

Advisor-hedge fund connections, information flows and deal outcomes in mergers and acquisitions

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Abstract

This paper examines the impact of investment banks' prime brokerage connections to hedge funds on the choice of an advisor and the deal outcome in M&As. Acquirers are more likely to choose advisors connected to hedge funds that hold equity in the target before the deal announcement. Such connections increase the likelihood of deal completion and increase acquirer abnormal returns when target firms are characterised by a high degree of information asymmetry. This suggests an 'indirect toehold' mechanism of information transmission.

Keywords: Choice of advisor; relationship banking; hedge fund holdings; indirect toehold; information advantage; mergers and acquisitions.

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1 Introduction

As a pre-cursor to economic resource re-allocation, and a catalyst for wealth creation and redistribution between relevant stakeholders, mergers and acquisitions (M&As) rank among the most significant corporate events. The Institute for Mergers, Acquisitions, and Alliances (IMAA)¹ estimates that at the peak of the 2015 merger wave, the transaction value of US M&As totalled \$2,417 billion. A common characteristic shared by these M&A transactions is their involvement of financial advisors, with in excess of 84% (by transaction value) of our sample of deals between 1990 and 2020 facilitated by an advisory firm.

Investment banks, acting as advisors, are especially important when executing complex deals characterised by high levels of information asymmetry (Servaes and Zenner, 1996). At the same time, they may exploit information gained through the advisory process for their own benefit (Bodnaruk et al., 2009), as well as share valuable firm-specific information with their other clients, such as hedge funds (Kumar et al., 2020).

Our paper examines the information flows between different parties within this network of connections involved in M&As and the effects of any information transmission on M&A outcomes. Several key players merit attention. (1) A bidder: a firm that intends to acquire a target and may already own an initial equity stake in the target. (2) An advisor: an investment bank chosen by the bidder to facilitate the deal. This bank may also serve as a prime broker to one or more hedge funds. (3) A target: the firm that is to be acquired through a completed deal. (4) Hedge funds that may have a stake in either the target and/or the bidding firm, and may (or may not) be connected to the advisor through a prime-brokerage relationship. Information flows within such a network are complex and multi-directional, and are discussed in detail in Section 2. This study examines two potential channels of information transmission. In the first, advisors may use the equity holdings of connected hedge funds in the target firm as an ‘indirect toehold’. This may enable advisors to obtain additional information about the target and use it to help the bidder to reduce information asymmetry (henceforth, IA) and secure

¹The data is available at <https://imaa-institute.org/mergers-and-acquisitions-statistics/united-states-ma-statistics/>

improved terms on the deal. In the second channel, connected hedge funds may obtain an ‘information advantage’ from their connected advisor concerning the deal’s prospects and initiate appropriate adjustments in their trading strategy in the bidder or target’s stock prior to any M&A announcement.

Using a sample of 910 US mergers of public companies with hedge fund holdings in the target firm between 2000 to 2019, we find that acquirers are more likely to have an investment bank as their deal advisor if the bank’s connected hedge funds own equity in the target firm. Two channels can contribute to this result. Having chosen a particular target, the acquirer may be searching for a connected advisor to facilitate the deal. The estimated probability for the average investment bank in our sample to be chosen as a deal’s advisor increases from 8% if it does not have connected hedge funds to 85% if it does. Alternatively, the acquirer may first hire an advisor who then recommends a firm with connected hedge fund holdings as a target. In our sample the probability for an average firm to be chosen as a target increases from 13% to 27% if the firm’s equity is held by a fund connected to the advisor.

Our analysis reveals no evidence that advisors share their private information about impending M&A deals with their connected funds. Connected hedge funds do not exhibit any significant changes in their equity holdings in either target or acquirer firms before the deal announcement when compared to unconnected funds. At the same time, deals where connected funds own equity in target firms exhibit a shorter deal duration, a higher likelihood of deal completion, and are associated with significantly higher acquirer abnormal returns on the announcement date in situations where target firms are characterized by an enhanced degree of IA. Furthermore, connected hedge fund holdings lead to a significantly reduced premium if a high IA target is of minor importance in the fund’s portfolio. The positive impact of connected hedge fund holdings on acquirer abnormal returns is more pronounced when the marginal value of information for a bidder is greater, namely when there are multiple bidders, when a bidder uses a larger fraction of stock as payment, and during merger waves. These findings suggest that the bidder may benefit from any value relevant information obtained through the advising investment

bank and its connected hedge funds, thereby supporting the ‘indirect toehold’ hypothesis. These relationships appear to help the bidder to reduce IA and enhance its bargaining power.

In this context, our analysis informs the growing literature on the relationship between hedge funds and their prime brokers and the potential information flow from prime brokers to hedge funds. Hedge funds sharing prime brokers exhibit a strong co-movement in returns attributable to information flowing from the common broker (Chung and Kang, 2016). Similarly, information regarding corporate client loans disseminates from prime brokers to hedge funds (Kumar et al., 2020). Hedge funds earn higher abnormal returns from IPO stocks when their prime brokers serve as IPO underwriters (Qian and Zhong, 2018). Prime brokerage relations also expose hedge funds to significant counterparty risk. The probability of contagion across hedge funds increases following adverse shocks to their prime broker’s share price (Boyson et al., 2010). Hedge funds using Lehman Brothers as their prime broker experience a decline in funding liquidity subsequent to its bankruptcy in 2008 (Aragon and Strahan, 2012). A liquidity shock to a prime broker can be transmitted to connected funds and result in a reduction in credit to hedge funds (Krutli et al., 2022). We contribute to this literature by highlighting the existence of a reverse direction of information flow, namely from hedge funds to their prime brokers.

Our analysis also contributes to discussions concerning the role of M&A advisors. Studies contend that investment bank advisors may facilitate the successful completion of complex deals characterized by significant informational asymmetries and also reduce transaction costs (Servaes and Zenner, 1996). However, the relevant empirical evidence is mixed. While investment bank involvement may lead to larger shareholder wealth gains (Kale et al., 2003), enhanced M&A returns (Bao and Edmans, 2011; Golubov et al., 2012), and a greater probability of deal completion (Hunter and Jagtiani, 2003), other studies find no association between an advisor’s quality and M&A outcomes (Rau, 2000; Hunter and Jagtiani, 2003; Ismail, 2010). At the same time, certain evidence suggests that the type of advisor impacts the terms of the M&A deals. For example, if a target’s own bank acts as the advisor, it fulfils ‘a certification role’ for the target’s quality, which leads

to enhanced target abnormal returns (Allen et al., 2004). For complex deals, boutique advisors are more likely to be used, and acquirers hiring boutique advisors tend to pay reduced premiums (Song et al., 2013). Several other factors are found to influence the choice of advisor. These include the prior performance of the advisor and changes in the advisors' market value. (Sibilkov and McConnell, 2014), prior client relationships, the reputation of the advisor, and deal complexity (Francis et al., 2014), advisor's industry expertise, and a firm's concerns about information leakage to industry rivals (Chang et al., 2016). Forte et al. (2010) focus on the target's choice of advisor and show that the probability of hiring a bank depends on the intensity of the previous banking relationship, the reputation of the bidder's advisor, and the complexity of the deal. Our findings contribute to this literature, indicating that an advisor's connections to hedge funds with holdings in the target is a significant determinant of the choice of advisor by acquirers.

Our study also contributes to the literature on the impact of IA in acquisitions and how any resulting gains are split between the firms. Acquirer returns are significantly higher in stock-swap acquisitions of difficult-to-value targets (Officer et al., 2009). Targets characterised by greater IA tend to receive larger bid premiums from the acquirers, and the acquirers' investors respond more positively to the acquisition of opaque targets (Cheng et al., 2016). Acquirers strategically exploit their superior bargaining power, are more likely to offer cash payments, and earn a larger fraction of total M&A gains if the target is characterized by higher IA (Luypaert and Van Caneghem, 2017). Acquirers' gains increase if they employ financial advisors in private offers, whereas the opposite is true for public deals (Leledakis et al., 2021). We show that advisors' connections to hedge funds that own equity in target firms are also a potential source of information for acquirers. Such an indirect toehold seems to help the bidder to collect more information about the target, reduce IA, and enhance their bargaining power. This result complements the findings in Bodnaruk et al. (2009) that investment banks exploit information gained as advisors to take stakes in target firms before the deal announcement, which is highly profitable. Their stakes are positively related to bid prospects and to the size of any premium paid for targets. Hence, the authors implicitly

document information flowing from the acquirers to the advisors, which the latter use for their benefit. Our findings suggest that information also flows in the reverse direction from the targets to hedge funds (through fund's direct stock holdings in the target), then to the investment banks (through their prime-brokerage relations with hedge funds), and finally (and beneficially) to bidders (through their advisory relationship with these investment banks).

Our paper also relates to the role of (direct) toeholds, namely pre-bid ownership of target shares, in acquisitions. Bidders strategically use toeholds to generate an informational advantage over rivals, positively affecting their profits. [Betton and Eckbo \(2000\)](#) and [Bris \(2002\)](#) find that the probability of being taken over, the takeover premium, and pre-bid increase in the target's stock price are negatively related to toehold size. In contrast, the post-announcement rise in the target's stock price is positively related to toehold size. [Povel and Sertsios \(2014\)](#) provide evidence that potential acquirers of a target use toeholds to improve their information about possible synergies with the target, and this strategy is more beneficial when the target is opaque. Our results indicate that advisor connections to hedge funds that hold targets appear to function as an 'indirect toehold', and similarly help to create an informational advantage for bidders.

Finally, our paper extends the literature on the role of hedge funds in the M&A process. Hedge fund activist interventions substantially increase the probability of a takeover offer and enhance shareholder value ([Boyson et al., 2017](#)). They also improve a firm's M&A decisions and investors respond favourably to such post-activism acquisitions ([Wu and Chung, 2021](#)). On the contrary, targets characterized by agency problems and facing threats of investor coordination often engage in hostile resistance, which leads to adverse outcomes unless hedge funds provide resistance ([Boyson and Pichler, 2019](#)). As for non-activist hedge funds, [Gao et al. \(2018\)](#) find evidence that pre-transaction hedge-fund holdings in the target firm increase the proportion of cash payment while having no effect on the deal premium. [Dai et al. \(2017\)](#) show that hedge funds use nonpublic information to take long positions in M&A target stocks and short positions in acquirer stocks before M&A announcements, and their stakes in targets are positively

related to takeover premiums. Our paper highlights how hedge funds may potentially gather target-related private information through their holdings and then transmit it to bidders via their prime brokerage connections to advisors.

2 Research Design: Information Flows in M&As

This section introduces two scenarios relating to information flow patterns in M&As, and then discusses how these patterns may influence the choice of an advisor, choice of a target, changes in hedge fund equity holdings, deal duration, deal completion, target premium, and abnormal returns. Note, these scenarios are not mutually exclusive. Figure 1 illustrates the potential directions of information flow between targets, hedge funds, advisors, and bidders in M&As. First, consider potential information flows from targets to hedge funds (through their equity holdings in targets), then to advisors (through their prime-brokerage relations with hedge funds), and finally to acquirers. This constitutes our ‘indirect toehold’ scenario.

[Figure 1 in here]

Hansen (1987) argues that a classic adverse selection problem arises in M&A transactions when targets possess proprietary information about their own value. Bidders can mitigate IA in several ways, including paying a lower purchase price (Makadok and Barney, 2001), paying with stock (Hansen, 1987, Finnerty et al., 2012), and using financial advisors (Officer, 2007, Leledakis et al., 2021). Financial advisors, incentivized by appropriate fees, use their expertise to identify synergies and collect value relevant information concerning potential targets. In addition, small direct equity holdings by the bidder in a target, termed toeholds, provide an information source for the bidders (Povel and Sertsios, 2014). However, a toehold purchase may create rumours of a pending bid that can result in a pre-bid run-up of the target’s market value that only serves to increase the offer price (Ravid and Spiegel, 1999) and/or a rejection of negotiations by the target (Betton et al., 2009). Therefore, target equity held by funds connected to deal advisors may generate a valuable source of information for acquirers, and such indirect access to

information may ultimately be less costly than a direct toehold.² The existence of such ‘indirect toeholds’ can be important for bidders with different initial M&A strategies. The acquirer may already have a target in mind and then choose an advisor best suited for the job, namely one contributing an ‘indirect toehold’ together with other types of expertise. There may be an alternative path in which the acquirer wants to grow through M&As, and hires an advisor who helps to choose a target. As the advisor may expect to obtain (or already possess) superior information about certain potential targets through its connected hedge funds, it may be more likely to recommend one of these firms as a target. Both alternatives lead to a higher likelihood of a connected advisor actually working on the deal.

Under this ‘indirect toehold’ scenario, we would expect:

- (1) an advisor with connected hedge funds owning a target’s shares is more likely to be hired, either because the acquirer chooses the connected advisor or the advisor recommends the firm with connected fund holdings to be the target;
- (2) a reduction in IA between the target and bidder, a shorter deal duration, and an increased likelihood of a successful acquisition;
- (3) the acquirer to gain enhanced bargaining power, leading to a reduction in the premium paid, a lower target abnormal return, and a higher acquirer abnormal return on the announcement date;
- (4) no pre-announcement increase in holdings by connected hedge funds in the target, due to the potential reduction in the target’s announcement returns.

In the second scenario, information flows from the acquirers to the advisors and finally to their connected hedge funds. It follows these hedge funds obtain privileged information and may earn superior returns by taking positions in the target firm prior to the announcement. We designate this possibility the ‘information advantage’ scenario.

[Qian and Zhong \(2018\)](#) examine hedge funds’ investment in new publicly listed stocks and find that hedge funds obtain informational advantages from their prime brokers

²Advisory banks may compensate connected hedge funds through the services they provide. As shown in [Kumar et al. \(2020\)](#) and [Qian and Zhong \(2018\)](#), hedge funds may benefit from mutual information flow between them and their prime broker.

servicing as underwriters for the stock listing. [Bodnaruk et al. \(2009\)](#) document that financial conglomerates in which affiliated investment banks advise the bidders, increase their positions in targets before M&A announcements. This tactic is associated with a greater probability of deal success and is highly profitable. Applying analogous reasoning to connected hedge funds, if information flows from advisory banks to hedge funds with prime brokerage connections, these funds will exploit this information by taking a position in the target firm in advance and realizing any gains around the M&A announcement.

Under this ‘information advantage’ scenario, we would expect:

- (1) the acquirer to be less likely to choose an advisor with connected hedge funds holding the target and a firm’s probability of becoming a target to decrease with connected fund holdings;
- (2) connected funds to increase their holdings in target firms before the acquisition announcements to gain abnormal returns;
- (3) connected hedge funds to be motivated to facilitate the deal³, a reduction in deal duration, and the likelihood of deal completion to increase;
- (4) connected fund holdings to be positively related to both the target premium and abnormal returns, and negatively related to acquirer abnormal returns on the announcement date.

Table 1 summarizes all the expected effects under the two scenarios.

[Table 1 in here]

We would anticipate the effects to be more pronounced for targets with an enhanced degree of IA for which the marginal benefits of IA reduction are greater. Therefore, we divide our sample into two sub-samples, namely those in which the target is characterised by a greater and lesser degree of IA, and undertake the analysis on each separately.

We use stock market and accounting information from CRSP/Compustat and the information on analysts’ coverage and the earnings forecasts from I/B/E/S to compute the following five measures for each target firm following [Karpoff et al. \(2013\)](#), [Cheng](#)

³Connected hedge funds may try to directly affect the merger outcome, e.g., voting on the shareholder meetings, to realize capital gains from their positions.

et al. (2016) and Boroichin et al. (2019):

- (1) *Amihud* is the average Amihud illiquidity measure over the year before the acquisition announcement;
- (2) *SPREAD* is the average bid-ask spread for the year before the acquisition announcement;
- (3) *Size* is the natural logarithm of the book value of total assets in the year before the acquisition announcement;
- (4) *COVER* denotes analysts' coverage, computed as the number of analysts for the target in the year before the acquisition announcement;
- (5) *ERR* is the relative forecast error, computed as the ratio of the absolute difference between the forecast earnings and the actual earnings per share to the price per share in the year before the acquisition announcement.

We calculate the *IA* value of a target as follows. For each value of *Amihud*, *SPREAD*, and *ERR*, which lies above the median, and for *Size* and *COVER*, lying below the median for a specific target firm, we assign one risk point to its *IA* value. A target is said to have high *IA* if the sum of its risk points (the final value of *IA*) is above the median value of all targets. On this basis, we classify 342 targets in our sample as high *IA* targets.

To evaluate the predictions from the two information flow scenarios relating to the choice of advisor, we estimate the following probit regression:

$$Pr(Advisor_Chosen^{i,j}) = \phi(\alpha + \beta_1 Connected^{i,j} + \beta_2 Holding_connected^{i,j} + \delta Controls^{i,j}) \quad (1)$$

where $Advisor_Chosen^{i,j}$ equals one if an advisor i is hired for a particular deal j , and zero otherwise, and ϕ is the standard normal pdf.

For an advisor to enter the estimation, they must have been the advisor in at least one acquisition during the past year immediately prior to the current acquisition announcement. $Connected^{i,j}$ is a dummy variable that equals one if an advisor i is the prime broker of a hedge fund with holdings in the target firm in acquisition j in the

quarter prior to deal announcement and zero otherwise. $Holding_connected^{i,j}$ is the percentage holdings of advisor i 's connected hedge funds in the target firm in acquisition j in the quarter prior to deal announcement.

In our sample, we identify 13 advisors that are connected in at least one deal. They include the Bank of America Corporation, JP Morgan Chase Co., Citigroup Inc., Goldman Sachs Group, Morgan Stanley, Merrill Lynch, Lehman Brothers, Bear Stearns, UBS Group AG, Deutsche Bank AG, Credit Suisse Group AG, Royal Bank of Canada, and Barclays plc. The number of unique unconnected advisors is 130.⁴

In choosing the remaining control variables, we follow [Sibilkov and McConnell \(2014\)](#): *Acquisition times* is the number of times an advisor serves as an acquirer's advisor one year before the acquisition announcements; *Acquisition value* is the logarithm of the total value of all acquisitions that an advisor serves as an acquirer's advisor one year before the acquisition announcements; *Prior advisor* equals one if the advisor serves as a M&A advisor for the acquirer one year before the acquisition announcements and zero otherwise; *Expertise* equals one if the advisor serves as an acquirer's advisor in an acquisition that involves a target from the same two-digit SIC industry as the target of the current acquisition and 0 otherwise.

In a similar vein, for those bidders participating in multiple deals in our sample, we test (via a probit model) if the probability of choosing a different advisor from the one selected previously increases commensurate with the connected hedge fund holdings of the new advisor.

$$Pr(New_Advisor^{i,j}) = \phi(\alpha + \beta Holding_connected^{i,j} + \delta Controls^{i,j}) \quad (2)$$

where $New_Advisor^{i,j}$ takes a value of one if the advisor i that is hired for deal j differs from the one the bidder in deal j selects for its previous deal.

We examine the alternative pathway in which the advisor recommends the target

⁴The 13 advisors that are connected in at least one deal include the largest investment banks, and altogether they advise 63% deals in our sample. In these deals, every advisor may still be unconnected. While we base our main results on all deals in our sample, we repeat the complete analysis using a sub-sample of deals using these 13 advisors only. The results are qualitatively the same as those of the main analysis, and are reported in full in online Appendix [A](#).

using the following probit regression:

$$Pr(Target_Chosen^{k,j}) = \phi(\alpha + \beta_1 Connected^{k,j} + \beta_2 Holding_connected^{k,j} + \delta Controls^{k,j}) \quad (3)$$

where $Target_Chosen^{k,j}$ equals one if a firm k is chosen to be the target for a particular deal j , and zero otherwise. We use propensity score matching to find potential targets for each deal. Following [Palepu \(1986\)](#), the determinants include: firm size (log of total assets), book-to-market ratio, return on equity, leverage (equity-to-asset ratio), liquidity (current assets/current liabilities), tangibility (tangible assets/total assets), sales growth, and the price-earning ratio. We obtain each firm’s propensity score as the probability that a firm with given characteristics will be a merger target. For each actual target, we select five firms in the same industry with the closest score, active in the same year. $Connected^{k,j}$ is a dummy variable that equals one if a firm k is held by hedge funds in the quarter before the announcement whose prime broker is the advisor in acquisition j and zero otherwise. $Holding_connected^{k,j}$ is the percentage holdings of such advisor’s connected hedge funds in the firm k in acquisition j .

On this basis, we can now begin to empirically discriminate between the two information scenarios. The ‘indirect toehold’ scenario predicts a positive relation between connected fund holdings and both the probability of an advisor being hired and for a firm becoming a target. This implies a positive β_1 and β_2 in Equations 1 and 3, as well as a positive β in Equation 2. The relationships underlying the ‘information advantage’ scenario dictate these coefficients carry the reverse signs.

In our analysis, we deliberately include only those deals with non-zero hedge fund holdings. This setting allows us to isolate the effects of connections instead of contaminating the analysis with any additional effects of why hedge funds in general choose to hold target firms. Nevertheless, we include the Inverse Mills Ratio (*IMR*) in all equations to account for a possible selection bias on the part of hedge funds. The first-stage probit analysis employs all target firms and estimates the probability of hedge funds owning equity in these target firms. Following [Dai et al. \(2017\)](#), we use:

the deals' percentage of cash payment, indicators for a hostile deal and tender offer, holdings by mutual funds in acquirers, the premium paid to the target, the target's return on assets, leverage, size, and book-to-market ratio as predictors of positive hedge fund stakes in targets. We then include the resulting Inverse Mills Ratio (*IMR_holding*) in all regressions.

Another important selection issue arises in this setting, namely that connections may be related to the advisor's importance in the financial markets, and bidders may deliberately choose a large (hence connected) advisor. To address this aspect of the selection decision, we estimate a probit model for the probability that the acquirer chooses a large investment bank as an advisor. We also include the corresponding Inverse Mills Ratio (*IMR_bigbank*) in all regressions. Following [Song et al. \(2013\)](#), the acquirer's choice of a large bank as the advisor is a function of deal size, percentage of cash payment, an indicator of a hostile deal, holdings by mutual funds in acquirers, whether the targets and acquirers are in different industries, the number of bidders, the fraction of target shares held by the acquirer before deal announcement, both target and acquirer's book-to-market ratio, and the target's return on equity.

To assess the effect of information flow on hedge fund equity holdings, we estimate the following Equation 4 based on individual hedge fund holdings:

$$\Delta Holding_{t-1}^{f,j} = \alpha + \beta Connected^{f,j} + FE_{deal} + FE_{fund} + \varepsilon^{f,j} \quad (4)$$

where $\Delta Holding_{t-1}^{f,j}$ are the changes in the holdings of hedge fund company f of the target's stock in acquisition deal j in the quarter before the deal announcement (the difference between the holdings at the end of quarter $t - 1$ and the previous quarter $t - 2$, with quarter t being the announcement quarter). The holdings are measured as the number of shares owned by a fund scaled by the total shares outstanding of the firm. $Connected^{f,j}$ is a dummy variable that equals one if the prime broker of hedge fund f is also the advisory bank in deal j and zero otherwise. To account for other characteristics of the deals and funds that may impact the outcome, we include deal and hedge fund

fixed effects in the regression.⁵

Under the ‘indirect toehold’ scenario, β should be non-positive in Equation (4), indicating that connected funds do not increase their holdings in target firms more than unconnected funds before the acquisition announcements. The ‘information advantage’ scenario would imply a positive β , with connected funds having a higher pre-announcement change in their holdings of target firms.

