independent and long-term, meaning that they are in the top five for the year before the announcement (Q-5–Q-1), and all others. This classification identifies independent long-term investors on a firm-specific basis.

Finally, since institutional investors tend to have a particular focus, we identify institutions whose style is to be a long-term investor, lending themselves to a monitoring role. Bushee (1998) classifies institutions into three groups—dedicated, quasi-indexer, and transient—based on their past investment patterns in the areas of portfolio turnover, diversification, and momentum trading. While transient institutions are not expected to exert effort to influence managers, dedicated institutions are likely to perform the full monitoring role of gathering information and attempting to influence managers. A priori, it is uncertain whether quasi-indexers will attempt to perform monitoring functions. We refine our monitoring measure by intersecting our groups of ILTIs with those identified by Bushee's method as dedicated and quasi-indexer investors. Thus, our measure identifies institutions with investment styles suited to monitoring activities and that also have a sufficiently long relationship with the acquiring firm to have the potential to influence managers. We also intersect only the dedicated institution sample with our sample of ILTIs with concentrated holdings, and our inferences are unchanged.

In sum, for each bidder as of the quarter-end prior to the deal announcement, we identify the top five institutional investors and aggregate the holdings of the independent, long-term, dedicated/quasi-indexer institutions among the top five into *Top5 Holdings (Independent & Long-term)* and aggregate the holdings of the remaining top five institutional investors into *Top5 Holdings (Other)*.

3.2. Measures of merger performance

We adopt a number of performance metrics to evaluate the monitoring role of institutional investors in corporate takeovers. The first measure, CAR3, is the bidder's

abnormal announcement-period return over days $(-1, 1)$, where day 0 is the date of initial bid announcement by the sample firm. Daily abnormal stock returns are computed using the market model and the value-weighted CRSP index. The estimation window is days $(-200, -60)$ prior to the acquisition announcement date.

As a measure of deal quality perceived by institutional investors, CAR3 has advantages and disadvantages. The advantages are that it is an immediate, market-based estimate of the wealth effect of the bid. The disadvantages come from the noise in the stock price reaction stemming from the degree of anticipation of the deal, uncertainty over the final price and resolution of the deal, information about the standalone value of the bidder, and information asymmetry between managers and outside investors about the potential for value creation in the deal (Bhagat, Dong, Hirshleifer, and Noah, 2005). In particular, if institutional investors are better informed than marginal market participants, the difference between their perception of the quality of the deal and the quality implied by CAR3 could be important. Thus, we complement the stock price reaction measure with post-merger long-run stock and operating performance.

We control for size, book-to-market, and pre-acquisition return in our long-run stock performance measure following Lyon, Barber, and Tsai (1999). Specifically, we sort the population of NYSE/NASDAQ/AMEX firms each month into NYSE size deciles and then further partition the bottom decile into quintiles, producing 14 total size groups. We simultaneously sort firms into book-to-market (B/M) deciles. After determining which of the 140 (14 size \times 10 B/M) groups the bidding firm is in at the month-end prior to the deal completion, we choose from that group 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. Three-year buy-and-hold returns (starting from the month after merger completion) are then calculated for the sample and control firms. Finally, the three-year buy-and-hold abnormal returns are the difference between sample firm returns and corresponding contemporaneous control firm returns (BHAR). The calendar-time portfolio approach of Fama (1998) leads to qualitatively similar results.

The ratio of earnings before interest and taxes to total assets (EBIT/assets) is used as a measure of operating performance (ROA). ROA could be affected by industry-wide factors. Therefore, we subtract the median ROA for all firms with the same primary two-digit SIC code as the bidding firm. We then estimate an AR(1) model using the post-merger industry-adjusted three-year average ROA as the left-hand-side variable, with the pre-merger corresponding measure as the right-hand-side variable. The AR(1) model takes into account the possibility that pre-merger operating performance could predict post-merger operating performance. The residual from the above regression is our measure of the abnormal change in ROA (Δ ROA). We note that the overall inferences are unchanged if we simply use changes in the industry-adjusted ROA.

Our final measure of the quality of the acquisition is the change in the average analyst earnings forecast around the merger event. This is a useful measure because it potentially improves upon the operating performance benchmark by employing a different proxy for expectations about how the bidder would have fared without the acquisition. The change in earnings forecast (Δ EPS) is calculated as the difference between the first average earnings forecast in the six-month period after merger completion (normalized by the stock price at the month-end after the merger consummation) and the last average forecast in the six-month period before merger announcement (normalized by the stock price at the month-end prior to the merger bid). Our earnings forecast data are from I/B/E/S.

3.3. Sample overview

Table 1 presents descriptive statistics of the institutional holdings for our sample of 2,150 bidding firms. We compute four measures of institutional holdings: *total*, *top5*, *top1*, and *block*. We observe a strong surge in merger and acquisition activity in the latter part of the 1990s, coinciding with the rising bull market, and a subsequent decrease in activity at the end of the 1990s.

There is a strong time trend in institutional holdings in our sample, similar to that observed for the population of CDA firms. On average, the holdings of the top five institutional investors are about half the size of the total institutional holdings in our bidding firms, and the holdings of the largest institutional investors are about one-sixth of the total institutional shareholdings. The fraction of firms with at least one institutional blockholder (*%block*) increases over time to greater than 70% by the end of the sample period. Of those bidding firms with institutional blockholders, the blockholdings are higher in the 1990s than in the 1980s (18% vs. 10%).

Most of our analysis will focus on the 1,815 completed acquisitions in the sample. This subsample has marginally higher (38% versus 34% average) total institutional ownership and about one percentage point higher concentrated (*top5*, *top1*, or *block*) ownership than

Table 1

Corporate acquisitions and institutional ownership over time, 1984–2001

The sample consists of 2,150 acquisitions announced during the period January 1, 1984–December 31, 2001. The bidders are listed in the Securities Data Company's Mergers and Acquisitions database and have institutional holdings data in the CDA/Spectrum database. *Frequency* gives the number of merger deals in each sample year. *Total* is the fraction of a company's stock that is owned by institutional investors. *Top5* is the share ownership controlled by the five largest institutional investors. *Top1* is the share ownership controlled by the largest institutional investor. *%Block* gives the fraction of sample firms with at least one institutional blockholder (owning 5% or above). For those firms with at least one institutional blockholder, *Block* is the share ownership controlled by institutional blockholders. The institutional holdings data are from the quarter-end prior to the acquisition announcement. *Total*, *top5*, *top1*, and *block* are sample means.

