Advisor-hedge fund connections and their role in M&A

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Abstract

This paper examines the impact of investment banks' 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 with holdings in the target before the deal announcement. Such connections increase the likelihood of deal completion while reducing the premium paid and the target abnormal return for target firms with a high degree of information asymmetry.

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

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1 Introduction

Mergers and acquisitions (M&A) are among the most important corporate events bringing substantial resource re-allocations within the economy. According to the analysis of the Institute for Mergers, Acquisitions and Alliances (IMAA)[1], in 2015 alone, when the most recent merger wave peaked, the total transaction value of US M&A reached $2,417 billion. A common characteristic of these transactions is that they usually involve financial advisors. For instance, on average, over 84% (by transaction value) of deals between 1990 and 2020 have been facilitated by an advisory firm (see Figure 1).

[Figure 1 in here]

Investment banks acting as advisors help executing complex deals, especially under high information asymmetry (Servaes and Zenner, 1996). At the same time, they may exploit insider information gained though the advisory process to their own advantage (Bodnaruk et al., 2009) or share valuable firm-specific information with their other clients, such as hedge funds (Kumar et al., 2020).

Our paper examines the information flow between different parties within connection networks during M&As and the effects of this information transmission on M&A outcomes. The key players here are (1) a bidder - a firm that intends to acquire a target and may have an initial stake in the target; (2) an advisor - an investment bank chosen by the bidder to facilitate the deal, the bank may also serve as a prime broker to hedge funds; (3) hedge funds that may be connected or not to the advisor through the prime-brokerage relation and may have a stake in the target firm; (4) a target - a firm that is to be acquired.

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

In such a network the information flow could go in both directions. On the one hand, advisors may use connected hedge funds' holdings in the target firm as an 'indirect toehold' to obtain additional information about the target and use it to help the bidder to reduced asymmetry of information and strike a better deal. On the other hand, hedge funds may gain 'information advantage' from the advisor about the prospects of the deal and trade in the target's stock accordingly before the M&A announcement.

Using a sample of 1,199 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 choose the investment bank whose connected hedge funds have holdings in the target firm. The conditional probability of a bank to be selected as the adviser given that it has connections to hedge funds holding the target is 0.961. This probability is only 0.014 in the absence of such connections.

We do not find evidence that advisors share their private information about the deal with their connected funds. Connected hedge funds do not exhibit any significant changes in their positions in target or acquirer firms before the deal announcement compared to unconnected funds. However, connected funds' holdings in the target firm increase the likelihood of deal completion and are associated with significantly lower target premium and smaller target abnormal returns on the announcement date, especially for target firms with higher degrees of information asymmetry. This finding suggests that the investment bank that advises the bidder may benefit from information obtained through connected hedge funds, supporting our 'indirect toehold' hypothesis. This seems to help the bidder to reduce information asymmetry, and enhance its bargaining power.

As such, our analysis contributes to the discussion on the role of advisors in M&A, which is largely populated with mixed findings. Theoretically, as mentioned earlier, investment banks help to execute complex deals that are characterized by significant

asymmetric information and reduce transaction costs (Servaes and Zenner, 1996). The empirical evidence are mixed, however. Investment bank involvement seems to lead to greater shareholder wealth gains (Kale et al., 2003), larger M&A returns (Bao and Edmans, 2011; Golubov et al., 2012), and higher probability of 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, some evidence suggests that the type of the advisor impacts the terms of the M&A deals. For example, commercial banks have a comparative advantage relative to investment banks in serving as M&A advisors. If a target's own bank acts as the advisor, it fulfills well 'a certification role' for target's quality, which leads to higher 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 lower premiums (Song et al., 2013). Several other factors are found to affect the choice of advisor. These include prior performance of the advisor and the advisors' market values changes (Sibilkov and McConnell, 2014), prior client relationships, the reputation of the advisor, and deal complexity (Francis et al., 2014), advisor's industry expertise and firms' concerns about information leakage to industry rivals (Chang et al., 2016). Forte et al. (2010) focus on target's choice of advisor and show that the probability of hiring the 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 and show that advisors' connection with hedge funds that have holdings in the target firm is a significant determinant of acquirer firms' choice of advisor.

Our study also contributes to the literature on the impact of information asymmetry in acquisitions and gains' split between the firms. Acquirer returns are significantly higher in stock-swap acquisitions of difficult-to-value targets (Officer et al., 2009). Targets with higher information asymmetry tend to receive larger bid premiums from the acquirers,

and the acquirers' investors respond more positively to the acquisition of an opaque target (Cheng et al., 2016). Acquirers strategically exploit their superior bargaining power and are more likely to offer cash payments and earn a larger fraction of total M&A gains if the target is characterized by higher information asymmetry (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 holding the target firms are also a source of information for acquirers. Such indirect toehold seems to help the bidder to collect more information about the target, reduce information asymmetry, and gain a higher bargaining power. This result is complementary to that of Bodnaruk et al. (2009), who show 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 the premiums paid for targets. Hence, the authors implicitly document the information flow from the acquirers to the advisors, which the latter use for their benefit. Our findings suggest the existence of the reverse information flow too, from the targets though hedge fund investors to the advisors and the bidders, which is beneficial for the bidders.

Our paper is related to the role of (direct) toeholds – pre-bid ownership of target share – in acquisitions. Bidders usually use toeholds to yield an information advantage over rivals, which positively affects 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 it is more beneficial if a target is opaque. Our results indicate that advisors' connections to

hedge funds holding targets seem to function as an 'indirect toehold' and similarly help to create an informational advantage for the bidders.

Our analysis contributes to a growing literature on the relationship between hedge funds and their prime brokers and the potential information flow from prime brokers to hedge funds. For instance, hedge funds sharing prime brokers exhibit a strong co-movement in returns, often attributable to information flows from the common broker (Chung and Kang, 2016). Similarly, the 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 also serve as IPO underwriters (Qian and Zhong, 2018). We contribute to the literature by pointing toward the existence of the reverse direction of information flow as well: from hedge funds to their prime brokers.

Finally, our paper extends the literature on the role and impact of hedge funds in the M&A market. Hedge fund activist interventions substantially increase the probability of a takeover offer and enhance shareholder value (Boyson et al., 2017); it also improves firms' M&A decisions and investors favourably receive such post-activism acquisitions (Wu and Chung, 2021). On the contrary, targets with agency problems and the threat of investor coordination often engage in hostile resistance, which leads to adverse outcomes unless hedge funds counter resist (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 effects 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 the M&A announcement, and their stakes in targets are positively related to the target takeover premium. Our paper highlights how hedge funds may potentially gather target-related

private information through their holdings and then transmit it to bidders via connected advisory firms.

2 Research Design

This section introduces two (not mutually exclusive) scenarios for the direction of information flow in M&A, and then discusses how this information flow may affect the choice of an advisor, changes in hedge fund holdings, deal duration, deal completion, target premium, and abnormal returns.

Figure 2 illustrates the direction of information flow between targets, hedge funds, advisors and bidders in M&A.

[Figure 2 in here]

Consider, first, the potential information flow from targets to hedge funds (thought their holdings in targets), then to advisors (through their prime-brokerage relations to hedge funds) and finally to acquirers. This constitutes our 'indirect toehold' scenario.

Hansen (1987) argues that a lemons problem arises in M&A transactions when targets possess proprietary information about their own value. Bidders can mitigate information asymmetry 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). In particular, financial advisors use their expertise to collect superior information for the potential targets and identify synergies. The advisors have the incentives to help the bidder and charge advisory fees. In addition, direct small holdings by the bidder in the target – toehold – are also a source

of information for the bidders (Povel and Sertsios, 2014). However, a toehold purchase may create rumors of a pending bid that can result in a pre-bid run-up of the target market value that increases the offer price (Ravid and Spiegel, 1999) and a rejection of negotiations by the target (Betton et al., 2009). Therefore, advisors' connected fund holdings in the target can be a valuable source of information for acquirers, and such indirect access to information may have lower costs than a direct toehold.

In this 'indirect toehold' scenario, we would expect:
(1) the acquirer to be more likely to choose an advisors with connected hedge funds holding the target;
(2) the information asymmetry between the target and the bidder to reduce, the deal duration to shorten and the likelihood of the acquisition completion to increase;
(3) the acquirer to gain higher bargaining power, leading to a reduction in the premium paid and a lower target abnormal return on the announcement date;
(4) the gains of hedge funds holding the target to reduce, hence no pre-announcement increase in holdings by connected hedge funds in the target.

All these effects would be expected to be more pronounced for targets with higher degrees of information asymmetry, for which the marginal benefits of the information asymmetry reduction are higher.[2]

In the second scenario, the information flows from the acquirers to the advisors and finally to their connected hedge funds. These hedge funds, hence, gain privileged information and may earn superior returns by taking positions in the target firm before the announcement. We call this the 'information advantage' scenario.

[2]Advisory 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.

Qian and Zhong (2018) examine hedge funds' investment in new publicly listed stocks and find that hedge funds obtain information advantages from their prime brokers, who also serve as underwriters for the stocks. Bodnaruk et al. (2009) document that financial conglomerates, in which the affiliated investment banks advise the bidders, increase the positions in targets before M&A announcements which is related to a higher probability of deal success and is highly profitable. Applying the same reasoning to connected hedge funds, if information flows from advisory banks to hedge funds with prime brokerage connections, those funds will exploit this information by taking a position in the target firm in advance and realizing the gain around the M&A announcement.

In this 'information advantage' scenario, we would expect:
(1) the acquirer to be less likely to choose an advisors with connected hedge funds holding the target;
(2) relative to unconnected funds, connected funds should increase their holdings in target firms before the acquisition announcements to gain abnormal returns;
(3) connected hedge funds to be motivated to facilitate the deal[3], the deal duration to reduce, and the likelihood of deal completion to increase; (4) connected fund holdings to be positively related to the target premium and abnormal returns on the announcement date.

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

[Table 1 in here]

To evaluate the predictions from the two scenarios related to the choice of the advisor, we estiamte the following logistic regression:

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

$$
\begin{aligned}
p_{i,j} =& \alpha + \beta_1 Connected_{i,j} + \beta_2 Holding_{i,j} + \beta_3 Connected_{i,j} \cdot IA \\
&+ \beta_4 Holding_{i,j} \cdot IA + \delta Controls_{i,j} + \eta_{i,j}
\end{aligned} \tag{1}
$$

where $p_{i,j}$ is the probability that an advisor i is hired for a particular deal j. For an advisor to enter the estimation, the advisor must have been the advisor in at least one acquisition during the past year before the announcement of the current acquisition. $Connected_{i,j}$ 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 and zero otherwise. $Holding_{i,j}$ is the percentage holdings of advisor i's connected hedge funds in the target firm in acquisition j. In our sample, we identify 13 connected advisors, including 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 while the number of unconnected advisors is 155.

IA represents the information asymmetry measure based on five variables used in Karpoff et al. (2013), Cheng et al. (2016) and Borochin et al. (2019). For each target firm, we compute the following five measures (1) *Amihud* is the average Amihud illiquidity measure over the year prior to the acquisition announcement; (2) *Size* is the natural logarithm of the book value of total assets in the year prior to the acquisition announcement; (3) *Age* is the number of years between the firm's IPO year and the year prior to the acquisition announcement; (4) *COV* is the number of analysts for the target in the year before the acquisition announcement; (5) *ERR* is 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. Analysts' earnings forecasts

come from I/B/E/S. IA is assigned an additional risk point for *Amihud* and ERR which are above the median, and for $Size$, Age and COV which are below the median. A target is said to be of high information asymmetry if the sum of its risk points (the final value of IA) is above the median. On this basis, we classify 515 targets in our sample as high information asymmetry targets.

In choosing the other control variables, we follow Sibilkov and McConnell (2014): *Acquisition times* is the number of times an advisor served 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 served as an acquirer's advisor one year before the acquisition announcements; *Prior advisor* equals one if the advisor served as a M&A advisor for the acquirer one year before the acquisition announcements and zero otherwise; *Expertise* equals one 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. We also include the Inverse Mills Ratio (IMR) in all equations to account for a possible selection on the side of hedge funds. The first stage probit analysis employs all target firms and estimates the the probability of hedge funds to hold this target firm.

Under the toehold scenario, we would expect β_1 on the variable *Connected* to be positive and significant, indicating higher probability of hieing an advisor with connected hedge funds holding the target.