We further check whether connected and unconnected funds exhibit differences in their ownership of the target firm following the deal’s announcement but prior to its completion, and if any changes in their equity holdings indicate alternative possible channels of information transmission. Generally, existing evidence suggests that hedge funds are likely to purchase targets’ equity after the deal announcement (Cui et al., 2022; Dai et al., 2017; Mitchell et al., 2004). If connected hedge funds additionally increase their holdings in the target subsequent to the deal’s announcement and prior to its completion, it may suggest that their advisors share information pointing towards the likelihood of successful deal completion, or information emanating from the fund’s relationship with the target indicates the deal is more likely to be completed. Such a pattern may also be indicative of an implicit contract between hedge funds and their prime brokers acting as deal advisors, in which funds purchase additional stakes in the target and then vote to help the bidder secure the deal. If connected funds are not seen to disproportionately increase their holdings, either there may be no information flowing between the advisor and connected hedge funds, or the information flowing from hedge funds to advisors may take the form stipulated by the ‘indirect toehold’ mechanism. In the latter case, funds may actually expect the bidder to underpay on the deal, so they choose not to increase their holdings in the target.

To address the post-announcement change in holdings, we restrict the sample to deals lasting more than one quarter for which we have another observation of holdings in the target prior to deal completion. In total, we identify 623 such deals. We then re-estimate Equation (4) using the changes in the holdings of each fund from the pre-announcement

⁵For comparison, we analyze the changes in hedge fund holdings in acquirers in a similar fashion.

quarter to the post-announcement quarter ($\Delta Holding_{t+1}$) as the dependent variable.

To evaluate the effect of information flow on deal duration, premium, and cumulative abnormal returns for both target and acquirer, we estimate Equation 5:

$$\left. \begin{array}{l} Duration^j \\ Premium^j \\ TCAR^j \\ ACAR^j \end{array} \right\} = \alpha + \beta Holding_connected^j + \delta Controls^j + \epsilon^j \quad (5)$$

where we calculate *Duration* as the number of months between the deal announcement date and its effective date; *Premium* is the premium computed as the ratio of the offer price per share to the target’s closing share price one week⁶ before the acquisition announcement; *TCAR* (*ACAR*) is the cumulative abnormal returns (CARs) for target (acquirer) firms on the acquisition announcement date, computed using the event study methodology of [Brown and Warner \(1985\)](#). Following [Cai and Sevilir \(2012\)](#) we estimate the Fama-French 3-factor model for each firm over the 200 trading days ending two months before the announcement. We compute the abnormal returns on the announcement day as the difference between the realized and expected returns. In the main specification, CAR represents the announcement date abnormal return. In [Section 8](#), we further calculate cumulative abnormal returns over different windows surrounding the announcement date.

The key variable of interest is *Holding_connected^j*, which represents the total holdings of all connected hedge funds in the target firm in deal *j* in the quarter before the announcement. We also control for the total holdings of hedge funds in a target firm in that quarter (*Holding_total*), hedge funds’ holdings in the acquirer (*Holding_acquirer*), and acquirers’ holdings in the target (*Toehold*).

In choosing the other control variables, we follow [Bodnaruk et al. \(2009\)](#) and [Gao et al. \(2018\)](#): *Return on assets (ROA)* is the return on a target firm’s assets in the last fiscal year before the acquisition announcement; *Leverage* is the equity-to-assets ratio of a target firm in the last fiscal year before the acquisition announcement; *B/M* is target’s

⁶We also use the share price four weeks before the announcement in a robustness check specification.

book-to-market value of equity measured in the last fiscal year before the acquisition announcement; *Tangible* is target’s ratio of total tangible assets to total assets in the last fiscal year before the acquisition announcement; *Size_a* is the logarithm of acquirer’s market capitalization in the last fiscal year before the acquisition announcement; *B/M_a* is acquirer’s book-to-market value of equity in the last fiscal year before the acquisition announcement; *RELSIZE* is the ratio of target total assets to bidder total assets; *Valpct* is the ratio of deal value to acquirer market capitalization in the last fiscal year before the acquisition announcement; *Holding_MF* is the mutual fund holdings in a target firm one quarter before the acquisition announcement; *Pctcash* is the percentage of cash payment in the consideration; *Hostile* is a dummy variable taking the value of 1 for a hostile deal and 0 otherwise; *Tender* is a dummy variable taking the value of 1 for tender offers and 0 otherwise; *Merger of equals* is a dummy variable taking the value of 1 when the target and acquirer consider their merger a merger of equals; *Diff_Ind* is a dummy variable taking the value of 1 for a deal where bidder and target are from different 3-digit SIC code industries and 0 otherwise; *Number of bidders* is the number of bidders involved in a deal.

To evaluate any potential effects on deal completion probability, we estimate the following probit regression:

$$Pr(Completion^j) = \phi(\alpha + \beta Holding_connected^j + \delta Controls^j) \quad (6)$$

where *Completion^j* equals 1 if deal *j* is completed. For the duration and completion regressions, following [Dikova et al. \(2010\)](#), we further control for the total value of the consideration paid by the acquirer in billions of dollars (*Deal Value*) and the amount of the termination fee paid by the acquirer in billions of dollars (*Termination fee*).

The ‘indirect toehold’ and ‘information advantage’ scenarios both lead to identical predictions concerning the relationship between connected hedge fund holdings and both deal duration (which is expected to decrease) and deal completion probability (which is expected to increase). It follows β in Equation (5) is expected to be negative for deal duration, and is expected to be positive in Equation (6). In contrast, the two information

flow scenarios generate opposing predictions for premium and abnormal returns. The ‘indirect toehold’ mechanism predicts a negative relation between connected hedge fund holdings and both premium and TCAR, hence, a negative β in Equation (5) for these specifications. It predicts a positive relationship with ACAR, so the expectation of a positive β . The ‘information advantage’ scenario yields precisely the reverse relationships. Therefore, our empirical results relating to the premium and target and acquirer abnormal returns variables, contain the most pertinent evidence enabling the analysis to potentially discriminate between the two information flow mechanisms.

Certain investment banks simultaneously act as both prime brokers for hedge funds and advisors in M&A deals. To capture their motivation to share information with bidders, we incorporate the interaction terms $Connected \times Abnormal_fees$ into Equations (1) and (3) and $Holding_connected_{t-1} \times Abnormal_fees$ into Equations (1)-(3) and (5)-(6). Advisors may be more willing to use their hedge fund connections to help the bidder in the presence of financial incentives to do so, namely when their advisory fees are higher. We calculate the fees paid by the acquirer as a percentage of deal value and define abnormal fees ($Abnormal_fees$) as the difference between the realized percentage fees and the average percentage fees for the two deals in the same industry with the closest deal size over the past two years.

We include target industry fixed effects and year fixed effects and use robust standard errors in Equations (1)-(3) and (5)-(6). We further add advisor fixed effects to Equations (3), (5), and (6). In Equation (4), as previously mentioned, we include both deal and fund fixed effects. Table 2 lists all the key variables and their definitions.

[Table 2 in here]

3 Data

We use three sets of data: (1) a sample of hedge funds from the TASS and Eureka hedge databases, (2) hedge fund holdings data from the 13f filings to the Security and Exchange Commission (SEC), and (3) a sample of M&A transactions with detailed information from

the Eikon database. We compile our hedge fund sample from the TASS and Eureka hedge databases over the period from January 1994 to September 2019, including information on affiliated companies, such as prime brokers. U.S. registered hedge fund investment companies that manage over \$100 million are required by the SEC to file quarterly reports on their holdings. We aggregate all individual hedge funds managed by the same hedge fund companies and obtain their holdings from the CDA database (Thomson Reuters, 13f filings) following [Cui et al. \(2022\)](#)⁷. In total, our sample comprises 5,713,269 data points of holdings (a hedge fund company-quarter-security uniquely defines each data point), with 651 hedge fund companies holding at least one of the target firms one quarter before the deal announcement.⁸

Our sample of acquisitions, announced between January 2000 to September 2019, is from the Eikon database. We apply several filters commonly used in prior M&A literature (see [Boyson et al., 2017](#); [Dai et al., 2017](#); [Wu and Chung, 2021](#)), namely: (1) the disclosed deal value should be greater than USD 1 million; (2) the acquirer should own less than 50% of the target's stock before the acquisition and should seek to own 100% of the target's shares upon successful acquisition; (3) spin-offs, repurchases, and self-tenders are excluded; (4) both the bidder and the target should be U.S. public firms listed on NYSE or Nasdaq, as the data on hedge fund holdings are available only for U.S. listed firms.⁹ The initial sample contains 2,681 deals. We use only deals for which all the necessary variables for our baseline analysis can be computed using the data from CRSP and Compustat¹⁰ and deals with non-zero hedge fund holdings in the target firm. The final sample includes 910 deals. We use the target primary ticker symbol to match the firms in our M&A sample to the companies included in the hedge-fund holdings sample. Overall, there are 130 unique advisors in our sample, of which 13 have a hedge fund

⁷For each hedge fund company, we check its information in Bloomberg to ensure that these companies have no side businesses, such as mutual funds or insurance.

⁸Hedge funds may request confidentiality for their holdings ([Agarwal et al., 2013](#)). [Agarwal et al. \(2013\)](#) show that confidential holdings of hedge funds outperform their original holdings. Hence, any results, including confidential holdings, are likely to be even stronger than those that we are able to document.

⁹This filter allows us to calculate the holdings of hedge funds in both the target and acquirer. Hedge funds may hold other companies, but this is not observed in our sample.

¹⁰The largest loss of data of 993 and 463 deals is driven by the absence of information on target ROA and acquirer size, respectively.

connection. An advisor is said to be connected if it acts as a prime broker to at least one hedge fund that holds equity in a target in a deal for which the advisor is employed. On average, connected advisors advise more deals than those who are unconnected (43.846 versus 4.285) and advise on larger valued deals (390.920 versus 19.031 billion dollars).

In terms of deal characteristics (Table 3), deals with connected and unconnected advisors exhibit statistically significant differences across multiple dimensions. The average holdings of connected funds are 2.0% in deals with connected advisors, while they are by construction zero in deals with unconnected advisors. Holdings of hedge funds in the acquirer are greater for deals with connected advisors (10.6 % versus 9.6%). On average, deals with connected advisors have targets with higher ROA (-0.004 versus -0.018), higher leverage (0.415 versus 0.364), lower book-to-market value (0.450 versus 0.679), and lower tangible assets (0.804 versus 0.889). The acquirers in connected deals are larger (8.883 versus 7.682) and have a lower book-to-market ratio (0.419 versus 0.532). The connected deals are characterised by a higher ratio of deal value to acquirer market capitalisation (0.623 versus 0.353), higher mutual fund holdings (0.506 versus 0.271), a higher percentage of the payment made in cash (0.622 versus 0.530), a larger overall deal value (6.140 versus 0.815 billion dollars), higher termination fees (0.108 versus 0.014 billion dollars), and a lower level of target information asymmetry (1.684 versus 3.263). The average number of advisors is 1.840 for deals with at least one connected advisor and 0.777 for deals without such advisors. On average, 5.3 connected hedge funds and 20.7 unconnected hedge funds take a stake in the target firm in deals with connected advisors, while 10.1 hedge funds hold the target in deals without such connections. Overall, the descriptive statistics suggest structural differences in the deals that involve connected and unconnected advisors.

[Table 3 in here]

4 Empirical Results

Table 4 reports the estimates obtained from Equation (1), which captures the determinants of an acquirer’s choice of advisor.¹¹ Results from sub-samples of deals in which targets exhibit high and low levels of IA are presented in Columns (1) and (2), respectively. Both the β_1 coefficient values, 4.55 and 4.18, are significant at the 1% level, suggesting that advisor connections are important for both high and low IA targets.¹² An advisor with prime brokerage connections to hedge funds holding the target firm is significantly more likely to be chosen by an acquirer, even controlling for other factors. For the average advisor in our sample, moving from a position of no connections to having connections increases its estimated probability of selection from 8% to 85%. This finding supports the ‘indirect toehold’ channel of information flows, that emanating from connected hedge funds through to advisors and acquirers. At the same time, the coefficient of 10.723 on *Holding_connected* is significant at the 1% level for targets with high IA. Acquirers are more likely to choose an advisor connected to hedge funds holding greater stakes in a target for those targets with high IA. This result is consistent with an expectation that obtain reliable information concerning more opaque targets is facilitated by funds with higher target equity holdings.

In columns (3) and (4), we include *Abnormal_fees* and the interaction terms with *Connected* and *Holding_connected*. *Abnormal_fees* play a role if targets exhibit high IA, but appear insignificant for those with low IA. While the positive impact of the connections dummy weakens somewhat if the bidder is paying larger advisory fees, the positive effect of the level of connected hedge fund holdings becomes even stronger for high IA targets. These results are also consistent with the ‘indirect toehold’ mechanism of information transmission. Advisors appear more willing to share information for the benefit of the acquirer when they receive enhanced fee income.

The coefficients of other variables are consistent with the literature. Acquirers are

¹¹The first stage probit regression results used to compute the IMRs are presented in online Appendix B.

¹²In unreported results, we also include an interaction term between *Connected* and IA and find this interaction is not statistically significant, indicating IA does not affect the relationship between the probability of choosing an advisor and their connected status.

more likely to select advisors with a higher value of acquisitions in the prior year, greater expertise in the target's industry, and possessing a previous connection with the acquirer. The coefficients on the *IMR_bigbank* are negative and statistically significant in columns (1) and (3), suggesting a downward-biased estimate without correction.

[Table 4 in here]

Turning now to factors influencing a change in advisor, the results reported in Table 5 all point in the same direction. The probability of changing an advisor increases with the equity holdings of funds connected with the new advisor for deals with high IA targets, and this effect is amplified further by any abnormal fees received by the new advisor.

[Table 5 in here]

Table 6 reports the estimation results for Equation (3), which explains the acquirer's choice of target. The positive coefficients β_1 on *Connected* are significant at the 1% level in all columns, suggesting that the advisor's connection to hedge funds holding the target significantly increases a firm's probability of being a target. For high IA targets, the estimated probability of the firm being chosen increases from 25% to 45% if the equity holdings of connected funds increase from zero to their average value. The corresponding change for the low IA targets is from 19% to 39%. The coefficients on *Holding_connected* are insignificant, indicating that the actual levels of holdings are not relevant. We find no evidence for differential effects across targets according to their level of IA. We note that connected fund holdings actually reduce a high IA firm's probability of becoming a target in the presence of a high level of abnormal fees (Column (3) in Table 6). One possible explanation may be that while advisors try to ensure the most favorable terms for the bidder, they do not want their connected funds' holdings in the target to lose value. Regarding other control variables, larger firms with a high book-to-market ratio are less likely to be chosen as targets. Overall, the findings support the alternative pathway, that advisors are more likely to recommend firms as targets to acquirers if their connected funds hold equity in the firm.

[Table 6 in here]

Table 7 reports the results from estimating Equation (4), which captures the changes in the individual hedge fund holdings in both target and acquirer before and after the deal’s announcement. The coefficient β is statistically insignificant in all specifications. There are no apparent differences evident between connected and unconnected funds with respect to changes in their equity holdings either one quarter prior or subsequent to the acquisition announcement. This finding suggests that either an absence of information flow between the advisor and connected hedge funds relating to the upcoming deal, or that connected funds optimally choose not to increase their holdings. The latter maybe interpreted as rational behaviour, as under our ‘indirect toehold’ mechanism, hedge funds are unlikely to achieve abnormal returns on their holdings in the target.¹³

[Table 7 in here]

With respect to deal completion, the positive and significant β in Columns (3) and (4) of Table 8 reveal the likelihood of deal completion is increasing in connected funds’ holdings.¹⁴ This effect is economically meaningful. For an average deal involving a target with high IA, a one standard deviation increase in connected hedge fund holdings leads to an increase in the deal’s completion probability of 5.2 percentage points, equivalent to about 5.8% of the average completion probability. Moreover, this effect on completion probability is driven predominantly by the holdings of connected funds, as overall hedge fund holdings are insignificant in almost all specifications.

The positive effects of connected funds’ holdings on the likelihood of deal completion are even more pronounced in the presence of abnormally high advisor fees (Column (7) in Table 8). The coefficient β_1^* on *Holding_connected* \times *Abnormal_fees* is positive and significant at 10% for targets with high IA, and this effect is four times larger than for

¹³We also consider a different measure of changes in equity holdings based not on fractional holdings of a firm, but the fraction of the hedge fund’s portfolio allocated the firm. The results reported in the online Appendix Table C1 similarly reveal no difference in connected funds pre- and post-announcement changes in holdings.

¹⁴The number of deals used in the completion probability model reduces because certain fixed effects perfectly predict completion. The results remain qualitatively unchanged if the full sample of deals is used without fixed effects.

targets with lower IA (82.44 vs. 21.35, respectively). The positive coefficient on the stand alone *Abnormal_fees* variable, significant at the 1% level, suggests that higher abnormal fees increase the likelihood of deal completion for targets with a high IA. Regarding other control variables, tender offer increase, while both hedge funds' holdings in acquirers and a greater number of bidders reduce the likelihood of completion for low IA deals.

We find no evidence that connected hedge fund holdings reduce the deal duration.¹⁵ Other control variables have signs consistent with the literature: greater deal value, hostile deals and the use of toehold are all associated with higher deal duration, while tender offers reduce it.

Our findings concerning deal completion probability provide no guidance on disentangling the 'indirect toehold' from the 'information advantage' mechanism, since the likelihood of deal completion is predicted by both scenarios. The results documenting the pattern of abnormal returns, however, support the 'indirect toehold' mechanism (Table 9). Specifically, announcement abnormal returns of bidders in deals involving targets with high IA increase with connected hedge fund holdings, with the relevant β coefficient value, 1.386 significant at the 1% level (Column (5) of Table 9). A one standard deviation increase in connected fund holdings translates to 3.5 bp increase in acquirer abnormal returns for targets with high IA. Given the mean value of ACAR of -0.013%, the increase in ACAR amounts to more than twice the absolute value of the mean ACAR, a finding which turns the ACAR positive. The effect is not statistically significant for targets with low IA.

We find no significant impact of connected fund holdings on either target premium or target abnormal returns in any specification.¹⁶ One possible explanation might be that while connected hedge funds facilitate the deal, they do not act against their own interests, and their involvement does not lead to underpayment in the M&A deal.¹⁷ Interestingly,

¹⁵The number of deals reduces for the duration model as duration is computed only for completed deals.

¹⁶We run the same model for the premium estimated based on the target market value four weeks before the announcement, and the results reported in online Appendix Table D1 are qualitatively unchanged.

¹⁷In Section 8, we separate connected hedge funds based on the relative importance of the target in the hedge fund portfolios and the length of hedge funds' holding period in the target. Connected hedge funds seem more likely to share information with their prime broker when they have small holdings in the target, do not specialise in the target industry, or hold the target for a shorter period.

in our deal sample, general fund involvement, as captured by the total holdings of hedge funds in the target, reduces both the premium paid and target abnormal returns for target firms with high IA. In terms of control variables, the premium consistently increases with acquirer size and for tender offers and decreases with mergers of equals.¹⁸

Overall, our baseline results are consistent with the ‘indirect toehold’ hypothesis that advisors use connected hedge funds with holdings in the target firm to obtain additional target-relevant information, thereby helping the bidder to reduce informational asymmetries. Consequently, advisors are more likely to be chosen if they are connected to hedge funds holding equity in the target and/or such advisors are more likely to recommend such a connected target. This leads to an enhanced likelihood of deal completion and larger acquirer announcement returns.

[Tables 8 and 9 in here]

5 Hedge Funds’ Information Sharing Incentives

The empirical evidence uncovered relating to the ‘indirect toehold’ mechanism suggests that hedge funds with equity holdings in a M&A target are a source of certain value-relevant information for the bidder, mediated through the connected advisor. Potentially, this channel leads to a premium reduction and lower returns to the target’s owners. Implicitly, this outcome also harms the connected hedge fund’s interests, but can such a sacrifice in returns actually serve to benefit these hedge funds?

One possible explanation is that connected hedge funds are willing to forego target abnormal returns in exchange for compensating benefits (possibly informal) conferred by their prime brokers (see, for example, [Chung and Kang, 2016](#); [Kumar et al., 2020](#); [Qian and Zhong, 2018](#)). In such a situation, sharing information may be optimal from the funds’ perspective when the associated benefits outweigh the costs. This situation is

¹⁸As a robustness check, we compute the target and acquirer abnormal returns in three different event windows, including a 3-day [-1, +1], a 7-day [3, +3], and an 11-day [5, +5] window ([Hillmer and Yu, 1979](#); [Krivin et al., 2003](#)). The results in online Appendix Table E1 are consistent with the main findings. Connected hedge fund holdings do not affect target abnormal returns, but they significantly increase the cumulative abnormal returns of the bidder in deals involving targets with enhanced IA.

facilitated when their portfolio losses incurred from the lower premium paid for targets are limited. To test this conjecture, we examine hedge funds' incentives and disincentives to share information from three perspectives: (i) the importance of the target in the hedge fund portfolio, (ii) the importance of the prime broker to the hedge funds, and (iii) hedge fund past performance and flows.¹⁹

5.1 Target importance in the hedge fund portfolio

We use three measures to assess the importance of the target firm in the hedge fund portfolio: (1) direct hedge fund investment: the fraction of the total hedge fund portfolio allocated to the target firm, (2) hedge fund industry specialization: the fraction of the hedge fund portfolio invested in the target's industry, and (3) the hedge fund's holding period in the target.

To implement our first measure, for each hedge fund and every firm held, we compute fractional holdings as the ratio of the dollar value of holdings in the firm scaled by the total value of the reported holdings of the hedge fund. If the fractional holdings in a target lie below the 30th percentile, it is denoted as representing a low share of the hedge fund portfolio (signalling it is of lesser importance to the hedge fund). In our sample, a 30th percentile holding of a hedge fund is 0.019% per firm. Next, for every target in our sample, we compute the total holdings by hedge funds for which this target is of low importance *Holding_connected_lowshare* and add this variable to Equation (5). We expect connected funds to be more willing to share information about targets in exchange for beneficial consideration from their prime brokers when their equity stakes in targets account for a smaller share of their whole portfolio.