Year	Frequency	Total	Top5	Top1	%Block	Block
1984	49	0.30	0.14	0.06	0.51	0.09
1985	63	0.32	0.14	0.05	0.48	0.09
1986	72	0.36	0.15	0.06	0.50	0.10
1987	68	0.36	0.16	0.06	0.59	0.09
1988	56	0.36	0.15	0.06	0.48	0.10
1989	51	0.37	0.15	0.06	0.41	0.12
1990	25	0.32	0.14	0.05	0.44	0.14
1991	71	0.31	0.15	0.06	0.46	0.13
1992	71	0.39	0.18	0.07	0.58	0.15
1993	85	0.37	0.18	0.07	0.67	0.13
1994	148	0.44	0.20	0.07	0.67	0.16
1995	181	0.44	0.20	0.07	0.69	0.17
1996	206	0.44	0.19	0.07	0.64	0.16
1997	243	0.46	0.21	0.08	0.73	0.18
1998	254	0.46	0.20	0.07	0.67	0.17
1999	224	0.46	0.22	0.08	0.74	0.18
2000	177	0.47	0.21	0.08	0.66	0.18
2001	106	0.51	0.22	0.08	0.73	0.17

the sample of withdrawn mergers. This subsample is also more likely (57% versus 53%) to have a blockholder.

4. Results on institutional monitoring

We begin by demonstrating the difficulty of detecting institutional monitoring when all institutional ownership is treated equally. In Table 2 we present our different measures of merger performance, broken out by the *total* institutional ownership in the bidding firm prior to the bid. The ability to influence management is akin to a threshold effect, such that some absolute level of holdings must be reached before influence is significant. This suggests that our measure of “large” institutional holdings should be an absolute measure across all years, rather than relative to holdings within a specific year. Thus, we assign firms to quintiles of institutional holdings based on the entire sample of holdings across all years. Nonetheless, it is worth noting that the inferences drawn from the paper are not changed if we use within-year sorting instead, which controls for the time trend in institutional holdings but misses the important point of growing institutional influence over time.

Sias and Starks (1997) and Gompers and Metrick (2001), among others, document that institutional investors tend to invest in large companies (a fact we have confirmed for our sample). However, as Moeller, Schlingemann, and Stulz (2004) show, it is the small bidders that tend to create more wealth at the announcement of a bid. Hence, sorting on institutional holdings without controlling for the size effect in institutional holdings will bias against finding support for institutional monitoring. We adopt a two-way size-and-holdings sort to address the size issue. Table 2 reports our univariate comparison of total institutional holdings and performance of merger deals after controlling for the size effect. Three of the four measures show no significant difference between large and small total

Table 2

Total institutional ownership and merger performance: univariate results after controlling for the size effect

The sample consists of 1,815 completed acquisitions announced during the period January 1, 1984–December 31, 2001. We sort all completed deals into quintiles based on bidder size as measured by market capitalization at the quarter-end prior to the merger announcement. Deals within each size quintile are then assigned into quintile classes based on total institutional ownership with the quintile breakpoints determined separately within each size quintile. We then recombine deals in the same institutional ownership quintiles across size classes. Cross-sectional averages are computed for firms in each institutional ownership quintile using various merger performance measures. We report the averages for the largest and smallest quintiles. CAR3 is the abnormal announcement-period return over $(-1, +1)$. BHAR is the three-year buy-and-hold abnormal return using the size, book-to-market, and pre-acquisition performance-matched control as the benchmark. Δ ROA is the residual from a cross-sectional regression of the post-merger three-year average of industry-adjusted ROA on the pre-merger corresponding measure. Δ EPS is calculated as the difference between the first average earnings forecast in the six-month period after merger completion (normalized by the stock price at the month-end after the merger consummation) and the last average forecast in the six-month period before merger announcement (normalized by the stock price at the month-end prior to the merger bid). The corresponding standard errors are in parentheses.

	CAR3	BHAR	Δ ROA	Δ EPS
Largest Institutional Holdings	-0.006 (0.096)	-0.107 (1.233)	0.032 (0.187)	-0.007 (0.020)
Smallest Institutional Holdings	-0.000 (0.097)	-0.060 (1.026)	-0.004 (0.278)	-0.011 (0.027)
<i>T</i> -test of differences in mean	-0.81	-0.55	1.80	1.35

institutional holdings (and for CAR3 and BHAR, the difference is the opposite of what would be predicted by monitoring). Only post-merger ROA is larger for bidders with large total institutional holdings. Our hypotheses posit that only concentrated holdings by ILTIs matter, so that using total holdings masks the variation in the true monitors. In our subsequent analyses, we will break out the holdings by this subgroup to test our hypotheses directly.

4.1. Merger performance

In Table 3 we present the results of estimating regression equations that control for firm size (natural log of bidder market capitalization at the end of Q-1) and many other characteristics previously found to be associated with merger performance: target status (private, public, subsidiary), whether the acquisition is diversifying (target is outside of the

Table 3

Cross-sectional regression analysis of institutional presence and merger performance

The sample consists of 1,815 completed acquisitions announced during the period January 1, 1984–December 31, 2001. CAR3 is the abnormal announcement-period return over (–1, +1). BHAR is the three-year buy-and-hold abnormal return using the size, book-to-market, and pre-acquisition performance-matched control as the benchmark. Δ ROA is the residual from a cross-sectional regression of the post-merger three-year average of industry-adjusted ROA on the pre-merger corresponding measure. Δ EPS is calculated as the difference between the first average earnings forecast in the six-month period after merger completion (normalized by the stock price at the month-end after the merger consummation) and the last average forecast in the six-month period before merger announcement (normalized by the stock price at the month-end prior to the merger bid). All control variables are measured at the quarter-end prior to the acquisition announcement. *Top5 Dummy (Independent & Long-Term)* is set equal to one if bidder holdings by independent, long-term, dedicated/quasi-indexer institutional investors who are in the top five investors is in the largest quintile, and zero otherwise. *Top5 Dummy (Other)* is set equal to one if the holdings by other top five institutional investors in the bidder is in the largest quintile, and zero otherwise. *Firm Size* is measured as the natural logarithm of the market capitalization of the bidder. *Total Holdings* is the fraction of a company's stock that is owned by institutional investors. *Private*, *Public*, *Diversifying*, *All Equity*, and *All Cash* are dummy variables that take the value of one for acquisitions of private firms, public firms, or firms in another two-digit SIC code than the acquirer or if only equity is used to pay for the acquisition or only cash is used, respectively, and zero otherwise. *Relative Size* is the transaction value divided by the equity market capitalization of the bidder at the end of the quarter prior to the acquisition announcement. *Tobin's Q* is defined as the bidder's market value divided by the book value of assets. *Leverage* is the ratio of book value debt to market value of equity. *Operating Cash Flow (OCF)* is sales minus the cost of goods sold, sales and general administration expenses, and working capital change. *S&P 500 Membership* is an indicator variable equal to one if the bidder is part of the S&P 500 index, and zero otherwise. *Number of Analysts Following* is the number of unique analysts making one-year-ahead earnings forecasts in the year prior to the bid. The corresponding *p*-value is reported in the parentheses below each coefficient. ***, **, * Indicate significance at the 1%, 5% and 10% level, respectively.