We assess the effect on hedge fund holdings using Equation 2:

$$\Delta Holding\_connected^i_{t-1} = \alpha + \beta \Delta Holding\_unconnected^i_{t-1} + \delta Controls^i_{t-1} + \epsilon^i_t \quad (2)$$

where $\Delta Holding\_connected^i_{t-1}$ and $\Delta Holding\_unconnected^i_{t-1}$ are the changes in holdings

of connected and unconnected hedge funds, respectively, of stock i in quarter $t-1$ (the difference between quarter t-1 and t-2), with the quarter t being the announcement quarter. The holdings are measured as the total number of shares owned by hedge funds scaled by the total shares outstanding of the firm. A hedge fund is said to be connected if it's prime broker is also the advisory bank in the deal.

We also control for the changes of holdings of connected and unconnected funds in quarter $t-2$ ($\Delta Holding\_connected^i_{t-2}$ and $\Delta Holding\_unconnected^i_{t-2}$) and hedge funds' holdings in the acquirer ($Holding\_acquirer_{t-1}$). In choosing the other control variables, we follow Bodnaruk et al. (2009) and Gao et al. (2018): $Return\ on\ asset_t$ (ROA_t) is the return on asset of a target firm in the last fiscal year before the acquisition announcement; $Leverage_t$ is the equity-to-assets ratio of a target firm in the last fiscal year before the acquisition announcement; B/M_t is target's book-to-market value of equity measured in the last fiscal year before the acquisition announcement; $Tangible_t$ 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 min 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 are considering their merger a merger of equals; $Diffind$ 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.

Under the 'indirect toehold' scenario, α should not be positive and β should be not higher than 1 in Equation (2), indicating that connected funds do not increase the holdings in target firms compared to unconnected funds before the acquisition announcements.

In Equation 3, we evaluate the effect on deal duration, premium and cumulative abnormal returns on target and acquirer:

$$\left.\begin{array}{r} Duration^i \\ Premium^i \\ TCAR^i \\ ACAR^i \end{array}\right\} = \alpha + \beta Holding\_connected^i_{t-1} + \delta Controls^i_{t-1} + \epsilon^i \tag{3}$$

Duration is calculated as the number of months between the announcement date and deal effective date; *Premium* is the premium existing one week (four weeks) before acquisition announcement measured by the premium of the offer price to target closing stock price; $TCAR$ ($ACAR$) is the cumulative abnormal returns (CARs) for target (acquirer) firms on the acquisition announcement date, computed using the event study method developed by Brown and Warner (1985). We use the CRSP value-weighted return as the market return and estimate the market model parameters over the 200 trading days ending two months before the merger announcement following Cai and Sevilir (2012).

The key variable of interest is $Holding\_connected^i_{t-1}$, which represents the total holdings of all connected hedge funds in target firm i in quarter t-1. We also control for the total holdings of hedge funds in a target firm in quarter t-1 ($Holding\_total_{t-1}$) and hedge funds' holdings in the acquirer ($Holding\_acquirer_{t-1}$).

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

$$Completion^i = \begin{cases} 1, \text{ if } Completion^i_{L^*} > 0, \text{ the deal is completed;} \\ 0, \text{ otherwise.} \end{cases} \tag{4}$$

$$Completion^i_{L^*} = \alpha + \beta Holding\_connected^i_{t-1} + \delta Controls^i_{t-1} + \epsilon^i \tag{5}$$

where $Completion^i$ equals 1 if deal i is completed. $Completion^i_{L^*}$ is a latent variable that depends on a set of explanatory variables. The error term η^i follows a logistical distribution. 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 a million dollars ($Deal\ Value$) and the amount of the termination fee paid by the acquirer in a million dollars ($Termination\ fee$).

The 'indirect toehold' and 'information advantage' scenarios both give the same predictions about the relation between connected hedge fund holdings and deal duration (which is expected to decrease) and deal completion probability (which is expected to increase). Hence, β in Equation (3) is expected to be negative for deal duration, and it is expected to be positive in Equation (5). Two scenarios give, however, different predictions for target premium and abnormal returns. The 'indirect toehold' mechanism predicts a negative relation, hence, a negative β in Equation (3), while the 'information advantage' predicts a positive relation.

To capture the effect of information asymmetry on changes in hedge fund holdings and deal outcome, we repeat the analysis using two sub-samples of deals with higher and lower target information asymmetry separately.

We include target industry fixed effects, advisor fixed effects and use robust standard errors in Equations (2) - (5). Table 2 summarizes 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 EurekaHedge 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.

Our hedge fund sample is from the TASS and Eurekahedge databases from January 1994 to September 2019, which includes information on affiliated companies, such as prime brokers. Hedge fund investment companies registered in the U.S. 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). In total, we have 5,713,269 data points of holdings (a hedge fund company-quarter-security uniquely defines each data point), and 691 hedge fund companies held at least one of the target firms one quarter before the deal announcement in our sample.

Our sample of acquisition is from the Eikon database. These acquisitions were announced between January 2000 to September 2019. We apply several filters commonly used in the prior M&A literature (see Boyson et al., 2017; Dai et al., 2017; Wu and Chung, 2021): (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 the 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.[4] The initial sample contains 2,681 deals. We use only those deals for which all the necessary variables for our baseline analysis can be computed using the data from CRSP and Compustat[5] and deals with non-zero hedge fund holdings in the target firm.[6] The final sample includes 1,199 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.

Panel A of Table 3 reports the advisor-level descriptive statistics, using connected and unconnected advisors separately. Overall, there are 155 unique advisors in our sample, of which 13 have a hedge fund connection. An advisor is said to be connected if it acts as a prime broker to at least one hedge fund that holds a target in a deal for which the advisor in employed. On average, connected advisors advise more deals than unconnected advisors (57.538 vs 4.807) and deals with larger values (519.880 vs 20.698 billion dollars).

Panel B uses all potential pairs deal-advisor in our sample. For each deal, we consider the chosen advisors and all other potential advisors that are not chosen but active in the advisory market during this year. This results in 58,761 advisor-deal combinations in total, with the vast majority of combinations being with not-chosen advisors. Note, that each advisor may enter both sub-sample of connected and unconnected advisors for

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

[5]The largest loss of data of 993 and 212 deals is driven by the absence of information on target ROA and tangible assets, respectively.

[6]We explicitly concentrate on those deals that have non-zero hedge fund holdings. This setting allows us to isolate the effect of connected vs unconnected hedge funds as opposed to contaminating them with additional effects of general hedge funds' choices of holding targets. We control for the selection of targets though the Inverse Mills Ratio in all the regressions, as will be detailed in Section 4.

different deals. Given the existence of connections to the target through hedge funds, 97.5% of advisors are chosen, while among unconnected advisors 1.3% are chosen to advise the deals. Connected advisors have previously worked on more deals than unconnected advisors (12.5 vs 3.5 deals) with the prior acquisitions being larger in values (99.6 vs 23.8 billion dollars). Connected advisors are also more likely to be the previous advisor of the acquirer in the past year (5.6% of connected advisors vs 0.03% of unconnected advisors) and advise a target in the same industry as the target of the current acquisition (32.2% vs 12.9% of cases, respectively).

Panel C reports the statistics for the deal level. The average number of advisors is 1.844 for deals with at least one connected advisor and 0.788 for deals without such advisors. On average, 5.4 connected hedge funds and 20.7 unconnected hedge funds take a stake in the target firm in deals with connected advisors, while 9.6 hedge funds hold the target in deals without such connections.

As for deal characteristics (Table 4), deals with connected and unconnected advisors exhibit statistically significant differences along multiple dimensions. The average holdings of connected funds are 1.9% in deals with connected advisors, while they are per construction zero in deals with unconnected advisors. Holdings of hedge funds in the acquirer are significantly higher for deals with connected advisors (10.0 % vs 8.5%). On average, deals with connected advisors have targets with higher ROA (-0.004 vs -0.019), higher leverage (0.401 vs 0.355), and lower tangible assets (0.802 vs 0.892). The acquirers in connected deals are of a larger size (6.715 vs 5.824) and they have a lower book-to-market ratio (0.317 vs 0.403). The connected deals are characterised by a higher ratio of deal value to acquirer market capitalization (0.471 vs 0.267), a higher percentage of payment made in cash (0.567 vs 0.487), a larger overall deal value (6.289 vs 0.865 billion dollars), higher termination fees (0.112 vs 0.014 billion dollars), and a lower level of target information

asymmetry (1.297 vs 2.616). Such connected deals are also more likely to be hostile (0.024 vs 0.09) and mergers of equals (0.050 vs 0.024).

[Table 3 to 4 in here]

4 Empirical Results

We report in Table 5 the estimation results for Equation (1), capturing the acquirer's choice of advisors. The coefficient β_1 of 4.13 is significantly at the 1% level. After controlling for other factors that influence the choice of a financial advisor, advisor's connection to hedge funds that hold the target firm significantly increases the likelihood of the advisor to be selected. In particular, for an average advisor in our sample, the probability to be chosen increases by 94.7 percentage points if the advisor becomes connected. This finding supports the 'indirect toehold' channel of the information flows from connected hedge funds to advisors and acquirers; therefore, acquirers are more likely to choose advisors whose connected hedge funds have holdings in the target. The coefficient on $Holding$ is not significant, suggesting that only the existence of information flows matters but not actual levels of holdings.

We do not find evidence for differential effects for targets with different levels of information asymmetry, as the coefficients β_3 and β_4 on the interaction terms $Connected \cdot IA$ and $Holding \cdot IA$ are not statistically significant. In columns (2) and (3) we repeat the analysis separately for sub-samples of deals with targets with high and low levels of information asymmetry respectively. We see that the coefficients β_1 are significantly positive in both columns.

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

more likely to select advisors with higher values of acquisitions in the prior year, higher expertise in the target's industry, and previous connections with the acquirer.

IMR is the inverse Mills ratio that controls for the selection of targets by hedge funds. In the first stage, for each target in the global sample we estimate the probability of being held by hedge funds. Following Dai et al. (2017), we regress the probability of a hedge fund holding a target on firm return on asset, leverage, size, book-to-market ratio, tangible assets, and holdings by mutual funds. The IMR has a negative and significant coefficient in Table 5, highlighting the negative-selection mechanism here.

[Table 5 in here]

Table 6 reports the estimation results for Equation (2), capturing the changes in hedge fund holdings before the deal announcement. Columns (1) to (3) present the results of changes of hedge fund holdings in targets, and columns (4) to (6) document those in acquirers. The coefficients of β are insignificant in columns (1) and (4), indicating that connected funds show no changes in their holdings in the target or acquirer firm compared to unconnected funds one quarter before the acquisition announcement. This finding suggests that either there is no information flow between the advisor and connected hedge funds regarding the upcoming deal, or connected funds optimally choose not to increase their holdings, since under our 'indirect toehold' mechanism they are not likely to achieve higher abnormal returns on the target holdings. The coefficients on $\Delta Holding\_connected_{t-2}$ are also insignificant in the full sample in columns (1) and (4), indicating no changes in holdings two quarters before the acquisition announcement. After separating the deals into sub-samples based on target information asymmetry, the β coefficients are still insignificant for target holdings. The only exception in a positive loading in Column (6) for holdings in acquirers with deals involving low information

asymmetry targets. However, changes in connected hedge fund holdings two quarters before announcement predict pre-announcement changes. We see a momentum-type effect for targets with high information asymmetry, where holdings of connected hedge funds keep moving in the same direction in two quarters preceding the announcement, while for targets with low information asymmetry the changes in holdings move into the opposite directions. Regarding other control variables, hedge funds decrease their holdings in acquirers in tender offers, especially if targets are characterised by high information asymmetry. Overall, we do not find strong evidence that connected hedge funds change their holdings in the target or acquirer firms systematically different than non-connected firms before the acquisition announcements, hence, the 'information advantage' mechanism of the information flow receives little support in our data.

[Table 6 in here]

As for deal duration (Table 7), we do not find any evidence of the effect of connected hedge funds on it. The coefficients of β on connected funds' holdings are insignificant in all columns. Other control variables have the signs consistent with the literature: higher deal value, higher termination fees, and hostile deals are associated with higher deal duration, while the percentage of cash payment, different industries, and a tender offer reduce the deal duration.