The second measure is a hedge fund's specialisation in the target industry. For each hedge fund, we compute fractional holdings in the industry as the ratio of the total dollar value allocated to those firms in the same four-digit SIC code as the target, scaled by the total value of the reported holdings of the hedge fund. We say that a hedge fund

¹⁹Another interesting question is whether connected hedge funds are more willing to share information when they hold both the target and the acquirer. In such a setting, any losses on the side of the target may be more than compensated by gains from the acquirer. Such test is not feasible in our sample, as there are only three deals where connected funds have such cross-holdings.

does not specialise in that industry, hence the target is of lesser importance to the hedge fund, if the fund's fractional holdings in the industry are below the 30th percentile. In our sample, a 30th percentile holding of hedge funds is 0.345% per industry. We include total holdings in the target by connected hedge funds that do not specialize in the target industry *Holding_connected_lowsic* in Equation (5). We expect connected funds to be more willing to share information about targets in return for benefits from their prime brokers when they do not specialise in the target industry.

Finally, we consider the period the hedge fund held the target prior to the M&A deal. A lengthier target holding period may signal the fund is a long-term investor and consequently less inclined to share information with prime brokers if the potential outcome is underpayment in the M&A deal. Hedge funds that have only recently acquired stakes in the target may have interests less vested in the company, and the benefits of strong prime brokerage relations may outweigh the costs of diminished returns. Mirroring the previous specifications, we add *Holding_connected_shortperiod* to Equation (5) which measures total holdings by connected hedge funds invested in the target for not longer than one quarter before the announcement. We expect connected funds to be more willing to sacrifice potential target premiums and announcement returns when they have only been holding the target for a short period.

5.2 Importance of prime brokerage relations for the hedge fund

A hedge fund may be more willing to share sensitive information with its prime broker when the latter is of primary importance for fund operations. To assess this importance we use two different measures: (1) the number of prime brokers associated with a hedge fund company, and (2) the total hedge fund company assets serviced by a given prime broker.

Funds with multiple prime brokers exhibit less dependence on each individual broker, while a secure relationship is of more importance to hedge funds with only a single prime broker. Our expectation is that hedge funds with a sole prime broker may be more likely to share information, as the benefits of sustaining a cordial brokerage relationship may

outweigh any losses resulting from the potentially lower premiums paid in M&As. In similar fashion to the previous specifications, we include *Holdings_connected_singlePB* in Equation (5) capturing holdings by connected hedge funds that have only one prime broker. We expect connected funds to be more willing to share information when they have only one prime broker.

Since the holding information is at a hedge fund company level, the prime brokerage relations are also measured on a company level. If a company operates several hedge funds and each of these hedge funds has its own prime broker, the company is classified as having multiple prime brokers. At the same time, if a company has a large flagship fund and several small satellite funds, it may only be the relations with the flagship fund's prime broker that are of real material importance for the company, as despite the multiple connections, in practice the fund company is more reliant upon sustaining relations with the main prime broker. To account for this possibility, we use the share of the assets under management linked to a dominant prime broker as a proxy for the importance of hedge fund-prime broker relations. For each hedge fund company reporting prime brokers b , we compute the fraction of assets the prime broker services based on the size of constituent funds:

$$Frac_Assets_b = \frac{\sum_i Fund_AUM_i^b}{\sum_j Fund_AUM_j}, \quad (7)$$

where $Fund_AUM_j$ are assets under management of fund j within a given hedge fund company, and $Fund_AUM_i^b$ are the assets under management of fund i that reports prime broker b . We denote a prime broker as dominant if it services at least 70% of the assets of the company. We proceed to compute the total holdings of connected funds in the targets if the deal advisor is the dominant prime broke of the hedge funds *Holding_connected_dominant70*, and incorporate this variable in Equation (5). We expect that funds with a dominant prime broker are more willing to share information.

5.3 Hedge fund past performance and flow

Recent performance and fund flow are likely to influence a hedge fund’s willingness to share information with their prime broker, but predicting the direction of the effect is difficult ex-ante. Consider poorly performing funds where the marginal benefit of a larger M&A announcement return on their holdings in target is high. These funds may be reluctant to share information with their prime broker(s) if such sharing potentially harms performance. At the same time, poor performance is often followed by outflows. Hedge funds’ liquidity deteriorates and they become more reliant on their prime brokers to provide financing to sustain their operations. This enhances incentives for funds to foster good relationships with their prime brokers and to share information.

To evaluate the effect of hedge fund performance, we calculate the hedge-fund-company level monthly returns as the asset-weighted monthly returns across individual hedge funds managed by this company. We classify a hedge fund company to be poorly performing if its average return over the quarter preceding the M&A announcement date is below the 30th percentile of all hedge fund companies active in that quarter. In our sample, an average 30th percentile of the returns is -0.07% per month. We include an additional variable into Equation (5) capturing holdings in the target by poorly performing hedge funds *Holding_connected_lowret*.

To address the effect of fund flow, we first compute dollar flows for each fund i during month m using Equation (8), where $Fund_AUM_m^i$ denotes the assets under management of fund i at the end of month m , and Ret_m^i is the reported return for fund i during month m . We aggregate the monthly dollar flows for all individual hedge funds managed by the same hedge fund company j during quarter q to estimate quarterly flows. Following Agarwal et al. (2004), we scale company-level quarterly dollar flows by beginning-of-quarter company-level assets under management.

$$Fund_DollarFlow_m^i = Fund_AUM_m^i - Fund_AUM_{m-1}^i(1 + Ret_m^i) \quad (8)$$

$$QuarterDollarFlow_q^j = \sum_i \sum_m Fund_DollarFlow_m^i,$$

for months m in quarter q , and funds i in company j .

$$\begin{aligned}
 AUM_{q-1}^j &= \sum_i Fund_AUM_{q-1}^i \\
 Flow_q^j &= \frac{QuarterDollarFlow_q^j}{AUM_{q-1}^j}
 \end{aligned}
 \tag{9}$$

We say that a hedge fund company has a low flow if its flow over the quarter before the M&A announcement lies below the 30th percentile of all hedge fund companies in that quarter. In our sample, an average 30th percentile of quarterly flows is -0.78% per quarter. Similar to the previous specifications, we incorporate a separate variable in Equation (5) capturing holdings in the target by connected hedge fund companies with low flows, *Holding_connected_lowflow*.

5.4 Information sharing incentives: Results

Tables 10 to 12 report the results using the sub-samples of targets with high IA.²⁰ We report estimates only for the key variables of interest. The effects of the other control variables are similar to the results we report in previous tables and we omit their estimates for the sake of brevity. Overall, our findings consistently corroborate the view that hedge funds for which the target is of less importance in their portfolio are more willing to share information with their prime broker. The effects of prime brokerage importance and fund flows are pronounced for acquirer abnormal returns, also further supporting the ‘indirect toehold’ mechanism of information transmission.

Specifically, if a high IA target is deemed to be of low importance in the hedge fund’s portfolio, connected hedge fund holdings lead to a significantly lower premium (Table 10). The coefficients of -14.32, -11.54, and -60.65 on *Holding_connected_lowshare*, *Holding_connected_lowsic*, and *Holding_connected_shortperiod*, respectively, all exhibit significance at least at the 5% level. These effects are economically meaningful. For example, a one standard deviation increase in connected fund holdings with low target

²⁰We report the results using sub-samples of targets with low IA in the online Appendix Tables F1 to F3.

share leads to a premium reduction of 9.07 basis points. The fact holdings in a target are less important for the hedge fund limits losses from the holdings, implying hedge funds are more likely to share information that may adversely impact the target premiums, possibly in exchange for other (informal) benefits provided by their prime brokers. Importantly, this fund holding's effect is pronounced only for connected hedge funds and not for total holdings of funds with a low target share, low industry specialization, or a short holding period. This finding highlights the importance of the information transmission channel through the prime brokerage connection. Furthermore, holdings by connected funds with a short investment period in the target lead to significantly lower target abnormal returns (column (3) of Table 11). The estimated coefficient of -27.16 is significant at the 5% level. A one standard deviation increase in such connected fund holdings leads to a decrease of 3.04 bp in target abnormal returns for targets with higher IA.

Regarding the importance of prime brokerage relations for hedge funds, we find no incremental effect of holdings by connected hedge funds with a single or dominant prime broker on either premium or target abnormal returns. Holdings of hedge funds with the single prime broker, however, significantly increase bidder abnormal return (column (4) of Table 12). The corresponding coefficient of 1.32 is significant at the 1% level. A one standard deviation increase in fund holdings by connected hedge funds with a single prime broker increases acquirer abnormal returns by 1.05 bp.

Holdings by poor performing connected funds do not appear to affect premiums, target or acquirer abnormal returns any differently than holdings of all other connected funds. Holdings by funds with low flow lead to further increases in acquirer abnormal returns. The corresponding coefficient of 1.27 is significant at the 1% level (column (7) of Table 12). A one standard deviation increase in fund holdings by connected hedge funds with low flow increases acquirer abnormal returns by 1.11 bp. Again, it is important to note that the effects of the single prime broker and low flows are driven only by connected hedge fund holdings, while no relation can be discerned for the total holdings of all hedge funds.

[Tables 10 to 12 in here]

6 Importance of Information Sharing for the Bidder

The observable effects of information sharing depend on the initial information set of a bidder and the marginal benefit of each piece of information obtained through the ‘indirect toehold’ channel. Information sharing may be more important for the bidder when: (1) the target and bidder are from different industries, (2) multiple bidders are involved in the deal, (3) a higher fraction of payment is made in stock, and (4) during a merger wave.

A bidder who lacks on-going expertise in the target industry will obtain greater benefits from becoming informed than a rival bidder with more industry experience (Povel and Sertsios, 2014). Hence, the benefits to the bidder of incremental information obtained through connected advisors may be more substantial in situations when the bidder and target are from different industries. To test this proposition, we include the interaction term $Holding_connected \times Dif f_Ind$ in Equation (5). We expect information to have a greater impact when the target and bidder are from different industries.

Another factor affecting the benefits of information sharing is the number of bidders. Auction theory suggests that toehold bidders may secure a competitive advantage over rivals (Betton et al., 2009). Thus, the ‘indirect toehold’ generated by connected hedge funds may benefit bidders more in the presence of multiple bidders for the target. In a similar fashion to the previous specification, we include $Holding_connected \times Multi_bidder$ in Equation (5), where $Multi_bidder$ is a dummy variable that equals one if more than one bidder is involved in the deal. Information sharing is expected to be more important to the bidder in the presence of competing bidders.

Bidders tend to resort to stock payment if they are concerned about adverse selection on the target side (Hansen, 1987). Hence, the benefits of information sharing may be larger when bidders offer stock payment as the target is likely to be relatively opaque. We include $Holding_connected \times Pctstock$ in Equation (5), where $Pctstock$ is the percentage of stock payment in the deal consideration. We expect the effects of information sharing to be greater when the bidder offers a higher fraction of payment with stock.

Finally, information sharing may be more beneficial during merger waves, periods

characterized by noisy information and enhanced uncertainty (Duchin and Schmidt, 2013). Following Ahern and Harford (2014), we calculate the dollar value of mergers in each industry-pair of acquirer and target industries each year. We say that there is a merger wave in an industry pair if the dollar value of all deals in this pair of industries in a year is above the 70th percentile. We then add the interaction term $Holding_connected \times Merger_wave$ into Equation (5). Information sharing is likely to be more important to the bidder during merger waves.

The results for acquirer abnormal returns in deals involving targets with high IA (Table 13) support our conjectures regarding the scenarios in which information sharing is important to bidders. The positive effect of connected hedge fund holdings is amplified if there are multiple bidders involved, when bidders use higher stock payment, and in those industries experiencing merger waves. The corresponding β^* coefficients of 1.69, 1.17, and 1.01 are positive and significant in columns (2)-(4). Once again, these effects are exclusively associated with connected hedge fund holdings, while the interactions with total hedge fund holdings are insignificant.²¹

[Table 13 in here]

7 Extensions

7.1 Insider trading

Whenever information flows (especially in an informal way) between different market participants around the time of information sensitive corporate events, an important consideration relates to the use of this information, in particular, if it increases the likelihood of insider trading by any of the counterparties involved. This motivates us to examine the possibility of insider trading activity involving our sample of M&As. We directly examine the litigation releases from the U.S. Securities and Exchange Commission (SEC) relating to insider trading around M&As and match the litigation

²¹We find no significant impact of connected fund holdings on premium or target abnormal returns when information sharing is more important for the bidder, and report these results in online Appendix Tables G1 and G2.

releases with the target names in our sample. We identify 65 instances of insider trading, accounting for 7.14% of deals. Following analysis of the corresponding SEC releases and complaints, we compile the following categories of the source of information leakage: senior management, including the board of directors of the target (acquirer), personal connections of senior management of target (acquirer), other employees in target (acquirer), employees in affiliated non-investment bank companies (such as audit firms or legal advisors), employees in affiliated investment banks, personal connections of employees in affiliated investment banks, hedge funds, unknown parties, and others. Table 14 reports the resulting classification. The majority of cases involve employees in affiliated companies, with 17 stemming from non-investment bank firms and 15 from investment banks and their connected individuals, together accounting for almost 50% of the insider trading cases. A total of 16 (14) cases are related to senior management, connected individuals, or other employees in the target (acquirer) firm, accounting for 24.6% (21.5%) of all cases. Notably, only one case involves insider trading by a hedge fund, indicating that such activity is uncommon (or more difficult to detect) in M&A transactions. Hedge funds are also not mentioned in any other cases relating to these insider trading investigations.

Given this detailed analysis of the actual insider trading cases, we do not expect that connected hedge fund involvement influences the probability of insider trading. Nevertheless, we formally evaluate the effects of connected fund holdings on this probability by estimating a probit model for the probability of insider trading on connected funds' holdings and the other control variables used in Equation (6). We find neither a significant effect of connected fund ownership on the probability of insider trading, nor a significant effect of any other deal characteristics, apart from some advisor fixed effects.²² Overall, connected funds do not appear to either use or share private information about M&As for the purposes of (detectable) insider trading.²³

[Table 14 in here]

²²We report the results in online Appendix H1.

²³Our results differ from those in Dai et al. (2017). These authors focus on insider trading by hedge funds with a short-term investment horizon as a group, while we are interested in whether connections via prime broker/advisor lead to information leakage to/from hedge funds.

7.2 Short-selling in acquirers

Short-selling the acquirer’s stock is another way traders generate profits around M&A announcements, and hedge funds are known for actively adopting short-selling strategies (Appel et al., 2020). If connected hedge funds receive information about the upcoming deal, they may short-sell the bidder’s equity in advance of the public announcement and/or increase their level of short selling. In contrast, if connected hedge funds envision information sharing with the bidder, they may refrain from such (strong) short-selling activity in the bidder’s stock. These possibilities motivate the examination of the pattern(s) of short-selling in the bidder’s stock around the M&A announcement and relate any such patterns to the holdings of connected hedge funds. Following Dai et al. (2017), we compute the monthly short interest ratio (SIR) for each acquirer as described in Equation (10), where $SHORTINT_ADJ_t$ is the adjusted short-selling in an acquirer in month t and SH_OUT_{t-1} is the adjusted number of shares outstanding in month $t-1$.

$$SIR_t = \frac{SHORTINT_ADJ_t}{SH_OUT_{t-1}} \quad (10)$$

We then compute the average short interest ratio for each bidder over a six month period, leaving a three-month gap prior to the announcement using Equation (11), where t is the month of the deal announcement. Finally, we compute the abnormal SIR ($ASIR$) for each bidder in months $t-1$, t , and $t+1$ using Equation (12).

$$AV_SIR_PAST = \frac{1}{6} \sum_{k=4}^9 SIR(t-k) \quad (11)$$

$$ASIR_t = \frac{SIR_t}{AV_SIR_PAST} \quad (12)$$

Table 15 reports the descriptive statistics of SIR , $ASIR_{t-1}$, $ASIR_t$, and $ASIR_{t+1}$. On average, targets with high IA have a significantly higher short-interest ratio than those with a low IA (0.072 versus 0.048). However, they exhibit no difference in their abnormal short-selling ratio around the month of the acquisition announcement.

To evaluate the potential effects of connected fund holdings on abnormal short

selling of acquirers' stock, we regress $ASIR_{t-1}$, $ASIR_t$, and $ASIR_{t+1}$ on the holdings of connected funds and other controls as in Equation (5). Results in Table 16 indicate that connected fund ownership has no significant effect on abnormal short-selling in acquirers. Interestingly, the effect of the overall hedge fund holdings on the post-announcement $ASIR_{t+1}$ in deals with high IA targets is positive and marginally significant. This captures the general activity of merger arbitrage hedge funds that are likely to more intensively short-sell bidders' stock (Mitchell et al., 2004).

[Tables 15 and 16 in here]

7.3 Post-merger performance

We now consider certain longer term implications for the bidder, focusing on post-merger performance of the merged firm. Bodnaruk et al. (2009) document a lower post-merger profitability for mergers in which the advisor to the bidder has a stake in the target firm. Could connected fund holdings in the target similarly lead to poor performance of the merged firm? To answer this question, we use three measures to assess the post-merger performance of the firm: (1) the return on assets (ROA), (2) the return on equity (ROE), and (3) the net profit margin, measured by the ratio of net income to net sales (NPM). We regress these profitability measures, computed at the end of the first fiscal year after the acquisition announcement, on connected funds' holdings and other controls as in Equation (5) for completed deals only. Table 17 shows no significant impact of connected hedge funds' holdings on the firm's future profitability. Hence, unlike direct holdings by the advisors, connected hedge fund holdings in the target are not associated with reduced future profitability of the merged firm.

[Table 17 in here]

8 Robustness

8.1 Propensity score matching

In this section, we control for other possible (unobserved) differences between deals with and without connected fund holdings using a propensity score matching technique. We examine completion, duration, premium, and abnormal returns for deals with connected fund holdings compared with a matched control sample of deals in which such holdings are absent.

The first-stage probit regression relates the probability of having connected fund holdings to a set of explanatory variables, including: the book-to-market value of both the target and acquirer, acquirer size, the asset size ratio of the target to the acquirer, the ratio of deal value to acquirer market capitalisation, mutual fund holdings, percentage of the payment made in cash, and a dummy indicating the target and the acquirer are from different industries. Deals with connected fund holdings and other deals are matched using one-to-one matching without replacement based on the estimated propensity score. We retain only those matches for which the difference in the score is smaller than 0.01, resulting in a total of 59 matched pairs. The results in Panel A of Table 18 show that the resulting treated and control groups are indistinguishable in terms of virtually all characteristics used as the basis for matching.

In Panel B of Table 18 we compare the differences across the two groups of deals in terms of the likelihood of deal completion, deal duration, premium paid, as well as the target's and acquirer's abnormal returns on the announcement day, and cumulative abnormal returns over three other windows $[-1,1]$, $[-3,3]$, and $[-5,5]$.

Deals with connected fund holdings have significantly lower premiums and smaller target abnormal returns in all windows. There is no evidence of significant differences in deal duration and acquirer abnormal returns between these two deal groups. The effect on the completion probability cannot be assessed, since our strict matching approach leads to having only completed deals in the paired sample.

Overall, the matching results support our central conclusion: the pattern of

information flow emanates from hedge funds holding the target through their prime brokers acting as deal advisors to the bidder, leading to improved deal outcomes for the bidder.

[Table 18 in here]

8.2 Pseudo hedge fund-prime broker connections

One potential concern in our analysis could be the endogeneity of hedge fund-prime broker connections. To address this issue, in the spirit of instrumental variable estimation, we define a pseudo-relationship between hedge funds and prime brokers and proceed to repeat the analysis using such instrumented connections instead of the actual ones.

For each connected advisor in our sample, we estimate a probit regression for the probability that a hedge fund has this advisor as its prime broker. The dependent variable is a dummy indicating the use of this advisor as a prime broker at the hedge fund level. We use hedge fund size, domicile, and strategy as explanatory variables. In total, we have 4,155 hedge funds in our sample. In the next step, we predict the hedge fund connection to each advisor. We say a hedge fund is estimated to be connected with a given advisor if the probability of such connection is above the 70th percentile for each advisor. Hence, each hedge fund may have multiple estimated connected advisors. We then aggregate such individual fund level pseudo-connections at a company level to use together with the holdings information. This yields 495 deals with pseudo-connected fund holdings (compared to 412 truly connected deals in the main sample), and the average holdings of such pseudo connected funds in the targets are 1.5% (which is comparable with 2% holdings by hedge funds truly connected via their actual prime brokers). We then use this pseudo-relationship to measure connected hedge fund holdings in the target firm.

The complete set of results is reported in the online Appendix Tables I1 to I5. We find that the advisor's pseudo connection to hedge funds significantly increases the likelihood of the advisor being selected. A firm is also more likely to be chosen as a target if it has pseudo-connected hedge fund holdings. Pseudo connected funds significantly decrease the holdings in targets and acquirers before the deal announcement. The pseudo-connected

hedge fund holdings significantly increase deal completion and reduce the target premium for targets with high IA. All these results are consistent with M&A deals exhibiting information flow patterns consistent with the ‘indirect toehold’ scenario.

9 Conclusion

This paper analyses the potential channels of information flow between bidders, advisors, and their connected hedge funds and its impact on the choice of the deal advisor, target, and the final deal outcome in M&As. We define connected hedge funds as those that hold equity in the target firm before an M&A announcement while having a prime broker who serves as the bidder’s advisor on the M&A deal. Using a sample of 910 US public M&A transactions between 2000 to 2019, we find that the existence connected hedge fund holdings in the target is a positive and significant determinant of the likelihood of an advisor being chosen to facilitate the deal. Two pathways lead to this relation. On the one hand, bidders are more likely to select connected advisors. On the other hand, once selected, advisors are also more likely to recommend a connected target. The connected hedge fund holdings in a target are positively associated with the likelihood of deal completion and acquirer abnormal returns, especially for targets characterised by high levels of information asymmetry.

These findings are consistent with an ‘indirect toehold’ information flow mechanism. Acquirers appear to choose advisors connected to hedge funds that hold the target to obtain an ‘indirect toehold’ in target firms. To justify their fees and increase the likelihood of fostering a profitable future relationship, advisors possess incentives to help the bidder. They are also motivated to exploit any private information obtained from their affiliated funds with holdings in the target firm, thereby helping bidders to reduce information asymmetry to enhance their bargaining power during negotiations. This leads to a higher probability of completing the merger deal successfully, as well as higher acquirer abnormal returns upon public announcement of the deal.

Our evidence indicates that affiliated hedge funds seem more likely to share

information with their prime brokers when the target is of diminished importance in the overall hedge fund portfolio, thereby limiting any potential losses for hedge funds due to lower announcement returns. Hedge funds are also more likely to share information if maintaining strong prime-brokerage relations with a specific advisor is more important to the fund. This situation arises when the advisor is the single prime broker for a hedge fund company, or when hedge funds experience outflows and become more reliant on prime brokerage support to finance their activities. The effects of the ‘indirect toehold’ are more pronounced when the acquisition of the relevant information is of greater importance for the bidder. This happens when multiple bidders compete for the deal, when the bidder uses a higher fraction of stock for payment, and in an economic environment characterised by a merger wave in the target-acquirer industry pair.