	CAR3	BHAR	Δ ROA	Δ EPS
Intercept	–0.104 (0.268)	–0.016 (0.989)	0.218 (0.278)	–0.046*** (0.000)
Top5 Dummy, Independent and Long-term	–0.001 (0.802)	0.214** (0.034)	0.055*** (0.007)	0.006*** (0.009)
Top5 Dummy, Other	–0.003 (0.636)	0.075 (0.257)	–0.009 (0.237)	0.001 (0.309)
Firm Size	–0.007*** (0.007)	–0.016 (0.630)	–0.005 (0.377)	0.005*** (0.000)

Table 3 (continued)

	CAR3	BHAR	ΔROA	ΔEPS
Total Holding	−0.004 (0.810)	0.000 (0.999)	−0.001 (0.973)	0.010 (0.124)
Private	0.028** (0.043)	−0.190 (0.282)	−0.112*** (0.001)	0.001 (0.820)
Public	−0.022* (0.091)	−0.107 (0.532)	−0.074** (0.029)	−0.004 (0.405)
Diversifying	0.003 (0.609)	0.010 (0.878)	0.017 (0.132)	0.000 (0.906)
All Equity	−0.003 (0.559)	−0.113* (0.093)	0.016 (0.200)	−0.001 (0.726)
All Cash	0.025*** (0.003)	0.035 (0.748)	−0.001 (0.978)	−0.001 (0.810)
Relative Size	0.015*** (0.001)	−0.032 (0.589)	−0.007 (0.423)	−0.004* (0.054)
Tobin's Q	0.000 (0.955)	0.002 (0.909)	0.000 (0.882)	0.001 (0.353)
Leverage	−0.022 (0.172)	0.262 (0.213)	0.074* (0.083)	−0.004 (0.530)
OCF/Assets	0.000 (0.988)	−0.021 (0.910)	−0.034 (0.331)	−0.016*** (0.005)
S&P 500 Membership	0.008 (0.299)	0.111 (0.272)	0.016 (0.148)	−0.002 (0.212)
Number of Analysts Following	0.000 (0.898)	−0.006 (0.891)	−0.019** (0.027)	−0.002 (0.339)
Yr, Ind. Dummies	Yes	Yes	Yes	Yes
p -value: H_0 : Independent & Long-Term \leq Other	0.329	0.063	0.003	0.044
Adjusted R^2	0.106	0.021	0.034	0.126
Number of observations	1,815	1,792	1,383	897

bidder's two-digit SIC code), all equity or all cash payment, relative size of the acquisition (total value of consideration paid by the bidder divided by the bidder's equity market capitalization at the end of Q-1), bidder Tobin's Q, bidder book leverage, and bidder profitability (operating cash flow scaled by assets). We also include two variables to control for the possibility that public scrutiny of some firms provides sufficient monitoring to ensure that these firms make better acquisitions (regardless of institutional presence): a dummy variable identifying S&P 500 membership and a variable counting the number of analysts following the firm. The regressions also include year and industry dummies.

In our hypothesis development, we predict that monitoring power is a threshold effect rather than a linear relation. Thus, we use dummy variables to identify concentrated holdings rather than imposing a linear relation between the level of concentrated holdings and monitoring effects. We note that when we reestimate the tests using continuous measures, we find that the inferences are virtually unchanged. Our variables of interest are total institutional holdings and dummies identifying bidders that have concentrated holdings by ILTIs, *Top5 Dummy (Independent & Long-Term)* and bidders that have concentrated holdings by other types of institutions, *Top5 Dummy (Other)*. To produce the dummy variables for the regression, we sort each of our two measures of top5 holdings into quintiles. *Top5 Dummy (Independent & Long-Term)* is set equal to one if bidder holdings by independent, long-term, dedicated/quasi-indexer institutional investors that

are among the top five investors are in the largest quintile, and zero otherwise. *Top5 Dummy (Other)* is set equal to one if the holdings by other top five institutional investors in the bidder are in the largest quintile, and zero otherwise.² We present four specifications, one for each of the four measures of merger performance.³

The multivariate results confirm the conclusion that total institutional holdings are uninformative. However, a different picture emerges for concentrated holdings by ILTIs. All three post-merger performance variables are positive and strongly significant (announcement return is unrelated to institutional holdings). Concentrated holdings by ILTIs are associated with three-year buy-and-hold returns that are 20 percentage points higher, a post-merger change in ROA that is five percentage points higher, and a change in analyst EPS forecast of almost one percentage point higher. We also break out the three-year BHAR into yearly measures and find that most of the superior long-term performance is achieved during the first year post-merger (not tabulated). Moreover, the results on S&P 500 membership and analyst coverage suggest that monitoring by investors, broadly defined, rather than specifically by these institutions, is not driving our results.

None of the coefficients on *Top5 Dummy (Other)* is significant in any of the performance regressions. F-tests confirm that the coefficients on *Top5 Dummy (Independent & Long-Term)* are significantly larger than those on *Top5 Dummy (Other)*. These results suggest that grey institutional investors that need to maintain and/or promote potential business relationships with the bidding firm are compromised as monitors. It also suggests that short-term investors do not make effective monitors. The results demonstrate the importance of accounting for institution type and length of investment when examining the effect of large investments.⁴ In untabulated regressions, we find that neither grey nor short-term institutional investors separately show any evidence of monitoring, so that grouping them together as we do does not mask any important variation.

The results support our first two hypotheses based on the costs and benefits of monitoring. The institutions with the lowest costs and greatest benefits from monitoring show evidence of monitoring and other institutions do not. As predicted, total institutional ownership has no relation with merger performance and neither does concentrated ownership by grey or short-term institutional investors.

Our third hypothesis predicts that ILTIs with large stakes will exert effort to influence managers rather than simply trade when outcomes are negative. With respect to

²As discussed earlier, we confirm our results for two other plausible measures of concentration (*top1* and *block*). The cross-sectional correlation is 0.61 between *Top5 Dummy, Independent & Long-term* and *Top1 Dummy, Independent & Long-term* and 0.70 between *Top5 Dummy, Independent & Long-term* and *Block Dummy, Independent & Long-term*. The mean aggregate holdings by independent long-term top five, top one, and block institutional investors in the largest quintile (*Top5 (Top1, Block) Dummy, Independent & Long-Term = 1*) are 19.6%, 10.8%, and 15.4%, respectively.