At the same time, connected funds' holdings significantly increase the likelihood of deal completion, especially for targets with higher information asymmetry, as revealed by a positive and significant β in Column (5) of Table 7. For an average deal involving a target with high information asymmetry, one standard deviation increase in connected hedge fund holdings leads to increase in a deal completion probability by 15.6 percentage point, which is around 17.7% of the baseline level. The effect on completion probability

is driven predominantly by connected funds, since the overall hedge fund holdings are not significant in any of the specifications. As for other control variables, hostile deals decreases the probability of deal completion, while tender offers tend to increase it. The results on deal completion probability, however, do not allow us to disentangle the 'indirect toehold' and 'information advantage' mechanisms, since they both point into the same direction of increasing the likelihood of deal completion.

The results regarding the effect on a premium, however, support the 'indirect toehold' mechanism. In Table 8, the β coefficients on connected hedge fund holdings are negative and significant for targets with high information asymmetry in Columns (2) and (5) of -2.818 and -2.213, respectively. A one standard deviation increase in connected fund holdings leads to a reduction of 6.8 (5.3) bp in premium paid relative to the target market value one week (four weeks) before the announcement. The effect is not statistically significant for targets with low information asymmetry. Interestingly, general hedge fund involvement captured by the total holdings of hedge funds in the target also reduces premium paid in our sample of the deals, but the effect of connected funds goes far beyond that of the overall hedge fund holdings. Hence, connected hedge fund holdings seem to help the bidder to reduce the premium paid for the targets, especially those with higher information asymmetry, consistent with the 'indirect toehold' mechanism. The influence of other control variables on premium is consistent with the findings documented in previous literature. Premium decreases with target's tangible assets, holdings of mutual funds, and merger of equals while it increases with acquirer size, the percentage of cash payment, and tender offer.

Results in Table 9 for abnormal returns similarly support the 'indirect toehold' mechanism of information flow. The coefficient on connected hedge fund holdings is significantly negative with value -3.475 in Column (2) for targets with high asymmetry

and it is insignificant in for targets with low asymmetry. A one standard deviation increase in connected fund holdings leads to a reduction of 8.3 bp in target abnormal returns for targets with a higher level of information asymmetry. Given the mean value of TCAR of 0.173%, the reduction in TCAR amounts for almost a half of the mean value. We find no significant impact of connected fund holdings on acquirer abnormal returns. In terms of control variables, target abnormal returns are positively associated with the acquirer size, tender offer and they are negatively associated with the mutual fund holdings and the target and acquirer being in different industries. Acquirer abnormal returns increase with acquirer size and decrease if firms involved are in different industries.

Overall, our results are consistent with the 'indirect toehold' hypothesis that advisors use connected hedge funds' holdings in the target firm to obtain additional information about the target and help the bidder to reduce information asymmetry. Thus, acquirers are more likely to choose advisors with connected hedge fund holdings, which leads to a higher likelihood of deal completion, a smaller takeover premium, and a lower target announcement returns.

[Tables 7 to 9 in here]

5 Extensions and robustness

5.1 Target importance in hedge fund portfolio

The evidence of the 'indirect toehold' mechanism suggests that hedge funds holding a target share the information with the bidder though the connected advisors. This leads to premium reduction and loss in target abnormal return, hence, such hedge funds

implicitly harm their own interests. But may such sacrifices be optimal for hedge funds? One possible explanation might be that connected hedge funds trade in premium and return for extra (possibly informal) benefits they obtain from their prime brokers (see, for example, Chung and Kang, 2016; Kumar et al., 2020; Qian and Zhong, 2018). Hence, information sharing will be optimal from the hedge funds' stand point when its benefits outweigh costs and when losses incurred due to a lower premium paid for targets are limited.

In order to empirically assess this explanation, we replace $Holding\_connected_{t-1}$ in Equation (3) with two variables capturing holdings of the target by hedge funds for which the target is of high and low importance.For each hedge fund and each firm held we compute fractional holdings as the ratio of the dollar value of holdings in a firm scaled by the total value of the reported holdings of the hedge fund. We say that the target represents a high share of hedge fund portfolio, hence, has a higher importance for the hedge fund, if the fractional holdings are above the median, and a low share otherwise. In our sample, a median fractional holdings of hedge funds is 0.13% per firm. Then for each target in our sample we compute holdings by hedge funds for which this target is of high importance ($Holding\_connected\_highshare_{t-1}$) and low importance ($Holding\_connected\_lowshare_{t-1}$) and use these two variables in Equation (3). We expect connected funds to be more willing to sacrifice premiums in targets to gain benefit from their prime brokers when their stakes in targets account for a smaller share in their whole portfolio.

The results in Table 10 show that neither of the connected holdings variables has any significant effects on deal duration, consistent with the main results. At the same time, if the holdings of the target account for a larger share in hedge fund portfolio, they lead to a significantly higher likelihood of deal completion. This suggests that hedge funds

with a larger share invested in the target may be more interested in the deal completion compared to the funds with relatively unimportant stakes in the target. The β coefficients on $Holding\_connected\_highshare_{t-1}$ are positive and significant in specifications for deal completion probability while that on $Holding\_connected\_lowshare_{t-1}$ is only significant for targets with a higher information asymmetry, and the magnitude of the effect is just over a half of that of holdings of connected funds with higher interest in the target.

The effect on premium (Table 11) is somewhat inconclusive. The estimated coefficients on holdings of connected hedge funds for which the target is of high and low importance both remain negative and similar in magnitude around -2.8 for the premium based on the target market value one week prior to the announcement, but only the coefficient on $Holding\_connected\_highshare_{t-1}$ is statistically significant. Using the premium computed realative to the target's market value 4 weeks before the announcement, the resulting effects are -1.977 and -3.208, respectively. Consistent with hedge funds transmitting the information only when their losses are limited, the estimated coefficient is larger in absolute value than that of $Holding\_connected\_lowshare_{t-1}$. However, neither of them is statistically significant.

The effect is strongly pronounced, however, for the abnormal returns (Table 12). The estimated coefficient of -8.202 on $Holding\_connected\_lowshare_{t-1}$ is significant at the 1% level for targets with higher information asymmetry, while the β coefficients on $Holding\_connected\_highshare_{t-1}$ is three times smaller in the absolute value (-2.352) and it is significant only at the 10% level. This finding suggests that when hedge funds hold a large fraction of the target company, they are less inclined to forgo high returns on the announcement date, so they are less likely to share information that may adversely impact the announcement returns. On the contrary, when the losses related to potentially lower announcement returns are limited due to small holdings in the target, hedge funds

are more likely to share such information, potentially in exchange of other (informal) benefits provided by their prime brokers.

[Tables 10 to 12 in here]

5.2 Hedge funds' holding period

Another way to assess the importance of the target in a hedge fund portfolio is to look at the pre-M&A hedge funds' holding period of the target. Hedge funds that have been holding the target for a long period may be long-term investors and are less likely to share the information with prime brokers, which may potentially lead to the underpayment in the M&A deal. Hedge funds that have only recently purchased stakes in the target, may not have a vested interest in the company, and the benefits of strong prime brokerage relations may outweigh the costs of a lower payment. Similar to the previous specification, we replace $Holding\_connected_{t-1}$ in Equation (3) with two variables $Holding\_connected\_longperiod_{t-1}$ and $Holding\_connected\_shortperiod_{t-1}$ capturing holdings by hedge funds that have been invested in the target for longer than the median time or shorter than the median time before the announcement. We expect connected funds to be more willing to sacrifice premiums and announcement returns in targets when they have been holding the target firm for a short period.

The results in Table 13 show that holdings by hedge funds with different investment time in the target do not have significant effects on deal duration, similar to all the previous results for duration. As for deal completion, holding by long-term-holding hedge funds increase the likelihood of deal completion for targets with higher information asymmetry. Such funds may have collected the relevant information over a longer time while holding the target. The holdings of short-term-holding hedge funds increase the

likelihood of deal completion for targets with lower information asymmetry. For such targets no extra information gathering effort seems to be required, and short-term hedge funds can benefit from the deal completion as suggested by Gao et al. (2018). Tables 14 and 15 show the estimation results for Equation (2) capturing the impact of hedge fund holdings on target premiums and returns. When hedge funds hold the target for a short period, their holdings lead to significantly lower premium (β=-3.204), lower target abnormal returns (β=-3.112), and higher acquirer abnormal returns (β=1.461) for target with higher information asymmetry. The effects of holdings by long-term-invested hedge funds are insignificant in all columns. This finding suggests that when hedge funds hold the targets for a short period, they are less likely to have vested interests and are more likely to trade in the announcement return on their stake in the target and share the information with prime brokers.

[Tables 13 to 15 in here]

5.3 Different event windows

This section estimates the target and acquirer abnormal returns using alternative event window periods. We compute the target and acquirer abnormal returns in three different event windows, including a 3-day [-1, +1] window, a 7-day [3, +3] window, 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). Table 16 reports the results using the abnormal returns in different windows, and the interpretation of the results remains qualitatively unchanged.

[Table 16 in here]

5.4 Propensity score matching

To control for other possible (unobserved) differences between deals with connected fund holdings and without such holdings, we now employ 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 without such holdings.

The first-stage probit regression relates the probability of having connected fund holdings to a set of explanatory variables. These include the book-to-market value of target and acquirer, acquirer size, the ratio of target's asset size to the acquirer's asset size, the ratio of deal value to acquirer market capitalization, mutual fund holdings, percentage of payment made in cash, and a dummy for the target and the acquirer being 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. Table 17 shows that the resulting treated and control groups are indistinguishable in terms of all the characteristics used as the basis of matching.

In Table 18 we compare the differences across the two groups of deals in terms of their likelihood of completion, duration, premium paid, as well as target's and acquirer's abnormal returns over an event window of [0], [-1,1], [-3,3], and [-5,5]. The results indicate that deals with connected fund holdings have significantly lower premiums and smaller target abnormal returns in all windows. There is no evidence of any difference in completion probability, duration, and acquirer abnormal returns between these two deals groups.

Overall, the matching results support our central conclusion: advisors use connected hedge funds' holdings in the target firm to help the bidder, leading to lower takeover premium and smaller target announcement returns.

[Tables 17 and 18 in here]

6 Conclusion

In this paper, we study the potential information flow between bidders, advisors, and their connected hedge funds and its impact of on the choice of advisor and deal outcome in M&As. We define connected hedge funds as those that hold the target before an M&A announcement while having a prime broker that serves as the bidder's advisor on the M&A deal. Using a sample of 1,199 US public M&A transactions between 2000 to 2019, we find that the existence of links to the target through connected hedge fund holdings is a positive and significant determinant of the likelihood for an advisor to be chosen by the acquirer to facilitate the deal. The connected hedge fund holdings in a target are also significantly positively related to the likelihood of deal completion and negatively related to the target premium and target abnormal returns especially for targets with high level of information asymmetry.

These findings are consistent with the 'indirect toehold' mechanism of information flow. Acquirers seem to choose advisors with connected hedge funds holding the target to obtain an 'indirect toehold' in target firms. Advisors are likely to have all the incentives to help the bidder to justify their fees and to increase the likelihood of being hired in the future again. Therefore, advisors may exploit possibly private information obtained from the affiliated funds with holdings in the target firm, and help bidders to reduce

information asymmetry and to gain a higher bargaining power. This leads to a higher probability of the merger completion, lower premiums paid and smaller target abnormal returns upon the deal announcements. The affiliated hedge funds seem to be more likely to share the information with their prime broker, when the target is of relatively low importance in the overall hedge fund portfolio, hence, any potential losses for hedge funds due to lower announcement returns are limited. Our findings contribute to the research on the 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 reduction can be achieved – utilising an 'indirect toehold' through connected hedge funds.

Overall, our analysis gives new insights into the role of advisors and their connections to other financial institutions in M&As.