Our findings contribute to research on information sharing between prime brokers and their clients ([Chung and Kang, 2016](#); [Kumar et al., 2020](#); [Qian and Zhong, 2018](#)), as well as to the literature showing that financial advisors reduce information asymmetry between targets and acquirers ([Officer, 2007](#); [Leledakis et al., 2021](#)). We highlight one particular channel through which such a reduction can be achieved, namely utilising an ‘indirect toehold’ through connected hedge funds. Overall, our analysis provides novel insights into the role of advisors and their connections to other financial institutions in M&A outcomes.

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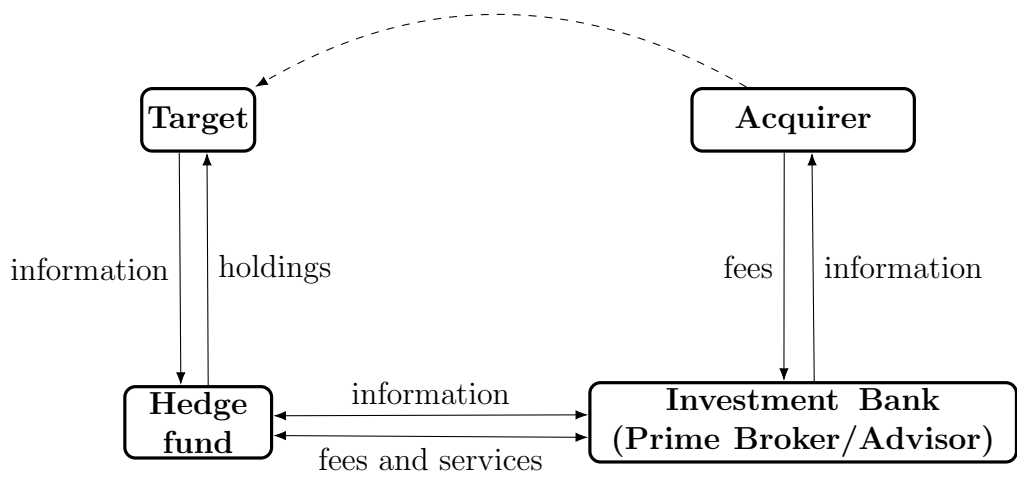
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The figure depicts the possible directions of information flow between target firms, hedge funds, investment banks, and acquiring firms in M&A.

Figure 1: The information flow in M&A.

Tables

Table 1: Predicted directions of effects of the information flow

The table summarises the predicted directions of the effects of the information flow between acquirers, advisors, connected hedge funds, and targets on different characteristics of M&A deals under two scenarios of indirect toehold and information advantage.

	Indirect Toehold	Information Advantage
Probability to choose a connected advisor	↗	↘
Probability to choose a target with connected fund holdings	↗	↘
Deal duration	↘	↘
Deal completion probability	↗	↗
Premium	↘	↗
Target announcement abnormal return	↘	↗
Acquirer announcement abnormal return	↗	↘
Pre-announcement hedge fund holdings	↘ or =	↗

Table 2: Variable description

This table describes the variables used in this paper in alphabetical order.

Variables	Description
Abnormal_fees	The difference between the percentage fees and the average percentage fees for the two deals with the closest deal size in the same industry over the past two years.
ACAR	Acquirer cumulative abnormal returns over event windows of [0], [-1,1], [-3,3], [-5,5], expressed in decimals.
Acquisition times	The number of times an advisor served as an acquirer's advisor one year before the acquisition announcement.
Acquisition value	The logarithm of the total value of all acquisitions that an advisor served as an acquirer's advisor one year before the acquisition announcement.
Amihud	The average Amihud illiquidity measure over the year prior to the acquisition announcement.
ASIR	The abnormal short interest for acquirers in the previous, current, and next month of acquisition announcement.
B/M	The book-to-market value of equity of a target or acquirer measured at the end of last fiscal year before the acquisition announcement.
Chosen	A dummy variable that equals 1 if an advisor is hired or a target is chosen for a particular deal and 0 otherwise.
Completion	A dummy variable that equals 1 if the deal is completed and 0 otherwise.
Connected	A dummy variable equals 1 if an advisor is the prime broker of a hedge fund with holdings in the target firm and 0 otherwise.
COVER	The number of analysts for the target in the year before the acquisition announcement.
Deal value	Total value of the consideration paid by the acquirer in a billion dollars.
Diff_Ind	A dummy variable equals 1 for a deal where bidder and target are from different 3-digit SIC code industries and 0 otherwise.
Duration	The number of months between the deal announcement and the deal final outcome.
ERR	The analyst forecast error for the target in the year before the acquisition announcement.
Expertise	A dummy variable equals 1 if the advisor served as an acquirer's advisor in an acquisition that involved a target from the same two-digit SIC industry as the target of the current acquisition and 0 otherwise.
Holding_acquirer	Hedge funds' holdings in the acquirer one quarter before the acquisition announcement.
Holding_connected	Holdings of connected hedge funds in a target firm one quarter before the acquisition announcement.
Holding_total	Holdings of all hedge funds in a target firm one quarter before the acquisition announcement.
Holding_MF	Mutual fund holdings in a target or acquirer firm one quarter before the acquisition announcement.
Δ Holding	Changes in holdings of each hedge fund in target or acquirer firms one quarter before or after the acquisition announcement.
IA	The target firm's information asymmetry measure based on five variables (<i>Amihud</i> , <i>SPREAD</i> , <i>Size</i> , <i>COVER</i> , <i>ERR</i>).
IMR	The Inverse Mills Ratio.
Insider trading	A dummy variable equals 1 if there is insider trading in a deal and 0 otherwise.
Leverage	The equity-to-assets ratio of a target firm at the end of last fiscal year before the acquisition announcement.
Hostile	A dummy variable equals 1 for a hostile deal and 0 otherwise.
Merger of equals	A dummy variable equals 1 when the target and acquirer are considering their merger a merger of equals and 0 otherwise.
Merger_wave	A dummy variable equals 1 if the dollar value of mergers in each target and acquirer industry pair in a year is above the 30th percentile.
Multi-bidder	A dummy variable equals 1 if more than one bidder is involved and 0 otherwise.
NPM	The net profit margin of the new firm at the end of the first fiscal year after the acquisition announcement.
Number of bidders	The number of bidders involved in a deal.
Pctcash	The percentage of the cash payment in the consideration.
Pctstock	The percentage of the stock payment in the consideration.
P/E	The price-earnings ratio in the year prior to the acquisition announcement.
Premium	The premium paid one week (four weeks) before the acquisition announcement.
Prior advisor	A dummy variable equals 1 if the advisor served as a M&A advisor for the acquirer one year before the acquisition announcement and 0 otherwise.
RELSIZE	The ratio of the target's asset size to the acquirer's asset size at the end of the last fiscal year before the acquisition announcement.
ROA	The return on asset of the target at the end of last fiscal year before the acquisition announcement.
ROE	The return on equity of the target at the end of last fiscal year before the acquisition announcement.
Sales	The sales growth rate in the year prior to the acquisition announcement.
Δ Shares	Changes in shares of a hedge fund portfolio allocated to target or acquirer firms one quarter before or after the acquisition announcement.
SIR	The short interest ratio for an acquirer measured as the short selling in each month divided by the numbers of shares outstanding in the previous month.
Size	The logarithm of the book value of total assets in the year prior to the acquisition announcement.
SPREAD	The average bid-ask spread over the year prior to the acquisition announcement.
Tangible	The ratio of total tangible assets to total assets at the end of last fiscal year before announcement.
TCAR	Target cumulative abnormal returns over event windows of [0], [-1,1], [-3,3], [-5,5], expressed in decimals.
Tender	A dummy variable taking the value of 1 for tender offers and 0 otherwise.
Termination fee	The amount of the termination fee paid by the acquirer in a billion dollars.
Toehold	The fraction of target shares held by the acquirer 6 months before the acquisition announcement.
Valpct	The ratio of deal value to acquirer market capitalization at the end of last fiscal year before the acquisition announcement.

Table 3: Descriptive statistics of deal characteristics

This table reports the descriptive statistics of deal characteristics based on whether they have connected hedge fund holdings in the target firm. We define a fund as a connected fund if the advisory bank is the prime broker of a hedge fund. *Holdings_connected* (*Holdings_unconnected*) represents the holdings of connected (unconnected) hedge funds in a target firm one quarter prior the acquisition announcement. *Duration* is the number of days between the deal announcement and the final deal outcome. *Completion* is a dummy variable that equals one if the deal is completed. *Premium* is the premium paid one week (four weeks) before the acquisition announcement. *TCAR* and *ACAR* are the cumulative abnormal returns on target and acquirer over an event window of [0], [-1,1], [-3,3], and [-5,5], respectively. Other variables are summarized in Table 2. We conduct a t-test for differences in means between deals with and without connected fund holdings. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Deals with connected fund holdings						Deals without connected fund holdings						t-test
	Mean	Median	SD	Min.	Max.	N	Mean	Median	SD	Min.	Max.	N	
Holdings_connected	0.020	0.012	0.025	0.000	0.189	412	0.000	0.000	0.000	0.000	0.000	498	17.572***
Holdings_unconnected	0.116	0.096	0.083	0.000	0.503	412	0.114	0.092	0.094	0.000	0.621	498	0.345
Holdings_acquirer	0.106	0.083	0.090	0.000	0.581	412	0.096	0.080	0.088	0.000	0.581	498	1.723*
Toehold	0.004	0.000	0.039	0.000	0.471	412	0.003	0.000	0.026	0.000	0.410	498	0.510
Duration	4.830	3.900	3.395	1.000	23.100	412	4.516	3.933	3.324	0.267	38.700	498	1.318
Completion	0.881	1.000	0.324	0.000	1.000	412	0.888	1.000	0.316	0.000	1.000	498	-0.304
Premium (one week)	0.375	0.303	0.373	-0.847	2.605	412	0.375	0.309	0.386	-0.507	3.222	498	-0.001
Premium (four weeks)	0.392	0.319	0.360	-0.864	2.313	412	0.411	0.311	0.441	-0.573	3.471	498	-0.676
TCAR	0.181	0.107	0.245	-0.200	1.748	412	0.196	0.102	0.302	-0.404	2.718	498	-0.789
TCAR[-1,1]	0.243	0.197	0.265	-0.210	2.308	412	0.273	0.200	0.328	-0.432	3.074	498	-1.489
TCAR[-3,3]	0.256	0.212	0.263	-0.255	2.300	412	0.282	0.214	0.328	-0.510	2.908	498	-1.296
TCARR[-5,5]	0.261	0.215	0.267	-0.338	2.245	412	0.288	0.213	0.335	-0.484	3.042	498	-1.348
ACAR	-0.013	-0.004	0.063	-0.325	0.276	412	-0.005	-0.004	0.045	-0.271	0.307	498	-2.117**
ACAR[-1,1]	-0.012	-0.009	0.075	-0.333	0.272	412	-0.009	-0.008	0.060	-0.342	0.286	498	-0.576
ACAR[-3,3]	-0.012	-0.009	0.080	-0.324	0.309	412	-0.009	-0.011	0.063	-0.383	0.294	498	-0.737
ACAR[-5,5]	-0.015	-0.011	0.087	-0.355	0.302	412	-0.010	-0.010	0.071	-0.393	0.367	498	-1.040
ROA_t	-0.004	0.007	0.056	-0.743	0.086	412	-0.018	0.002	0.069	-0.743	0.086	498	3.214***
Leverage_t	0.415	0.416	0.293	-1.278	0.987	412	0.364	0.314	0.320	-1.278	0.999	498	2.497**
B/M_t	0.450	0.426	0.861	-10.145	5.113	412	0.679	0.638	0.503	-1.332	3.488	498	-4.999***
Tangible_t	0.804	0.880	0.210	0.127	1.000	412	0.889	0.975	0.169	0.249	1.000	498	-6.733***
Size_a	8.883	8.686	1.712	3.082	12.956	412	7.682	7.360	2.058	2.306	12.483	498	9.449***
B/M_a	0.419	0.357	0.309	-0.610	1.707	412	0.532	0.495	0.326	-0.236	2.010	498	-5.309***
RELSIZE	0.735	0.266	3.109	0.000	37.120	412	0.430	0.148	1.804	0.000	37.120	498	1.847*
Valpct	0.623	0.317	1.382	0.001	15.294	412	0.353	0.154	0.837	0.001	15.294	498	3.633***
Holding_MF	0.506	0.446	0.771	0.000	9.991	412	0.271	0.099	0.549	0.000	9.991	498	5.361***
Pctcash	0.622	0.733	0.400	0.000	1.000	412	0.530	0.500	0.440	0.000	1.000	498	3.285***
Hostile	0.022	0.000	0.146	0.000	1.000	412	0.010	0.000	0.100	0.000	1.000	498	1.440
Diffind	0.396	0.000	0.490	0.000	1.000	412	0.390	0.000	0.488	0.000	1.000	498	0.187
Merger of equals	0.027	0.000	0.161	0.000	1.000	412	0.012	0.000	0.109	0.000	1.000	498	1.625
Tender	0.192	0.000	0.394	0.000	1.000	412	0.165	0.000	0.371	0.000	1.000	498	1.065
Deal value (\$B)	6.140	1.960	12.493	0.012	79.406	412	0.815	0.247	2.303	0.008	35.274	498	9.323***
Termination fee (\$B)	0.108	0.000	0.365	0.000	3.500	412	0.014	0.000	0.161	0.000	3.500	498	5.166***
IA	1.684	1.000	1.548	0.000	5.000	412	3.263	4.000	1.543	0.000	5.000	498	-15.342***
Number of bidders	1.073	1.000	0.287	1.000	3.000	412	1.062	1.000	0.294	1.000	4.000	498	0.545
Number of advisors	1.840	1.000	1.319	1.000	11.000	412	0.777	1.000	0.596	0.000	4.000	498	16.102***
Number of connected HFs	5.340	4.000	5.305	1.000	38.000	412	0.000	0.000	0.000	0.000	0.000	498	22.465***
Number of unconnected HFs	20.743	18.000	13.718	0.000	89.000	412	10.100	7.000	9.176	1.000	70.000	498	13.948***

Table 4: Choice of the advisor

This table reports the results from Equation (1), examining the acquirer's choice of advisors in M&A. Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if an advisor is hired by the acquirer for the operation and zero otherwise. *Connected* is a dummy variable that equals one if an advisor is the prime broker of a hedge fund with holdings in the target firm and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's connected hedge funds in the target firm one quarter before the acquisition announcement. *Abnormal_fees* is the abnormal fees paid by the acquirer. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low	(3) IA_high	(4) IA_low
Connected (β_1)	4.548*** (0.394)	4.177*** (0.145)	3.908*** (0.553)	4.174*** (0.256)
Holding_connected(β_2)	10.723*** (4.116)	2.825 (6.140)	35.564*** (11.476)	3.945 (10.529)
Abnormal_fees			-0.035 (0.064)	-0.010 (0.062)
Connected \times Abnormal_fees (β_1^*)			-1.350*** (0.482)	-0.024 (0.593)
Holding_connected \times Abnormal_fees (β_2^*)			76.713** (29.959)	4.672 (43.085)
Acquisition times	0.018** (0.008)	-0.011* (0.006)	0.018** (0.008)	-0.011* (0.006)
Acquisition value	-0.026 (0.016)	0.085*** (0.015)	-0.026 (0.016)	0.085*** (0.015)
Prior advisor	0.676** (0.288)	1.276*** (0.151)	0.676** (0.288)	1.277*** (0.151)
Expertise	0.719*** (0.078)	0.471*** (0.063)	0.718*** (0.078)	0.471*** (0.063)
IMR_holding	0.003 (0.002)	0.000 (0.002)	0.003 (0.002)	0.000 (0.002)
IMR_bigbank	-0.003** (0.001)	-0.000 (0.001)	-0.003** (0.001)	-0.000 (0.001)
Constant	-2.464*** (0.416)	-3.452*** (0.250)	-2.435*** (0.420)	-3.453*** (0.251)
R-squared	0.361	0.599	0.362	0.599
Number of deals	323	541	323	541
Observations	16,034	26,817	16,034	26,817
Industry, Year FE	Yes	Yes	Yes	Yes

Table 5: Change of the advisor

This table reports the results from Equation (2), examining the acquirer's change of advisors in M&A. Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if a new advisor is hired by the acquirer for the operation and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's connected hedge funds in the target firm one quarter before the acquisition announcement. *Abnormal_fees* is the abnormal fees paid by the acquirer. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low	(3) IA_high	(4) IA_low
Holding_connected (β)	65.004*** (21.857)	6.070 (5.053)	253.575*** (91.961)	11.646 (8.492)
Holding_total	-0.121 (2.257)	-2.119* (1.177)	-11.754 (10.056)	-4.005* (2.272)
Abnormal_fees			1.646 (1.115)	0.545 (0.606)
Holding_connected \times Abnormal_fees (β^*)			180.288** (90.843)	9.454 (11.781)
Holding_total \times Abnormal_fees			-10.409 (8.552)	-3.287 (3.090)
Holding_acquirer_t1	1.876 (1.806)	3.306 (2.052)	0.277 (1.677)	3.188 (2.034)
Toehold	-	-0.123*** (0.026)	-	-0.124*** (0.027)
Deal value	0.039 (0.541)	-0.010 (0.013)	0.307 (0.527)	-0.012 (0.012)
Termination fee	-50.163 (48.763)	-0.042 (0.302)	-80.848 (49.455)	-0.015 (0.292)
RELSIZE	2.156* (1.243)	0.096 (0.230)	2.111* (1.125)	0.103 (0.231)
Pctcash	0.278 (0.609)	0.163 (0.291)	0.061 (0.561)	0.145 (0.292)
Hostile	-	0.612 (0.672)	-	0.578 (0.691)
Diff_Ind	0.336 (0.376)	0.123 (0.281)	0.363 (0.336)	0.108 (0.285)
Merger of equals	-	-	-	-
Tender	-0.561 (0.430)	-0.144 (0.291)	-0.733* (0.440)	-0.113 (0.304)
Number of bidders	-	-0.682 (0.537)	-	-0.653 (0.543)
IMR_holding	0.022* (0.012)	-0.013* (0.008)	0.020* (0.011)	-0.013* (0.008)
IMR_bigbank	-0.018* (0.011)	-0.001 (0.005)	-0.012 (0.011)	-0.000 (0.006)
Constant	-0.702 (1.089)	1.404 (1.047)	1.040 (1.780)	1.642* (0.978)
R-squared	0.215	0.137	0.274	0.141
Number of deals	80	202	80	202
Industry, Year FE	51	Yes	Yes	Yes

Table 6: Choice of the target

This table reports the results from Equation (3), examining the acquirer's choice of targets in M&A. Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if a firm is chosen to be the target and zero otherwise. *Connected* is a dummy variable that equals one if a firm is held by hedge funds whose prime broker is the advisor and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's connected hedge funds in the firm one quarter before the acquisition announcement. *Abnormal_fees* is the abnormal fees paid by the acquirer. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low	(3) IA_high	(4) IA_low
Connected (β_1)	0.983*** (0.154)	1.196*** (0.087)	1.291*** (0.337)	1.244*** (0.141)
Holding_connected(β_2)	2.778 (2.895)	0.203 (1.507)	-8.556 (5.698)	-2.910 (2.865)
Abnormal_fees			0.041 (0.115)	-0.030 (0.136)
Connected \times Abnormal_fees (β_1^*)			0.350 (0.307)	0.095 (0.219)
Holding_connected \times Abnormal_fees (β_2^*)			-14.503** (6.498)	-6.040 (4.881)
Size	-0.109*** (0.035)	0.039 (0.024)	-0.108*** (0.035)	0.039 (0.024)
B/M	0.020 (0.041)	-0.139** (0.067)	0.020 (0.041)	-0.138** (0.067)
ROE	0.077 (0.060)	-0.023 (0.070)	0.074 (0.060)	-0.013 (0.067)
Leverage	0.151 (0.092)	0.011 (0.116)	0.142 (0.092)	0.015 (0.116)
Tangible	0.102 (0.274)	-0.166 (0.190)	0.100 (0.272)	-0.171 (0.190)
Sales	-0.060 (0.054)	-0.180 (0.136)	-0.059 (0.054)	-0.176 (0.135)
P/E	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
IMR_holding	-0.001 (0.004)	-0.000 (0.003)	-0.001 (0.004)	-0.000 (0.003)
IMR_bigbank	-0.001 (0.002)	0.005** (0.002)	-0.001 (0.002)	0.005** (0.002)
Constant	0.002 (0.758)	-1.136 (0.706)	-0.035 (0.756)	-1.109 (0.710)
R-squared	0.037	0.087	0.039	0.087
Observations	1,884	3,064	1,884	3,064
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table 7: Changes in hedge fund holdings

This table reports the results from Equation (4) for the changes in the hedge fund holdings in a target or acquirer. Panel A and B report the changes in holdings one quarter before or after the deal announcement, respectively ($\Delta Holding_{t-1}$ and $\Delta Holding_{t+1}$). Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. *Connected* is a dummy variable that equals one if a hedge fund's prime broker is also the advisory bank in a deal and zero otherwise. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)	(2)	(3)	(4)
	in target		in acquirer	
	IA_high	IA_low	IA_high	IA_low
Panel A: $\Delta Holding_{t-1}$				
Connected (β)	-0.003 (0.051)	-0.014 (0.013)	0.023 (0.020)	-0.001 (0.006)
Constant	1.237*** (0.208)	1.068*** (0.223)	0.309*** (0.088)	1.273*** (0.021)
R-squared	0.495	0.182	0.202	0.089
Number of deals	345	565	323	523
Deal and Fund FE	Yes	Yes	Yes	Yes
Panel B: $\Delta Holding_{t+1}$				
Connected (β)	0.109 (0.174)	-0.026 (0.020)	0.031 (0.048)	-0.005 (0.009)
Constant	0.126 (0.198)	-0.568*** (0.133)	-3.955*** (0.138)	0.388* (0.199)
R-squared	0.499	0.211	0.948	0.153
Number of deals	153	317	195	390
Deal and Fund FE	Yes	Yes	Yes	Yes