³It is plausible that institutional investors in the target firms also play a similar monitoring role. In untabulated results, we find that controlling for the institutional ownership in the target (in the same way as we do for the bidder) has no material effect on our inferences. Further, including managerial equity ownership in the bidder does not change our main results.

⁴One concern about our classification of institutional investors into grey and independent investors is that it is debatable whether mutual funds (investment companies, CDA type 3) are truly active monitors because monitoring could compromise their flexibility to trade in and out of stocks. To address this issue, we take out the CDA type 3 investors from our group of independent institutional investors and analyze them separately (the other investors remain the same as before). We find that inclusion of mutual funds in the “independent” category does not drive the monitoring results.

acquisition bids, we predict that these institutions will exert influence to have bad deals withdrawn rather than sell their shares. To test this prediction, we examine the relation between institutional holdings and deal completion.

4.2. Deal completion

The presence of monitoring ILTIs in the bidding firms exerts influence on deal completion through two mechanisms. First, a bad bid can be viewed as an outcome that arises due to a breakdown in monitoring mechanisms. Thus, managers of firms with concentrated ILTI holdings should be less likely to propose bad deals. Second, monitoring by ILTIs prevents bad bids from being completed. While we have previously argued that CAR3 might be an imperfect measure of the deal quality perceived by institutional investors in the bidder, we do not believe that such investors are completely insensitive to the stock price reaction to the bid. Information asymmetry between managers and shareholders could explain a negative reaction to a good bid, but it is unlikely to explain a significantly large negative reaction. Rather, as argued in Paul (2006), bids met with large negative reactions are likely to be truly bad deals. Thus, if the stock price reaction is sufficiently negative, independent long-term institutions with large investments would prefer to see the bid reversed.

Table 4 presents evidence on both mechanisms. Panel A tabulates the frequency of extremely high (top CAR3 quintile) and low (bottom CAR3 quintile) announcement

Table 4
Institutional presence and merger completion

The sample consists of 2,150 acquisitions announced during the period January 1, 1984–December 31, 2001.

Panel A: Institutional presence and bid announcement

We sort the three-day announcement-period abnormal returns (CAR3) into quintiles, and use the top and bottom quintiles to define good versus bad deals. We then compare the frequencies of good and bad deals across two subsamples where *Top5 Dummy (Independent & Long-Term)* takes the value of either one (firms with large ILTI stakes) or zero (firms without large ILTI stakes). For comparison, we also examine the frequencies of good and bad deals across two other subsamples where *Top5 Dummy (Other)* takes the value of one (firms with large stakes by other institutions) or zero (firms without large stakes by other institutions). *Top5 Dummy (Independent & Long-Term)* is set equal to one if bidder holdings by independent, long-term, dedicated/quasi-indexer institutional investors who are in the top five investors is in the largest quintile, and zero otherwise. *Top5 Dummy (Other)* is set equal to one if the holdings by other top five institutional investors in the bidder is in the largest quintile, and zero otherwise. The corresponding standard errors are in parentheses. The table presents *p*-values associated with the hypotheses that the presence of large ILTI stakes (other large institutional stakes) in the bidding firms is significantly associated with the proportion of bad/good deals, as well as the *p*-values testing the differences between the effect of large ILTI holdings and the effect of large other institutional holdings.

	Number of Observations	Proportion of Bad/Good Deals
		Bad Deals
(1) Top5 Dummy (Independent & Long-Term) = 1	430	0.169
(2) Top5 Dummy (Independent & Long-Term) = 0	1,720	0.208
<i>p</i> -value: H ₀ : Dif. in prop. of bad deals ((1)–(2)) ≥ 0		0.042
(3) Top5 Dummy (Other) = 1	430	0.204
(4) Top5 Dummy (Other) = 0	1,720	0.199

Table 4 (continued)

p -value: H_0 : Dif. in prop. of bad deals ((3)–(4)) ≥ 0		0.589
p -value: H_0 : Effect of Independent & Long-Term ((1)–(2)) \geq Effect of Other ((3)–(4))		0.083
		Good deals
(5) Top5 Dummy (Independent & Long-Term) = 1	430	0.195
(6) Top5 Dummy (Independent & Long-Term) = 0	1,720	0.201
p -value: H_0 : Dif. in prop. of good deals ((5)–(6)) ≤ 0		0.615
(7) Top5 Dummy (Other) = 1	430	0.216
(8) Top5 Dummy (Other) = 0	1,720	0.196
p -value: H_0 : Dif. in prop. of good deals ((7)–(8)) ≤ 0		0.184
p -value: H_0 : Effect of Independent & Long-Term ((5)–(6)) \leq Effect of Other ((7)–(8))		0.804

Panel B: Probit analysis of institutional presence and the likelihood of merger completion

The dependent variable is the completion dummy, which is set equal to one if the announced deal is eventually completed and zero otherwise. All control variables are measured at the quarter-end prior to the acquisition announcement unless indicated otherwise. *Top5 Dummy (Independent & Long-Term)* is set equal to one if bidder holdings by independent, long-term, dedicated/quasi-indexer institutional investors who are in the top five investors in the largest quintile, and zero otherwise. *Top5 Dummy (Other)* is set equal to one if the holdings by other top five institutional investors in the bidder is in the largest quintile, and zero otherwise. *CAR3* is the abnormal announcement period return over $(-1, +1)$. *Firm Size* is measured as the natural logarithm of the market capitalization of the bidder. *Total Holdings* is the fraction of a company's stock that is owned by institutional investors. *Private*, *Public*, *Diversifying*, *All Equity*, and *All Cash* are dummy variables that take the value of one for acquisitions of private firms, public firms, or firms in another two-digit SIC code than the acquirer or if only equity is used to pay for the acquisition or if only cash is used, respectively, and zero otherwise. *Relative Size* is the transaction value divided by the equity market capitalization of the bidder at the end of the quarter prior to the acquisition announcement. *Tobin's Q* is defined as the bidder market value divided by the book value of assets. *Leverage* is the ratio of book value debt to market value of equity. *Operating Cash Flow (OCF)* is sales minus the cost of goods sold, sales and general administration expenses, and working capital change. *S&P 500 Membership* is an indicator variable equal to one if the bidder is part of the S&P 500 index, and zero otherwise. *Number of Analysts Following* is the number of unique analysts making one-year-ahead earnings forecasts in the year prior to the bid. We present the marginal effect of each explanatory variable on the likelihood of merger completion. The corresponding p -value is reported in the parentheses below each coefficient. ***, **, * Indicate significance at the 1%, 5% and 10% level, respectively.