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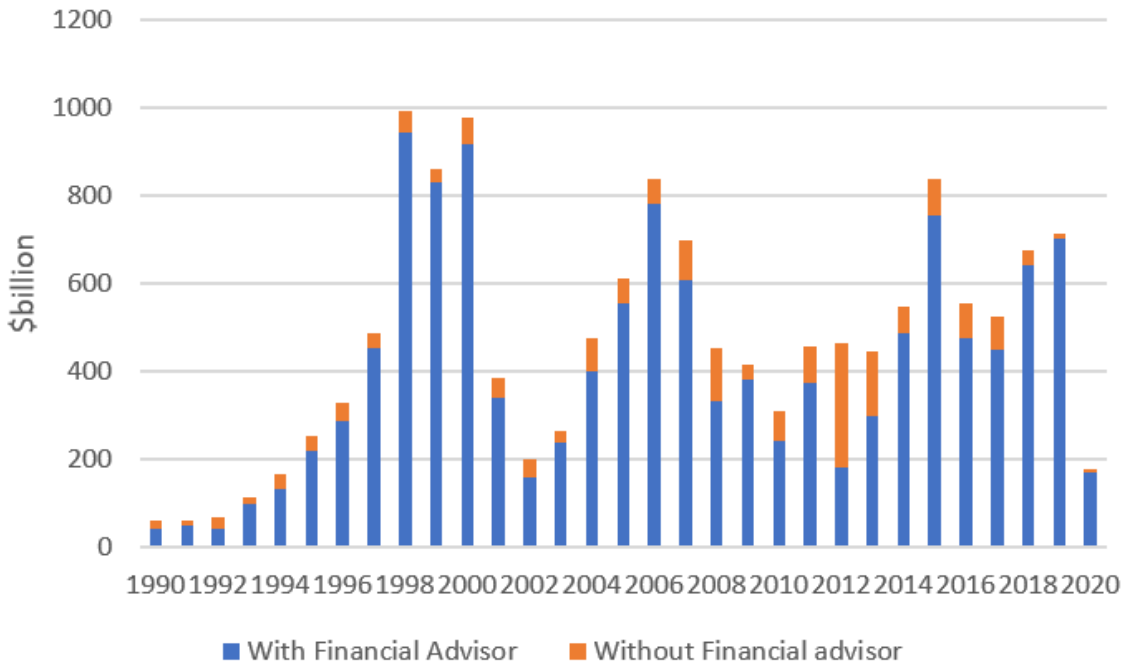
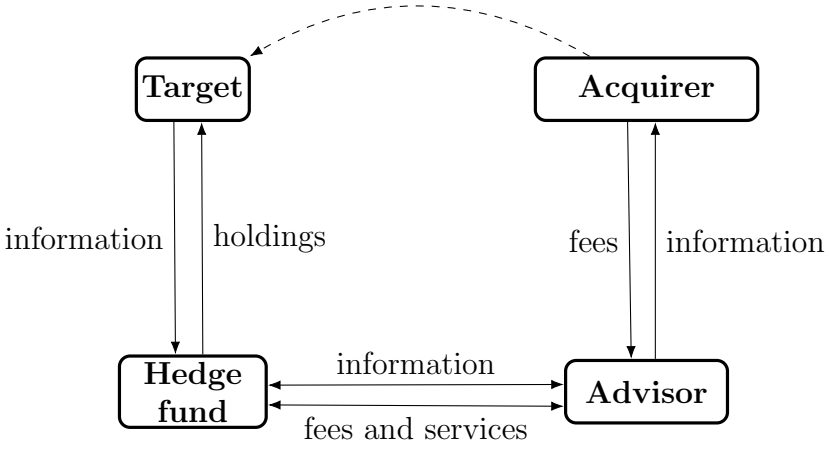


The figure depicts US M&A transactions from 1990 to 2020 and the use of financial advisors (Source of data: Refinitiv Eikon).

Figure 1: US M&A from 1990 to 2020



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

Figure 2: 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	↗	↘
Deal duration	↘	↘
Deal completion probability	↗	↗
Premium	↘	↗
Target 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
ACAR	Acquirer cumulative abnormal returns computed on the acquisition announcement date, expressed in decimal.
Acquisition times	The number of times an advisor served as an acquirer's advisor one year before the acquisition announcements.
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 announcements.
Age	The number of years between the firm's IPO year and the year prior to the 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 announcement.
Completion	A dummy variable that equals one if the deal is completed.
Connected	A dummy variable equals 1 if an advisor is the prime broker of a hedge fund that have holdings in the target firm and 0 otherwise.
COV	The number of analysts for the target in the year before the bid.
Deal value	Total value of the consideration paid by the acquirer in a million dollars.
Diffind	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 error for the target in the year before the bid.
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	Holdings of an advisor's connected hedge funds in the target firm.
$\text{Holding\_acquirer}_{t-1}$	Hedge funds' holding the in acquirer one quarter before the acquisition announcement.
$\text{Holding\_connected}_{t-1}$	Holdings of connected hedge funds in a target firm one quarter before the acquisition announcement.
$\text{Holding\_total}_{t-1}$	Holdings of all hedge funds in a target firm one quarter before the acquisition announcement.
Holding_MF	Mutual fund holdings in a target firm one quarter before the acquisition announcement.
$\Delta Holding\_connected$	Changes in holdings of connected funds measured by the difference between the holdings per fund in the current and previous quarters.
$\Delta Holding\_unconnected$	Changes in holdings of unconnected funds are measured by the difference between the holdings per fund in the current and previous quarters.
IA	The target firm's information asymmetry measure based on five variables ($Amihud$, $Size$, Age, COV, ERR).
IMR	The Inverse Mills Ratio.
Leverage	The equity-to-assets ratio of a target firm at the end of last fiscal year before 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.
Pctcash	The percentage of the stock payment in the consideration.
Premium	The premium paid one day (week) 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 announcements 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 announcement.
ROA	The return on asset of the target at the end of last fiscal year before announcement.
Size	The logarithm of the target market capitalization or acquirer at the last fiscal year before 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 computed on the acquisition announcement date, expressed in decimal.
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 million dollars.
Valpct	The ratio of deal value to acquirer market capitalization at the end of last fiscal year before announcement.

Table 3: Descriptive statistics of advisors

This table reports the descriptive statistics of advisor characteristics. Connected advisors are advisors with a prime brokerage connection with hedge funds that have holdings in the target firm. Panel A reports the statistics for connected and unconnected advisors, respectively. In Panel B, we include the chosen advisors and other potential advisors not chosen but active in the advisory market for each deal. Panel C reports the advisor statistics for deals with and without connected fund holdings, respectively. Other variables are summarized in Table 2. We conduct a t-test for differences in means between connected and unconnected advisors. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Mean	Median	SD	Min.	Max.	N	Mean	Median	SD	Min.	Max.	N	t-test
Panel A: Advisor level													
	Connected advisors						Unconnected advisors						
Number of deals advised	57.538	53.000	39.240	3.000	130.000	13	4.807	2.000	8.489	1.000	64.000	155	13.682***
Deal value advised ($B)	519.880	441.470	384.260	58.061	1176.900	13	20.698	1.611	56.906	0.011	420.580	155	14.782***
Panel B: Dead-advisor level													
	Deal-connected advisors pairs						Deal-unconnected advisors pairs						
Probability to be chosen	0.975	1.000	0.156	0.000	1.000	767	0.013	0.000	0.113	0.000	1.000	57994	233.752***
Acquisition times	12.469	12.000	5.526	0.000	29.000	767	3.483	1.000	4.485	0.000	29.000	57994	54.942***
Acquisition value ($B)	99.634	84.874	89.132	0.000	445.000	767	23.862	2.131	52.083	0.000	445.000	57994	39.534***
Prior advisor	0.056	0.000	0.230	0.000	1.000	767	0.003	0.000	0.057	0.000	1.000	57994	23.449***
Expertise	0.322	0.000	0.468	0.000	1.000	767	0.129	0.000	0.336	0.000	1.000	57994	15.709***
Panel C: Dead level													
	Deals with connected advisors						Deals without connected advisors						
Number of advisors	1.844	1.000	1.301	1.000	11.000	543	0.788	1.000	0.634	0.000	4.000	656	18.311***
Number of connected HFs	5.350	4.000	5.447	1.000	38.000	543	0.000	0.000	0.000	0.000	0.000	656	25.158***
Number of unconnected HFs	20.727	18.000	13.795	0.000	91.000	543	9.604	7.000	9.352	1.000	70.000	656	16.561***

Table 4: 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. $Holding\_connected_{t-1}$ ($Holding\_unconnected_{t-1}$) 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						
	Mean	Median	SD	Min.	Max.	N	Mean	Median	SD	Min.	Max.	N	t-test
$Holding\_connected_{t-1}$	0.019	0.012	0.024	0.000	0.189	543	0.000	0.000	0.000	0.000	0.000	656	20.665***
$Holdings\_unconnected_{t-1}$	0.113	0.093	0.081	0.000	0.503	543	0.107	0.084	0.091	0.000	0.621	656	1.220
$Holdings\_acquirer_{t-1}$	0.100	0.080	0.093	0.000	0.672	543	0.085	0.067	0.087	0.000	0.581	656	2.764***
Duration	4.791	4.100	2.695	1.400	10.300	543	4.497	4.100	2.356	1.400	10.300	656	1.894*
Completion	0.875	1.000	0.331	0.000	1.000	543	0.895	1.000	0.307	0.000	1.000	656	-1.086
Premium (one week)	0.333	0.292	0.249	-0.021	1.027	543	0.340	0.286	0.272	-0.021	1.000	656	-0.428
Premium (four weeks)	0.355	0.298	0.269	-0.048	1.141	543	0.373	0.299	0.304	-0.048	1.141	656	-1.092
TCAR	0.173	0.107	0.230	-0.200	1.748	543	0.181	0.092	0.284	-0.404	2.718	656	-0.502
TCAR1	0.223	0.176	0.248	-0.210	2.308	543	0.252	0.189	0.305	-0.432	3.074	656	-1.793*
TCAR3	0.234	0.192	0.250	-0.255	2.300	543	0.263	0.196	0.314	-0.510	2.908	656	-1.737*
TCAR5	0.239	0.198	0.254	-0.338	2.245	543	0.269	0.204	0.321	-0.484	3.042	656	-1.777
ACAR	-0.013	-0.007	0.067	-0.325	0.315	543	-0.005	-0.004	0.052	-0.271	0.539	656	-2.142**
ACAR1	-0.012	-0.011	0.079	-0.333	0.354	543	-0.012	-0.008	0.068	-0.342	0.562	656	-0.205
ACAR3	-0.014	-0.011	0.085	-0.324	0.367	543	-0.011	-0.010	0.071	-0.383	0.528	656	-0.559
ACAR5	-0.016	-0.013	0.091	-0.355	0.342	543	-0.012	-0.011	0.082	-0.460	0.576	656	-0.764
ROA_t	-0.004	0.006	0.062	-0.788	0.089	543	-0.019	0.002	0.073	-0.788	0.089	656	3.732***
Leverage_t	0.401	0.386	0.296	-1.483	0.98743	543	0.355	0.299	0.330	-1.483	0.999	656	2.515**
B/M_t	0.566	0.429	2.085	-10.145	44.215	543	0.672	0.624	0.516	-3.829	3.488	656	-1.261
Tangible_t	0.802	0.882	0.215	0.000	1.000	543	0.892	0.977	0.172	0.000	1.000	656	-8.022***
Size_a	6.715	7.998	4.098	0.000	12.740	543	5.824	6.624	3.748	0.000	12.483	656	3.933***
B/M_a	0.317	0.280	0.323	-0.610	1.707	543	0.403	0.357	0.364	-0.236	2.010	656	-4.296***
RELSIZE	0.565	0.124	2.723	0.000	37.120	543	0.330	0.085	1.581	0.000	37.120	656	1.870
Valpct	0.471	0.206	1.231	0.000	15.294	543	0.267	0.088	0.744	0.000	15.294	656	3.533***
Holding_MF	0.630	0.355	4.034	0.000	93.337	543	0.514	0.068	5.145	0.000	93.337	656	0.428
Pctcash	0.567	0.622	0.412	0.000	1.000	543	0.487	0.400	0.442	0.000	1.000	656	3.214***
Hostile	0.024	0.000	0.153	0.000	1.000	543	0.009	0.000	0.095	0.000	1.000	656	2.044**
Diffind	0.538	1.000	0.499	0.000	1.000	543	0.530	1.000	0.499	0.000	1.000	656	0.251
Merger of equals	0.050	0.000	0.218	0.000	1.000	543	0.024	0.000	0.154	0.000	1.000	656	2.352**
Tender	0.166	0.000	0.372	0.000	1.000	543	0.137	0.000	0.344	0.000	1.000	656	1.378
Deal value ($B)	6.289	1.928	12.970	0.000	86.831	543	0.865	0.240	2.725	0.000	35.274	656	10.446***
Termination fee ($B)	0.112	0.000	0.363	0.000	3.500	543	0.014	0.000	0.147	0.000	3.500	656	6.297***
IA	1.297	1.000	1.253	0.000	5.000	543	2.616	3.000	1.215	0.000	5.000	656	-18.450***