Table 8: Deal duration and completion

This table reports the results from Equation (5) for the impact of connected fund holdings on deal duration and completion. Columns (1), (3), (5), (7) and (2), (4), (6), (8) use sub-samples of targets with information asymmetry above or below the median separately. *Duration* is the number of months between the deal announcement and the deal outcome. *Completion* is a dummy variable that equals one if the deal is completed. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Abnormal_fees* is the abnormal fees paid by the acquirer. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Duration		Completion		Duration		Completion		Duration		Completion		Duration		Completion	
	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low
Holding_connected (β)	-9.527 (6.511)	2.748 (9.182)	19.066** (9.693)	17.140** (6.929)	-0.586 (12.645)	-3.338 (13.111)	137.809** (65.761)	31.366** (12.842)								
Holding_total	1.306 (1.984)	-1.190 (1.735)	5.600** (2.654)	-0.473 (1.189)	2.876 (4.356)	-3.174 (3.865)	7.451 (11.326)	3.549 (2.325)								
Abnormal_fees					-0.091 (0.334)	0.724 (1.069)	2.498*** (0.753)	-0.851 (0.526)								
Holding_connected \times Abnormal_fees (β^*)					8.235 (11.088)	-10.657 (20.404)	82.440* (45.405)	21.353* (12.772)								
Holding_total \times Abnormal_fees					1.448 (2.931)	-3.275 (5.063)	-1.870 (8.753)	5.691** (2.822)								
Holding_acquirer	-3.617 (2.353)	2.839 (2.086)	0.948 (1.844)	-3.309*** (1.082)	-3.515 (2.342)	3.023 (2.071)	1.822 (2.979)	-3.677*** (1.106)								
Toehold	0.197*** (0.038)	0.121*** (0.035)	0.028 (0.038)	-	0.195*** (0.036)	0.122*** (0.035)	-0.055 (0.045)	-								
Deal value	-0.129 (0.281)	0.042*** (0.015)	5.589 (3.880)	-0.003 (0.010)	-0.159 (0.304)	0.041*** (0.015)	4.157 (4.625)	-0.005 (0.011)								
Termination fee	-3.288 (20.371)	0.853 (0.558)	-9.261 (32.885)	-0.557* (0.309)	-2.152 (21.000)	0.864 (0.561)	-2.120 (54.251)	-0.552* (0.322)								
RELSIZE	0.077*** (0.025)	-0.068* (0.040)	0.574 (0.447)	-0.015 (0.032)	0.077*** (0.025)	-0.072* (0.043)	0.525 (0.372)	-0.005 (0.031)								
Pctcash	-1.544* (0.913)	0.295 (0.542)	0.723 (0.627)	0.029 (0.280)	-1.530 (0.929)	0.309 (0.548)	-0.000 (0.643)	-0.072 (0.300)								
Hostile	-	10.549*** (1.959)	-	-	-	10.520*** (1.987)	-	-								
Diff_Ind	-0.420 (0.366)	-0.418 (0.363)	-0.179 (0.494)	0.046 (0.204)	-0.426 (0.372)	-0.424 (0.361)	-0.537 (0.593)	0.069 (0.210)								
Merger of equals	5.619*** (2.109)	1.549 (1.700)	-	-0.325 (0.628)	5.374** (2.104)	1.605 (1.634)	-	-0.448 (0.656)								
Tender	-1.727*** (0.380)	-2.125*** (0.418)	-0.631 (0.595)	1.015*** (0.330)	-1.681*** (0.408)	-2.141*** (0.418)	-0.695 (0.691)	0.973*** (0.339)								
Number of bidders	-2.502 (1.525)	1.061 (1.131)	-	-1.687*** (0.387)	-2.304 (1.444)	1.110 (1.119)	-	-1.942*** (0.436)								
IMR_holding	-0.008 (0.013)	0.004 (0.016)	-0.019 (0.019)	0.001 (0.008)	-0.008 (0.013)	0.005 (0.016)	-0.026 (0.018)	-0.001 (0.009)								
IMR_bigbank	-0.004 (0.005)	-0.023*** (0.008)	-0.001 (0.015)	0.008 (0.006)	-0.004 (0.006)	-0.022** (0.009)	0.008 (0.021)	0.010 (0.006)								
Constant	9.310*** (2.580)	4.415** (2.039)	-1.457 (3.415)	2.023* (1.217)	8.835*** (2.707)	4.559** (2.015)	-1.415 (5.148)	1.806 (1.351)								
R-squared	0.634	0.437	0.314	0.343	0.635	0.439	0.449	0.368								
Number of deals	298	480	119	367	298	480	119	367								
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes								

Table 9: Target premium and abnormal returns

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium and abnormal returns. Columns (1), (3), (5), (7), (9), (11) and (2), (4), (6), (8), (10), (12) use sub-samples of targets with information asymmetry above or below the median separately. *Premium* is the premium paid one week before the announcement. *TCAR* and *ACAR* are the target and acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Abnormal_fees* is the abnormal fees paid by the acquirer. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)		(12)	
	Premium	(one week)	TCAR	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high	IA_low	IA_high
Holding_connected (β)	-0.617	-0.659	-2.219	-0.305	1.386***	-0.085	1.221	-0.602	0.462	-0.036	1.137*	-0.245	(2.814)	(0.762)	(1.652)	(0.633)	(0.327)	(0.163)	(5.600)	(1.368)	(5.066)	(1.077)	(0.643)	(0.281)
Holding_total	-0.607**	-0.166	-0.504*	-0.044	-0.021	0.056	-1.155	0.095	-0.939*	-0.013	0.025	0.040	(0.301)	(0.274)	(0.267)	(0.279)	(0.027)	(0.039)	(1.322)	(0.414)	(0.547)	(0.329)	(0.061)	(0.078)
Abnormal_fees							0.061	-0.142	0.005	-0.052	0.002	0.018							(0.161)	(0.106)	(0.106)	(0.058)	(0.010)	(0.019)
Holding_connected \times Abnormal_fees (β^*)							1.867	0.306	2.735	0.561	-0.249	-0.301							(6.232)	(2.049)	(6.119)	(1.364)	(0.862)	(0.378)
Holding_total \times Abnormal_fees							-0.529	0.393	-0.419	0.017	0.044	-0.015							(1.086)	(0.548)	(0.447)	(0.277)	(0.043)	(0.094)
Holding_acquirer	-0.072	-0.061	-0.060	0.128	-0.034	0.022	-0.132	-0.121	-0.139	0.108	-0.026	0.030	(0.563)	(0.291)	(0.504)	(0.144)	(0.035)	(0.073)	(0.591)	(0.309)	(0.532)	(0.151)	(0.036)	(0.074)
Toehold	-0.017	-0.006	-0.015*	-0.002	-0.001	0.003***	-0.018	-0.007	-0.014	-0.002	-0.001*	0.003***	(0.022)	(0.004)	(0.008)	(0.004)	(0.001)	(0.001)	(0.021)	(0.004)	(0.009)	(0.003)	(0.001)	(0.001)
ROA_t	-1.005	-0.018	-0.600	-0.402	0.060	-0.014	-1.009	-0.069	-0.603	-0.444	0.060	-0.001	(0.951)	(0.445)	(0.517)	(0.260)	(0.041)	(0.044)	(0.964)	(0.456)	(0.529)	(0.279)	(0.042)	(0.042)
Leverage_t	-0.059	-0.041	-0.006	-0.023	0.005	-0.001	-0.059	-0.035	0.004	-0.023	0.003	-0.001	(0.192)	(0.117)	(0.108)	(0.079)	(0.017)	(0.011)	(0.192)	(0.122)	(0.111)	(0.082)	(0.019)	(0.012)
B/M_t	-0.024	0.005	-0.037	0.024	-0.005	-0.006	-0.017	0.001	-0.037	0.022	-0.005	-0.005	(0.109)	(0.029)	(0.049)	(0.016)	(0.012)	(0.004)	(0.116)	(0.030)	(0.053)	(0.016)	(0.012)	(0.004)
Size_a	0.075*	0.020	0.062*	0.031	-0.001	0.007**	0.073*	0.017	0.062*	0.030	-0.002	0.008**	(0.042)	(0.019)	(0.036)	(0.022)	(0.003)	(0.003)	(0.040)	(0.019)	(0.038)	(0.021)	(0.003)	(0.003)
B/M_a	0.207	-0.077	0.225**	-0.004	-0.001	0.007	0.215	-0.093	0.230**	-0.015	-0.002	0.010	(0.180)	(0.084)	(0.111)	(0.061)	(0.015)	(0.020)	(0.178)	(0.090)	(0.110)	(0.062)	(0.016)	(0.020)
Tangible_t	0.095	0.057	0.215	0.111*	-0.018	0.026	0.079	0.061	0.205	0.113*	-0.017	0.025	(0.205)	(0.173)	(0.195)	(0.062)	(0.024)	(0.019)	(0.206)	(0.176)	(0.188)	(0.065)	(0.024)	(0.019)
RELSIZE	0.004	-0.018	-0.001	-0.007	0.000	-0.004	0.004	-0.016	-0.001	-0.006	0.000	-0.005	(0.008)	(0.020)	(0.009)	(0.013)	(0.001)	(0.003)	(0.008)	(0.020)	(0.010)	(0.014)	(0.001)	(0.003)
Valpct	-0.118	-0.013	-0.182	-0.007	-0.000	0.014*	-0.118	-0.015	-0.185	-0.008	0.000	0.014*	(0.153)	(0.038)	(0.159)	(0.028)	(0.012)	(0.007)	(0.158)	(0.038)	(0.156)	(0.028)	(0.011)	(0.007)
Holding_MF	-0.009	-0.010	-0.042	-0.022	-0.005*	0.003	-0.007	-0.011	-0.040	-0.022	-0.005*	0.003	(0.039)	(0.016)	(0.035)	(0.020)	(0.003)	(0.003)	(0.037)	(0.017)	(0.034)	(0.020)	(0.003)	(0.003)
Pctcash	0.019	0.081	-0.049	0.053	-0.011	0.023*	0.008	0.091	-0.047	0.060	-0.012	0.021*	(0.102)	(0.073)	(0.091)	(0.049)	(0.016)	(0.012)	(0.121)	(0.074)	(0.086)	(0.054)	(0.017)	(0.012)
Hostile	0.139	0.096	-0.426**	-0.035	0.070**	-0.053*	0.117	0.128	-0.487**	-0.018	0.079**	-0.058*	(0.303)	(0.180)	(0.213)	(0.098)	(0.035)	(0.030)	(0.308)	(0.185)	(0.225)	(0.103)	(0.039)	(0.031)
Diff_Ind	-0.048	0.004	-0.057	0.020	-0.008	-0.008	-0.045	0.004	-0.056	0.020	-0.008	-0.008	(0.058)	(0.040)	(0.061)	(0.028)	(0.007)	(0.008)	(0.059)	(0.042)	(0.064)	(0.027)	(0.007)	(0.008)
Merger of equals	0.105	-0.252**	0.055	-0.158**	0.070***	-0.006	0.113	-0.259**	0.053	-0.161**	0.070**	-0.006	(0.397)	(0.110)	(0.266)	(0.072)	(0.025)	(0.042)	(0.392)	(0.104)	(0.267)	(0.070)	(0.027)	(0.043)
Tender	0.035	0.166**	-0.042	0.111**	0.004	0.003	0.033	0.169**	-0.048	0.111**	0.005	0.002	(0.116)	(0.080)	(0.085)	(0.048)	(0.007)	(0.120)	(0.080)	(0.085)	(0.049)	(0.007)	(0.012)	(0.012)
Number of bidders	-0.083	0.097	-0.019	-0.091*	0.013	-0.014	-0.072	0.088	-0.016	-0.092*	0.013	-0.014	(0.217)	(0.081)	(0.172)	(0.050)	(0.010)	(0.013)	(0.233)	(0.080)	(0.180)	(0.051)	(0.009)	(0.013)
IMR_holding	0.006*	0.004***	0.005	0.002	-0.000	0.000	0.005	0.004***	0.005	0.002	-0.000	0.000	(0.003)	(0.001)	(0.004)	(0.001)	(0.000)	(0.000)	(0.004)	(0.001)	(0.004)	(0.001)	(0.000)	(0.000)
IMR_bigbank	0.001	-0.001	0.001	-0.000	0.000	0.000	0.001	-0.001	0.000	-0.001	0.000	0.000	(0.002)	(0.001)	(0.002)	(0.001)	(0.000)	(0.000)	(0.003)	(0.002)	(0.002)	(0.001)	(0.000)	(0.000)
Constant	-1.334	-0.255	-1.242*	-0.294	0.083	-0.150**	-1.244	-0.177	-1.192*	-0.257	0.078	-0.162**	(0.821)	(0.505)	(0.638)	(0.423)	(0.087)	(0.063)	(0.845)	(0.499)	(0.648)	(0.416)	(0.093)	(0.064)
R-squared	0.585	0.497	0.578	0.459	0.695	0.627	0.586	0.502	0.581	0.461	0.698	0.631												
Number of deals	329	547	317	510	317	505	329	547	317	510	317	505												
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes												

Table 10: Target premium: hedge funds' information sharing incentives

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium, considering hedge funds' information sharing incentives. We report the results using sub-samples of targets with information asymmetry above the median. The dependent variable is the premium paid one week before the announcement. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. We further include holdings by hedge funds for which the target accounts for a low share in a hedge fund portfolio, hedge funds have low investments in the target industry, hedge funds have held the target for a short period, a hedge fund has a single prime broker, the prime broker services 70% of the assets of a hedge fund, a hedge fund performs poorly, and a hedge fund with low inflows. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Holding_connected (β)	2.214 (2.702)	1.731 (2.515)	0.614 (2.161)	0.966 (3.153)	0.673 (4.729)	0.818 (2.814)	-0.207 (3.522)
Holding_connected_lowshare (β^*)	-14.319** (7.035)						
Holding_connected_lowsic (β^*)		-11.543** (5.129)					
Holding_connected_shortperiod (β^*)			-60.647*** (15.749)				
Holding_connected_singlePB (β^*)				-2.531 (3.735)			
Holding_connected_dominant70 (β^*)					-0.198 (5.982)		
Holding_connected_lowret (β^*)						-4.550 (5.448)	
Holding_connected_lowflow (β^*)							1.986 (5.684)
Holding_total	-0.564** (0.236)	-0.481** (0.234)	-0.364 (0.251)	-0.504* (0.270)	-0.297 (0.352)	-0.423 (0.274)	-0.288 (0.247)
Holding_total_lowshare	1.763* (1.060)						
Holding_total_lowsic		0.358 (0.623)					
Holding_total_shortperiod			-1.209 (1.921)				
Holding_total_singlePB				0.451 (0.602)			
Holding_total_dominant70					-0.426 (0.733)		
Holding_total_lowret						0.741 (1.361)	
Holding_total_lowflow							-1.285 (0.813)
Constant	-1.523*** (0.435)	-1.388*** (0.442)	-1.322*** (0.466)	-1.323*** (0.454)	-1.336*** (0.422)	-1.320*** (0.459)	-1.364*** (0.431)
R-squared	0.436	0.427	0.431	0.414	0.413	0.415	0.415
Number of deals	329	329	329	329	329	329	329
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 11: Target abnormal returns: hedge funds' information sharing incentives

This table reports the results from Equation (5) for the impact of connected fund holdings on target abnormal returns, considering hedge funds' information sharing incentives. We report the results using sub-samples of targets with information asymmetry above the median. The dependent variable is the target abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. We further include holdings by hedge funds for which the target accounts for a low share in a hedge fund portfolio, hedge funds have low investments in the target industry, hedge funds have held the target for a short period, a hedge fund has a single prime broker, the prime broker services 70% of the assets of a hedge fund, a hedge fund performs poorly, and a hedge fund with low inflows. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Holding_connected (β)	-1.148 (1.152)	-1.745* (0.997)	-1.678* (0.925)	-2.223 (1.510)	-1.564 (3.452)	-1.090 (0.969)	-3.095* (1.661)
Holding_connected_lowshare (β^*)	-4.394 (3.538)						
Holding_connected_lowsic (β^*)		-0.718 (2.906)					
Holding_connected_shortperiod (β^*)			-27.162** (13.207)				
Holding_connected_singlePB (β^*)				1.348 (2.090)			
Holding_connected_dominant70 (β^*)					-0.003 (3.964)		
Holding_connected_lowret (β^*)						-4.207 (3.342)	
Holding_connected_lowflow (β^*)							4.010 (2.979)
Holding_total	-0.227 (0.180)	-0.296 (0.188)	-0.268 (0.184)	-0.237 (0.245)	-0.201 (0.216)	-0.205 (0.232)	-0.180 (0.212)
Holding_total_lowshare	-0.626 (0.942)						
Holding_total_lowsic		0.300 (0.887)					
Holding_total_shortperiod			-0.237 (1.167)				
Holding_total_singlePB				-0.100 (0.867)			
Holding_total_dominant70					-0.317 (0.638)		
Holding_total_lowret						-0.454 (1.088)	
Holding_total_lowflow							-0.992 (0.980)
Constant	-1.132*** (0.338)	-1.043*** (0.342)	-1.050*** (0.353)	-1.070*** (0.345)	-1.016*** (0.333)	-1.002*** (0.346)	-1.068*** (0.351)
R-squared	0.413	0.408	0.414	0.408	0.409	0.412	0.414
Number of deals	317	317	317	317	317	317	317
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 12: Acquirer abnormal returns: hedge funds' information sharing incentives

This table reports the results from Equation (5) for the impact of connected fund holdings on acquirer abnormal returns considering hedge funds' information sharing incentives. We report the results using sub-samples of targets with information asymmetry above the median. The dependent variable is the acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. We further include holdings by hedge funds for which the target accounts for a low share in a hedge fund portfolio, hedge funds have low investments in the target industry, hedge funds have held the target for a short period, a hedge fund has a single prime broker, the prime broker services 70% of the assets of a hedge fund, a hedge fund performs poorly, and a hedge fund with low inflows. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Holding_connected (β)	0.921** (0.386)	0.895** (0.379)	0.789** (0.346)	0.385** (0.156)	0.746** (0.296)	0.815** (0.375)	0.306* (0.160)
Holding_connected_lowshare (β^*)	-0.810 (0.498)						
Holding_connected_lowsic (β^*)		-0.608 (0.369)					
Holding_connected_shortperiod (β^*)			2.125 (1.604)				
Holding_connected_singlePB (β^*)				1.318*** (0.302)			
Holding_connected_dominant70 (β^*)					0.105 (0.466)		
Holding_connected_lowret (β^*)						0.164 (0.444)	
Holding_connected_lowflow (β^*)							1.267*** (0.337)
Holding_total	-0.001 (0.023)	0.002 (0.022)	0.001 (0.022)	0.023 (0.023)	0.004 (0.027)	0.016 (0.025)	0.005 (0.021)
Holding_total_lowshare	-0.057 (0.090)						
Holding_total_lowsic		-0.104 (0.072)					
Holding_total_shortperiod			-0.097 (0.152)				
Holding_total_singlePB				-0.086 (0.058)			
Holding_total_dominant70					-0.035 (0.068)		
Holding_total_lowret						-0.231 (0.148)	
Holding_total_lowflow							-0.036 (0.061)
Constant	0.039 (0.044)	0.049 (0.048)	0.060 (0.051)	0.028 (0.045)	0.056 (0.050)	0.051 (0.043)	0.038 (0.043)
R-squared	0.540	0.544	0.535	0.562	0.533	0.541	0.563
Number of deals	317	317	317	317	317	317	317
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 13: Acquirer abnormal returns: importance of information sharing for the bidder

This table reports the results from Equation (5) for the impact of connected fund holdings on acquirer abnormal returns, considering the importance of information sharing for the bidder. We report the results using sub-samples of targets with information asymmetry above the median. The dependent variable is the acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Diff_Ind* is a dummy variable that equals one if the bidder and target are from different 3-digit SIC code industries and 0 otherwise. *Multi-bidder* is a dummy variable that equals one if more than one bidder is involved. *Pctstock* is the percentage of stock payment. *Merger_wave* is a dummy variable that equals one when there is a merger wave in the target-acquirer industry. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Holding_connected (β)	0.961** (0.395)	1.336*** (0.389)	0.608* (0.337)	0.594 (0.361)
Holding_connected \times Diff_Ind (β^*)	0.603 (0.657)			
Holding_connected \times Multi-bidder (β^*)		1.694* (0.967)		
Holding_connected \times Pctstock			1.177** (0.478)	
Holding_connected \times Merger_wave (β^*)				1.012** (0.427)
Holding_total	-0.061** (0.028)	-0.024 (0.028)	0.000 (0.039)	-0.006 (0.036)
Holding_total \times Diff_Ind	0.074 (0.046)			
Holding_total \times Multi-bidder		0.121 (0.129)		
Holding_total \times Pctstock			-0.024 (0.060)	
Holding_total \times Merger_wave				-0.027 (0.063)
Constant	0.088 (0.086)	0.095 (0.084)	0.067 (0.084)	0.067 (0.080)
R-squared	0.705	0.700	0.705	0.702
Number of deals	317	317	317	317
Controls	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table 14: Classification of insider trading

This table reports the classification of insider trading and the number of insider trading in each class. The fraction of the total deals is the number of insider trading in each class divided by the total number of deals (910) and the fraction of the total insider trading cases is the number of insider trading in each class divided by the total number of insider trading with targets (65).