	Completion
Intercept	0.121 (0.475)
Top5 Dummy (Independent & Long-Term)	0.040** (0.036)
Top5 Dummy (Other)	0.011 (0.292)
CAR3	-0.104 (0.417)
Top5 Dummy (Independent & Long-Term) \times CAR3	0.545* (0.072)
Top5 Dummy (Other) \times CAR3	0.260 (0.186)
Firm Size	0.006 (0.413)
Total Holdings	0.021 (0.682)
Private	-0.012 (0.800)

Table 4 (continued)

Panel B: Probit analysis of institutional presence and the likelihood of merger completion

	Completion
Public	−0.089** (0.021)
Diversifying	−0.001 (0.936)
All Equity	−0.035** (0.020)
All Cash	−0.021 (0.379)
Relative Size	−0.118*** (0.000)
Tobin's Q	0.007 (0.436)
Leverage	0.025 (0.631)
OCF/Assets	−0.010 (0.851)
S&P 500 Membership	0.028 (0.163)
Number of Analysts Following	−0.006 (0.550)
Yr. Ind. Dummies	Yes
p -value: H_0 : Independent and Long-term \times CAR3 \leq Other \times CAR3	0.086
Pseudo R^2	0.137
Number of observations	2,150

returns in our sample, split by whether the bidder has concentrated holdings by ILTIs or other institutions. The presence of large ILTI holdings in bidding firms is associated with significantly fewer bad deals being announced, compared to when large ILTIs are absent, although the presence of large ILTI holdings in bidding firms is not associated with significantly more good deals being announced. In contrast, the presence of large short-term and grey institutional investors in bidding firms is not significantly associated with more (fewer) good (bad) merger deals being announced. Moreover, the presence of large ILTI holdings in bidding firms is associated with significantly fewer bad deals being announced than is the presence of large short-term and grey institutions. Thus, monitoring by ILTIs with concentrated holdings reduces the chance of a bad bid being announced in the first place.

We now examine what happens when preventative monitoring fails and management does announce a bad bid. In Panel B of Table 4, we conduct a probit analysis where the dependent variable is a dummy variable equal to one if the announced deal is completed, and zero otherwise. The independent variables of interest are the three-day bidder abnormal announcement-period return (CAR3), our two measures of concentrated institutional presence, and the interaction terms of CAR3 and concentrated institutional presence. We present the marginal effect of each explanatory variable on the likelihood of

merger completion.⁵ The control variables are similar to those used in our multivariate analysis of merger performance. The standalone *Top5 Dummy (Independent & Long-Term)* shows that these institutions are generally associated with a higher likelihood of deal completion. This is consistent with our earlier monitoring findings and those in Panel A because it suggests that, on average, bidders with concentrated presence of these institutions are more careful to attempt deals that will be regarded favorably by their investor base and completed.

Moving to the test of whether these institutions intervene in bad deals, we find that the initial stock market reaction to the deal is irrelevant unless there is a strong presence by ILTIs in the bidding firm. Our results suggest that when there is such presence and the stock price reaction upon initial announcement is negative, then the bidding firm is under pressure to call off the deal. For every 1% negative stock price reaction, the likelihood of withdrawal increases by 0.55%. Given that the unconditional withdrawal frequency in our sample is only 16%, this is a large effect. The pressure from ILTIs with large holdings to cancel a bad bid is great enough to offset their positive marginal completion effect. For example, a stock price reaction of -7% would offset the positive effect of these institutions' presence on deal completion ($0.04 - (0.07 * 0.55) = 0$). This is not an inconsequential effect; Andrade, Mitchell, and Stafford (2001) show that during our sample period, about 18% of all public deals produced an acquirer announcement return of -5% or worse (the announcement return for our bottom CAR3 quintile is -6% or worse). The coefficient on the interaction between *Top5 Dummy (Other)* and CAR3 is insignificantly different from zero and significantly smaller than that on the interaction between *Top5 Dummy (Independent & Long-Term)* and CAR3. Finally, our proxies for public scrutiny are not significantly associated with completion likelihood.

In summary, we find that in terms of the merger completion decision, monitoring effects are evident when ILTIs have concentrated shareholdings. This is consistent with the earlier results on post-merger performance, which indicate that concentrated investments by the same type of institutions are a critical component of corporate governance mechanisms in the bidding firm. Further, the results are helpful in distinguishing between active monitoring and the alternative explanation that institutions simply passively invest more in better firms. The rise in bad-bid withdrawals suggests an active rather than a passive role by ILTIs.

Our final hypothesis predicts that through monitoring, ILTIs with large holdings acquire information that allows them to trade for private gain in the long run. In next section, we examine short-term and long-term institutional trading prior to and around the bid announcement.

5. Results on trading

In this section, we ask whether institutions trade and when they trade relative to the bid announcement. There are two aspects of trading to consider. First is the “Wall Street

⁵Specifically, for each continuous explanatory variable, the marginal effect is obtained by taking the partial derivative of a Normal cumulative distribution function and evaluating both continuous/binary control variables at their sample averages. For each binary explanatory variable, the marginal effect is obtained as the difference between the likelihood of merger completion when the binary variable of interest is set to one and the same likelihood when the binary variable of interest is set to zero, and all other control variables taking their sample averages.

Rule,” whereby institutions sell rather than exert effort to influence management. Our results thus far demonstrate an observable monitoring and influencing effect, confined to ILTIs with large stakes. Here we test the prediction that these institutions focus on monitoring instead of short-term trading. The second aspect is that, through portfolio adjustments over time, trading affords an opportunity for institutions to capture private gain from their information-gathering efforts.

5.1. Short-term trading

We start by examining short-term trading in the quarter prior to the bid announcement (Q-1) and in the announcement quarter (Q0). We estimate the following equation for the change in holdings in Q0 to test for a relation between our measures of bid quality and institutional trading in the quarter immediately surrounding the bid:

$$\begin{aligned} \text{Change in Holdings}_{i,Q_0} = & \alpha_0 + \beta_1 \text{Deal Quality}_i \\ & + \beta_2 \text{Return}_{i,Q_0} + \beta_3 \text{Return}_{i,Q-1} \\ & + \beta_4 \text{Firm Size}_{i,Q-5} + \beta_5 \text{Firm B/M}_{i,Q-5} \\ & + \beta_6 \text{Turnover}_{i,Q_0} + \beta_7 \text{Turnover}_{i,Q-1} \\ & + \beta_8 \text{Turnover}_{i,Q-4} + \beta_9 \text{EOY}_i + \beta_{10} \text{DaysToEndofQuarter}_i + e_i, \end{aligned} \quad (1)$$

where the control variables follow [Gompers and Metrick \(2001\)](#) and [Parrino, Sias, and Starks \(2003\)](#) who study the determinants of (changes in) institutional holdings. We include the contemporaneous and lagged returns for the bidding firm, as well as its firm size, book-to-market (both measured in Q-5), the contemporaneous and lagged share turnover, turnover from one year prior, an end-of-year (EOY) dummy, and the number of days between the deal announcement and the quarter-end. Turnover in a particular period is constructed by dividing the period-specific volume by the shares outstanding as of the end of the previous period. Seasonal effects are handled by including turnover from one year prior and the end-of-year dummy (which takes the value of one if the quarter being examined is the fourth quarter). Finally, we control for the timing of the deal within the quarter by including the number of days between the announcement day and the end of quarter. When we examine the change in institutional holdings in the quarter prior to the bid announcement, the timing of the control variables is adjusted accordingly and we drop the days-to-end-of-quarter variable.

The specification in Eq. (1) is a reverse regression where we predict past change in holdings with merger performance measures on the right-hand side. The intuition is that if institutions have superior knowledge about the quality of management or their ability to monitor management, then abnormal changes in their holdings will be explained by the ex post observed quality of the deal. The control variables in Eq. (1) explain normal changes in institutional holdings, so we can interpret a significant coefficient on ex post merger performance as evidence that institutions’ ex ante information about merger quality influences their trading decisions.

As in our previous analysis, we make use of several merger performance measures: abnormal announcement-period return, long-run returns, long-run operating performance, and analyst earnings forecast revision. To measure the change in shareholdings by different institutional investors in the bidder, we split the change in total institutional shareholdings into trading by ILTIs that are among the top five investors and all other

institutions. In light of our previous results that most of the superior long-term performance as a result of institutional monitoring is achieved during the first year post-merger, we tabulate both one-year (BHAR1) and three-year (BHAR) buy-and-hold returns in our analysis of institutional trading.

Panel A of Table 5 presents the results for the quarter prior to the announcement (Q-1). The panel shows no relation between measures of merger performance and ILTIs' trading. To confirm that monitoring institutions choose influencing over trading, we undertake a

Table 5

Institutional trading around acquisitions

The sample consists of 1,815 completed acquisitions announced during the period January 1, 1984–December 31, 2001. We regress the change in institutional holdings on the following control variables: measures of merger performance (CAR3, BHAR1, BHAR, Δ ROA, and Δ EPS), contemporaneous and lagged stock returns, firm size, firm book-to-market, contemporaneous and lagged share turnover, and measures of seasonal effects. CAR3 is the abnormal announcement-period return over $(-1, +1)$. BHAR1 (BHAR) is the one-year (three-year) buy-and-hold abnormal return using the size, book-to-market, and pre-acquisition performance-matched control as the benchmark. Δ ROA is the residual from a cross-sectional regression of the post-merger three-year average of industry-adjusted ROA on the pre-merger corresponding measure. Δ EPS is calculated as the difference between the first average analyst earnings forecast in the six-month period after merger completion (normalized by the stock price at the month-end after the merger consummation) and the last average forecast in the six-month period before merger announcement (normalized by the stock price at the month-end prior to the merger bid). Turnover in a particular period is constructed by dividing the period-specific volume by the shares outstanding as of the end of the previous period. We vary both the type of institutional holdings whose change we are trying to explain (the dependent variable) and the measure of merger performance. Each of the dependent variables is regressed on five specifications that are identical except for the merger performance measure. For parsimony, we suppress the coefficients on the control variables and tabulate only the coefficient on merger performance. The corresponding p -value is reported in the parentheses below each coefficient.

Panel A: Short-run changes in holdings

The change in institutional holdings over the quarter prior to the bid announcement (Q-1) is the dependent variable. To measure the change in shareholdings by different institutional investors, we split the change in total institutional shareholdings into trading by the following two groups: independent, dedicated/quasi-indexer institutional investors who are among the five largest institutional investors at least since Q-5, *Top5 (Independent & Long-Term)*, and other institutional investors. We present the change in holding results for all, independent long-term top five, and other institutional investors.

Merger performance	Dependent variable is the change during Q-1 in the holdings of:		
	All institutional investors	Top5 (independent and long-term)	Other institutional investors
CAR3	-0.003 (0.378)	0.001 (0.894)	-0.005 (0.739)
BHAR1	0.000 (0.859)	0.000 (0.600)	0.001 (0.593)
BHAR	0.001 (0.343)	0.002 (0.321)	-0.000 (0.983)
Δ ROA	0.012 (0.151)	0.009 (0.180)	-0.001 (0.780)
Δ EPS	0.134 (0.171)	0.006 (0.863)	0.129 (0.163)

Table 5 (continued)

Panel B: Long-run changes in holdings

The change in institutional holdings over the year prior to the bid announcement (Q-4–Q-1) is the dependent variable. To measure the change in shareholdings by different institutional investors in the bidder, we split the change in total institutional shareholdings into trading by the following two groups: independent, dedicated/quasi-indexer institutional investors who are among the five largest institutional investors at least since Q-5, *Top5 (Independent & Long-Term)* and other institutional investors. We present the change in holding results for all, independent long-term top five, and other institutional investors. ***, **, * Indicate significance at the 1%, 5% and 10% level, respectively.

Merger performance	Dependent variable is the change over Q-4–Q-1 in the holdings of:		
	All institutional investors	Top5, independent and long-term	Other institutional investors
CAR3	–0.029 (0.199)	0.026* (0.064)	–0.052*** (0.057)
BHAR1	0.001 (0.808)	0.004 (0.109)	–0.000 (0.901)
BHAR	–0.000 (0.864)	0.001 (0.205)	0.002 (0.459)
ΔROA	0.025 (0.231)	0.035*** (0.010)	0.011 (0.529)
ΔEPS	0.364 (0.219)	0.036 (0.708)	0.457 (0.186)

Panel C: Long-run changes in holdings: selling versus buying

The change in institutional holdings over the year prior to the bid announcement (Q-4–Q-1) is the dependent variable. In contrast to Panels A and B, measures of merger performance are split into positive and negative realizations and include dummy variables identifying bids in the top and bottom performance quintiles to capture asymmetry and nonlinearity. Specifically, *Positive* takes the value of the corresponding performance measure if it is in the positive range, and zero otherwise. *Negative* is defined analogously. *Top quintile* is a dummy variable that takes the value of one if the corresponding performance measure is in the top performance quintile, and zero otherwise. *Bottom quintile* is defined analogously. Due to space constraints, we only report the coefficients on these four performance measure variables and only for the change in holdings by independent, long-term, dedicated/quasi-indexer institutional investors with concentrated holdings. ***, **, * Indicate significance at the 1%, 5% and 10% level, respectively.