Table 5: Logistic regression on advisor choice

This table reports the results from Equation (1), examining the acquirer's choice of advisors in M&A. Column (1) use the whole sample, and columns (2)-(3) use sub-samples of targets with information asymmetry measure above or below the median separately. The dependent variable is a dummy variable 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 that have holdings in the target firm and zero otherwise. $Holding$ is the percentage holdings of an advisor's connected hedge funds in the target firm. IA represents the target firm's information asymmetry measure based on five variables (*Amihud*, *Size*, *Age*, COV, ERR). Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
	Probability being chosen		
Sample=	All	IA_high	IA_low
Connected (β_1)	4.133***	4.075***	4.117***
	(0.134)	(0.416)	(0.135)
Holding (β_2)	4.601	30.324	4.708
	(6.688)	(37.232)	(6.668)
Connected·IA (β_3)	-0.101		
	(0.427)		
Holding·IA (β_4)	25.947		
	(37.025)		
Acquisition times	-0.001	0.016**	-0.012**
	(0.004)	(0.007)	(0.006)
Acquisition value	0.042***	-0.014	0.085***
	(0.009)	(0.014)	(0.012)
Prior advisor	1.219***	0.986***	1.339***
	(0.107)	(0.190)	(0.130)
Expertise	0.538***	0.634***	0.439***
	(0.039)	(0.058)	(0.054)
IMR	-0.140**	-0.043	-0.213**
	(0.070)	(0.185)	(0.103)
Constant	8.250	0.901	13.755*
	(5.598)	(14.743)	(8.177)
R-squared	0.531	0.316	0.613
Number of deals	1181	507	674
Number of observations	58,547	25,029	33,518

Table 6: Changes in hedge fund holdings before the deal announcement

This table reports the results from Equation (2) examining changes in hedge fund holdings in target and acquirer firms one quarter before the deal announcement. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. $\Delta Holding\_connected$ ($\Delta Holding\_unconnected$) represents the change in connected (unconnected) fund holdings. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	$\Delta Holding\_connected_{t-1}$ *in target*			$\Delta Holding\_connected_{t-1}$ *in acquirer*		
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
$\Delta Holding\_unconnected_{t-1}(\beta)$	-0.001	-0.006	0.002	0.009	-0.004	0.052***
	(0.006)	(0.004)	(0.021)	(0.010)	(0.009)	(0.019)
$\Delta Holding\_connected_{t-2}$	0.007	0.020***	-0.073**	0.002	0.001	-0.025
	(0.011)	(0.006)	(0.035)	(0.004)	(0.003)	(0.026)
$\Delta Holding\_unconnected_{t-2}$	-0.001	-0.003	-0.009	0.008	0.002	-0.004
	(0.005)	(0.003)	(0.011)	(0.005)	(0.008)	(0.010)
Holding_acquirer$_{t-1}$	-0.000	0.000	-0.001	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
ROA_t	0.004	0.108	-0.149	0.015	0.040	-0.037
	(0.045)	(0.084)	(0.144)	(0.032)	(0.028)	(0.063)
Leverage_t	0.000	-0.060	0.015	0.002	-0.011	0.007
	(0.020)	(0.045)	(0.028)	(0.007)	(0.017)	(0.013)
B/M_t	-0.014	-0.010	-0.018	-0.003*	-0.004	-0.003
	(0.010)	(0.013)	(0.014)	(0.002)	(0.005)	(0.002)
Size_a	0.000	-0.004	-0.003	0.001	-0.001	0.002
	(0.004)	(0.003)	(0.006)	(0.001)	(0.002)	(0.002)
B/M_a	0.005	-0.030*	0.015	0.002	0.000	-0.002
	(0.016)	(0.016)	(0.025)	(0.006)	(0.009)	(0.012)
Tangible_t	0.010	0.041	0.020	-0.023*	-0.043	-0.009
	(0.032)	(0.072)	(0.045)	(0.014)	(0.032)	(0.018)
RELSIZE	-0.001	-0.006	0.006*	0.001	-0.001	0.002
	(0.004)	(0.007)	(0.003)	(0.001)	(0.003)	(0.002)
Valpct	0.005	0.001	-0.005	-0.001	-0.002	-0.001
	(0.010)	(0.014)	(0.009)	(0.003)	(0.004)	(0.004)
Holding_MF	0.001*	-0.000	0.001	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pctcash	0.013	-0.020	0.049**	-0.001	0.002	0.001
	(0.012)	(0.027)	(0.020)	(0.004)	(0.006)	(0.007)
Hostile	0.011	0.101	0.018	-0.023	-0.000	-0.016
	(0.026)	(0.084)	(0.031)	(0.016)	(0.013)	(0.018)
Diffind	0.013	0.014	0.013	0.002	-0.003	0.006
	(0.010)	(0.017)	(0.010)	(0.004)	(0.004)	(0.006)
Merger of equals	-0.012	0.012	-0.012	-0.027	0.002	-0.027
	(0.036)	(0.015)	(0.047)	(0.018)	(0.006)	(0.020)
Tender	0.021*	0.005	0.025	-0.008**	-0.014**	-0.005
	(0.012)	(0.023)	(0.018)	(0.003)	(0.006)	(0.005)
IMR	0.026	0.004	0.022	0.029**	0.050	0.022
	(0.040)	(0.053)	(0.055)	(0.014)	(0.045)	(0.018)
Year	0.001	0.003**	0.000	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Constant	-3.950	-5.353	-2.004	-2.135	-4.084	-1.298
	(3.985)	(3.957)	(5.453)	(1.346)	(3.751)	(2.009)
R-squared	0.357	0.516	0.475	0.357	0.505	0.492
Number of deals	910	391	519	910	391	519
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Hedge fund holdings, deal duration and completion

This table reports the results from Equation (3) examining the impact of connected fund holdings on deal duration and completion. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure 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. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		Duration			Completion	
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connect$_{t-1}(\beta)$	0.521	4.263	-1.761	7.899**	102.990**	4.608
	(4.188)	(11.363)	(5.340)	(3.666)	(40.828)	(4.228)
Holding_total$_{t-1}$	-0.065	-0.031	-0.761	0.086	1.187	-0.201
	(0.914)	(1.166)	(1.615)	(0.811)	(1.089)	(0.992)
Holding_acquirer$_{t-1}$	0.057	-1.941*	2.606	-1.513***	0.502	-2.864***
	(0.952)	(1.060)	(1.783)	(0.521)	(1.076)	(0.652)
Deal value	0.026***	-0.114	0.027**	-0.004	0.197	-0.008
	(0.010)	(0.281)	(0.013)	(0.008)	(0.237)	(0.009)
Termination fee	1.206**	4.625	1.156**	-0.210	65.671*	-0.193
	(0.490)	(9.125)	(0.546)	(0.247)	(36.898)	(0.250)
RELSIZE	0.012	0.069*	-0.064	-0.023	-0.010	-0.046*
	(0.039)	(0.037)	(0.043)	(0.017)	(0.020)	(0.028)
Pctcash	-0.006**	-0.011**	-0.001	0.000	0.001	-0.001
	(0.003)	(0.006)	(0.004)	(0.002)	(0.003)	(0.002)
Hostile	6.500***	-	9.135***	-3.019***	-	-2.984***
	(1.041)		(1.379)	(0.503)		(0.554)
Diffind	-0.425**	-0.487***	-0.491	-0.011	-0.106	0.077
	(0.174)	(0.180)	(0.326)	(0.125)	(0.176)	(0.180)
Merger of equals	-0.121	-0.329	-0.282	-0.537	-1.599	-0.417
	(0.753)	(0.517)	(0.837)	(0.357)	(1.254)	(0.310)
Tender	-1.338***	-0.871**	-1.662***	0.376**	0.225	0.481*
	(0.226)	(0.385)	(0.374)	(0.155)	(0.307)	(0.271)
IMR	-1.979***	-1.751	-2.358**	0.116	1.048	-0.166
	(0.622)	(1.255)	(1.007)	(0.314)	(0.814)	(0.555)
Year	0.011	-0.056*	0.050	0.010	0.010	0.007
	(0.023)	(0.033)	(0.035)	(0.012)	(0.020)	(0.014)
Constant	142.163*	256.938*	93.171	-28.581	-101.707	1.144
	(84.160)	(149.059)	(125.778)	(40.317)	(82.244)	(61.927)
R-squared	0.637	0.702	0.703	0.113	0.080	0.169
Number of deals	814	355	459	921	393	526
Industry FE	Yes	Yes	Yes	No	No	No
Advisor FE	Yes	Yes	Yes	No	No	No

Table 8: Hedge fund holdings and target premium

This table reports the results from Equation (3) examining the impact of connected fund holdings on target premium. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. *Premium* is the premium paid one week (four weeks) before the announcement. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter prior the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Premium (one week)			Premium (four weeks)		
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connected$_{t-1}$(β)	-0.102	-2.818***	-0.229	0.395	-2.213**	0.557
	(0.698)	(0.871)	(0.581)	(0.732)	(1.091)	(0.834)
Holding_total$_{t-1}$	-0.247**	-0.372**	-0.213	-0.269**	-0.380**	-0.172
	(0.099)	(0.159)	(0.154)	(0.121)	(0.179)	(0.160)
Holding_acquirer$_{t-1}$	-0.043	-0.251	-0.116	-0.102	-0.498*	-0.109
	(0.120)	(0.245)	(0.193)	(0.136)	(0.266)	(0.194)
ROA_t	-0.019	-0.217	0.184	-0.081	-0.241	-0.013
	(0.228)	(0.287)	(0.373)	(0.306)	(0.332)	(0.431)
Leverage_t	-0.050	0.015	-0.109	-0.037	-0.028	-0.068
	(0.067)	(0.101)	(0.089)	(0.056)	(0.101)	(0.088)
B/M_t	0.028	0.089*	0.016	0.020	0.104	0.003
	(0.029)	(0.050)	(0.026)	(0.036)	(0.086)	(0.019)
Size_a	0.032***	0.033**	0.016	0.046***	0.062**	0.021*
	(0.010)	(0.016)	(0.011)	(0.011)	(0.024)	(0.011)
B/M_a	-0.010	-0.012	-0.043	0.033	0.060	-0.024
	(0.043)	(0.093)	(0.065)	(0.049)	(0.113)	(0.065)
Tangible_t	-0.142**	-0.205	0.019	-0.189**	-0.231	0.039
	(0.066)	(0.205)	(0.105)	(0.075)	(0.252)	(0.102)
RELSIZE	0.003	0.002	-0.004	0.003	-0.003	0.001
	(0.004)	(0.007)	(0.009)	(0.005)	(0.010)	(0.011)
Valpct	-0.015	-0.061	-0.003	-0.007	-0.015	-0.013
	(0.011)	(0.060)	(0.019)	(0.015)	(0.041)	(0.025)
Holding_MF	-0.001	-0.004**	0.000	-0.001	-0.006***	0.002*
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Pctcash	0.049	0.028	0.087**	0.043	-0.009	0.094**
	(0.031)	(0.057)	(0.038)	(0.030)	(0.049)	(0.041)
Hostile	0.096	0.252	0.054	-0.044	-0.172	-0.074
	(0.096)	(0.200)	(0.136)	(0.077)	(0.150)	(0.095)
Diffind	-0.013	-0.039	-0.006	-0.031	-0.056	-0.016
	(0.020)	(0.035)	(0.031)	(0.022)	(0.040)	(0.028)
Merger of equals	-0.172***	-0.106	-0.186***	-0.255***	-0.099	-0.241***
	(0.057)	(0.231)	(0.064)	(0.056)	(0.245)	(0.070)
Tender	0.082***	-0.001	0.108*	0.133***	0.090	0.145**
	(0.029)	(0.055)	(0.057)	(0.040)	(0.092)	(0.063)
IMR	0.362***	0.307	0.075	0.475***	0.741*	0.043
	(0.080)	(0.400)	(0.136)	(0.105)	(0.383)	(0.154)
Year	0.002	0.006	-0.002	0.003	0.008	-0.001
	(0.003)	(0.006)	(0.003)	(0.004)	(0.008)	(0.003)
Constant	-31.738***	-35.749	-2.228	-44.525***	-75.720*	-1.965
	(10.082)	(42.092)	(15.612)	(13.262)	(41.210)	(16.115)
R-squared	0.450	0.563	0.529	0.475	0.579	0.559
Number of deals	876	374	502	877	375	502
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 9: Hedge fund holdings and abnormal returns