	Senior management, Target	Personal connection of Senior management, Target	Other employee, Target
Number of insider trading with target	8	4	4
Fraction of the total deals	0.88%	0.44%	0.44%
Fraction of the total insider trading cases	12.31%	6.15%	6.15%
	Senior management, Bidder	Personal connection of senior management, Bidder	Other employee, Bidder
Number of insider trading with target	6	2	6
Fraction of the total deals	0.66%	0.22%	0.66%
Fraction of the total insider trading cases	9.23%	3.08%	9.23%
	Affiliated company employees (non investment banks)	Affiliated investment bank employee	Personal connection of investment bank employee
Number of insider trading with target	17	14	1
Fraction of the total deals	1.87%	1.54%	0.11%
Fraction of the total insider trading cases	26.15%	21.54%	1.54%
	Hedge Funds	Unknown	Other
Number of insider trading with target	1	1	1
Fraction of the total deals	0.11%	0.11%	0.11%
Fraction of the total insider trading cases	1.54%	1.54%	1.54%

Table 15: Descriptive statistics of short-selling in acquirers

This table reports the descriptive statistics of short-selling in acquirers. SIR_t is the short interest ratio for each acquirer in the month of acquisition announcement, measured by Equation (10). $ASIR_{t-1}$, $ASIR_t$, and $ASIR_{t+1}$ are the abnormal short interest ratio for acquirers in the previous, current, and next month of the deal announcement. We conduct a t-test for differences in means between targets with information asymmetry level above (panel A) or below the median (panel B). *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Mean	Median	STD	Kurtosis	Skewness	Min	Max	N
Panel A: highIA								
SIR_t	0.072**	0.033	0.252	163.766	12.133	0.000	3.739	312
$ASIR_{t-1}$	1.103	0.998	0.820	129.269	9.498	0.097	12.540	298
$ASIR_t$	1.259	1.078	1.376	185.271	12.238	0.072	22.296	298
$ASIR_{t+1}$	1.481	1.117	1.815	108.248	9.010	0.054	25.350	298
Panel B: lowIA								
SIR_t	0.048	0.028	0.075	96.605	8.110	0.000	1.021	533
$ASIR_{t-1}$	1.053	0.987	0.496	37.948	4.241	0.136	6.488	515
$ASIR_t$	1.215	1.061	0.789	31.365	4.307	0.239	8.952	514
$ASIR_{t+1}$	1.556	1.204	1.845	187.869	11.492	0.110	33.790	514

Table 16: Short-selling in acquirers

This table reports the results from Equation (5) for the impact of connected fund holdings on abnormal short-selling in acquirers. Columns (1)-(3) and (4)-(6) use sub-samples of targets with information asymmetry above or below the median separately. $ASIR_{t-1}$, $ASIR_t$, and $ASIR_{t+1}$ are the abnormal short interest ratio for acquirers in the previous, current, and next month of the deal announcement. $Holding_connected$ ($Holding_total$) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	$ASIR_{t-1}$	$ASIR_t$	$ASIR_{t+1}$	$ASIR_{t-1}$	$ASIR_t$	$ASIR_{t+1}$
		IA_high			IA_low	
Holding_connected (β)	-1.332 (12.128)	0.812 (7.489)	-0.463 (13.897)	-2.575 (2.498)	-0.907 (1.570)	-8.244 (7.732)
Holding_total	1.237 (1.379)	-0.032 (0.972)	2.231* (1.175)	-0.412 (0.544)	-0.549 (0.355)	0.702 (1.589)
Holding_acquirer	1.457 (1.810)	0.644 (1.122)	1.981 (1.925)	-0.888 (0.828)	-0.425 (0.579)	-2.407 (1.609)
Toehold	-0.049 (0.031)	-0.021 (0.023)	-0.019 (0.035)	-0.001 (0.011)	0.008 (0.006)	-0.025 (0.027)
ROA_t	2.671 (2.693)	1.445 (1.624)	2.684 (3.130)	-0.259 (0.659)	-0.285 (0.371)	-1.042 (1.704)
Leverage_t	0.084 (0.276)	0.032 (0.229)	0.023 (0.290)	0.115 (0.273)	0.073 (0.149)	0.332 (0.493)
B/M_t	-0.098 (0.198)	-0.119 (0.111)	-0.091 (0.248)	0.027 (0.052)	0.023 (0.036)	0.020 (0.112)
Size_a	-0.004 (0.064)	-0.038 (0.046)	0.050 (0.083)	-0.082 (0.066)	-0.035 (0.048)	-0.176 (0.140)
B/M_a	0.787 (0.527)	0.417 (0.318)	0.901 (0.587)	-0.099 (0.313)	0.091 (0.349)	-0.151 (0.464)
Tangible_t	-0.486 (0.735)	-0.426 (0.544)	-0.679 (0.868)	-0.471 (0.319)	-0.215 (0.186)	-1.240** (0.619)
RELSIZE	-0.009 (0.022)	-0.012 (0.016)	-0.021 (0.032)	-0.046 (0.065)	-0.032 (0.033)	-0.177 (0.175)
Valpet	0.311 (0.442)	-0.038 (0.281)	0.908* (0.530)	0.113 (0.128)	0.084 (0.088)	0.243 (0.318)
Holding_MF	0.113 (0.109)	0.074 (0.077)	0.115 (0.136)	-0.046 (0.052)	-0.031 (0.022)	-0.036 (0.091)
Pctcash	0.369 (0.356)	0.225 (0.222)	0.288 (0.417)	-0.348 (0.254)	-0.004 (0.106)	-1.111 (0.672)
Hostile	-1.191 (1.779)	-0.654 (1.033)	-1.196 (2.051)	-0.747 (0.469)	-0.797** (0.386)	-1.147 (0.978)
Diff_Ind	-0.359 (0.368)	-0.311 (0.221)	-0.209 (0.424)	0.082 (0.142)	0.045 (0.104)	0.083 (0.229)
Merger of equals	0.395 (1.214)	0.566 (0.678)	0.071 (1.380)	-0.424 (0.418)	-0.100 (0.141)	-1.663 (1.165)
Tender	-0.059 (0.399)	-0.074 (0.258)	0.092 (0.457)	-0.031 (0.160)	0.042 (0.103)	-0.134 (0.281)
Number of bidders	-0.035 (0.281)	-0.035 (0.210)	-0.053 (0.278)	0.524 (0.652)	0.123 (0.140)	2.295 (2.562)
IMR_holding	0.015 (0.018)	0.006 (0.010)	0.024 (0.021)	0.001 (0.009)	0.004 (0.006)	0.009 (0.014)
IMR_bigbank	0.005 (0.005)	0.003 (0.003)	0.006 (0.006)	-0.005 (0.003)	0.001 (0.002)	-0.012* (0.007)
Constant	-0.745 (2.722)	0.905 (1.537)	-2.019 (3.090)	2.499** (1.235)	1.730*** (0.620)	2.121 (3.449)
R-squared	0.364	0.372	0.519	0.481	0.431	0.523
Number of deals	283	283	283	499	498	498
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 17: Post-merger performance

This table reports the results from Equation (5) for the impact of connected fund holdings on post-merger performance. Columns (1)-(3) and (4)-(6) use sub-samples of targets with information asymmetry above or below the median separately. *ROA*, *ROE*, and *NPM* are the return on asset, return on equity, and net profit margin of the new firm one year after the acquisition. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1) ROA	(2) ROE IA_high	(3) NPM	(4) ROA	(5) ROE IA_low	(6) NPM
Holding_connected (β)	-0.131 (0.138)	-1.499 (4.697)	-2.963 (1.950)	0.028 (0.044)	28.314 (23.376)	0.003 (0.468)
Holding_total	0.050 (0.047)	-1.211 (1.289)	0.523** (0.255)	0.002 (0.011)	-16.608 (15.619)	0.035 (0.118)
Holding_acquirer	0.055*** (0.020)	-1.996** (0.871)	0.011 (0.214)	0.023* (0.013)	3.417 (2.622)	0.080 (0.095)
Toehold	-0.001** (0.001)	0.022 (0.021)	-0.009 (0.008)	0.000** (0.000)	-0.040 (0.048)	0.002 (0.002)
ROA_t	0.236* (0.126)	-5.182 (4.738)	1.049* (0.533)	0.056*** (0.017)	0.596 (6.981)	0.345 (0.256)
Leverage_t	0.002 (0.012)	-0.247 (0.371)	0.065 (0.066)	0.002 (0.004)	0.879 (1.076)	0.038 (0.052)
B/M_t	0.006 (0.009)	-0.233 (0.308)	0.025 (0.057)	0.003*** (0.001)	-0.147 (0.651)	0.017 (0.013)
Size_a	0.010* (0.006)	-0.203 (0.175)	0.085*** (0.027)	0.006*** (0.001)	0.304 (0.200)	0.039*** (0.010)
B/M_a	0.025 (0.022)	-0.777 (0.729)	0.299* (0.155)	-0.004 (0.005)	2.058 (1.617)	-0.099 (0.096)
Tangible_t	-0.038 (0.048)	1.802 (1.957)	-0.307 (0.242)	-0.004 (0.006)	1.507 (1.656)	-0.029 (0.060)
RELSIZE	-0.000 (0.000)	0.003 (0.032)	0.008 (0.010)	-0.000 (0.001)	-0.131 (0.218)	-0.007 (0.007)
Valpct	-0.010*** (0.002)	-0.003 (0.089)	-0.077** (0.034)	0.003** (0.001)	0.205 (0.537)	0.027* (0.016)
Holding_MF	0.005 (0.007)	-0.154 (0.228)	0.045 (0.063)	0.000 (0.001)	0.104 (0.227)	-0.010 (0.018)
Pctcash	0.008 (0.010)	-0.284 (0.311)	-0.108 (0.104)	0.004 (0.003)	-1.022 (0.707)	0.058 (0.041)
Hostile	-	-	-	0.002 (0.008)	2.892 (3.500)	0.046 (0.093)
Diff_Ind	-0.002 (0.005)	0.021 (0.140)	-0.061 (0.061)	0.000 (0.003)	-0.081 (0.514)	0.018 (0.034)
Merger of equals	0.103 (0.062)	-2.398 (2.263)	0.969* (0.492)	-0.025 (0.022)	-8.978 (9.115)	-0.365 (0.301)
Tender	-0.003 (0.014)	0.050 (0.305)	-0.130 (0.133)	0.006** (0.002)	-1.530 (1.173)	0.043** (0.022)
Number of bidders	0.028 (0.039)	-0.699 (1.339)	0.417 (0.349)	-0.002 (0.004)	0.740 (0.957)	-0.025 (0.060)
IMR_holding	-0.001 (0.000)	0.017 (0.013)	-0.000 (0.001)	0.000 (0.000)	-0.027 (0.026)	0.001 (0.001)
IMR_bigbank	-0.000 (0.000)	0.004 (0.005)	0.003* (0.002)	0.000* (0.000)	0.009 (0.024)	0.000 (0.001)
Constant	0.021 (0.052)	-2.354 (2.038)	-0.371 (0.430)	-0.088*** (0.019)	-5.248 (4.301)	-0.968*** (0.240)
R-squared	0.540	0.420	0.596	0.404	0.183	0.374
Number of deals	293	293	292	471	471	471
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 18: Propensity score matching results

Panel A reports the balancing test results of propensity score matching. The treated group includes deals with connected fund holdings, and the control group includes other deals. Panel B reports the propensity matching results for deals announced between January 2000 and September 2019. All variables are defined in Table 2. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Matching quality				
	Treated (with connected holdings)	Control (without connected holdings)	%bias	t-stat
B/M.t	0.544	0.624	-18.900	-1.030
Size_a	8.966	8.975	-0.500	-0.030
B/M_a	0.488	0.420	21.300	1.160
RELSIZE	0.799	0.231	20.400	1.110
Valpct	0.340	0.230	35.100	1.910*
Holding_MF	0.376	0.281	27.600	1.500
pctcash	0.589	0.649	-13.800	-0.750
Diffind	0.237	0.288	-11.500	-0.620
Panel B: Matching results				
	Treated (with connected holdings)	Control (without connected holdings)	Difference	t-stat
Complete	1.000	1.000	0.000	.
Duration	125.772	132.228	-6.456	-0.360
Premium (one week)	0.301	0.446	-0.146	-1.860*
Premium (four weeks)	0.330**	0.550	-0.220	-2.320**
TCAR	0.122***	0.303	-0.181	-2.900***
TCAR[-1,1]	0.199***	0.368	-0.169	-2.780***
TCAR[-3,3]	0.204***	0.367	-0.163	-2.650***
TCAR[-5,5]	0.202***	0.369	-0.167	-2.690***
ACAR	-0.019	-0.010	-0.009	-1.040
ACAR[-1,1]	-0.015	-0.008	-0.007	-0.530
ACAR[-3,3]	-0.011	-0.003	-0.009	-0.690
ACAR[-5,5]	-0.012	0.002	-0.014	-0.940

Advisor-hedge fund connections, information flows, and deal outcomes in mergers and acquisitions

Supplementary results

Appendix A Deals involving connected advisors

To ensure that our results are not driven by some systematic, possibly unobserved differences between advisors that are connected and not, we repeat the analysis using the sub-sample of deals involving advisors that are connected at least in one deal in our sample. Hence, we drop all deals involving advisors that are never connected. The remaining advisors are still connected in some of the deals in this sub-sample, while they are unconnected in other deals. In total, we identify 575 deals with such at-least-once-connected advisors, accounting for 63% of the sample. The results in tables [A1](#) to [A5](#) indicate that our main conclusions remain qualitatively unchanged when using this connected sub-sample of deals. The ‘indirect toehold’ information channel appears to be robust. It requires a direct link between hedge funds and their prime broker to manifest in the M&A outcomes.

Table A1: Choice of the advisor: deals involving connected advisors

This table reports the results from Equation (1), examining the acquirer's choice of advisors in M&A using only deals that involve connected advisors. Columns (1) and (2) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if an advisor is hired by the acquirer for the operation and zero otherwise. *Connected* is a dummy variable that equals one if an advisor is the prime broker of a hedge fund with holdings in the target firm and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's connected hedge funds in the target firm one quarter before the acquisition announcement. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low
Connected (β_1)	4.440*** (0.381)	4.180*** (0.147)
Holding_connected (β_2)	15.368** (6.451)	2.268 (6.004)
Acquisition times	0.039*** (0.010)	-0.006 (0.007)
Acquisition Value	-0.021 (0.020)	0.108*** (0.018)
Prior advisor	0.815** (0.386)	1.182*** (0.179)
Expertise	0.822*** (0.101)	0.554*** (0.072)
IMR_holding	0.003 (0.003)	0.002 (0.002)
IMR_bigbank	-0.000 (0.001)	-0.000 (0.001)
Constant	-1.987*** (0.283)	-4.029*** (0.315)
R-squared	0.451	0.666
Number of deals	151	402
Observations	7,305	19,887
Industry, Year FE	Yes	Yes

Table A2: Choice of the target: deals involving connected advisors

This table reports the results from Equation (3), examining the acquirer's choice of targets in M&A using only deals that involve connected advisors. Columns (1) and (2) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if a firm is chosen to be the target and zero otherwise. *Connected* is a dummy variable that equals one if a firm is held by hedge funds whose prime broker is the advisor and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's connected hedge funds in the firm one quarter before the acquisition announcement. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Standard errors are clustered at the firm level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low
Connected (β_1)	1.115*** (0.164)	1.400*** (0.097)
Holding_connected (β_2)	2.307 (2.955)	0.158 (1.528)
Size	-0.162*** (0.054)	0.040 (0.029)
B/M	0.020 (0.060)	-0.145** (0.073)
ROE	0.034 (0.094)	0.001 (0.088)
Leverage	0.071 (0.133)	-0.063 (0.138)
Tangible	-0.443 (0.435)	-0.186 (0.229)
Sales	-0.059 (0.100)	-0.370* (0.209)
P/E	-0.000 (0.001)	0.000 (0.000)
IMR_holding	0.001 (0.008)	0.002 (0.004)
IMR_bigbank	-0.002 (0.004)	0.004 (0.003)
Constant	0.336 (0.901)	-1.786* (0.973)
R-squared	0.0788	0.132
Observations	870	2,223
Industry, Year, Advisor FE	Yes	Yes

Table A3: Changes in hedge fund holdings before the deal announcement: deals involving connected advisors

This table reports the results from Equation (4) for the changes in individual hedge fund holdings in a target or acquirer using only deals that involve connected advisors. Panel A and B report the changes in holdings one quarter before or after the deal announcement, respectively ($\Delta Holding_{t-1}$ and $\Delta Holding_{t+1}$). Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. *Connected* is a dummy variable that equals one if a hedge fund's prime broker is also the advisory bank in a deal and zero otherwise. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)	(2)	(3)	(4)
	IA_high	IA_low	IA_high	IA_low
Panel A: $\Delta Holding_{t-1}$				
Connected (β)	-0.014 (0.061)	0.001 (0.013)	0.017 (0.023)	-0.004 (0.006)
Constant	0.040 (0.178)	0.205** (0.091)	0.572*** (0.098)	1.203*** (0.011)
R-squared	0.390	0.196	0.239	0.117
Number of deals	156	419	152	385
Deal and Fund FE	Yes	Yes	Yes	Yes
Panel B: $\Delta Holding_{t+1}$				
Connected (β)	0.093 (0.163)	-0.023 (0.021)	0.044 (0.061)	-0.001 (0.009)
Constant	-1.089*** (0.217)	0.082 (0.059)	-0.015 (0.079)	0.036 (0.027)
R-squared	0.511	0.207	0.275	0.145
Number of deals	73	240	95	288
Deal and Fund FE	Yes	Yes	Yes	Yes

Table A4: Deal duration, and completion: deals involving connected advisors

This table reports the results from Equation (5) for the impact of connected fund holdings on deal duration and completion using only deals that involve connected advisors. Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. *Duration* is the number of months between the deal announcement and the deal outcome. *Completion* is a dummy variable that equals one if the deal is completed. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)	(2)	(3)	(4)
	Duration		Completion	
	IA_high	IA_low	IA_high	IA_low
Holding_connected (β)	-12.827*	8.287	-959.292	28.104***
	(7.528)	(9.145)	(0.000)	(8.725)
Holding_total	-0.542	-3.041	55.582	-2.382
	(2.009)	(2.202)	(0.000)	(1.581)
Holding_acquirer	-0.463	2.004	-709.466	-2.552**
	(2.084)	(2.464)	(0.000)	(1.225)
Toehold	0.423***	0.159***	-	-
	(0.090)	(0.036)		
Deal_Value	0.015	0.047***	-108.516	-0.006
	(0.329)	(0.016)	(0.000)	(0.016)
Termination fee	-7.432	0.797	903.108	-0.621
	(17.304)	(0.505)	(0.000)	(0.435)
RELSIZE	0.067***	-0.098	10.796	-0.035
	(0.019)	(0.062)	(0.000)	(0.029)
Pctcash	-0.559	0.183	70.201	0.293
	(0.734)	(0.667)	(0.000)	(0.377)
Hostile	-	9.045***	-	-
		(2.822)		
Diff_Ind	-0.579*	-0.400	-46.571	0.175
	(0.336)	(0.377)	(0.000)	(0.264)
Merger of equals	9.080***	1.901	-	-0.164
	(0.921)	(2.095)		(0.765)
Tender	-1.612**	-2.070***	-52.531	1.247***
	(0.632)	(0.536)	(0.000)	(0.452)
Number of bidders	-1.315	1.239	-	-1.383***
	(1.493)	(1.182)		(0.429)
IMR_holding	0.010	-0.003	0.690	0.020*
	(0.015)	(0.018)	(0.000)	(0.011)
IMR_bigbank	-0.007	-0.022**	-1.635	-0.002
	(0.008)	(0.009)	(0.000)	(0.008)
Constant	8.213***	3.693	22.135	4.474***
	(2.484)	(2.888)	(0.000)	(1.304)
R-squared	0.759	0.440	1	0.397
Number of deals	138	362	30	207
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table A5: Target premium, and abnormal returns: deals involving connected advisors

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium and abnormal returns using only deals that involve connected advisors. Columns (1), (3), (5), (7) and (2), (4), (6), (8) use the sub-samples of targets with information asymmetry above or below the median separately. *Premium* is the premium paid one week (four weeks) before the announcement. *TCAR* and *ACAR* are the target and acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Premium IA_high	(one week) IA_low	Premium IA_high	(four weeks) IA_low	TCAR		ACAR	
Holding_connected (β)	1.696 (3.550)	-1.036 (0.906)	-0.209 (3.024)	-0.568 (1.001)	-2.391 (2.376)	-0.572 (0.724)	1.608*** (0.298)	-0.018 (0.180)
Holding_total	-0.856** (0.393)	0.095 (0.393)	-0.943** (0.408)	0.159 (0.458)	-0.690 (0.595)	0.182 (0.378)	-0.027 (0.027)	0.030 (0.057)
Holding_acquirer	0.102 (0.625)	0.053 (0.243)	0.233 (0.637)	-0.228 (0.250)	-0.137 (0.860)	0.111 (0.175)	0.105 (0.086)	0.028 (0.096)
Toehold	-0.074 (0.076)	-0.004 (0.005)	-0.071 (0.077)	-0.003 (0.006)	0.001 (0.023)	-0.002 (0.004)	0.006 (0.006)	0.003*** (0.001)
ROA_t	0.783 (1.171)	-0.595 (0.691)	-0.240 (1.011)	-1.053 (1.022)	-1.242 (1.436)	-1.009 (0.781)	-0.104 (0.128)	-0.041 (0.138)
Leverage_t	-0.068 (0.267)	0.148 (0.130)	-0.250 (0.241)	0.216* (0.128)	0.040 (0.279)	0.012 (0.109)	-0.074* (0.040)	-0.001 (0.015)
B/M_t	0.008 (0.162)	0.005 (0.033)	0.047 (0.143)	0.009 (0.027)	-0.130* (0.077)	0.008 (0.036)	0.010 (0.012)	-0.002 (0.009)
Size_a	0.092 (0.083)	0.033 (0.030)	0.124 (0.084)	0.038 (0.030)	0.066 (0.078)	0.027 (0.032)	-0.002 (0.007)	0.007 (0.005)
B/M_a	0.371 (0.472)	-0.177 (0.110)	0.437 (0.403)	-0.115 (0.098)	0.385 (0.342)	0.000 (0.098)	-0.049** (0.021)	0.009 (0.023)
Tangible_t	-0.304 (0.646)	0.154 (0.194)	-0.215 (0.735)	0.165 (0.202)	0.056 (0.513)	0.091 (0.089)	-0.142* (0.072)	0.036 (0.025)
RELSIZE	0.005 (0.013)	-0.027 (0.026)	-0.000 (0.010)	-0.025 (0.023)	-0.001 (0.009)	-0.001 (0.019)	0.000 (0.001)	-0.003 (0.004)
Valpct	0.018 (0.184)	0.026 (0.060)	0.111 (0.181)	0.054 (0.049)	-0.035 (0.232)	-0.014 (0.051)	0.004 (0.017)	0.012 (0.010)
Holding_MF	-0.993** (0.374)	-0.010 (0.013)	-0.819* (0.428)	-0.007 (0.025)	-0.766** (0.291)	-0.023 (0.020)	-0.042 (0.026)	0.003 (0.003)
Pctcash	-0.200 (0.196)	0.131 (0.086)	-0.238 (0.181)	0.117* (0.068)	-0.144 (0.170)	0.070 (0.053)	-0.011 (0.014)	0.023 (0.016)
Hostile	1.468* (0.774)	0.128 (0.168)	1.011 (0.776)	-0.006 (0.146)	1.422** (0.537)	-0.024 (0.099)	-0.128** (0.062)	-0.044 (0.030)
Diff_Ind	-0.070 (0.162)	-0.014 (0.047)	-0.077 (0.162)	-0.027 (0.044)	-0.121** (0.057)	0.033 (0.035)	-0.001 (0.008)	-0.019* (0.011)
Merger of equals	0.557 (0.988)	-0.279* (0.143)	0.294 (0.935)	-0.418*** (0.132)	0.339 (0.789)	-0.183** (0.075)	-0.250*** (0.067)	0.002 (0.067)
Tender	-0.056 (0.179)	0.172* (0.100)	0.092 (0.215)	0.226** (0.089)	-0.177 (0.166)	0.104 (0.077)	0.019 (0.017)	0.007 (0.013)
Number of bidders	0.030 (0.248)	0.105 (0.115)	-0.006 (0.282)	0.211 (0.171)	-0.061 (0.323)	-0.084 (0.070)	0.068*** (0.024)	-0.016 (0.016)
IMR_holding	0.001 (0.004)	0.004** (0.002)	0.001 (0.004)	0.002 (0.001)	0.004 (0.005)	0.002 (0.002)	-0.000 (0.000)	0.000 (0.000)
IMR_bigbank	-0.002 (0.003)	-0.001 (0.002)	-0.001 (0.003)	-0.000 (0.002)	-0.001 (0.005)	-0.001 (0.002)	-0.000 (0.000)	-0.000 (0.000)
Constant	-1.495 (1.117)	-0.829 (0.632)	-1.529 (1.306)	-0.922 (0.712)	-1.352 (1.461)	-0.360 (0.562)	0.296** (0.122)	-0.088 (0.079)
R-squared	0.656	0.532	0.685	0.518	0.702	0.458	0.857	0.657
Number of deals	151	405	151	405	147	371	147	366
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix B Inverse mills ratio

Tables B1 and B2 report the estimation results for the first-stage probit regressions for hedge funds' holdings in the target and for acquirers' choice of an advisor, respectively, which are used later to compute the *IMR_holding* and *IMR_bigbank*. Consistent with the literature, hedge funds are more likely to hold targets in deals with a higher percentage of cash payment and more mutual fund holdings in the acquirer. The likelihood of an acquirer hiring a large bank as the advisor increases in deal size, mutual fund holdings in the acquirer, and acquirer book-to-market ratio, while it decreases in the percentage of cash payment.