Merger performance	Dependent variable is the change over Q-4–Q-1 in the holdings of independent long-term Top 5 institutional investors			
	Positive	Negative	Top quintile	Bottom quintile
CAR3	0.025* (0.084)	–0.024 (0.576)	–0.000 (0.998)	–0.014** (0.021)
BHAR1	0.017* (0.072)	–0.000 (0.964)	0.007 (0.177)	–0.006* (0.074)
BHAR	0.006 (0.361)	0.004 (0.478)	–0.005 (0.298)	–0.003 (0.486)
ΔROA	0.063*** (0.006)	–0.020* (0.067)	–0.008 (0.129)	–0.019** (0.041)
ΔEPS	0.441 (0.511)	0.026 (0.786)	0.003 (0.645)	–0.007 (0.124)

more detailed examination of the change in shareholdings by independent, long-term top five institutions in the announcement quarter (Q0). We do not find any significant correlation between the Q0 change in their holdings and the announcement-period abnormal return (CAR3) or other measures of post-merger performance. Further, bidders with the greatest drop in independent, long-term top five institutional shareholdings in the announcement quarter are not associated with the worst CAR3. Thus, ILTIs with concentrated holdings do not dump their shares following bad acquisition announcements. Instead, as shown in Table 4 Panel B, they exert effort to influence the bidding firm's management to withdraw the bid. This evidence also ensures that our probit results from that panel are not driven by reverse causality from institutional investors dumping their shares at the bid announcement and pushing the stock price down.

Overall, the tests support our conjecture that independent, long-term investors with concentrated holdings find that the cost-benefit analysis favors monitoring rather than short-term trading. Further, the results for the other institutions suggest that any information advantage gained by these institutions is not so precise as to allow them to advantageously trade around a bid. Next, we expand the trading window and examine the change in institutional holdings over the four quarters prior to the merger announcement (Q-4–Q-1).

5.2. Long-term trading

Panel B of Table 5 presents the results from estimating the following regression using the change in institutional holdings over a one-year period (Q-4–Q-1):

$$\begin{aligned} \text{Change in Holdings}_{i,Q-4,Q-1} = & \alpha_0 + \beta_1 \text{Deal Quality}_i \\ & + \beta_2 \text{Return}_{i,Q-4,Q-1} + \beta_3 \text{Return}_{i,Q-8,Q-5} \\ & + \beta_4 \text{Firm Size}_{i,Q-5} + \beta_5 \text{Firm B/M}_{i,Q-5} + \beta_6 \text{Turnover}_{i,Q-4,Q-1} \\ & + \beta_7 \text{Turnover}_{i,Q-8,Q-5} + e_i, \end{aligned} \quad (2)$$

where the control variables are defined as in Eq. (1) but with a different time frame. Here, we do not argue that institutions have knowledge of the bid well in advance of its announcement. Rather, we argue that institutions gather information about the firm's management that helps them assess whether this management is likely to make better or worse decisions in general. Institutions then make their portfolio adjustments accordingly, without foreknowledge of any specific corporate decision. We use the ex post acquisition decision as a proxy for institutions' assessment of management quality.

We find that both announcement returns and post-merger operating performance help explain pre-merger changes in the holdings of ILTIs. Thus, the monitoring efforts of these institutions produce information that helps them choose whether to increase their holdings in a firm. The fact that we find evidence of long-term, but not short-term, effects suggests that their information is more general in nature, applying to the overall quality of a firm's management and to their private information about how receptive management is to their influence. Their trading on this information pays off when management makes investment decisions that are rewarded by the market with higher announcement returns. These announcement returns capitalize better long-run operating performance in these mergers.

We have argued that the costs of selling shares will be high relative to the net benefits of monitoring for ILTIs with large holdings. If, as the evidence in Panel B suggests, ILTIs' monitoring effort does produce information about the quality of management and their ability to influence it, then there will be times when they perceive low-quality management to be unwilling to listen to them. In such cases, the cost of staying invested would outweigh the costs of selling. As we hypothesize, they will trade out of a firm, but only if they perceive the potential for a large value reduction by management. We test this hypothesis by allowing for asymmetry and/or nonlinearity in our trading regressions. Specifically, we split each merger performance measure into positive and negative realizations and include dummy variables identifying deals in the top and bottom performance quintiles. Panel C of Table 5 presents the results.

ILTIs with large holdings do not respond symmetrically to positive and negative information about the firm. While they will linearly increase their holdings as the information about the firm becomes more positive, their actions on the downside are quite different. The regressions show no linear relation between changes in their holdings and negative information. However, the coefficient on the dummy variable capturing the bottom performance quintile is significantly negative, indicating that these institutions will only sell if the information is bad enough, suggesting a threshold effect in their selling decision. From a trading perspective, the stock-price-based measures are the most important measures of deal quality. The results show that when the announcement return or one-year buy-and-hold return is in the bottom quintile, ILTIs reduce their holdings in advance of the bid. The results hold for the ROA bottom quintile dummy as well (note that the negative coefficient on the negative ROA variable indicates that institutional holdings increase in advance of poor ROA, but the effect is small), suggesting that the stock price measures are reflecting deteriorating operating performance.

The results for other institutions (untabulated) continue to show little relation between their trading activity and measures of merger performance. If anything, other institutions appear to increase their holdings in advance of poorly received bids. We have also checked the short-term trading results using the expanded specification and there continues to be no evidence of short-term trading by ILTIs with large stakes.

In summary, we find no evidence of profitable short-term trading around bid announcements. Monitoring institutions adjust their holdings over time as their information about the firm warrants. They only sell in advance of extremely poor bids.

Together with the results from Table 4, the analysis here presents a more complete picture of how ILTIs monitor, influence, and trade. Through their monitoring effort, these institutions generate information about the quality of management and their ability to influence that management. This information is not event-specific, which would allow for profitable short-term trading. Rather, it provides them with input to make long-term adjustments to their holdings. While they focus their efforts on monitoring and influencing, they will reduce their stake in a firm if there is the potential for significant value reduction. Further, as shown in Table 4, Panel B, when they are surprised by a very bad decision, they exert pressure to have management reverse that decision.

It is worth noting that the other, non-monitoring institutions do not show any superior trading skill in either the short term or the long term around bid announcements. Since our prior tests have shown that they do not have any monitoring influence on managers, they are attempting to gain through trading but are not, on average, succeeding.

6. Evidence on alternative explanations

While our results suggest that ILTIs with large stakes actively monitor management, we cannot completely rule out the possibility that our results are due to endogeneity or other causes for a spurious correlation between good merger performance and concentrated ILTI holdings. The most likely alternative explanation is that institutions are good at picking and investing in better-managed firms, leading to the observed relation without any active monitoring. Under the assumption that all institutions have equal stock-picking ability, we would not expect the monitoring effect to be only observed for ILTIs with concentrated holdings. However, we can relax this assumption and assume that ILTIs specialize in identifying and staying invested in better-governed firms. We believe that the results from Table 4, Panel B, on deal withdrawal suggest an active monitoring role of ILTIs rather than a passive, stock-picking strategy. Further, we discuss results from additional tests below that increase our confidence in the monitoring hypothesis. Specifically, the strength of the monitoring effect increases in the 1990s contemporaneously with a general increase in institutional shareholder activism; the effect remains if we control for firm performance and governance as determinants of institutional holdings; and the effect is strongest among institutions that would be expected to attempt to influence management most (public pension funds) and weakest among those that would put relatively more weight on information gathering and trading (investment companies).

6.1. Sample subperiods

According to [Kini, Kracaw, and Mian \(2004\)](#), the 1980s are marked by intense takeover activity, hostility, and less effective internal control mechanisms, while the 1990s are characterized by a less active takeover market but more involved alternative governance mechanisms. As a result, we separate our sample period into these two subperiods and repeat our analyses. We find that institutional monitoring is more pronounced in the latter period when the overall environment is conducive to their influence. Specifically, in the 1990s, the effects of the presence of ILTIs with concentrated holdings on merger performance are that the three-year buy-and-hold return is 22% higher and the post-merger change in ROA is 5% higher than without their presence. In the 1980s, the respective effects are 15% and 3%. The F-tests show that these effects are significantly greater in the 1990s than in the 1980s.

6.2. Controlling for firm performance and governance

To address the concern that ILTIs simply invest in better-quality firms, we carry out the following analysis. First, we estimate a regression of institutional shareholdings by independent, long-term top five institutional investors on firm size, stock return, and the corporate governance index (G-score) first introduced in [Gompers, Ishii, and Metrick \(2003\)](#). We find that firm size is the only consistently significant factor in institutions' shareholding decision, and that the G-score has no effect at all. These results do not suggest that ILTIs with concentrated holdings tend to systematically invest in better performing and/or better-governed firms. Next, we use the abnormal level of institutional shareholdings (the residual of the above regression) in our multiple regressions of post-merger performance. The coefficient on the abnormal institutional shareholdings captures any monitoring role by institutions,

rather than the superior performance of the bidding firm itself. We find that the presence of concentrated holdings by ILTIs, as captured by the ranking of the abnormal institutional shareholding measure, is positively and significantly associated with post-merger performance. Bushee, Carter, and Gerakos (2004) show that institutions prefer to invest in firms with good board governance. Better boards can be expected to make better acquisition decisions, consistent with our results. We cannot observe the board structure of our sample firms, so our G-score analysis provides only an indirect test of this explanation.

6.3. *Information collection versus efforts to influence*

We view monitoring as consisting of two elements: gathering information that can be used in institutional investors' portfolio selection decisions, and using such information to actively affect firm policies thereby benefiting all investors. It is highly plausible that some institutions favor one aspect of monitoring over another. For example, investment companies and independent investment advisors could be more interested in information gathering and trading, while public pension funds might be more interested in actively influencing firm decisions. We carry out additional investigation to see whether we can further identify institutions that would focus more on one aspect of monitoring than the other. Indeed, we find some evidence that CDA type 3 institutions (investment companies) show more evidence of informed trading, while public pension funds show more evidence of monitoring. The CDA type 4 institutions (independent investment advisors) are in between, showing equally strong evidence of both.

6.4. *Holdings aggregation*

Institutions aggregate their holdings across funds or fund managers and report only the aggregate holdings in their 13F forms. This complicates our analysis because fund managers might not share information or coordinate effort and might not even share the same objectives of monitoring versus trading, and departing managers might not adequately pass on firm-specific information to their successors. We note, however, that treating these institutions as one investor most likely biases against our finding a monitoring effect to the extent that multiple funds within the same institutions take uncoordinated positions in a single firm. To evaluate whether such aggregation could be affecting our results, we rank the type 3 institutions based on the number of funds within the institution. The top 20 institutions (e.g., Fidelity, Barclays Global Investors, Vanguard, Franklin Resources, etc.) on average have 40 individual funds. After excluding the top 20, the rest of the type 3 investors on average have six individual funds. The top 20 type 3 investors count for 14.8% of total institutional holdings and 29.4% of total ILTI concentrated holdings. When we remove these 20 institutions from our measures of concentrated institutional holdings, the inferences remain unchanged. In doing so, we do not intend to eliminate the aggregation problem entirely (this would deplete the sample unacceptably), but to see if there is any change in the results that would suggest that the aggregation problem is a concern.

7. **Discussion and conclusion**

The results in our study depict a complete and intuitive picture of institutional monitoring versus trading: when monitoring benefits exceed costs, institutional investors

will monitor rather than trade, and their monitoring activities offer them informational advantages that they can use to adjust their portfolios over time.

Our evidence on the relation between institutional holdings and acquisition quality shows that only concentrated holdings by ILTIs have any relation with post-merger performance; total institutional holdings and concentrated holdings by other types of institutions show no monitoring effect. Further, bid completion is sensitive to the market reaction to the bid announcement, but only in the presence of concentrated holdings by ILTIs. Thus, these institutions are active in influencing management's decision to reverse a bad decision.

Finally, our examination of the trading activity of these independent, long-term monitoring institutions supports the hypothesis that they focus on monitoring and influencing, rather than trading for profit. They show no evidence of profitable short-term trading around bids. Rather, they engage in long-term beneficial adjustments to their holdings. Consistent with the hypothesis that the high costs of selling a large stake are part of the motivation to monitor, we find that ILTIs with large stakes only sell in advance of extremely poor bids.

Thus, ILTIs with concentrated holdings monitor management and take action when they see a problem. They do not trade actively on short-term information. Once management has made a poor decision, ILTIs will attempt to have that decision reversed. Over time, if they anticipate a large enough value reduction and/or they perceive their ability to influence management to be low, they will sell their stakes. Overall, they gain from their monitoring efforts. The gain from effective monitoring is shared with other shareholders, while the gain from long-run portfolio adjustment is private.

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