This table reports the results from Equation (3) examining the impact of connected fund holdings on cumulative abnormal returns on target and acquirer on the acquisition announcement date. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		TCAR			ACAR	
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connected$_{t-1}(\beta)$	-0.383	-3.475**	-0.582	0.104	0.750	0.016
	(0.478)	(1.405)	(0.655)	(0.213)	(0.570)	(0.157)
Holding_total$_{t-1}$	-0.111	-0.188	-0.130	0.014	-0.027	0.044
	(0.147)	(0.217)	(0.201)	(0.024)	(0.029)	(0.036)
Holding_acquirer$_{t-1}$	0.030	-0.391	-0.037	0.000	0.024	-0.019
	(0.177)	(0.421)	(0.152)	(0.035)	(0.026)	(0.074)
ROA_t	-0.319	-0.394	-0.773	0.005	0.046	0.075
	(0.251)	(0.318)	(0.576)	(0.057)	(0.084)	(0.103)
Leverage_t	0.011	0.125	-0.059	0.008	0.012	-0.001
	(0.052)	(0.100)	(0.085)	(0.007)	(0.019)	(0.010)
B/M_t	0.008	0.006	0.015	-0.004	0.002	-0.005
	(0.014)	(0.049)	(0.019)	(0.005)	(0.008)	(0.005)
Size_a	0.050***	0.038	0.042**	0.004*	0.001	0.006*
	(0.016)	(0.037)	(0.017)	(0.002)	(0.003)	(0.003)
B/M_a	0.052	0.086	0.068	0.004	0.019	-0.002
	(0.051)	(0.097)	(0.062)	(0.010)	(0.017)	(0.019)
Tangible_t	-0.100	0.034	-0.063	-0.031	-0.035	-0.012
	(0.091)	(0.368)	(0.096)	(0.023)	(0.061)	(0.030)
RELSIZE	0.001	0.011	-0.015*	0.002*	0.000	-0.001
	(0.005)	(0.007)	(0.009)	(0.001)	(0.001)	(0.003)
Valpct	0.001	-0.012	0.024	0.008	-0.011	0.007
	(0.019)	(0.076)	(0.023)	(0.006)	(0.011)	(0.007)
Holding_MF	-0.003***	-0.004*	-0.002**	0.000	-0.001	0.000
	(0.001)	(0.002)	(0.001)	(0.000)	(0.001)	(0.000)
Pctcash	-0.011	-0.100	0.046	0.010	-0.005	0.018*
	(0.046)	(0.102)	(0.035)	(0.008)	(0.013)	(0.010)
Hostile	-0.086	-0.216	-0.124	-0.019	0.016	-0.016
	(0.073)	(0.263)	(0.095)	(0.024)	(0.030)	(0.030)
Diffind	-0.025	-0.097**	0.027	-0.011**	-0.014	-0.008
	(0.021)	(0.049)	(0.024)	(0.005)	(0.008)	(0.008)
Merger of equals	-0.104	-0.010	-0.109*	-0.009	0.032	-0.003
	(0.085)	(0.269)	(0.058)	(0.040)	(0.035)	(0.054)
Tender	0.030	-0.041	0.121**	0.003	0.004	0.009
	(0.027)	(0.072)	(0.052)	(0.007)	(0.008)	(0.011)
IMR	0.460***	0.607	0.323***	0.070***	0.025	0.051
	(0.104)	(0.457)	(0.119)	(0.025)	(0.061)	(0.039)
Year	0.006	0.013	0.003	-0.001	-0.000	-0.001
	(0.005)	(0.011)	(0.004)	(0.001)	(0.001)	(0.001)
Constant	-48.871***	-75.779	-30.553*	-4.459	-1.035	-3.022
	(15.547)	(46.895)	(15.996)	(2.721)	(6.107)	(3.877)
R-squared	0.327	0.431	0.458	0.443	0.549	0.594
Number of deals	861	378	483	856	378	478
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 10: Hedge fund holdings, deal duration and completion: shares in hedge fund portfolio

This table reports the results from Equation (3) examining the impact of connected fund holdings on deal duration and completion based on the share of the target in hedge fund total portfolio.Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure 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. $Holding\_connected\_highshare_{t-1}$ ($Holding\_connected\_lowshare_{t-1}$) represents the holdings of connected hedge funds in a target firm that accounts for a high (low) share in hedge fund total portfolio one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		Duration			Completion	
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connect_highshare$_{t-1}(\beta)$	1.867	8.866	-0.381	12.457**	145.135*	10.117**
	(4.456)	(13.531)	(6.217)	(4.860)	(76.470)	(5.122)
Holding_connect_shortshare$_{t-1}(\beta)$	-7.873	-16.038	-10.594	-1.257	84.428*	-10.291
	(16.136)	(32.974)	(21.358)	(7.748)	(47.415)	(9.390)
Holding_total$_{t-1}$	-0.058	0.132	-0.823	0.042	1.176	-0.323
	(0.906)	(1.169)	(1.640)	(0.808)	(1.083)	(0.995)
Holding_acquirer$_{t-1}$	0.027	-2.040*	2.661	-1.532***	0.465	-2.928***
	(0.975)	(1.043)	(1.795)	(0.520)	(1.060)	(0.651)
Deal value	0.027**	-0.118	0.029**	-0.000	0.000	-0.000
	(0.011)	(0.273)	(0.014)	(0.000)	(0.000)	(0.000)
Termination fee	0.985**	5.531	0.922*	-0.000	0.063*	-0.000
	(0.454)	(8.706)	(0.495)	(0.000)	(0.036)	(0.000)
RELSIZE	0.001***	0.055	-0.064	-0.000	0.001***	-0.026
	(0.000)	(0.044)	(0.043)	(0.001)	(0.000)	(0.032)
Pctcash	-0.006**	-0.011**	-0.001	0.000	0.001	-0.000
	(0.003)	(0.005)	(0.004)	(0.002)	(0.003)	(0.002)
Hostile	6.443***	-	9.082***	-3.091***	-	-3.077***
	(1.036)		(1.368)	(0.540)		(0.591)
Diffind	-0.416**	-0.469***	-0.479	-0.026	-0.112	0.077
	(0.183)	(0.157)	(0.341)	(0.123)	(0.175)	(0.181)
Merger of equals	-0.105	-0.281	-0.258	-0.626*	-1.583	-0.354
	(0.747)	(0.507)	(0.828)	(0.365)	(1.251)	(0.350)
Tender	-1.355***	-0.883**	-1.682***	0.398***	0.235	0.533**
	(0.225)	(0.383)	(0.374)	(0.148)	(0.309)	(0.262)
IMR	-1.956***	-1.764	-2.305**	0.201	1.061	0.022
	(0.644)	(1.262)	(1.080)	(0.307)	(0.814)	(0.535)
Year	0.014	-0.054*	0.053	0.013	0.011	0.011
	(0.024)	(0.031)	(0.037)	(0.012)	(0.020)	(0.013)
Constant	133.388	253.006*	83.009	-41.497	-105.077	-22.412
	(87.866)	(143.479)	(136.775)	(38.943)	(81.816)	(59.044)
R-squared	0.636	0.704	0.702	0.114	0.080	0.180
Number of deals	814	355	459	921	393	526
Industry FE	Yes	Yes	Yes	No	No	No
Advisor FE	Yes	Yes	Yes	No	No	No

Table 11: Hedge fund holdings and target premium: shares in hedge fund portfolio

This table reports the results from Equation (3) examining the impact of connected fund holdings on target premium based on the share of the target in hedge fund total portfolio. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. *Premium* is the premium paid one week (four weeks) before the announcement. $Holding\_connected\_highshare_{t-1}$ ($Holding\_connected\_lowshare_{t-1}$) represents the holdings of connected hedge funds in a target firm that accounts for a high (low) share in hedge fund total portfolio one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Premium (one week)			Premium (four weeks)		
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connected_highshare$_{t-1}(\beta)$	-0.188	-2.859**	-0.574	0.568	-1.977	0.418
	(0.727)	(1.171)	(0.576)	(0.855)	(1.434)	(1.016)
Holding_connected_lowshare$_{t-1}(\beta)$	0.009	-2.684	1.441	-0.938	-3.208	0.477
	(1.692)	(2.543)	(2.528)	(1.469)	(2.455)	(1.866)
Holding_total$_{t-1}$	-0.262***	-0.372**	-0.213	-0.291**	-0.368**	-0.208
	(0.097)	(0.155)	(0.159)	(0.117)	(0.180)	(0.159)
Holding_acquirer$_{t-1}$	-0.032	-0.251	-0.123	-0.093	-0.507*	-0.091
	(0.118)	(0.248)	(0.187)	(0.133)	(0.269)	(0.183)
ROA_t	0.049	-0.222	0.066	0.054**	-0.239	0.060
	(0.035)	(0.293)	(0.043)	(0.027)	(0.340)	(0.044)
Leverage_t	-0.061	0.016	-0.097	-0.060	-0.028	-0.082
	(0.058)	(0.102)	(0.069)	(0.043)	(0.101)	(0.069)
B/M_t	0.029	0.088*	-0.013	0.034	0.104	-0.012
	(0.044)	(0.050)	(0.039)	(0.051)	(0.086)	(0.034)
Size_a	0.033***	0.034**	0.018	0.043***	0.062**	0.022**
	(0.009)	(0.016)	(0.012)	(0.010)	(0.024)	(0.010)
B/M_a	-0.014	-0.004	0.014	-0.021	0.064	0.009
	(0.025)	(0.088)	(0.023)	(0.029)	(0.106)	(0.020)
Tangible_t	-0.176***	-0.210	-0.024	-0.222***	-0.227	-0.022
	(0.062)	(0.205)	(0.102)	(0.073)	(0.251)	(0.100)
RELSIZE	0.000	0.002	0.000	0.000	-0.004	0.000*
	(0.000)	(0.007)	(0.000)	(0.000)	(0.010)	(0.000)
Valpct	-0.005***	-0.062	-0.006***	-0.005***	-0.020	-0.007***
	(0.001)	(0.062)	(0.001)	(0.001)	(0.042)	(0.001)
Holding_MF	-0.000***	-0.000*	0.000	-0.000***	-0.000***	0.002**
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Pctcash	0.000	0.000	0.001*	0.000	-0.000	0.001**
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	0.097	0.251	0.038	-0.021	-0.176	-0.090
	(0.089)	(0.202)	(0.142)	(0.065)	(0.153)	(0.096)
Diffind	-0.014	-0.039	-0.009	-0.032	-0.056	-0.019
	(0.018)	(0.035)	(0.030)	(0.021)	(0.041)	(0.028)
Merger of equals	-0.177***	-0.106	-0.207***	-0.254***	-0.096	-0.264***
	(0.060)	(0.232)	(0.059)	(0.059)	(0.250)	(0.066)
Tender	0.089***	-0.001	0.108*	0.142***	0.090	0.153**
	(0.028)	(0.054)	(0.056)	(0.039)	(0.092)	(0.059)
IMR	0.405***	0.310	0.094	0.528***	0.739*	0.114
	(0.085)	(0.405)	(0.121)	(0.102)	(0.383)	(0.124)
Year	0.002	0.005	-0.002	0.004	0.008	-0.000
	(0.003)	(0.007)	(0.003)	(0.004)	(0.008)	(0.003)
Constant	-35.748***	-35.631	-2.866	-50.592***	-75.314*	-8.147
	(10.464)	(42.350)	(14.085)	(13.048)	(41.272)	(13.453)
R-squared	0.453	0.563	0.539	0.482	0.579	0.570
Number of deals	876	374	502	877	375	502
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 12: Hedge fund holdings and abnormal returns: shares in hedge fund portfolio