Table B1: Probability of hedge funds to hold the targets

This table reports the estimation results for the probability of hedge funds to hold the targets one quarter before the acquisition announcement. *Holding* > 0 is a dummy variable that equals one if a target has hedge fund holdings. *Holding_MF_a* is mutual fund holdings in an acquirer firm one quarter before the acquisition announcement. Other variables are defined in Table 2. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Holding>0
Pctcash	0.298** (0.135)
Hostile	-0.108 (0.406)
Tender	0.303 (0.187)
Holding_MF_a	1.671*** (0.217)
Premium	-0.164 (0.143)
ROA_t	-0.580 (0.856)
Leverage_t	-0.057 (0.196)
Size_t	0.040 (0.032)
B/M_t	-0.075 (0.063)
Constant	-0.192 (0.371)
Pseudo R-squared	0.186
Number of deals	1,037
Year FE	Yes

Table B2: Probability of acquirers to use a big bank advisor

This table reports the estimation results for the probability of acquirers to use a big bank advisor. *Bigbank* is a dummy variable that equals one if a deal involves a big bank advisor. Other variables are defined in Table 2. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Bigbank
ln(Deal Value)	0.467*** (0.037)
Pctcash	-0.275** (0.118)
Hostile	-0.520 (0.419)
Holding_MF_a	0.293* (0.163)
Diff_Ind	-0.023 (0.098)
Number of bidders	0.055 (0.174)
Toehold	-0.010 (0.014)
BM_a	0.441** (0.173)
BM_t	0.098 (0.074)
ROE_t	-0.029 (0.079)
Constant	-3.610*** (0.682)
Pseudo R-squared	0.200
Number of deals	910
Year FE	Yes

Appendix C Changes in shares of targets and acquirers in hedge fund portfolios

In this appendix, we evaluate changes in holdings of connected and unconnected hedge funds not based on the fractions of the total shares outstanding held in the target/acquirer but based on the share of a hedge fund portfolio allocated to the target/acquirer. We use the changes of the fractional value of the target or acquirer in the connected or unconnected hedge fund portfolios that measures the importance of the firm in the hedge fund portfolio ($\Delta Shares$). Similar to the main results, we do not find any significant link between the connected hedge funds and the pre-announcement changes in the shares of targets or bidders in their portfolios (Table C1).

Table C1: Changes in shares in hedge fund portfolio

This table reports the results from Equation (4) for the changes in shares of the target or acquirer in the hedge fund portfolio one quarter before or after the deal announcement, respectively ($\Delta Shares_{t-1}$ and $\Delta Shares_{t+1}$). Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. *Connected* is a dummy variable that equals one if a hedge fund's prime broker is also the advisory bank in a deal and zero otherwise. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) in target IA_high	(2) in target IA_low	(3) in acquirer IA_high	(4) in acquirer IA_low
Panel A: $\Delta Shares_{t-1}$				
Connected (β)	-0.012 (0.029)	-0.021 (0.035)	0.001 (0.053)	0.006 (0.027)
Constant	5.564*** (0.070)	0.323*** (0.071)	4.375*** (0.301)	1.493*** (0.035)
R-squared	0.972	0.608	0.754	0.389
Number of deals	345	565	323	523
Deal and Fund FE	Yes	Yes	Yes	Yes
Panel B: $\Delta Shares_{t+1}$				
Connected (β)	0.117 (0.150)	0.350*** (0.120)	0.279 (0.169)	0.013 (0.050)
Constant	0.947*** (0.142)	-0.039 (0.173)	3.917*** (0.247)	7.342*** (1.366)
R-squared	0.951	0.619	0.895	0.584
Number of deals	150	315	195	390
Deal and Fund FE	Yes	Yes	Yes	Yes

Appendix D Premium based on the target market value four weeks before the announcement

Table [D1](#) reports the results for the impact of connected fund holdings on premium estimated relative to the target market value four weeks before the deal announcement. The interpretation of the results remain qualitatively unchanged from the main paper.

Table D1: Target premium based on the market value 4 weeks before announcement

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium. Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is the premium paid four weeks before the announcement. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Abnormal_fees* is the abnormal fees paid by the acquirer. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low	(3) IA_high	(4) IA_low
Holding_connected (β)	0.003 (3.114)	-0.296 (0.900)	3.772 (3.834)	-0.662 (1.800)
Holding_total	-0.714** (0.324)	-0.112 (0.339)	-1.411 (1.113)	0.481 (0.465)
Abnormal_fees			0.103 (0.103)	-0.251* (0.140)
Holding_connected \times Abnormal_fees(β^*)			3.949 (5.189)	-0.326 (2.408)
Holding_total \times Abnormal_fees			-0.688 (0.857)	0.939 (0.640)
Holding_acquirer	-0.244 (0.500)	-0.256 (0.285)	-0.329 (0.532)	-0.363 (0.304)
Toehold	-0.006 (0.012)	-0.005 (0.005)	-0.007 (0.012)	-0.006 (0.005)
ROA_t	-1.034 (0.790)	-0.161 (0.677)	-1.038 (0.811)	-0.229 (0.682)
Leverage_t	-0.341** (0.169)	-0.023 (0.121)	-0.343** (0.169)	-0.015 (0.125)
B/M_t	-0.040 (0.127)	-0.011 (0.026)	-0.029 (0.132)	-0.016 (0.026)
Size_a	0.080* (0.041)	0.024 (0.018)	0.076* (0.042)	0.018 (0.018)
B/M_a	0.167 (0.181)	-0.050 (0.084)	0.179 (0.185)	-0.068 (0.090)
Tangible_t	0.288 (0.277)	0.044 (0.195)	0.259 (0.278)	0.046 (0.196)
RELSIZE	-0.002 (0.008)	-0.016 (0.014)	-0.002 (0.008)	-0.013 (0.015)
Valpct	-0.134 (0.105)	0.010 (0.030)	-0.130 (0.108)	0.006 (0.031)
Holding_MF	-0.038 (0.039)	-0.006 (0.025)	-0.034 (0.040)	-0.007 (0.028)
Pctcash	-0.067 (0.115)	0.081 (0.061)	-0.086 (0.110)	0.094 (0.063)
Hostile	0.049 (0.374)	-0.050 (0.115)	0.047 (0.380)	-0.006 (0.121)
Diff_Ind	-0.017 (0.082)	-0.013 (0.041)	-0.014 (0.081)	-0.011 (0.044)
Merger of equals	0.107 (0.487)	-0.359*** (0.101)	0.118 (0.482)	-0.374*** (0.099)
Tender	0.207 (0.130)	0.205** (0.085)	0.203 (0.137)	0.210** (0.083)
Number of bidders	0.007 (0.208)	0.206* (0.124)	0.029 (0.215)	0.189 (0.115)
IMR_holding	0.004 (0.003)	0.002 (0.001)	0.004 (0.004)	0.001 (0.001)
IMR_bigbank	0.000 (0.002)	-0.000 (0.001)	0.001 (0.002)	-0.002 (0.002)
Constant	-1.242 (0.825)	-0.267 (0.535)	-1.112 (0.918)	-0.147 (0.525)
R-squared	0.655	0.485	0.658	0.496
Number of deals	329	547	329	547
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Appendix E Target and bidder abnormal returns: different event windows

We compute the target and acquirer abnormal returns in three different event windows, including a 3-day $[-1,+1]$, a 7-day $[3,+3]$, and an 11-day $[5,+5]$ window. Several studies address the issue of appropriate window lengths to accurately measure price reactions (Hillmer and Yu, 1979; Krivin et al., 2003). The results in Table E1 are consistent with the main findings. Connected hedge fund holdings lead to a statistically significant increase in the cumulative abnormal returns of the bidder for deals involving targets with high information asymmetry. This pattern is pronounced for all event windows considered.

Table E1: Hedge fund holdings and abnormal returns: different event windows

This table reports the results from Equation (5) for the impact of connected fund holdings on cumulative abnormal returns on target (TCAR) and acquirer (ACAR) over event windows of [-1,1], [-3,3], [-5,5]. Columns (1), (3), (5), (7), (9), (11) and (2), (4), (6), (8), (10), (12) use sub-samples of targets with information asymmetry above or below the median separately. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) TCAR[-1,1] IA_high	(2) IA_low	(3) TCAR[-3,3] IA_high	(4) IA_low	(5) TCAR[-5,5] IA_high	(6) IA_low	(7) ACAR[-1,1] IA_high	(8) IA_low	(9) ACAR[-3,3] IA_high	(10) IA_low	(11) ACAR[-5,5] IA_high	(12) IA_low
Holding_connected (β)	-1.394 (1.348)	-0.204 (0.560)	-1.042 (1.431)	-0.190 (0.551)	-0.917 (1.439)	-0.352 (0.536)	1.274*** (0.289)	-0.024 (0.194)	1.959*** (0.416)	0.148 (0.205)	2.110*** (0.445)	0.131 (0.230)
Holding_total	-0.600*** (0.221)	-0.145 (0.249)	-0.571** (0.234)	-0.124 (0.249)	-0.549** (0.249)	-0.133 (0.254)	-0.058 (0.051)	0.042 (0.039)	-0.072* (0.037)	0.045 (0.044)	-0.050 (0.038)	0.050 (0.047)
Holding_acquirer	-0.286 (0.436)	0.021 (0.154)	-0.361 (0.439)	0.040 (0.149)	-0.374 (0.468)	0.026 (0.153)	-0.058 (0.091)	-0.014 (0.078)	-0.036 (0.088)	-0.006 (0.076)	-0.010 (0.100)	-0.041 (0.077)
Toehold	-0.011 (0.018)	-0.002 (0.003)	-0.012 (0.017)	-0.003 (0.002)	-0.015 (0.018)	-0.004* (0.002)	-0.000 (0.001)	0.002** (0.001)	-0.000 (0.001)	0.001 (0.001)	0.001 (0.002)	0.000 (0.001)
ROA_t	-0.634 (0.608)	-0.334 (0.317)	-0.746 (0.616)	-0.116 (0.299)	-0.724 (0.648)	-0.141 (0.320)	0.054 (0.067)	-0.085 (0.072)	0.171* (0.086)	0.011 (0.063)	0.239** (0.117)	-0.036 (0.080)
Leverage_t	0.080 (0.132)	-0.060 (0.083)	0.047 (0.117)	-0.048 (0.084)	0.033 (0.118)	-0.060 (0.087)	-0.005 (0.017)	0.006 (0.012)	-0.015 (0.018)	0.018 (0.019)	-0.034 (0.026)	0.021 (0.021)
B/M_t	-0.054 (0.071)	0.024 (0.023)	-0.066 (0.068)	0.013 (0.026)	-0.063 (0.073)	0.008 (0.024)	-0.002 (0.014)	0.003 (0.005)	-0.007 (0.012)	0.002 (0.005)	-0.011 (0.017)	-0.001 (0.005)
Size_a	0.065* (0.036)	0.019 (0.014)	0.065* (0.038)	0.020 (0.013)	0.065* (0.039)	0.021 (0.013)	0.005 (0.004)	0.006 (0.004)	0.008* (0.005)	0.007 (0.004)	0.012* (0.006)	0.006 (0.005)
B/M_a	0.149 (0.128)	-0.042 (0.055)	0.132 (0.137)	-0.026 (0.054)	0.160 (0.144)	-0.010 (0.055)	0.016 (0.026)	0.013 (0.021)	0.024 (0.022)	0.000 (0.022)	0.026 (0.025)	0.004 (0.025)
Tangible_t	0.047 (0.189)	0.131** (0.062)	0.059 (0.177)	0.117* (0.068)	0.069 (0.177)	0.092 (0.069)	-0.029 (0.027)	0.021 (0.028)	-0.047* (0.028)	0.035 (0.026)	-0.054 (0.033)	0.032 (0.027)
RELSIZE	0.006 (0.008)	0.004 (0.012)	0.005 (0.008)	0.005 (0.011)	0.003 (0.007)	0.003 (0.011)	-0.002 (0.001)	-0.004 (0.003)	-0.003* (0.002)	-0.003 (0.003)	-0.004 (0.003)	0.000 (0.004)
Valpct	-0.171 (0.164)	-0.013 (0.026)	-0.187 (0.166)	-0.018 (0.024)	-0.187 (0.174)	-0.017 (0.024)	0.016 (0.026)	0.011 (0.008)	0.013 (0.023)	0.006 (0.008)	0.025 (0.031)	0.000 (0.010)
Holding_MF	-0.043 (0.028)	-0.014 (0.014)	-0.035 (0.026)	-0.020 (0.014)	-0.030 (0.026)	-0.021 (0.014)	-0.005 (0.005)	0.001 (0.003)	-0.009 (0.006)	0.003 (0.003)	-0.013* (0.007)	0.003 (0.007)
Pctcash	0.009 (0.081)	0.101* (0.055)	0.013 (0.079)	0.106** (0.050)	0.002 (0.083)	0.116** (0.048)	-0.004 (0.019)	0.024* (0.014)	-0.009 (0.020)	0.022 (0.016)	-0.017 (0.026)	0.019 (0.018)
Hostile	0.231 (0.199)	-0.044 (0.114)	0.215 (0.175)	-0.019 (0.122)	0.213 (0.181)	-0.007 (0.130)	0.097 (0.074)	-0.028 (0.032)	0.124 (0.077)	-0.034 (0.036)	0.094 (0.094)	-0.036 (0.038)
Diff_Ind	-0.037 (0.060)	0.032 (0.027)	-0.031 (0.056)	0.023 (0.028)	-0.026 (0.051)	0.019 (0.030)	-0.014 (0.010)	-0.013 (0.009)	-0.015 (0.009)	-0.016* (0.008)	-0.004 (0.008)	-0.014 (0.009)
Merger of equals	0.339 (0.311)	-0.146 (0.091)	0.387 (0.294)	-0.110 (0.092)	0.382 (0.289)	-0.102 (0.103)	0.059 (0.042)	0.025 (0.046)	0.060 (0.043)	0.025 (0.041)	0.078 (0.048)	0.011 (0.052)
Tender	0.082 (0.118)	0.112** (0.049)	0.103 (0.105)	0.126*** (0.043)	0.108 (0.100)	0.117*** (0.045)	0.001 (0.015)	-0.004 (0.011)	0.003 (0.012)	-0.006 (0.011)	0.008 (0.016)	-0.007 (0.010)
Number of bidders	-0.051 (0.215)	-0.078* (0.041)	-0.039 (0.208)	-0.063 (0.044)	-0.036 (0.204)	-0.048 (0.048)	0.022 (0.018)	-0.008 (0.016)	0.030* (0.018)	-0.010 (0.017)	0.046** (0.019)	0.001 (0.017)
IMR_holding	0.006 (0.004)	0.002** (0.001)	0.006* (0.004)	0.003*** (0.001)	0.006 (0.004)	0.003** (0.001)	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.000)	-0.000 (0.001)	0.000 (0.000)
IMR_bigbank	0.000 (0.002)	0.000 (0.001)	0.001 (0.002)	-0.000 (0.001)	0.001 (0.002)	-0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Constant	-1.206* (0.654)	-0.301 (0.297)	-1.231* (0.639)	-0.375 (0.297)	-1.287** (0.644)	-0.336 (0.300)	-0.012 (0.109)	-0.149** (0.073)	-0.078 (0.142)	-0.160* (0.096)	-0.227 (0.153)	-0.208 (0.128)
R-squared	0.614	0.453	0.631	0.463	0.634	0.465	0.653	0.585	0.680	0.564	0.652	0.572
Number of deals	327	546	327	547	327	547	327	541	327	542	327	542
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix F Results using sub-sample of targets with low information asymmetry

In this appendix, we report the impact of connected fund holdings on premium, target, and acquirer abnormal returns, considering hedge funds' information-sharing incentives or the importance of information sharing for the bidder for sub-samples of targets with information asymmetry below the median. Tables [F1](#) to [F6](#) report the results.

Table F1: Target premium: hedge funds' information sharing incentives

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium considering hedge funds' information sharing incentives, using sub-samples of targets with information asymmetry below the median. The dependent variable is the premium paid computed relative to the target market value one week before the announcement. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. We further include holdings by hedge funds for which the target accounts for a low share in a hedge fund portfolio, hedge funds have low investments in the target industry, hedge funds has held the target for a short period, a hedge fund has a single prime broker, the prime broker services 70% of the assets of a hedge fund, a hedge fund performs poorly, and a hedge fund with low inflows. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Holding_connected (β)	-0.357 (0.693)	-1.053 (0.789)	-0.585 (0.718)	-0.723 (0.791)	-0.196 (0.779)	0.325 (1.100)	-0.500 (0.798)
Holding_connected_lowshare (β^*)	7.862 (6.303)						
Holding_connected_lowsic (β^*)		5.640 (3.609)					
Holding_connected_shortperiod (β^*)			4.659 (3.342)				
Holding_connected_singlePB (β^*)				3.221 (2.569)			
Holding_connected_dominant70 (β^*)					0.089 (1.331)		
Holding_connected_lowret (β^*)						-1.181 (1.993)	
Holding_connected_lowflow (β^*)							1.363 (1.830)
Holding_total	-0.199 (0.236)	-0.140 (0.234)	-0.044 (0.236)	-0.087 (0.327)	-0.033 (0.329)	-0.177 (0.245)	-0.092 (0.224)
Holding_total_lowshare	0.448 (0.904)						
Holding_total_lowsic		-0.217 (0.404)					
Holding_total_shortperiod			-1.999** (0.977)				
Holding_total_singlePB				-0.434 (0.596)			
Holding_total_dominant70					-0.565 (0.609)		
Holding_total_lowret						-0.462 (0.866)	
Holding_total_lowflow							-0.999 (0.761)
Constant	0.010 (0.356)	-0.023 (0.359)	0.013 (0.356)	0.015 (0.354)	-0.025 (0.361)	-0.006 (0.342)	0.016 (0.348)
R-squared	0.297	0.301	0.303	0.296	0.296	0.295	0.298
Number of deals	547	547	547	547	547	547	547
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table F2: Target abnormal returns: hedge funds' information sharing incentives

This table reports the results from Equation (5) for the impact of connected fund holdings on target abnormal returns considering hedge funds' information sharing incentives, using sub-samples of targets with information asymmetry below the median. The dependent variable is the target abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. We further include holdings by hedge funds for which the target accounts for a low share in a hedge fund portfolio, hedge funds have low investments in the target industry, hedge funds has held the target for a short period, a hedge fund has a single prime broker, the prime broker services 70% of the assets of a hedge fund, a hedge fund performs poorly, and a hedge fund with low inflows. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Holding_connected (β)	-0.322 (0.578)	-0.929* (0.551)	-0.171 (0.569)	-0.334 (0.654)	-0.002 (0.659)	-0.043 (0.712)	-0.639 (0.626)
Holding_connected_lowshare (β^*)	5.070 (3.510)						
Holding_connected_lowsic (β^*)		6.021** (2.659)					
Holding_connected_shortperiod (β^*)			1.323 (1.625)				
Holding_connected_singlePB (β^*)				0.117 (2.022)			
Holding_connected_dominant70 (β^*)					-0.625 (1.027)		
Holding_connected_lowret (β^*)						-0.031 (1.205)	
Holding_connected_lowflow (β^*)							1.890* (1.004)
Holding_total	-0.074 (0.215)	-0.029 (0.213)	0.053 (0.239)	-0.000 (0.303)	0.001 (0.283)	-0.074 (0.220)	-0.041 (0.217)
Holding_total_lowshare	-0.520 (0.753)						
Holding_total_lowsic		-0.437* (0.233)					
Holding_total_shortperiod			-1.845** (0.763)				
Holding_total_singlePB				-0.405 (0.527)			
Holding_total_dominant70					-0.341 (0.414)		
Holding_total_lowret						-0.449 (0.528)	
Holding_total_lowflow							-0.614* (0.341)
Constant	-0.162 (0.270)	-0.193 (0.272)	-0.176 (0.277)	-0.159 (0.259)	-0.196 (0.277)	-0.171 (0.262)	-0.149 (0.263)
R-squared	0.274	0.285	0.286	0.273	0.273	0.271	0.275
Number of deals	510	510	510	510	510	510	510
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table F3: Acquirer abnormal returns: hedge funds' information sharing incentives

This table reports the results from Equation (5) for the impact of connected fund holdings on acquirer abnormal returns considering hedge funds' information sharing incentives, using sub-samples of targets with information asymmetry below the median. The dependent variable is the acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. We further include holdings by hedge funds for which the target accounts for a low share in a hedge fund portfolio, hedge funds have low investments in the target industry, hedge funds has held the target for a short period, a hedge fund has a single prime broker, the prime broker services 70% of the assets of a hedge fund, a hedge fund performs poorly, and a hedge fund with low inflows. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Holding_connected (β)	-0.133 (0.132)	-0.158 (0.141)	-0.115 (0.132)	-0.089 (0.127)	-0.096 (0.155)	-0.141 (0.179)	-0.029 (0.141)
Holding_connected_lowshare (β^*)	0.526 (0.935)						
Holding_connected_lowsic (β^*)		0.156 (0.724)					
Holding_connected_shortperiod (β^*)			-0.000 (0.625)				
Holding_connected_singlePB (β^*)				-0.316 (0.689)			
Holding_connected_dominant70 (β^*)					-0.243 (0.413)		
Holding_connected_lowret (β^*)						0.213 (0.251)	
Holding_connected_lowflow (β^*)							-0.401 (0.258)
Holding_total	0.046* (0.025)	0.039 (0.026)	0.044 (0.030)	0.045 (0.027)	-0.003 (0.030)	0.049* (0.026)	0.033 (0.026)
Holding_total_lowshare	-0.132 (0.195)						
Holding_total_lowsic		0.080 (0.069)					
Holding_total_shortperiod			-0.013 (0.201)				
Holding_total_singlePB				-0.009 (0.078)			
Holding_total_dominant70					0.168** (0.082)		
Holding_total_lowret						-0.156 (0.148)	
Holding_total_lowflow							0.128 (0.130)
Constant	-0.043 (0.049)	-0.048 (0.049)	-0.046 (0.049)	-0.046 (0.049)	-0.036 (0.048)	-0.042 (0.049)	-0.051 (0.050)
R-squared	0.326	0.328	0.325	0.326	0.333	0.327	0.328
Number of deals	505	505	505	505	505	505	505
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table F4: Target premium: importance of information sharing for the bidder