This table reports the results from Equation (3) examining the impact of connected fund holdings on cumulative abnormal returns on target and acquirer on the acquisition announcement date based on the share of the target in hedge fund total portfolio. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. $Holding\_connected\_highshare_{t-1}$ ($Holding\_connected\_lowshare_{t-1}$) represents the holdings of connected hedge funds in a target firm that accounts for a high (low) share in hedge fund total portfolio one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		TCAR			ACAR	
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connected_highshare$_{t-1}(\beta)$	-0.288	-2.352*	-0.487	0.074	0.969*	-0.057
	(0.534)	(1.383)	(0.696)	(0.234)	(0.562)	(0.164)
Holding_connected_lowshare$_{t-1}(\beta)$	-0.664	-8.202***	0.069	0.302	-0.172	0.577
	(1.838)	(3.106)	(3.093)	(0.259)	(0.491)	(0.366)
Holding_total$_{t-1}$	-0.107	-0.131	-0.118	0.015	-0.016	0.050
	(0.150)	(0.219)	(0.212)	(0.024)	(0.033)	(0.034)
Holding_acquirer$_{t-1}$	0.025	-0.429	0.035	-0.004	0.016	-0.025
	(0.176)	(0.426)	(0.142)	(0.034)	(0.026)	(0.074)
ROA_t	-0.172	-0.382	-0.199	0.010	0.049	0.021
	(0.130)	(0.323)	(0.155)	(0.027)	(0.084)	(0.020)
Leverage_t	0.006	0.126	-0.066	0.004	0.012	-0.006
	(0.052)	(0.099)	(0.082)	(0.006)	(0.019)	(0.010)
B/M_t	-0.008	0.004	-0.004	0.001	0.002	0.005
	(0.022)	(0.047)	(0.028)	(0.005)	(0.008)	(0.006)
Size_a	0.046***	0.037	0.044**	0.002	0.001	0.004
	(0.014)	(0.036)	(0.019)	(0.002)	(0.003)	(0.003)
B/M_a	0.009	0.105	0.006	-0.002	0.023	-0.005
	(0.014)	(0.088)	(0.017)	(0.003)	(0.017)	(0.004)
Tangible_t	-0.117	0.073	-0.090	-0.021	-0.027	0.000
	(0.088)	(0.370)	(0.104)	(0.024)	(0.061)	(0.030)
RELSIZE	0.000***	0.008	-0.000	0.000***	-0.000	-0.002
	(0.000)	(0.007)	(0.013)	(0.000)	(0.001)	(0.004)
Valpct	-0.003*	-0.022	-0.003	0.000	-0.013	0.001
	(0.002)	(0.075)	(0.003)	(0.000)	(0.011)	(0.001)
Holding_MF	-0.000***	-0.000**	-0.002**	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Pctcash	-0.000	-0.001	0.000	0.000	-0.000	0.000*
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	-0.061	-0.230	-0.065	-0.013	0.014	-0.016
	(0.072)	(0.261)	(0.090)	(0.023)	(0.030)	(0.030)
Diffind	-0.023	-0.095**	0.024	-0.011**	-0.013	-0.010
	(0.021)	(0.047)	(0.023)	(0.004)	(0.008)	(0.008)
Merger of equals	-0.110	-0.001	-0.097	-0.009	0.034	-0.003
	(0.089)	(0.282)	(0.061)	(0.040)	(0.038)	(0.053)
Tender	0.033	-0.043	0.112**	0.003	0.003	0.009
	(0.027)	(0.073)	(0.050)	(0.007)	(0.007)	(0.011)
IMR	0.490***	0.588	0.413***	0.048**	0.022	0.022
	(0.087)	(0.460)	(0.149)	(0.023)	(0.062)	(0.036)
Year	0.007	0.014	0.003	-0.001	-0.000	-0.001
	(0.005)	(0.011)	(0.004)	(0.001)	(0.001)	(0.001)
Constant	-51.537***	-75.005	-39.030**	-2.772	-0.896	-0.335
	(14.097)	(48.327)	(18.424)	(2.399)	(6.070)	(3.667)
R-squared	0.326	0.435	0.453	0.459	0.558	0.599
Number of deals	861	378	483	856	378	478
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 13: Hedge fund holdings, deal duration and completion: hedge fund holding period

This table reports the results from Equation (3) examining the impact of connected fund holdings on deal duration and completion based on hedge funds' holding period in the target firm. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure 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. $Holding\_connected\_highshare_{t-1}$ ($Holding\_connected\_lowshare_{t-1}$) represents the holdings of connected hedge funds in a target firm that accounts for a high (low) share in hedge fund total portfolio one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		Duration			Completion	
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connect_longperiod$_{t-1}(\beta)$	-3.687	3.247	-4.611	3.345	390.916*	-1.075
	(5.120)	(25.147)	(7.315)	(4.267)	(202.243)	(4.720)
Holding_connect_shortperiod$_{t-1}(\beta)$	7.198	4.968	3.492	27.214**	55.897	28.132**
	(6.786)	(8.919)	(9.885)	(10.585)	(34.200)	(12.698)
Holding_total$_{t-1}$	-0.058	-0.020	-0.778	0.070	1.145	-0.205
	(0.901)	(1.224)	(1.597)	(0.798)	(1.081)	(0.971)
Holding_acquirer$_{t-1}$	0.044	-1.945*	2.596	-1.554***	0.497	-3.046***
	(0.962)	(1.050)	(1.790)	(0.527)	(1.075)	(0.670)
Deal value	0.028**	-0.114	0.030**	-0.000	0.000	-0.000
	(0.011)	(0.283)	(0.013)	(0.000)	(0.000)	(0.000)
Termination fee	1.007**	4.658	0.940*	-0.000	0.063*	-0.000
	(0.467)	(9.320)	(0.506)	(0.000)	(0.036)	(0.000)
RELSIZE	0.001***	0.069*	-0.062	-0.000	0.001***	-0.026
	(0.000)	(0.042)	(0.044)	(0.001)	(0.000)	(0.032)
Pctcash	-0.006**	-0.011**	-0.001	0.000	0.001	-0.000
	(0.003)	(0.006)	(0.004)	(0.002)	(0.003)	(0.002)
Hostile	6.455***	-	9.156***	-2.990***	-	-2.941***
	(1.033)		(1.396)	(0.513)		(0.572)
Diffind	-0.419**	-0.488***	-0.479	-0.014	-0.106	0.106
	(0.177)	(0.185)	(0.325)	(0.124)	(0.175)	(0.182)
Merger of equals	-0.104	-0.325	-0.255	-0.627*	-1.581	-0.303
	(0.740)	(0.500)	(0.830)	(0.362)	(1.243)	(0.318)
Tender	-1.357***	-0.873**	-1.704***	0.378**	0.225	0.475*
	(0.230)	(0.390)	(0.397)	(0.156)	(0.315)	(0.275)
IMR	-1.963***	-1.751	-2.327**	0.238	1.054	-0.006
	(0.613)	(1.257)	(1.008)	(0.316)	(0.815)	(0.544)
Year	0.015	-0.056	0.052	0.012	0.010	0.008
	(0.023)	(0.034)	(0.035)	(0.012)	(0.020)	(0.014)
Constant	132.519	256.557*	85.519	-42.431	-103.168	-13.789
	(83.438)	(150.711)	(127.163)	(40.269)	(82.231)	(61.019)
R-squared	0.637	0.702	0.702	0.116	0.084	0.181
Number of deals	814	355	459	921	393	526
Industry FE	Yes	Yes	Yes	No	No	No
Advisor FE	Yes	Yes	Yes	No	No	No

Table 14: Hedge fund holdings and target premium: hedge fund holding period

This table reports the results from Equation (3) examining the impact of connected fund holdings on target premium based on hedge funds' holding period in the target firm. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. *Premium* is the premium paid one week (four weeks) before the announcement. $Holding\_connected\_highshare_{t-1}$ ($Holding\_connected\_lowshare_{t-1}$) represents the holdings of connected hedge funds in a target firm that accounts for a high (low) share in hedge fund total portfolio one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Premium (one week)			Premium (four weeks)		
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connected_longperiod$_{t-1}(\beta)$	0.133	-2.326	-0.334	0.599	-2.709	0.572
	(0.883)	(2.238)	(0.749)	(0.880)	(2.140)	(1.124)
Holding_connected_shortperiod$_{t-1}(\beta)$	-0.657	-3.204***	-0.293	-0.065	-1.847	0.145
	(0.932)	(0.759)	(0.823)	(0.823)	(1.160)	(0.861)
Holding_total$_{t-1}$	-0.261***	-0.375**	-0.224	-0.294**	-0.374**	-0.206
	(0.097)	(0.156)	(0.156)	(0.118)	(0.183)	(0.151)
Holding_acquirer$_{t-1}$	-0.033	-0.246	-0.119	-0.092	-0.506*	-0.089
	(0.118)	(0.251)	(0.190)	(0.133)	(0.270)	(0.185)
ROA_t	0.048	-0.226	0.064	0.054**	-0.239	0.060
	(0.036)	(0.287)	(0.043)	(0.027)	(0.338)	(0.044)
Leverage_t	-0.060	0.015	-0.094	-0.061	-0.027	-0.081
	(0.059)	(0.100)	(0.069)	(0.044)	(0.102)	(0.068)
B/M_t	0.030	0.089*	-0.014	0.035	0.102	-0.012
	(0.045)	(0.049)	(0.039)	(0.051)	(0.087)	(0.035)
Size_a	0.033***	0.034**	0.016	0.043***	0.062**	0.022**
	(0.009)	(0.016)	(0.011)	(0.010)	(0.024)	(0.010)
B/M_a	-0.014	-0.003	0.014	-0.022	0.062	0.009
	(0.025)	(0.088)	(0.023)	(0.029)	(0.106)	(0.020)
Tangible_t	-0.175***	-0.212	-0.024	-0.224***	-0.231	-0.021
	(0.062)	(0.208)	(0.102)	(0.073)	(0.256)	(0.102)
RELSIZE	0.000	0.002	0.000	0.000	-0.003	0.000**
	(0.000)	(0.007)	(0.000)	(0.000)	(0.010)	(0.000)
Valpct	-0.005***	-0.063	-0.006***	-0.005***	-0.018	-0.007***
	(0.001)	(0.063)	(0.001)	(0.002)	(0.042)	(0.001)
Holding_MF	-0.000***	-0.000*	0.000	-0.000***	-0.000***	0.002*
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Pctcash	0.000	0.000	0.001**	0.000	-0.000	0.001**
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
Hostile	0.098	0.253	0.039	-0.019	-0.177	-0.089
	(0.089)	(0.200)	(0.140)	(0.067)	(0.153)	(0.096)
Diffind	-0.015	-0.038	-0.006	-0.034	-0.057	-0.020
	(0.019)	(0.037)	(0.029)	(0.021)	(0.041)	(0.027)
Merger of equals	-0.177***	-0.108	-0.208***	-0.254***	-0.095	-0.265***
	(0.060)	(0.228)	(0.059)	(0.060)	(0.249)	(0.067)
Tender	0.090***	-0.000	0.108*	0.144***	0.090	0.154***
	(0.028)	(0.054)	(0.057)	(0.039)	(0.091)	(0.059)
IMR	0.403***	0.308	0.108	0.518***	0.744*	0.112
	(0.083)	(0.402)	(0.125)	(0.102)	(0.384)	(0.132)
Year	0.002	0.005	-0.002	0.004	0.008	-0.000
	(0.003)	(0.006)	(0.003)	(0.004)	(0.008)	(0.003)
Constant	-35.308***	-35.223	-4.890	-48.934***	-75.790*	-7.817
	(10.265)	(41.988)	(14.705)	(12.849)	(41.109)	(14.573)
R-squared	0.454	0.563	0.537	0.481	0.579	0.570
Number of deals	876	374	502	877	375	502
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 15: Hedge fund holdings and abnormal returns: hedge fund holding period

This table reports the results from Equation (3) examining the impact of connected fund holdings on cumulative abnormal returns on target and acquirer on the acquisition announcement date based on hedge funds' holding period in the target firm. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. $Holding\_connected\_highshare_{t-1}$ ($Holding\_connected\_lowshare_{t-1}$) represents the holdings of connected hedge funds in a target firm that accounts for a high (low) share in hedge fund total portfolio one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		TCAR			ACAR	
Sample=	All	IA_high	IA_low	All	IA_high	IA_low
Holding_connected_longperiod$_{t-1}(\beta)$	-0.288	-3.947	-0.349	-0.097	-0.200	-0.052
	(0.632)	(2.388)	(0.769)	(0.129)	(0.420)	(0.172)
Holding_connected_shortperiod$_{t-1}(\beta)$	-0.428	-3.112**	-0.549	0.447	1.461***	0.169
	(0.739)	(1.401)	(0.664)	(0.429)	(0.233)	(0.257)
Holding_total$_{t-1}$	-0.108	-0.177	-0.121	0.016	-0.015	0.045
	(0.150)	(0.218)	(0.210)	(0.024)	(0.037)	(0.034)
Holding_acquirer$_{t-1}$	0.026	-0.399	0.035	-0.004	0.012	-0.027
	(0.176)	(0.428)	(0.143)	(0.034)	(0.027)	(0.074)
ROA_t	-0.173	-0.394	-0.201	0.011	0.054	0.020
	(0.130)	(0.322)	(0.153)	(0.026)	(0.085)	(0.021)
Leverage_t	0.006	0.127	-0.065	0.003	0.013	-0.006
	(0.053)	(0.100)	(0.083)	(0.006)	(0.019)	(0.010)
B/M_t	-0.008	0.001	-0.004	0.000	-0.000	0.005
	(0.022)	(0.048)	(0.028)	(0.005)	(0.008)	(0.006)
Size_a	0.046***	0.038	0.043**	0.002	0.001	0.004
	(0.014)	(0.036)	(0.019)	(0.002)	(0.003)	(0.003)
B/M_a	0.009	0.099	0.006	-0.002	0.021	-0.005
	(0.014)	(0.089)	(0.017)	(0.003)	(0.015)	(0.004)
Tangible_t	-0.118	0.036	-0.090	-0.022	-0.027	-0.001
	(0.088)	(0.365)	(0.106)	(0.024)	(0.058)	(0.030)
RELSIZE	0.000***	0.011	-0.000	0.000***	0.001	-0.002
	(0.000)	(0.007)	(0.013)	(0.000)	(0.001)	(0.004)
Valpct	-0.003*	-0.019	-0.003	0.000*	-0.011	0.001
	(0.002)	(0.076)	(0.003)	(0.000)	(0.010)	(0.001)
Holding_MF	-0.000***	-0.000**	-0.002**	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Pctcash	-0.000	-0.001	0.000	0.000	0.000	0.000**
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	-0.060	-0.225	-0.064	-0.015	0.009	-0.016
	(0.072)	(0.261)	(0.089)	(0.023)	(0.031)	(0.030)
Diffind	-0.024	-0.098**	0.024	-0.011**	-0.015*	-0.008
	(0.021)	(0.048)	(0.025)	(0.004)	(0.009)	(0.008)
Merger of equals	-0.110	-0.006	-0.100*	-0.008	0.036	-0.004
	(0.090)	(0.275)	(0.059)	(0.040)	(0.039)	(0.052)
Tender	0.033	-0.042	0.112**	0.003	0.002	0.008
	(0.027)	(0.072)	(0.050)	(0.007)	(0.006)	(0.011)
imr	0.487***	0.604	0.415***	0.052**	0.027	0.028
	(0.087)	(0.464)	(0.153)	(0.022)	(0.061)	(0.036)
year	0.006	0.013	0.003	-0.000	-0.000	-0.001
	(0.005)	(0.011)	(0.004)	(0.001)	(0.001)	(0.001)
Constant	-51.088***	-75.245	-39.404**	-3.398	-1.603	-1.314
	(13.874)	(47.834)	(19.174)	(2.366)	(6.145)	(3.532)
R-squared	0.326	0.432	0.453	0.463	0.577	0.597
Number of deals	861	378	483	856	378	478
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 16: Hedge fund holdings and abnormal returns: different event windows

This table reports the results from Equation (3) examining the impact of connected fund holdings on cumulative abnormal returns on target and acquirer over event windows of [-1,1], [-3,3], [-5,5]. Columns (1) and (4) use the whole sample, and columns (2)-(3) and (5)-(6) use sub-samples of targets with information asymmetry measure above or below the median separately. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 2. Standard errors are clustered at the fund level and reported in brackets. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TCAR1		ACAR1		TCAR3		ACAR3		TCAR5		ACAR5	
Sample=	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_connect$_{t-1}(\beta)$	-2.928**	-0.390	0.589	0.054	-2.734**	-0.331	1.055	0.180	-2.985**	-0.376	1.063	0.171
	(1.196)	(0.534)	(0.463)	(0.156)	(1.315)	(0.504)	(0.698)	(0.162)	(1.326)	(0.543)	(0.843)	(0.195)
Holding_total$_{t-1}$	-0.419**	-0.179	0.005	0.015	-0.417**	-0.101	0.010	0.015	-0.351*	-0.099	0.020	0.033
	(0.172)	(0.176)	(0.070)	(0.047)	(0.189)	(0.185)	(0.067)	(0.050)	(0.211)	(0.196)	(0.074)	(0.051)
Holding_acquirer$_{t-1}$	-0.355	-0.158	-0.018	-0.030	-0.375	-0.131	0.037	-0.030	-0.383	-0.136	0.058	-0.017
	(0.393)	(0.192)	(0.064)	(0.073)	(0.382)	(0.192)	(0.063)	(0.070)	(0.390)	(0.197)	(0.066)	(0.073)
ROA_t	-0.205	-0.982*	0.019	-0.004	-0.229	-0.045	0.030	0.170*	-0.266	-0.004	0.034	0.177
	(0.441)	(0.571)	(0.083)	(0.153)	(0.444)	(0.520)	(0.095)	(0.097)	(0.446)	(0.520)	(0.098)	(0.120)
Leverage_t	0.167	-0.095	0.050	-0.000	0.162	-0.094	0.024	-0.005	0.148	-0.118	0.020	-0.013
	(0.106)	(0.082)	(0.039)	(0.012)	(0.099)	(0.087)	(0.029)	(0.013)	(0.106)	(0.087)	(0.040)	(0.016)
B/M_t	-0.014	0.012	0.008	0.001	-0.021	-0.000	0.008	-0.001	-0.014	-0.009	0.002	-0.004
	(0.073)	(0.021)	(0.013)	(0.005)	(0.075)	(0.023)	(0.013)	(0.005)	(0.086)	(0.021)	(0.019)	(0.005)
Size_a	0.045	0.032***	0.001	0.006	0.047	0.033**	0.001	0.007	0.042	0.032**	0.002	0.007
	(0.036)	(0.012)	(0.004)	(0.004)	(0.035)	(0.014)	(0.005)	(0.005)	(0.037)	(0.014)	(0.007)	(0.006)
B/M_a	0.012	0.037	0.029	0.020	-0.002	0.056	0.022	0.012	0.019	0.066	0.016	0.011
	(0.123)	(0.047)	(0.024)	(0.018)	(0.127)	(0.052)	(0.020)	(0.019)	(0.126)	(0.057)	(0.027)	(0.023)
Tangible_t	-0.213	-0.153	-0.027	-0.024	-0.234	-0.103	-0.023	-0.021	-0.174	-0.111	0.012	-0.024
	(0.315)	(0.093)	(0.083)	(0.035)	(0.306)	(0.091)	(0.086)	(0.033)	(0.322)	(0.101)	(0.078)	(0.035)
RELSIZE	0.011	0.002	-0.001	-0.003	0.013	0.003	-0.004**	-0.003	0.008	0.003	-0.005**	0.002
	(0.008)	(0.009)	(0.002)	(0.003)	(0.008)	(0.008)	(0.002)	(0.003)	(0.008)	(0.008)	(0.002)	(0.003)
Valpct	-0.031	0.001	-0.012	0.010	-0.034	-0.010	-0.017	0.007	-0.062	-0.011	-0.010	-0.003
	(0.086)	(0.022)	(0.013)	(0.008)	(0.089)	(0.021)	(0.015)	(0.008)	(0.092)	(0.020)	(0.017)	(0.008)
Holding_MF	-0.008***	0.001	-0.001	0.000	-0.008***	0.000	-0.001	0.000	-0.007***	0.000	-0.001**	0.000*
	(0.002)	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
Pctcash	-0.040	0.094***	0.005	0.023**	-0.039	0.088***	0.002	0.024**	-0.043	0.104***	-0.004	0.022
	(0.096)	(0.027)	(0.019)	(0.011)	(0.096)	(0.031)	(0.020)	(0.012)	(0.099)	(0.032)	(0.025)	(0.014)
Hostile	0.296	-0.121	0.045	-0.005	0.286	-0.061	0.077*	-0.006	0.320	-0.057	0.077	-0.010
	(0.292)	(0.086)	(0.046)	(0.025)	(0.291)	(0.090)	(0.039)	(0.029)	(0.304)	(0.102)	(0.071)	(0.029)
Diffind	-0.066	0.022	-0.025**	-0.012	-0.067	-0.002	-0.021**	-0.017**	-0.058	-0.006	-0.011	-0.019**
	(0.052)	(0.022)	(0.011)	(0.009)	(0.048)	(0.027)	(0.008)	(0.009)	(0.047)	(0.029)	(0.010)	(0.009)
Merger of equals	0.045	-0.136**	0.038	0.028	0.084	-0.078	0.050	0.030	0.081	-0.069	0.089	0.023
	(0.304)	(0.063)	(0.069)	(0.044)	(0.325)	(0.067)	(0.071)	(0.037)	(0.339)	(0.072)	(0.071)	(0.051)
Tender	0.044	0.100*	0.011	0.009	0.074	0.101**	0.010	0.009	0.082	0.094*	0.021	0.013
	(0.115)	(0.051)	(0.014)	(0.009)	(0.106)	(0.050)	(0.014)	(0.009)	(0.105)	(0.051)	(0.017)	(0.011)
IMR	0.799**	0.429***	0.029	0.072**	0.863**	0.403***	0.011	0.082**	0.793*	0.383***	0.039	0.076**
	(0.399)	(0.113)	(0.071)	(0.034)	(0.412)	(0.135)	(0.085)	(0.038)	(0.441)	(0.143)	(0.079)	(0.035)
Year	0.011	0.002	0.000	-0.001	0.011	0.001	-0.000	-0.000	0.009	0.001	0.000	-0.000
	(0.008)	(0.004)	(0.001)	(0.001)	(0.007)	(0.003)	(0.002)	(0.001)	(0.007)	(0.003)	(0.002)	(0.001)
Constant	-85.685**	-38.283***	-2.982	-4.472	-90.280**	-34.101**	-0.447	-5.910	-82.195*	-31.841*	-3.540	-5.456
	(38.356)	(14.524)	(7.382)	(3.293)	(40.665)	(16.100)	(8.871)	(3.572)	(42.534)	(16.957)	(8.025)	(3.462)
R-squared	0.451	0.471	0.511	0.566	0.467	0.448	0.519	0.549	0.453	0.445	0.491	0.535
Number of deals	389	518	389	513	389	519	389	514	389	519	389	514
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 17: Balancing tests of propensity score matching

This table 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. B/M is the book-to-market value of equity of a target of acquirer measured at the end of the last fiscal year before announcement. $Size\_a$ is the logarithm of the acquirer market capitalization at the last fiscal year before the announcement. $RELSIZE$ is the ratio of the target's asset size to the acquirer's asset size at the end of the last fiscal year before the announcement. $Valpct$ is the ratio of deal value to acquirer market capitalization at the end of the last fiscal year before announcement. $Holding\_MF$ is mutual fund holdings in a target firm one quarter before the acquisition announcement. $Pctcash$ is the percentage of the stock payment in the consideration. $Diffind$ is a dummy variable equals one for a deal where bidder and target are from different 3-digit SIC code industries and 0 otherwise. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Treated	Control	%bias	t-stats
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	58.861	64.858	-13.800	-0.750
Diffind	0.237	0.288	-11.500	-0.620

Table 18: Propensity score matching results

This table reports the propensity matching results for deals announced between January 2000 and September 2019. Connected includes deals with holdings of connected hedge funds in a target firm one quarter prior to the acquisition announcement, and others include deals without connected fund holdings. *Completion* is a dummy variable that equals one if the deal is completed. *Duration* is the number of months between the deal announcement and the deal outcome. *Premium* is the premium paid one week (four weeks) before the 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. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The missing values of t-stats indicate that all deals are completed in both groups, and there is no difference.

	Connected	Others	Difference	t-stats
Completion	1.000	1.000	0.000	.
Duration	124.421	125.579	-1.158	-0.080
Premium1	0.288	0.399	-0.111	-2.320**
Premium4	0.324	0.458	-0.134	-2.460**
TCAR	0.122	0.303	-0.181	-2.900***
TCAR1	0.199	0.368	-0.169	-2.780***
TCAR3	0.204	0.367	-0.163	-2.650***
TCAR5	0.202	0.369	-0.167	-2.690***
ACAR	-0.019	-0.010	-0.009	-1.040
ACAR1	-0.015	-0.008	-0.007	-0.530
ACAR3	-0.011	-0.003	-0.009	-0.690
ACAR5	-0.012	0.002	-0.014	-0.940