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium, considering the importance of information sharing for the bidder, using sub-samples of targets with information asymmetry below the median. The dependent variable is the premium paid one week before the announcement. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Diff_Ind* is a dummy variable that equals one if the bidder and target are from different 3-digit SIC code industries and 0 otherwise. *Multi-bidder* is a dummy variable that equals one if more than one bidder is involved. *Pctstock* is the percentage of stock payment. *Merger_wave* is a dummy variable that equals one when there is a merger wave in the target-acquirer industry. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Holding_connected (β)	-1.765 (1.344)	-0.701 (0.835)	0.010 (0.895)	-3.470** (1.667)
Holding_connected \times Diff_Ind (β^*)	2.039 (1.412)			
Holding_connected \times Multi-bidder (β^*)		0.983 (1.171)		
Holding_connected \times Pctstock (β^*)			-2.408 (3.442)	
Holding_connected \times Merger_wave (β^*)				3.544* (2.042)
Holding_total	-0.186 (0.470)	-0.063 (0.315)	-0.165 (0.445)	0.475 (0.766)
Holding_total \times Diff_Ind	0.058 (0.779)			
Holding_total \times Multi-bidder		-1.279** (0.589)		
Holding_total \times Pctstock			0.052 (1.160)	
Holding_total \times Merger_wave				-0.889 (0.822)
Constant	-0.217 (0.500)	-0.413 (0.514)	-0.221 (0.519)	-0.239 (0.489)
R-squared	0.501	0.503	0.499	0.507
Number of deals	547	547	547	547
Controls	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table F5: Target abnormal returns: importance of information sharing for the bidder

This table reports the results from Equation (5) for the impact of connected fund holdings on target abnormal returns, considering the importance of information sharing for the bidder, using sub-samples of targets with information asymmetry below the median. The dependent variable is the target abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Diff_Ind* is a dummy variable that equals one if the bidder and target are from different 3-digit SIC code industries and 0 otherwise. *Multi-bidder* is a dummy variable that equals one if more than one bidder is involved. *Pctstock* is the percentage of stock payment. *Merger_wave* is a dummy variable that equals one when there is a merger wave in the target-acquirer industry. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Holding_connected (β)	-0.343 (0.965)	-0.637 (0.691)	-0.484 (0.962)	-3.504** (1.655)
Holding_connected \times Diff_Ind (β^*)	0.098 (1.120)			
Holding_connected \times Multi-bidder (β^*)		1.870 (1.206)		
Holding_connected \times Pctstock (β^*)			0.715 (1.862)	
Holding_connected \times Merger_wave (β^*)				3.959** (1.721)
Holding_total	-0.092 (0.217)	0.014 (0.323)	0.262 (0.505)	0.577 (0.719)
Holding_total \times Diff_Ind	0.094 (0.528)			
Holding_total \times Multi-bidder		-0.613 (0.476)		
Holding_total \times Pctstock			-0.893 (0.784)	
Holding_total \times Merger_wave				-0.880 (0.691)
Constant	-0.294 (0.427)	-0.325 (0.434)	-0.243 (0.421)	-0.232 (0.388)
R-squared	0.459	0.463	0.468	0.489
Number of deals	547	547	547	547
Controls	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table F6: Acquirer abnormal returns: importance of information sharing for the bidder

This table reports the results from Equation (5) for the impact of connected fund holdings on acquirer abnormal returns considering the importance of information sharing for the bidder, using sub-samples of targets with information asymmetry below the median. The dependent variable is the acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Diff_Ind* is a dummy variable that equals one if bidder and target are from different 3-digit SIC code industries and 0 otherwise. *Multi-bidder* is a dummy variable that equals one if more than one bidder is involved. *Pctstock* is the percentage of stock payment. *Merger_wave* is a dummy variable that equals one when there is a merger wave in the target-acquirer industry. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Holding_connected (β)	-0.130 (0.256)	-0.109 (0.184)	0.140 (0.169)	0.011 (0.426)
Holding_connected \times Diff_Ind (β^*)	0.078 (0.304)			
Holding_connected \times Multi-bidder (β^*)		0.021 (0.261)		
Holding_connected \times Pctstock (β^*)			-0.835** (0.401)	
Holding_connected \times Merger_wave (β^*)				-0.145 (0.422)
Holding_total	0.068 (0.049)	0.046 (0.037)	0.066 (0.040)	-0.025 (0.066)
Holding_total \times Diff_Ind	-0.023 (0.059)			
Holding_total \times Multi-bidder		0.127 (0.093)		
Holding_total \times Pctstock			-0.014 (0.093)	
Holding_total \times Merger_wave				0.113 (0.074)
Constant	-0.149** (0.063)	-0.130** (0.060)	-0.138** (0.064)	-0.146** (0.060)
R-squared	0.627	0.629	0.634	0.634
Number of deals	505	505	505	505
Controls	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Appendix G Target premium and CAR: importance of information sharing for the bidder

This section reports the results for the effect of the importance of information sharing for the bidder on target premium and CAR, for targets with high levels of information asymmetry.

Table G1: Target premium: importance of information sharing for the bidder

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium, considering the importance of information sharing for the bidder, using sub-samples of targets with information asymmetry above the median. The dependent variable is the premium paid relative to the target market value one week before the announcement. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Diff_Ind* is a dummy variable that equals one if the bidder and target are from different 3-digit SIC code industries and 0 otherwise. *Multi-bidder* is a dummy variable that equals one if more than one bidder is involved. *Pctstock* is the percentage of stock payment. *Merger_wave* is a dummy variable that equals one when there is a merger wave in the target-acquirer industry. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Holding_connected (β)	3.768 (8.147)	-0.372 (2.735)	-2.128 (5.004)	7.000 (8.921)
Holding_connected \times Diff_Ind (β^*)	-6.449 (8.869)			
Holding_connected \times Multi-bidder (β^*)		-9.243 (15.506)		
Holding_connected \times Pctstock (β^*)			2.303 (6.061)	
Holding_connected \times Merger_wave (β^*)				-10.144 (9.208)
Holding_total	-0.471 (0.401)	-0.635** (0.287)	-0.359 (0.722)	-1.120*** (0.389)
Holding_total \times Diff_Ind	-0.281 (0.458)			
Holding_total \times Multi-bidder		0.608 (3.765)		
Holding_total \times Pctstock			-0.530 (1.125)	
Holding_total \times Merger_wave				0.968 (0.674)
Constant	-1.305 (0.818)	-1.304 (0.898)	-1.311 (0.877)	-1.163 (0.798)
R-squared	0.590	0.586	0.586	0.595
Number of deals	329	329	329	329
Controls	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table G2: Target abnormal returns: importance of information sharing for the bidder

This table reports the results from Equation (5) for the impact of connected fund holdings on target abnormal returns, considering the importance of information sharing for the bidder, using sub-samples of targets with information asymmetry above the median. The dependent variable is the target abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. *Diff_Ind* is a dummy variable that equals one if the bidder and target are from different 3-digit SIC code industries and 0 otherwise. *Multi-bidder* is a dummy variable that equals one if more than one bidder is involved. *Pctstock* is the percentage of stock payment. *Merger_wave* is a dummy variable that equals one when there is a merger wave in the target-acquirer industry. Other variables are defined in Table 2. We use all the other controls as in Table 9, which are not reported for the sake of space. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Holding_connected (β)	-0.222 (4.317)	-2.093 (1.825)	-5.559 (4.775)	3.000 (4.039)
Holding_connected \times Diff_Ind (β^*)	-2.835 (4.998)			
Holding_connected \times Multi-bidder (β^*)		-3.792 (18.261)		
Holding_connected \times Pctstock (β^*)			5.049 (5.714)	
Holding_connected \times Merger_wave (β^*)				-7.246 (4.384)
Holding_total	-0.761 (0.468)	-0.480* (0.264)	-0.139 (0.405)	-0.628 (0.533)
Holding_total \times Diff_Ind	0.446 (0.608)			
Holding_total \times Multi-bidder		-0.732 (3.564)		
Holding_total \times Pctstock			-0.739 (0.828)	
Holding_total \times Merger_wave				0.149 (0.839)
Constant	-1.124* (0.589)	-1.301* (0.730)	-1.234* (0.652)	-1.099** (0.506)
R-squared	0.581	0.579	0.585	0.594
Number of deals	329	329	329	329
Controls	Yes	Yes	Yes	Yes
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Appendix H Probability of insider trading

In this appendix we reports the estimation results of the probit model for the impact of connected fund holdings on the probability of insider trading. The dependent variable is a dummy that equals one if there is insider trading in a deal.

Table H1: Probability of insider trading

Columns (1) and (2) use sub-samples of targets with information asymmetry above or below the median separately. $Holding_connected_{t-1}$ ($Holding_total_{t-1}$) are the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2 of the main paper. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	IA_high	IA_low
Holding_connected (β)	-1.310 (1.876)	-0.809 (0.671)
Holding_total	0.225 (0.247)	0.095 (0.191)
Holding_acquirer	-0.269 (0.218)	0.429 (0.363)
Toehold	0.002 (0.006)	0.001 (0.002)
ROA_t	0.419 (0.291)	0.235 (0.245)
Leverage_t	-0.077 (0.109)	-0.022 (0.085)
B/M_t	0.003 (0.041)	-0.016 (0.035)
Size_a	-0.016 (0.027)	-0.016 (0.023)
B/M_a	-0.083 (0.134)	0.004 (0.078)
Tangible_t	-0.182 (0.220)	-0.029 (0.094)
RELSIZE	0.011 (0.010)	0.015 (0.017)
Valpct	-0.082 (0.174)	-0.035 (0.041)
Holding_MF	0.003 (0.024)	0.032 (0.053)
Pctcash	-0.021 (0.064)	0.099 (0.070)
Hostile	0.231 (0.250)	0.100 (0.168)
Diff_Ind	-0.024 (0.026)	-0.023 (0.047)
Merger of equals	-0.032 (0.134)	-0.058 (0.089)
Tender	0.051 (0.067)	0.101 (0.073)
Number of bidders	0.060 (0.086)	0.025 (0.061)
IMR_holding	-0.000 (0.002)	0.001 (0.001)
IMR_bigbank	-0.001 (0.002)	-0.002 (0.001)
Constant	0.704 (0.633)	0.118 (0.333)
R-squared	0.484	0.423
Number of deals	329	547
Industry, Year, Advisor FE	Yes	Yes

Appendix I Results using pseudo hedge fund-prime broker connections

In this appendix, we repeat the analysis using a pseudo hedge fund-prime broker connection to account for endogeneity. We estimate hedge funds' choice of prime brokers using fund size, domicile, and strategy. Tables [I1](#) to [I5](#) show the results. We find that the advisor's pseudo connection to hedge funds also significantly increases the likelihood of the advisor being selected. A firm is more likely to be chosen as target if it has pseudo-connected hedge fund holdings. Pseudo connected funds significantly decrease the holdings in targets and acquirers before the announcement. The pseudo-connected hedge fund holdings significantly increase deal completion and reduce target premium for targets with higher information asymmetry levels.

Table II: Choice of the advisor: pseudo hedge fund-prime broker connections

This table reports the results from Equation (1), examining the acquirer's choice of advisors in M&A using pseudo hedge fund-prime broker connections. Columns (1) and (2) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if an advisor is hired by the acquirer for the operation and zero otherwise. *Connected* is a dummy variable that equals one if an advisor is the pseudo prime broker of a hedge fund with holdings in the target firm and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's pseudo-connected hedge funds in the target firm one quarter before the acquisition announcement. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low
Connected (β_1)	0.391*** (0.100)	0.449*** (0.063)
Holding_connected(β_2)	0.472 (0.756)	0.126 (0.547)
Acquisition times	0.025*** (0.008)	0.031*** (0.004)
Acquisition value	-0.028* (0.016)	0.082*** (0.013)
Prior advisor	0.598** (0.302)	1.249*** (0.143)
Expertise	0.554*** (0.071)	0.174*** (0.049)
IMR_holding	0.001 (0.001)	0.004** (0.002)
IMR_bigbank	-0.003*** (0.001)	-0.005*** (0.001)
Constant	-2.553*** (0.398)	-3.104*** (0.151)
Pseudo-R:	0.123	0.206
Number of deals	323	541
Observations	16,034	26,817
Industry, Year FE	Yes	Yes

Table I2: Choice of the target: pseudo hedge fund-prime broker connections

This table reports the results from Equation (3), examining the acquirer's choice of targets in M&A using pseudo hedge fund-prime broker connections. Columns (1) and (2) use sub-samples of targets with information asymmetry above or below the median separately. The dependent variable is a dummy variable that equals one if a firm is chosen to be the target and zero otherwise. *Connected* is a dummy variable that equals one if a firm is held by hedge funds whose pseudo prime broker is the advisor and zero otherwise. *Holding_connected* is the percentage holdings of an advisor's pseudo-connected hedge funds in the firm one quarter before the acquisition announcement. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Other variables are defined in Table 2. Standard errors are clustered at the firm level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1) IA_high	(2) IA_low
Connected (β_1)	1.706*** (0.187)	1.614*** (0.100)
Holding_connected (β_2)	4.395** (1.859)	0.410 (1.657)
Size	-0.136*** (0.038)	0.050* (0.026)
B/M	0.017 (0.044)	-0.127* (0.073)
ROE	0.095 (0.061)	-0.025 (0.075)
Leverage	0.137 (0.098)	-0.022 (0.122)
Tangible	0.063 (0.285)	-0.156 (0.198)
Sales	-0.085 (0.058)	-0.172 (0.118)
P/E	0.000 (0.000)	0.000 (0.000)
IMR_holding	-0.000 (0.005)	-0.001 (0.003)
IMR_bigbank	-0.002 (0.002)	0.005** (0.002)
Constant	0.716 (0.802)	-1.065 (0.716)
R-squared	0.081	0.113
Observations	1,884	3,064
Industry, Year, Advisor FE	Yes	Yes

Table I3: Changes in hedge fund holdings before the deal announcement: pseudo hedge fund-prime broker connections

This table reports the results from Equation (4) for the changes in the individual hedge fund holdings in a target or acquirer. Panel A and B report the changes in holdings one quarter before or after the deal announcement, respectively ($\Delta Holding_{t-1}$ and $\Delta Holding_{t+1}$). Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. *Connected* is a dummy variable that equals one if a hedge fund's pseudo prime broker is also the advisory bank in a deal and zero otherwise. *IA* represents the target firm's information asymmetry measure based on five variables (*Amihud*, *SPREAD*, *Size*, *COVER*, *ERR*). Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)	(2)	(3)	(4)
	in target IA_high	IA_low	in acquirer IA_high	IA_low
Panel A: $\Delta Holding_{t-1}$				
Connected (β)	-1.370*** (0.240)	-0.957*** (0.224)	-0.492*** (0.027)	0.020 (0.020)
Constant	1.237*** (0.208)	1.067*** (0.223)	0.332*** (0.086)	1.198*** (0.009)
R-squared	0.495	0.182	0.202	0.089
Number of deals	345	565	323	523
Deal and Fund FE	Yes	Yes	Yes	Yes
Panel B: $\Delta Holding_{t+1}$				
Connected (β)	-2.722*** (0.345)	-0.257* (0.136)	0.180** (0.076)	0.075 (0.124)
Constant	0.631* (0.324)	-0.314*** (0.060)	-3.924*** (0.132)	0.304** (0.130)
R-squared	0.498	0.211	0.948	0.153
Number of deals	153	317	195	390
Deal and Fund FE	Yes	Yes	Yes	Yes

Table I4: Deal duration, and completion: pseudo hedge fund-prime broker connections

This table reports the results from Equation (5) for the impact of connected fund holdings on deal duration and completion using pseudo hedge fund-prime broker connections. Columns (1), (3) and (2), (4) use sub-samples of targets with information asymmetry above or below the median separately. *Duration* is the number of months between the deal announcement and the deal outcome. *Completion* is a dummy variable that equals one if the deal is completed. *Holding_connected* (*Holding_total*) are the holdings of pseudo-connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	Duration		Completion	
	IA_high	IA_low	IA_high	IA_low
Holding_connected (β)	-2.256 (1.848)	0.721 (9.415)	32.436*** (10.895)	12.212 (10.693)
Holding_total	1.572 (2.128)	-1.037 (1.881)	3.642 (3.211)	0.002 (1.190)
Holding_acquirer	-3.855* (2.261)	2.821 (2.083)	0.589 (1.893)	-3.349*** (1.082)
Toehold	0.201*** (0.039)	0.122*** (0.036)	0.028 (0.031)	
Deal value	-0.177 (0.289)	0.042*** (0.015)	5.598 (3.875)	0.002 (0.010)
Termination fee	-4.472 (20.024)	0.857 (0.556)	-1.351 (32.953)	-0.557* (0.317)
RELSIZE	0.078*** (0.026)	-0.068* (0.040)	0.545 (0.441)	-0.010 (0.032)
Pctcash	-1.531* (0.916)	0.307 (0.546)	0.614 (0.607)	0.043 (0.278)
Hostile	-	10.474*** (1.931)	-	-
Diff_Ind	-0.411 (0.359)	-0.413 (0.359)	-0.137 (0.508)	0.104 (0.207)
Merger of equals	5.574*** (1.997)	1.562 (1.707)	-	-0.270 (0.635)
Tender	-1.726*** (0.382)	-2.131*** (0.433)	-0.646 (0.527)	1.037*** (0.320)
Number of bidders	-2.689* (1.441)	1.080 (1.119)	-	-1.650*** (0.373)
IMR_holding	-0.008 (0.012)	0.004 (0.016)	-0.018 (0.019)	-0.000 (0.009)
IMR_bigbank	-0.005 (0.005)	-0.023*** (0.008)	-0.003 (0.015)	0.008 (0.006)
Constant	9.588*** (2.503)	4.379** (2.034)	-1.413 (3.730)	1.848 (1.268)
R-squared	0.632	0.437	0.333	0.334
Number of deals	298	480	119	367
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes

Table I5: Target premium, and abnormal returns: pseudo hedge fund-prime broker connections

This table reports the results from Equation (5) for the impact of connected fund holdings on target premium and abnormal returns using pseudo hedge fund-prime broker connections. Columns (1), (3), (5), (7) and (2), (4), (6), (8) use sub-samples of targets with information asymmetry above or below the median separately. *Premium* is the premium paid one week (four weeks) before the announcement. *TCAR* and *ACAR* are the target and acquirer abnormal returns on the acquisition announcement date. *Holding_connected* (*Holding_total*) are the holdings of pseudo-connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Robust standard errors are reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Sample=	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Premium (one week) IA_high	Premium (one week) IA_low	Premium (four weeks) IA_high	Premium (four weeks) IA_low	TCAR IA_high IA_low		ACAR IA_high IA_low	
Holding_connected (β)	-0.900* (0.529)	-0.125 (0.813)	-0.802 (0.560)	0.316 (0.757)	0.017 (0.670)	-0.015 (0.459)	0.025 (0.086)	-0.003 (0.160)
Holding_total	-0.497* (0.285)	-0.195 (0.296)	-0.603* (0.333)	-0.151 (0.359)	-0.554 (0.337)	-0.060 (0.272)	0.005 (0.040)	0.052 (0.036)
Holding_acquirer	-0.113 (0.566)	-0.060 (0.290)	-0.281 (0.508)	-0.254 (0.284)	-0.055 (0.518)	0.128 (0.144)	-0.035 (0.031)	0.022 (0.072)
Toehold	-0.017 (0.022)	-0.006 (0.004)	-0.006 (0.011)	-0.005 (0.005)	-0.014 (0.008)	-0.002 (0.003)	-0.001** (0.001)	0.003*** (0.001)
ROA_t	-0.978 (0.937)	-0.020 (0.446)	-1.023 (0.782)	-0.165 (0.679)	-0.544 (0.549)	-0.402 (0.259)	0.025 (0.061)	-0.014 (0.044)
Leverage_t	-0.059 (0.192)	-0.042 (0.120)	-0.338* (0.175)	-0.027 (0.124)	-0.016 (0.111)	-0.024 (0.077)	0.011 (0.013)	-0.001 (0.011)
B/M_t	-0.023 (0.112)	0.007 (0.030)	-0.039 (0.130)	-0.009 (0.026)	-0.036 (0.050)	0.025 (0.017)	-0.006 (0.014)	-0.005 (0.004)
Size_a	0.076* (0.042)	0.020 (0.018)	0.082** (0.041)	0.024 (0.018)	0.061* (0.037)	0.031 (0.022)	-0.001 (0.003)	0.008** (0.003)
B/M_a	0.198 (0.181)	-0.077 (0.085)	0.161 (0.183)	-0.051 (0.084)	0.216* (0.111)	-0.005 (0.062)	0.005 (0.017)	0.006 (0.020)
Tangible_t	0.072 (0.199)	0.067 (0.173)	0.263 (0.263)	0.047 (0.194)	0.237 (0.199)	0.115* (0.058)	-0.031 (0.028)	0.027 (0.019)
RELSIZE	0.003 (0.008)	-0.017 (0.019)	-0.002 (0.008)	-0.016 (0.014)	-0.001 (0.010)	-0.006 (0.014)	0.000 (0.001)	-0.004 (0.003)
Valpct	-0.118 (0.152)	-0.015 (0.037)	-0.134 (0.106)	0.010 (0.030)	-0.179 (0.164)	-0.009 (0.027)	-0.002 (0.013)	0.014* (0.007)
Holding_MF	-0.008 (0.040)	-0.010 (0.017)	-0.036 (0.036)	-0.005 (0.025)	-0.045 (0.037)	-0.022 (0.020)	-0.004 (0.005)	0.003 (0.003)
Pctcash	0.017 (0.101)	0.081 (0.072)	-0.068 (0.116)	0.082 (0.062)	-0.050 (0.093)	0.054 (0.049)	-0.011 (0.018)	0.023* (0.012)
Hostile	0.165 (0.300)	0.087 (0.182)	0.078 (0.400)	-0.046 (0.120)	-0.452** (0.223)	-0.036 (0.097)	0.085** (0.039)	-0.054* (0.030)
Diff_Ind	-0.050 (0.058)	0.002 (0.041)	-0.020 (0.081)	-0.013 (0.042)	-0.052 (0.059)	0.019 (0.028)	-0.011 (0.007)	-0.008 (0.008)
Merger of equals	0.097 (0.401)	-0.252** (0.110)	0.097 (0.483)	-0.358*** (0.100)	0.063 (0.265)	-0.158** (0.073)	0.066*** (0.025)	-0.006 (0.043)
Tender	0.042 (0.118)	0.166** (0.080)	0.211 (0.130)	0.205** (0.085)	-0.036 (0.084)	0.110** (0.048)	-0.000 (0.006)	0.003 (0.012)
Number of bidders	-0.078 (0.219)	0.092 (0.078)	0.011 (0.208)	0.201* (0.121)	-0.014 (0.175)	-0.093* (0.052)	0.009 (0.009)	-0.015 (0.013)
IMR_holding	0.006* (0.003)	0.004*** (0.001)	0.004 (0.003)	0.002 (0.001)	0.005 (0.004)	0.002 (0.001)	-0.000 (0.000)	0.000 (0.000)
IMR_bigbank	0.001 (0.002)	-0.001 (0.001)	0.000 (0.002)	-0.000 (0.001)	0.000 (0.002)	-0.000 (0.001)	0.000 (0.000)	0.000 (0.000)
Constant	-1.342 (0.820)	-0.260 (0.523)	-1.248 (0.833)	-0.255 (0.552)	-1.240* (0.626)	-0.293 (0.426)	0.084 (0.083)	-0.150** (0.064)
R-squared	0.586	0.496	0.656	0.485	0.575	0.458	0.623	0.626
Number of deals	329	547	329	547	317	510	317	505
Industry, Year, Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes