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

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Abstract

This paper examines the impact of investment banks' connection with hedge funds on acquirer firms' choice of advisor and deal outcome in M&A. We find that acquirers are more likely to choose advisors whose connected hedge funds have holdings in the target one quarter before the deal announcement. Those holdings are negatively related to the premium paid to the target and target abnormal returns when targets have higher degrees of information asymmetry. These results support our 'indirect toehold' hypothesis.

Keywords: Choice of advisor; relationship banking; hedge fund holdings; indirect toehold; information advantage; merger 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 IMAA analysis, in 2015 alone, when the most recent merger wave peaked, the total transaction value of US M&A reached $2545 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). Activist hedge funds now also play a significant role in M&A. According to data from Activist Insight, 839 companies were targeted by at least one activist hedge fund in 2019, including 21% with a market capitalization exceeding US$10 billion.[1]

Our paper examines the connections between advisors and hedge funds and how these connections influence the choice of an advisor in M&A and deal outcome. We say that a hedge fund is connected to the investment bank (that serves as the advisor in M&A deal) if the hedge fund uses this bank as a prime broker. We develop two hypotheses concerning the direction of information flow between advisors and connected hedge funds. The 'indirect toehold' hypothesis posits that advisors use connected hedge funds' holdings in the target firm as an 'indirect toehold' to obtain additional information about the target and help the bidder. The 'information advantage' hypothesis posits that connected hedge funds gain privileged information from the advisor and increase stakes in target firms before the M&A announcement. Using a sample of 1,389 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

[1]Mark DesJardine and Rodolphe Durand. Does hedge fund activism impact the long-term sustainability of companies? Principles for Responsible Investment. June 22, 2020.

hedge funds have holdings in the target firm. The conditional probability of a bank is selected given that it has a hedge fund connection is 0.984, while the number given it doesn't have such a relationship is 0.013. We find that connected hedge funds do not show any significant changes in their position in target or acquirer firms before the deal announcement compared to unconnected funds. Hence, there is no evidence that advisors share their private information about the deal with their connected funds. However, connected funds' holdings in the target firm 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 supplied by connected hedge funds, supporting our 'indirect toehold' hypothesis. This may help the bidder gather relevant information about the target, reduce information asymmetry, and enhance its bargaining power. At the same time, affiliated funds holdings do not affect deal duration, the period between the announcement and deal effective dates.

As such, we contribute to the literature on the role of advisors in M&A. The role of merger advisors and their impact on merger outcomes has received much attention in the literature, but the findings are mixed. Theoretically, investment banks help to execute complex deals that are characterized by significant asymmetric information and reduce transaction costs (Servaes and Zenner, 1996). Empirically, they lead to higher shareholder wealth gains (Kale et al., 2003), M&A returns (Bao and Edmans, 2011; Golubov et al., 2012), and probability of completion (Hunter and Jagtiani, 2003). However, other studies find no association between an advisor's quality and M&A outcomes (Rau, 2000; Hunter and Jagtiani, 2003; Ismail, 2010).

Allen et al. (2004) find evidence that commercial banks have a comparative advantage relative to investment banks in serving as M&A advisors, i.e. 'a certification role', and

this effect hold for the target firms only. Song et al. (2013) show that boutique advisors are more likely to be used in complex deals, and acquirers hiring boutique advisors tend to pay lower premiums.

Bodnaruk et al. (2009) study the insider role of the advisory bank and find 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. Our findings suggest that advisors act as information transmitters from hedge funds to bidders.

Recent literature investigates factors affecting the choice of advisors and their effects on shareholder wealth. Sibilkov and McConnell (2014) show that prior performance is a significant determinant of whether an investment bank will be chosen as the advisor by future acquirers. It is also positively associated with the advisors' market values changes, which is positively related to acquirers' announcement returns. Francis et al. (2014) find that prior client relationships, the reputation of the advisor, and deal complexity are the main factors. Chang et al. (2016) find that advisor's industry expertise and firms' concern about information leakage to industry rivals are strong determinants of advisor choice for firms in M&A. Forte et al. (2010) focus on target's choice of advisor and show that the probability of hiring the bank with which a firm has a strong prior relationship is influenced by the intensity of the previous banking relationship, the reputation of the bidder's advisor, and the complexity of the deal. Our findings 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 contributes to the literature on the impact of information asymmetry in acquisitions and the division of gains between firms. During an extensive due diligence process, the bidder can gather superior information about the target and is likely to

exploit this information advantage during the M&A negotiation process strategically. Acquirer returns are significantly higher in stock-swap acquisitions of difficult-to-value targets (Officer et al., 2009). A target with more information asymmetry receives a more significant bid premium from the acquirer, and the acquirer's 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 more significant fraction of total M&A gains if the target is characterized by higher information asymmetry (Luypaert and Van Caneghem, 2017). Acquirers gain higher when they employ financial advisors in private offers, whereas the opposite is true for public deals (Leledakis et al., 2021). We show that advisors' connected fund holdings in the target firm are also a source of information for acquirers and help the bidder gain more bargaining power.

Our paper is also related to the role of toeholds (prebid 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' connected fund holdings can work as an 'indirect toehold' and create an informational advantage.

Our analysis also contributes to a growing literature investigating the relationship between hedge funds and their prime brokers and the potential information flow from prime brokers to hedge funds. For instance, Chung and Kang (2016) find that hedge

funds sharing prime brokers exhibit a strong co-movement in returns, often attributable to information flows initiated by the common broker. Similarly, (Kumar et al., 2020) document evidence that information regarding corporate client loans disseminates from prime brokers to hedge funds. Qian and Zhong (2018) find that IPO stocks with abnormally high hedge funds holdings yield abnormal returns, and hedge funds earn higher abnormal returns from this when their prime brokers also serve as IPO underwriters. We contribute to the literature by pointing toward the reverse direction of information flow. Our results indicate that there is also information flow from connected hedge funds to their prime brokers, who also advise the bidders in M&A.

Finally, our paper extends the literature on the role and impact of hedge funds in the M&A market. Boyson et al. (2017) find that hedge fund activist interventions substantially increase the probability of a takeover offer and enhance shareholder value. Similarly, Wu and Chung (2021) show that hedge fund activism improves firms' M&A decisions, and investors favourably receive such post-activism acquisitions. 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). Few studies investigate the short-term nature of hedge fund holdings and their impact on M&A. Gao et al. (2018) provide 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 a 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 'indirect toehold' and then transmit it to the bidder via a connected advisory firm.

2 Research Design

This section develops testable hypotheses relating to the choice of merger advisors and their effects on deal outcomes. To provide context, we introduce two competing hypotheses concerning the direction of information flow in M&A, then discuss how this affects the choice of advisors, changes in hedge fund holdings, deal duration, target premium, and cumulative abnormal returns.

Figure 2 illustrates the direction of information flow between advisors and hedge funds in M&A. First, the 'indirect toehold hypothesis' posits that merger advisors that also provide prime brokerage service to hedge funds use connected hedge funds' holdings in the target firm as an 'indirect toehold' to obtain additional information about the target and help the bidder. Therefore, the information flows from targets to hedge funds then advisors and finally acquirers. 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 pay a lower purchase price (Makadok and Barney, 2001), pay with stock (Hansen, 1987, Finnerty et al., 2012), and use 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 any synergetic benefits. The advisors also have the incentive to help the bidder and charge advisory fees. In addition, toehold is also a source of information for bidders that helps them improve their information about possible synergies with the target (Povel and Sertsios, 2014). However, a toehold purchase may also create rumors of a pending bid that can result in a pre-bid run-up that increases the offer price (Ravid and Spiegel, 1999) and a target rejection of negotiation (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 case, we expect acquirers to be more likely to choose advisors whose connected hedge funds have holdings in the target. The reduced information asymmetry between target and bidder also reduces deal duration and gives acquirers more bargaining power. As a result, the premium paid can be reduced, leading to lower target abnormal returns on the acquisition announcements. The effect can be expected more pronounced for targets with higher degrees of information asymmetry, for which the margin benefit of information asymmetry reduction is higher.[2] However, connected funds will get a smaller gain from the holdings in target firms and are not likely to increase their holdings. Thus, we expect that that relative to unconnected funds, connected funds do not change or decrease their holdings in target firms before the acquisition announcements.

Alternatively, the 'information advantage' hypothesis posits that connected hedge funds may gain privileged information from the advisory bank and earn superior returns by taking a position in the target firm and expecting its share price to increase around the time of M&A announcement. Therefore, the information flows from acquirer to advisors and finally connected hedge funds. Qian and Zhong (2018) examine hedge funds' investment in new public stocks and find that connected hedge funds obtain information advantages from their prime brokers. The latter also serve as underwriters and earn significantly higher returns. Bodnaruk et al. (2009) document that financial conglomerates in which affiliated investment banks advise the bidders to increase the positions in targets before M&A announcements which enhances the 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 before the announcement and realizing the gain around the M&A announcement.

[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.

In this case, acquirers are not likely to choose advisors whose connected hedge funds have holdings in the target. Relative to unconnected funds, connected funds should increase their holdings in target firms before the acquisition announcements to gain abnormal returns. Those funds also have the motivation to facilitate the deal and reduce the deal duration. 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. Connected fund holdings should predict higher target premiums and higher cumulative abnormal returns if this is the case. The above analysis leads to the following two sets of hypotheses:

'indirect toehold' hypothesis:

H1(a) Acquirers are more likely to choose advisors whose connected hedge funds have holdings in target firms.

H2(a) Relative to unconnected funds, hedge funds, connected to the advisory bank, do not increase their holdings in target firms before M&A announcements.

H3(a) Connected funds' holdings in targets before the acquisition announcement lead to:

(1) a shorter deal duration;

(2) a lower takeover premium;

(3) lower target announcement returns.

H4 The above effects are stronger when target firms have higher degrees of information asymmetry.

'information advantage' hypothesis:

H1(b) Acquirers not likely to choose advisors whose connected hedge funds have holdings in target firms.

H2(b) Relative to unconnected funds, hedge funds, connected to the advisory bank, increase their holdings in target firms before M&A announcements.

H3(b) Connected funds' holdings in targets before the acquisition announcement lead to:

(1) a shorter deal duration;

(2) a higher takeover premium;

(3) higher target announcement returns.

[Figure 2 in here]

To tests these hypotheses, we estimate the following regression models:

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

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

$$Duration/Premium/TCAR/ACAR^i = \alpha + \beta Holding\_connected^i_{t-1} + \delta Controls^i_{t-1} + \epsilon^i \tag{3}$$

We use a logit regression to test the choice of advisor hypothesis. $p_{i,j}$ 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 12 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, and Barclays plc while the number of unconnected advisors is 175.

X denotes either the Amihud illiquidity or firm size that captures the information asymmetry of the target firm (Karpoff et al., 2013 and Borochin et al., 2019). 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 bias. The probit analysis employs all target firm observations and the dependent variable equals one if hedge funds have holdings in a target firm.

In Equation 2, $\Delta Holding\_connected^{i}_{t-1}$ ($\Delta Holding\_unconnected^{i}_{t-1}$) is the change in connected (unconnected) fund holdings per fund of stock i in quarter t-1 (the difference between quarter t-1 and t-2), where the holdings of stock is measured as the total number of shares owned by hedge funds scaled by the total shares outstanding. We define a fund as a connected fund if the advisory bank is the prime broker of a hedge fund.

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; $Size_t$ is the logarithm of target's market

capitalization 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; $Valpct$ 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.

In Equation 3, $Duration$ is calculated as the number of days between the announcement date and deal effective date; $Premium$ is the premium existing one day (week) 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 ($Holding\_acquirer_{t-1}$).

For the duration, we further control for the following variables, following Dikova et al. (2010): $Deal\ Value$ is the total value of the consideration paid by the acquirer in a million dollars; $Termination\ fee$ is the amount of the termination fee paid by the acquirer in a million dollars; $RELSIZE$ is the ratio of target total assets to bidder total assets. The other control variables are defined in Equation (2). In Equations (2) and (3), we also include target industry fixed effects, advisor fixed effects and use robust standard errors. Table 1 summarizes all the variable definitions we use in this paper.

To capture the effect of information asymmetry on changes in hedge fund holdings and deal outcome, we estimate the same model for a sub-sample of deals with higher and lower levels of information asymmetry. Following Karpoff et al. (2013) and Borochin et al. (2019), we measure information asymmetry using the Amihud measure and firm size and then estimate Equations (2) and (3) for targets with Amihud illiquidity measure or the size above or below the median separately.

[Table 1 in here]

Under the 'indirect toehold' hypothesis, we expect β_1 and β_2 to be positive in Equation (1), indicating that acquirers are more likely to choose the advisor whose connected hedge funds have holdings in the target firms. We expect $beta_3$ and β_4 to be positive using the Amihud illiquidity measure and negative using size, indicating stronger effects for targets with higher degrees of information asymmetry. We expect β lower 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. We expect β to be negative in Equation (3), suggesting that connected hedge funds holdings lead to shorter deal duration, lower target premium, and lower target abnormal returns. The

β coefficients in equations (2) and (3) shall be more significant when using targets with higher degrees of information asymmetry.

Under the 'information advantage' hypothesis, we expect β_1 and β_2 to be negative in Equation (1), indicating that acquirers are less likely to choose the advisor whose connected hedge funds have holdings in the target firms. We expect β to be positive and larger than 1 in Equation (2), indicating that connected funds increase the holdings in target firms compared to unconnected funds before the acquisition announcements. In Equation (3), we expect β to be negative for the duration and positive for premium and abnormal returns, indicating that connected funds' holdings in the target firm reduce the deal duration and are positively related to the target premium and abnormal returns.

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. 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 and Kolokolova (2021). In total, we have 5,713,269 data points of holdings (each data point is uniquely defined by a

hedge fund company-quarter-security), and 543 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 completed between January 2000 to September 2019. We only include the disclosed value type of acquisitions, indicating all deals that have a disclosed dollar value and the acquirer is acquiring an interest of 50% or over in a target, raising its interest from below 50% to above 50%, or acquiring the remaining interest it does not already own. We require that both the bidder and the target are public firms headquartered in the United States, as the data on hedge fund holdings are available only for U.S. listed firms.[3] Following Gao et al. (2018) and Wu and Chung (2021), we require the deal value to be at least USD 1 million. The initial sample contains 3529 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[4] and deals with hedge fund holdings in the target firm. The final sample includes 1,389 deals. We use the target primary ticker symbol to match the firms in our M&A sample to the companies included in hedge-fund holdings.

Table 2 reports the descriptive statistics of characteristics for advisors. Panel A reports the statistics for connected and unconnected advisors, respectively. Overall, there are 187 unique advisors in our sample, of which 12 have a hedge fund connection. On average, connected advisors advise more deals than unconnected advisors (60 versus 4.85) and larger deal value (435150 versus 13847 million dollars). In Panel B, we look at all potential combinations: for each deal, we include the chosen advisors and other potential advisors that are not chosen but active in the advisory market. Hence, there are 69,469 advisors in total, and many are not-chosen advisors. The conditional probability of a

[3]This filter gives us a clear sample as we calculate the holdings of hedge funds both in the target and acquirer. For other companies, hedge funds may have holdings, but it is not observed.

[4]The largest loss of data 1783 deals is driven by the absence of information on target ROA.

bank is selected given that it has a hedge fund connection is 0.984, while the number given it doesn't have such a relationship is 0.013. On average, connected advisors also have higher numbers and values of prior acquisitions (9.596 and 54595 million dollars versus 3.153 and 11705 million dollars). They are more likely to be the previous advisor of the acquirer in the past year (0.049 versus 0.003) and advise a target in the same industry as the target of the current acquisition (0.288 versus 0.113). Panel C reports the advisor statistics for deals with and without connected fund holdings, respectively. The average number of advisors is 1.756 for deals with connected fund holdings and 0.801 for deals without. On average, 4.787 connected funds and 18.637 unconnected funds take a stake in the target firm in deals with connected fund holdings, while five unconnected funds hold the target in deals without connected fund holdings.

Comparing deal characteristics (Table 3), We see that deals with connected hedge fund holdings reveal statistically significant differences in terms of hedge fund holdings, target and acquirer characteristics and deal outcomes in comparison to deals without connected fund holdings. The average holdings of connected funds are 2%, and the holdings of unconnected funds and holdings in the acquirer are also higher for deals with connected fund holdings (10.8% and 9.4 % versus 9.2% and 7.8%). On average, deals with connected hedge fund holdings have a target with a larger size (6.936 versus 5.173), smaller Amihud illiquidity measure (0.953 versus 5.435), less tangible assets (0.808 versus 0.895), an acquirer with a larger size (8.855 versus 7.670), lower B/M ratio (0.241 versus 0.514), a higher percentage of cash payment (0.559 versus 0.457), larger deal value (5560.88 versus 827.493 million dollars), and higher termination fees (99.695 versus 8.108 million dollars).

[Table 2 to 3 in here]

4 Empirical Results

We report the estimation results for Equation (1), capturing the acquirer's choice of advisors in Table 4. Columns (1) and (2) use the Amihud illiquidity measure and firm size to capture the information asymmetry of the target firm, respectively. The coefficient of β_1 is significantly positive at the 1% level in both columns, indicating that after controlling for other factors that influence an acquirer's choice of a financial advisor, advisor's connection with hedge funds that have holdings in the target firm is a significant determinant of the likelihood that the acquirer chooses a specific advisor. This finding supports our 'indirect toehold' hypothesis that the information flows from connected hedge funds to advisors and acquirers; therefore, acquirers to be 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 levels of holdings. The coefficient of β_3 is significantly negative in column (2), indicating that the effect is more pronounced for targets with smaller sizes. The coefficients of other variables are consistent with the literature. Acquirers are more likely to select advisors with higher numbers of and values of acquisitions in the prior year, higher expertise in the target's industry, and previous connections with the acquirer.

[Table 4 in here]

Table 5 reports the estimation results for Equation (2), capturing the changes in hedge fund holdings before the deal announcement. Columns (1) to (5) present the results of changes of hedge fund holdings in targets, and columns (6) to (10) document those in acquirers. The coefficients of β are insignificant in columns (1) and (6), 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 or connected funds are not willing to increase their holdings under our 'indirect toehold' hypothesis. The coefficients on $\Delta Holding\_connected_{t-2}$ are also insignificant, indicating no changes in holdings two quarters before the acquisition announcement. After separating into sub-samples based on target information asymmetry, the β coefficients are still insignificant except in column (9). In terms of other control variables, hedge funds decrease their holdings in targets when acquirers are more likely to be overvalued and have a higher book-to-market ratio. Overall, we find no evidence that connected hedge funds change their holdings in the target or acquirer firms before the acquisition announcements, hence, no support for 'information advantage' hypothesis.

[Table 5 in here]

Table 6-8 displays the estimation results for Equation (3) capturing the impact of connected hedge funds holdings on deal duration, target premium, and abnormal returns. As for deal duration, we do not find any evidence of the effect of connected hedge funds. In Table 6, column (1) uses the whole sample and columns (2) to (5) use the sub-sample of deals with target Amihud illiquidity measure or size below and above the median, respectively. The coefficient of β on connected funds holdings is positive but insignificant in all columns suggesting that connected funds holdings have no significant impact on deal duration. Consistent with the literature, higher termination fees and hostile deals are associated with higher deal duration, while deal value, the percentage of cash payment, and tender offer are associated with lower deal duration.

The empirical results support our 'indirect toehold' hypothesis in terms of premium. In Table 7, the β coefficient is negative but insignificant in column (1). Looking separately into sub-samples of deals with different levels of information asymmetry, the β coefficients

are significantly negative of -2.336 and -2.800 in columns (2) and (3), respectively, for targets with higher information asymmetry. A one standard deviation increase in connected fund holdings leads to a reduction of 6.3 (7.6) bp in premium paid for targets with a higher level of information asymmetry. On the contrary, the β coefficients are not significant in columns (4) and (5). Similar patterns can be found in columns (6) to (10), where the premium is computed based on the target market value one week before the announcement. These results support our 'indirect toehold' hypothesis that connected funds holdings help the bidder reduce the premium paid to the target, especially those with higher information asymmetry levels. The influence of other control variables on premiums is consistent with the findings documented in previous literature. Premium decreases with the ratio of deal value to acquirer market capitalization while increases with acquirer size, tender offer, and hostile deals.

Results in Table 8 also support our 'indirect toehold' hypothesis. Column (1)-(5) and (6)-(10) reports the results for TCAR and ACAR, respectively. The coefficient β on connected fund holdings is negative but insignificant in column (1). After dividing into the two sub-samples, the β coefficients are significantly negative with values -2.527 and -3.181 in columns (2) and (3) for targets with high asymmetry and insignificant in columns (4) and (5) for targets with low asymmetry, respectively. A one standard deviation increase in connected fund holdings leads to a reduction of 6.8 (8.6) bp in target abnormal returns for targets with a higher level of information asymmetry, which is consistent with our 'indirect toehold' hypothesis. We find no significant impact of connected fund holdings on acquirer abnormal returns (see columns (6) to (10)). In terms of control variables, acquirer size and hostile deal are positively related to target abnormal returns. The percentage of deal value to acquirer market capitalization and mutual fund holdings are negatively associated with target abnormal returns. Acquirer abnormal returns are positively associated with the percentage of deal value to acquirer

market capitalization, hostile deal, and merger of equals.

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. Thus, acquirers are more likely to choose advisors with connected hedge fund holdings, which leads to a lower takeover premium and target announcement returns.

[Table 6 to 8 in here]

5 Robustness tests

5.1 Different information asymmetry measures

In this section, we use other measures of information asymmetry. Following Cheng et al. (2016), We measure a target's information asymmetry as perceived by market investors: COV is the number of analysts following a target in the year before the acquisition announcement; 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. $DISP$ is the standard deviation of all earnings forecasts in the year before the acquisition announcement. Analysts' earnings forecasts come from I/B/E/S. The results in Table 9 to 13 confirm that our main findings remain qualitatively unchanged using other measures of information asymmetry.

[Table 9 to 13 in here]

5.2 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). To examine the robustness of our empirical results for different window lengths, we report additional cumulative abnormal returns on windows (-1, +1), (3, +3) and (5, +5) in Tables 14 to 16. The β coefficients for $TCAR$ are negative and larger in absolute value for targets with higher information asymmetry but not statistically significant, consistent with market efficiency.

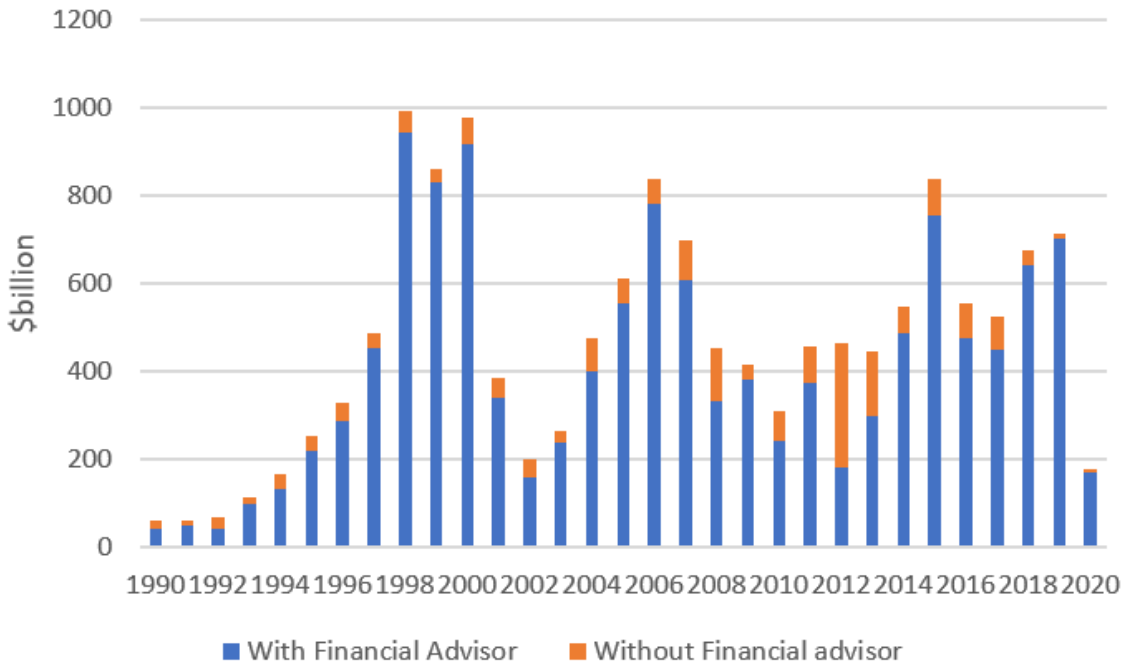
6 Conclusion

In this paper, we study the impact of advisor's hedge fund connection on the choice of advisor and deal outcome in M&A. Using a sample of 1,389 US public M&A transactions between 2000 to 2019, we find that connected hedge fund holdings in the target, measured as the holdings of hedge funds whose prime broker is the bidder's advisor, are positive and significant determinants of the likelihood that an acquirer will choose an advisor. We further find that these connected holdings are significantly negatively related to the target premium and target abnormal returns when targets have a higher level of information asymmetry.

Our findings are consistent with our 'indirect toehold' hypothesis. Acquirers choose advisors who have connected fund holdings in the target to obtain possibly private

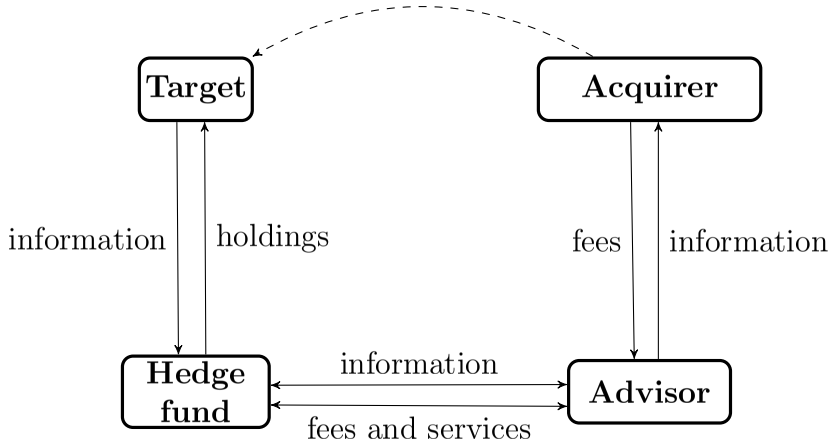
information, reduce information asymmetry, and gain more bargaining power. Advisors also have the incentives to help the bidder. They justify their advisory fees and are more likely to be hired next time. Therefore, advisors may use connected fund holdings as an 'indirect toehold' in target firms, exploit information obtained from affiliated funds with holdings in the target firm, and help bidders gain more bargaining power, leading to lower target premiums and target abnormal returns after the acquisition announcements. Our findings contribute 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 it is achieved-utilising 'indirect toehold' through connected hedge funds.

Our analysis provides new insights into the effects of investment banks' connections on financial advisors' choice and adds to the overall understanding of the roles of advisors in M&A.



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 direction of information flow between advisors and hedge funds in M&A.

Figure 2: The information flow in M&A.

Tables

Table 1: Variable Description

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

Variables	Description
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.
ACAR	Acquirer cumulative abnormal returns computed on the acquisition announcement date.
B/M	The book-to-market value of equity of a target of acquirer measured at the end of last fiscal year before announcement.
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.
DISP	The analyst forecast dispersion for the target in the year before the bid.
Duration	The number of days between the deal announcement and the deal final outcome.
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.
ERR	The analyst error for the target in the year before the bid.
Holding	Holdings of an advisor's connected hedge funds in the target firm.
Holding_acquirer$_{t-1}$	Hedge funds' holding the in acquirer one quarter before the acquisition announcement.
Holding_connected$_{t-1}$	Holdings of connected hedge funds in a target firm one quarter before the acquisition announcement.
Holding_total$_{t-1}$	Holdings of all hedge funds in a target firm one quarter before the acquisition announcement.
Holding_MF$_{t-1}$	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.
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.
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 2: 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 1. 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: Connected advisors						Unconnected advisors						
Number of deals advised	60.000	48.000	33.853	21.000	113.000	12	4.850	2.000	9.002	1.000	68.000	187	15.624***
Deal value advised ($M)	435150.000	411220.000	273330.000	94605.000	889710.000	12	13847.000	1041.700	40815.000	10.770	333060.000	187	18.666***
	Panel B: Connected advisors						Unconnected advisors						
Probability to be chosen	0.984	1.000	0.127	0.000	1.000	732	0.013	0.000	0.114	0.000	1.000	68737	228.581***
Acquisition times	9.596	9.000	4.605	0.000	25.000	732	3.153	1.000	3.952	0.000	29.000	68737	43.791***
Acquisition value	54595.000	42813.000	45286.000	0.000	237140.000	732	11705.000	606.270	27951.000	0.000	239140.000	68737	40.948***
Prior advisor	0.049	0.000	0.216	0.000	1.000	732	0.003	0.000	0.056	0.000	1.000	68737	20.816***
Expertise	0.288	0.000	0.453	0.000	1.000	732	0.113	0.000	0.316	0.000	1.000	68737	14.841***
	Panel C: Deals with connected fund holdings						Deals without connected fund holdings						
Number of advisors	1.756	1.000	1.176	1.000	11.000	540	0.801	1.000	0.610	0.000	4.000	849	19.828***
Number of connected HFs	4.787	3.000	5.058	1.000	38.000	540	0.000	0.000	0.000	0.000	0.000	849	27.585***
Number of unconnected HFs	18.637	16.000	12.804	0.000	91.000	540	8.154	5.000	8.587	1.000	70.000	849	18.259***

Table 3: Descriptive statistics of deal characteristics

This table reports the descriptive statistics of deal characteristics based on whether they have connected hedge fund holdings in the target firm. We define a fund as a connected fund if the advisory bank is the prime broker of a hedge fund. $Holding\_connected_{t-1}$ ($Holding\_unconnected_{t-1}$) 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. *Premium* is the premium paid one day (week) before the acquisition announcement. $TCAR$ ($ACAR$) is the target (acquirer) cumulative abnormal returns computed on the acquisition announcement date. Other variables are summarized in Table 1. 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$_{t-1}$	0.020	0.012	0.027	0.000	0.225	540	0.000	0.000	0.000	0.000	0.000	849	22.043***
Holding_unconnected$_{t-1}$	0.108	0.091	0.079	0.000	0.503	540	0.092	0.069	0.087	0.000	0.621	849	3.593***
Holding_acquirer$_{t-1}$	0.094	0.073	0.094	0.000	0.672	540	0.078	0.056	0.093	0.000	1.058	849	3.148***
Duration	148.839	123.000	98.130	30.000	693.000	540	139.999	121.000	99.100	0.000	1161.000	849	1.627
Premium (one day)	0.325	0.264	0.348	-0.851	2.766	540	0.356	0.280	0.408	-0.683	3.902	849	-1.442
Premium (one week)	0.344	0.293	0.347	-0.847	2.605	540	0.371	0.292	0.410	-0.894	3.410	849	-1.248
TCAR	0.151	0.083	0.271	-2.125	1.748	540	0.201	0.137	0.441	-2.198	2.266	849	-2.403**
ACAR	-0.009	-0.001	0.058	-0.325	0.315	540	-0.005	-0.001	0.102	-0.524	2.369	849	-0.980
ROA_t	0.021	0.007	2.182	-28.303	41.992	540	-0.027	0.002	0.134	-2.055	1.401	849	0.638
Leverage_t	0.375	0.400	0.814	-16.996	0.987	540	0.340	0.342	0.454	-4.078	1.013	849	1.042
Size_t	6.936	6.905	1.668	-3.331	11.328	540	5.173	5.070	1.432	1.705	11.107	849	20.744***
Amihud_t (10^{-6})	0.953	0.047	8.756	0.000	186.800	540	5.435	0.900	13.930	0.000	125.200	849	-6.683***
B/M_t	1.017	0.422	13.996	-34.948	321.237	540	0.544	0.592	4.367	-121.017	26.056	849	0.904
Tangible_t	0.808	0.889	0.213	0.127	1.000	540	0.895	0.983	0.170	0.166	1.000	849	-7.907***
Size_a	8.855	8.633	1.705	3.082	12.956	540	7.670	7.354	2.111	1.066	12.693	849	9.319***
B/M_a	0.241	0.343	3.197	-62.585	1.774	540	0.514	0.462	0.361	-0.486	4.761	849	-2.076**
Valpct	0.952	0.286	6.441	0.001	118.612	540	0.367	0.151	1.076	0.000	19.415	849	2.184**
Holding_MF	0.454	0.188	2.150	-0.001	48.204	540	0.298	0.023	3.262	-0.003	93.337	849	0.979
Pctcash	0.559	0.608	0.413	0.000	1.000	540	0.457	0.342	0.445	0.000	1.000	849	4.294**
Hostile	0.004	0.000	0.061	0.000	1.000	540	0.000	0.000	0.000	0.000	0.000	849	1.775*
Diffind	0.328	0.000	0.470	0.000	1.000	540	0.332	0.000	0.471	0.000	1.000	849	-0.169
Merger of equals	0.044	0.000	0.206	0.000	1.000	540	0.026	0.000	0.159	0.000	1.000	849	1.883*
Tender	0.172	0.000	0.378	0.000	1.000	540	0.141	0.000	0.349	0.000	1.000	849	1.557
Deal value ($M)	5560.880	1656.700	13036.820	11.832	164746.900	540	827.493	232.890	2470.300	3.740	33555.000	849	10.295***
Termination fee ($M)	99.395	0.000	393.078	0.000	5400.000	540	8.108	0.000	55.108	0.000	1250.000	849	6.666***
RELSIZE	0.493	0.237	1.839	0.000	40.173	540	0.373	0.134	1.258	0.000	29.369	849	1.438
IMR	0.792	0.792	0.288	0.765	0.805	540	0.794	0.795	0.221	0.785	0.807	849	-17.986***

Table 4: Logistic regression on advisor choice

This table reports the results from Equation (1) examining the acquirer's choice of advisors in M&A. 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. X represents the target firm's Amihud illiquidity measure and firm size in columns (1) and (2), respectively. Other variables are defined in Table 1. 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)
X=	Amihud	Size
Connected (β_1)	4.173***	5.381***
	(0.167)	(0.726)
Holding (β_2)	3.003	-8.162
	(7.311)	(26.026)
Connected·X (β_3)	0.494	-0.150*
	(0.936)	(0.090)
Holding·X (β_4)	1.946	1.474
	(41.534)	(3.661)
Acquisition times	0.012**	0.013**
	(0.005)	(0.005)
Acquisition value	0.046***	0.047***
	(0.009)	(0.009)
Prior advisor	1.293***	1.290***
	(0.105)	(0.105)
Expertise	0.474***	0.471***
	(0.040)	(0.040)
IMR	-0.034	-0.036
	(0.061)	(0.061)
Constant	-0.159	-0.008
	(4.837)	(4.807)
Observations	58,792	59,404
Pseudo R2	0.518	0.517

Table 5: 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 (6) use the whole sample, and columns (2)-(5) and (7)-(10) use sub-samples of targets with Amihud illiquidity measure or size 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 1. 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)
		$\Delta Holding\_connected_{t-1}$ *in target*					$\Delta Holding\_connected_{t-1}$ *in acquirer*			
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large	All	Amihud_high	Size_small	Amihud_low	Size_large
$\Delta Holding\_unconnected_{t-1}(\beta)$	-0.001	0.000	-0.004	-0.015	-0.007	0.007	0.002	0.005	0.082***	0.050
	(0.007)	(0.008)	(0.006)	(0.026)	(0.028)	(0.008)	(0.005)	(0.005)	(0.027)	(0.033)
$\Delta Holding\_connected_{t-2}$	0.008	0.020***	0.018***	-0.047	-0.049	0.001	0.004	0.006***	-0.006	-0.006
	(0.010)	(0.006)	(0.004)	(0.036)	(0.035)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)
$\Delta Holding\_unconnected_{t-2}$	-0.002	-0.002	-0.000	0.006	0.020	0.005	0.000	-0.004	-0.009	0.014
	(0.006)	(0.004)	(0.005)	(0.023)	(0.023)	(0.007)	(0.004)	(0.005)	(0.017)	(0.020)
Holding_acquirer$_{t-1}$	0.000	0.001*	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
ROA_t	0.023	-0.192	0.336	0.015	-0.167	-0.004	0.062	-0.109	-0.009	-0.016
	(0.073)	(0.188)	(0.204)	(0.095)	(0.191)	(0.025)	(0.057)	(0.225)	(0.046)	(0.083)
Leverage_t	0.079	-0.843	1.165	0.043	-0.625	-0.021	0.034	-0.461	-0.042	-0.064
	(0.272)	(0.556)	(0.723)	(0.351)	(0.705)	(0.092)	(0.218)	(0.831)	(0.171)	(0.310)
Size_t	-0.596	5.718	-8.307	-0.374	4.307	0.113	-0.348	3.079	0.254	0.428
	(1.892)	(3.905)	(5.108)	(2.446)	(4.913)	(0.641)	(1.525)	(5.801)	(1.187)	(2.131)
B/M_t	-0.047	0.438	-0.643	-0.030	0.329	0.009	-0.027	0.238	0.019	0.033
	(0.145)	(0.301)	(0.392)	(0.187)	(0.377)	(0.049)	(0.117)	(0.448)	(0.091)	(0.163)
Size_a	-0.005**	-0.006***	-0.003	-0.013***	-0.013**	0.001	0.001	0.000	0.001	0.001
	(0.002)	(0.002)	(0.003)	(0.004)	(0.005)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
B/M_a	-0.005***	-0.042**	-0.021	0.026	0.027	-0.001	0.009	0.003	0.001	-0.003
	(0.001)	(0.019)	(0.015)	(0.028)	(0.030)	(0.001)	(0.012)	(0.010)	(0.013)	(0.013)
Tangible_t	3.722	-34.994	50.867	2.374	-26.342	-0.721	2.097	-18.872	-1.572	-2.641
	(11.576)	(23.884)	(31.238)	(14.978)	(30.124)	(3.918)	(9.325)	(35.491)	(7.264)	(13.043)
Valpct	-0.001*	-0.002	0.000	-0.001**	-0.001	0.000*	0.002*	0.001	0.000	0.000
	(0.000)	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Holding_MF	0.009	-0.061	0.091	0.005	-0.047	-0.001	0.003	-0.034	-0.003	-0.004
	(0.020)	(0.042)	(0.057)	(0.027)	(0.054)	(0.007)	(0.017)	(0.063)	(0.013)	(0.023)
Pctcash	0.010	0.009	-0.001	0.007	0.020	-0.001	-0.005	0.000	0.012	0.003
	(0.013)	(0.012)	(0.015)	(0.023)	(0.029)	(0.005)	(0.010)	(0.009)	(0.012)	(0.013)
Hostile	-0.048**	-	-	-0.013	-0.053	-0.057***	-	-	-0.027	-0.039
	(0.021)			(0.045)	(0.049)	(0.022)			(0.037)	(0.033)
Diffind	-0.024**	-0.008	-0.009	-0.029*	-0.039**	-0.003	0.001	0.000	-0.003	-0.004
	(0.009)	(0.009)	(0.007)	(0.017)	(0.017)	(0.005)	(0.004)	(0.003)	(0.007)	(0.008)
Merger of equals	-0.010	-0.017	-0.010	-0.031	-0.045	-0.026	-0.013	-0.021	-0.017	-0.022
	(0.044)	(0.033)	(0.019)	(0.040)	(0.039)	(0.025)	(0.019)	(0.014)	(0.026)	(0.031)
Tender	0.013	0.021	0.016	-0.003	0.002	-0.002	-0.012*	-0.019**	0.003	0.009
	(0.011)	(0.030)	(0.019)	(0.012)	(0.013)	(0.005)	(0.006)	(0.008)	(0.005)	(0.006)
imr	-5.324	50.734	-73.712	-3.340	38.350	1.030	-3.080	27.327	2.274	3.819
	(16.804)	(34.647)	(45.299)	(21.759)	(43.741)	(5.691)	(13.534)	(51.448)	(10.556)	(18.954)
Year	0.000	0.001**	0.000	0.000	0.001	-0.000	-0.000	0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Constant	422.542	-4,029.993	5,851.227	264.596	-3,045.530	-81.020	244.999	-2,169.717	-178.850	-301.445
	(1,334.466)	(2,750.532)	(3,595.994)	(1,727.044)	(3,471.764)	(451.733)	(1,074.708)	(4,084.688)	(838.169)	(1,505.062)
Observations	882	399	392	487	490	882	399	392	487	490
R-squared	0.453	0.744	0.749	0.560	0.564	0.461	0.669	0.643	0.598	0.593
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6: Hedge fund holdings and deal duration

This table reports the results from equation (3) examining the impact of connected fund holdings on deal duration. Column (1) uses the whole sample, and columns (2) to (5) use sub-samples of targets with Amihud illiquidity measure or size above or below the median separately. *Duration* is the number of days between the deal announcement and the deal final outcome. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 1. 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)
			Duration		
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large
Holding_connected$_{t-1}(\beta)$	8.577	220.195	27.750	32.428	43.972
	(121.871)	(170.395)	(136.158)	(155.021)	(184.249)
Holding_total$_{t-1}$	8.551	32.996	38.602	-30.820	-42.427
	(23.643)	(40.817)	(33.873)	(40.363)	(47.883)
Holding_acquirer$_{t-1}$	3.951	-50.580	-66.251**	41.201	33.264
	(30.308)	(36.353)	(27.313)	(70.054)	(70.851)
Deal value	0.001	-0.022**	-0.005***	0.001	0.001
	(0.000)	(0.011)	(0.001)	(0.001)	(0.001)
Termination fee	0.035**	1.285**	1.150**	0.036*	0.037
	(0.017)	(0.618)	(0.472)	(0.019)	(0.023)
RELSIZE	8.909	5.045	2.712	4.612	3.295
	(7.337)	(13.743)	(14.708)	(10.334)	(12.181)
Pctcash	-0.185**	-0.378**	-0.378**	-0.044	-0.076
	(0.072)	(0.187)	(0.184)	(0.120)	(0.142)
Hostile	213.208***	-	-	227.535***	224.079***
	(35.050)			(57.446)	(57.325)
Diffind	2.994	2.697	4.442	-1.195	-0.331
	(4.690)	(4.646)	(5.704)	(8.597)	(9.013)
Merger of equals	-7.192	2.147	12.560	-2.282	-22.881
	(29.989)	(26.961)	(29.245)	(48.187)	(36.231)
Tender	-36.710***	-21.897	-27.255*	-43.097***	-43.435**
	(9.189)	(16.730)	(15.093)	(15.123)	(18.257)
IMR	-35.832***	21.431	32.061	-40.814*	-36.087
	(12.422)	(23.282)	(25.015)	(21.286)	(25.266)
Year	0.670	0.750	1.284	0.951	0.636
	(0.751)	(1.013)	(1.040)	(1.057)	(1.087)
Constant	1,688.960	-3,123.569	-5,048.014*	1,494.551	1,751.306
	(2,042.362)	(3,507.005)	(2,920.765)	(2,987.099)	(2,978.540)
Observations	888	401	393	491	495
R-squared	0.665	0.756	0.753	0.710	0.710
Industry FE	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes

Table 7: 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 (6) use the whole sample, and columns (2)-(5) and (7)-(10) use sub-samples of targets with Amihud illiquidity measure or size above or below the median separately. *Premium* is the premium paid one day (week) 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 1. 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)
		Premium (one day)					Premium (one week)			
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large	All	Amihud_high	Size_small	Amihud_low	Size_large
Holding_connected$_{t-1}(\beta)$	-0.276	-2.336**	-2.800***	-0.240	-0.673	-0.450	-2.690**	-3.012***	-0.364	-0.733
	(0.699)	(1.079)	(0.937)	(0.498)	(0.550)	(0.658)	(1.250)	(0.914)	(0.548)	(0.590)
Holding_total$_{t-1}$	-0.234**	-0.311**	-0.281**	-0.306	-0.263	-0.211**	-0.275***	-0.209	-0.259	-0.252
	(0.110)	(0.132)	(0.121)	(0.218)	(0.169)	(0.107)	(0.096)	(0.134)	(0.178)	(0.167)
Holding_acquirer$_{t-1}$	0.116	0.242	0.319	-0.078	-0.173	0.145	0.291	0.377	-0.089	-0.245
	(0.188)	(0.363)	(0.428)	(0.322)	(0.316)	(0.181)	(0.329)	(0.355)	(0.352)	(0.377)
ROA$_t$	-0.295	0.042	2.516	0.106	0.091	-0.433*	-0.049	1.362	0.091	0.064
	(0.223)	(0.919)	(2.217)	(0.261)	(0.420)	(0.254)	(0.837)	(1.691)	(0.323)	(0.461)
Leverage$_t$	-1.100	-0.217	8.548	0.391	0.222	-1.604*	-0.797	4.443	0.337	0.107
	(0.815)	(2.427)	(8.140)	(0.956)	(1.513)	(0.925)	(1.971)	(6.213)	(1.184)	(1.653)
Size$_t$	7.561	0.063	-61.421	-2.772	-2.424	11.114*	4.116	-32.408	-2.376	-1.712
	(5.715)	(17.533)	(56.941)	(6.704)	(10.833)	(6.487)	(14.255)	(43.452)	(8.287)	(11.867)
B/M$_t$	0.582	0.116	-4.575	-0.212	-0.185	0.854*	0.432	-2.340	-0.181	-0.131
	(0.438)	(1.333)	(4.342)	(0.513)	(0.829)	(0.497)	(1.100)	(3.340)	(0.634)	(0.909)
Size$_a$	0.030***	0.032**	0.030*	0.027*	0.021	0.033***	0.038***	0.034**	0.033**	0.022
	(0.010)	(0.016)	(0.018)	(0.014)	(0.013)	(0.009)	(0.013)	(0.014)	(0.015)	(0.015)
B/M$_a$	0.009***	0.051	-0.013	0.034	0.058	0.009**	0.081	0.024	0.046	0.066
	(0.003)	(0.072)	(0.055)	(0.047)	(0.055)	(0.004)	(0.082)	(0.074)	(0.054)	(0.060)
Tangible$_t$	-46.454	-0.499	375.750	16.970	14.807	-68.231*	-25.274	198.203	14.525	10.462
	(35.006)	(107.386)	(348.647)	(41.004)	(66.302)	(39.719)	(87.234)	(265.991)	(50.681)	(72.610)
Valpct	-0.005***	-0.010	-0.009	-0.004**	-0.005***	-0.005***	-0.004	-0.009	-0.005***	-0.006***
	(0.001)	(0.026)	(0.033)	(0.002)	(0.002)	(0.001)	(0.026)	(0.032)	(0.002)	(0.002)
Holding_MF	-0.084	-0.028	0.646	0.033	0.028	-0.122*	-0.064	0.338	0.028	0.021
	(0.063)	(0.191)	(0.625)	(0.073)	(0.118)	(0.071)	(0.156)	(0.477)	(0.091)	(0.130)
Pctcash	0.000	0.001	0.001	0.001	0.001	0.001***	0.001	0.001*	0.001	0.001
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
Hostile	0.877***	-	-	0.693***	0.674***	0.887***	-	-	0.840***	0.788***
	(0.088)			(0.119)	(0.146)	(0.085)			(0.143)	(0.158)
Diffind	0.015	0.037	0.047	-0.022	-0.031	0.014	0.022	0.029	-0.013	-0.026
	(0.022)	(0.047)	(0.047)	(0.037)	(0.031)	(0.018)	(0.048)	(0.044)	(0.029)	(0.026)
Merger of equals	-0.033	0.103	0.163	-0.096	-0.111	-0.065	0.170	0.190	-0.120	-0.174*
	(0.066)	(0.092)	(0.143)	(0.101)	(0.075)	(0.076)	(0.118)	(0.157)	(0.098)	(0.097)
Tender	0.054*	-0.054	-0.053	0.075*	0.087**	0.061*	-0.070	-0.056	0.095	0.123**
	(0.032)	(0.097)	(0.091)	(0.039)	(0.042)	(0.037)	(0.091)	(0.066)	(0.061)	(0.058)
IMR	67.525	0.794	-544.589	-24.578	-21.469	99.115*	36.816	-287.180	-21.063	-15.161
	(50.826)	(155.802)	(505.325)	(59.599)	(96.333)	(57.676)	(126.673)	(385.537)	(73.658)	(105.509)
Year	0.004	0.002	-0.000	0.001	0.002	0.003	-0.000	-0.003	0.001	0.001
	(0.003)	(0.005)	(0.006)	(0.005)	(0.004)	(0.003)	(0.005)	(0.006)	(0.004)	(0.004)
Constant	-5,367.758	-66.867	43,234.970	1,948.945	1,701.163	-7,874.005*	-2,922.247	22,804.547	1,671.207	1,201.139
	(4,033.780)	(12,369.453)	(40,124.163)	(4,732.167)	(7,648.911)	(4,577.282)	(10,056.079)	(30,614.331)	(5,846.480)	(8,375.082)
Observations	841	375	373	470	468	854	380	378	478	476
R-squared	0.491	0.616	0.637	0.575	0.585	0.512	0.631	0.653	0.609	0.614
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: 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. Column (1) uses the whole sample, and columns (2) to (5) use sub-samples of targets with Amihud illiquidity measure or size 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 1. 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)
			TCAR					ACAR		
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large	All	Amihud_high	Size_small	Amihud_low	Size_large
Holding_connected$_{t-1}(\beta)$	-0.656	-2.527**	-3.181***	-0.049	-0.348	0.026	0.276	0.139	-0.041	-0.056
	(0.555)	(1.268)	(1.053)	(0.552)	(0.583)	(0.087)	(0.260)	(0.365)	(0.116)	(0.135)
Holding_total$_{t-1}$	-0.049	0.161	0.161	-0.272*	-0.255	0.018	-0.001	-0.017	0.035	0.043
	(0.094)	(0.160)	(0.169)	(0.152)	(0.163)	(0.023)	(0.034)	(0.031)	(0.034)	(0.029)
Holding_acquirer$_{t-1}$	0.201	0.048	0.171	0.239	0.305	0.022	-0.015	-0.008	0.042	0.005
	(0.142)	(0.490)	(0.425)	(0.194)	(0.196)	(0.026)	(0.029)	(0.020)	(0.050)	(0.060)
ROA_t	-0.820*	-0.926	3.179	0.160	0.285	-0.004	0.049	0.273*	0.007	0.023
	(0.418)	(0.856)	(1.951)	(0.180)	(0.353)	(0.047)	(0.091)	(0.137)	(0.090)	(0.077)
Leverage_t	-3.032*	-4.031	11.423	0.608	1.065	-0.017	0.140	0.977*	0.020	0.085
	(1.543)	(2.444)	(7.134)	(0.665)	(1.295)	(0.175)	(0.138)	(0.516)	(0.331)	(0.285)
Size_t	21.103*	27.275	-80.581	-4.186	-7.452	0.111	-0.991	-6.874*	-0.157	-0.570
	(10.765)	(16.607)	(49.980)	(4.640)	(9.086)	(1.220)	(0.903)	(3.579)	(2.308)	(1.995)
B/M_t	1.619*	2.127	-6.154	-0.319	-0.569	0.009	-0.076	-0.526*	-0.012	-0.043
	(0.825)	(1.312)	(3.821)	(0.355)	(0.696)	(0.093)	(0.072)	(0.277)	(0.177)	(0.153)
Size_a	0.026**	0.033***	0.025	0.031*	0.034*	0.002	0.001	0.000	0.003	0.002
	(0.011)	(0.008)	(0.015)	(0.019)	(0.019)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)
B/M_a	0.009**	-0.024	-0.073	0.069	0.066	-0.001*	0.008	0.011	-0.005	-0.009
	(0.004)	(0.162)	(0.134)	(0.046)	(0.048)	(0.001)	(0.010)	(0.011)	(0.009)	(0.008)
Tangible_t	-129.437*	-167.604	492.527	25.614	45.604	-0.704	6.039	42.068*	0.939	3.481
	(66.014)	(101.869)	(305.943)	(28.403)	(55.660)	(7.463)	(5.523)	(21.910)	(14.113)	(12.214)
Valpct	-0.005***	-0.023*	-0.023	-0.006***	-0.006***	0.001**	-0.001	-0.001	0.001***	0.001***
	(0.002)	(0.013)	(0.020)	(0.002)	(0.002)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
Holding_MF	-0.238**	-0.325*	0.858	0.040	0.075	-0.002	0.010	0.074*	0.001	0.006
	(0.118)	(0.182)	(0.551)	(0.051)	(0.099)	(0.013)	(0.010)	(0.040)	(0.025)	(0.022)
Pctcash	0.000*	0.001	0.001**	0.000	-0.000	0.000	-0.000	-0.000	0.000**	0.000**
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	0.708***	-	-	0.553***	0.536***	0.042***	-	-	0.048*	0.050**
	(0.138)			(0.092)	(0.103)	(0.015)			(0.026)	(0.021)
Diffind	0.023	0.086	0.118*	-0.051*	-0.067**	0.004	0.003	0.007	0.007	0.003
	(0.045)	(0.075)	(0.068)	(0.030)	(0.029)	(0.004)	(0.006)	(0.007)	(0.005)	(0.005)
Merger of equals	-0.010	0.153	0.141	-0.018	-0.025	0.037*	0.088***	0.079***	0.050**	0.064***
	(0.042)	(0.191)	(0.137)	(0.053)	(0.080)	(0.020)	(0.011)	(0.014)	(0.023)	(0.013)
Tender	0.008	-0.109	-0.126**	0.069*	0.069***	0.002	0.009	0.006	0.001	0.001
	(0.033)	(0.072)	(0.054)	(0.041)	(0.024)	(0.005)	(0.006)	(0.005)	(0.007)	(0.005)
IMR	187.996*	243.135	-713.798	-37.077	-66.126	1.013	-8.791	-61.009*	-1.369	-5.061
	(95.765)	(147.641)	(443.448)	(41.241)	(80.842)	(10.835)	(8.020)	(31.754)	(20.499)	(17.735)
Year	0.001	0.002	0.000	0.003	0.003	-0.001	-0.000	-0.000	-0.001	-0.001
	(0.003)	(0.005)	(0.005)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-14,926.771*	-19,305.397	56,667.628	2,938.698	5,244.097	-79.166	698.019	4,843.774*	110.203	403.588
	(7,597.114)	(11,718.969)	(35,208.811)	(3,273.921)	(6,418.017)	(859.771)	(636.524)	(2,521.857)	(1,626.957)	(1,407.662)
Observations	882	399	392	487	490	882	399	392	487	490
R-squared	0.472	0.555	0.581	0.568	0.579	0.461	0.553	0.549	0.577	0.602
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9: Logistic regression on advisor choice: different measures of information asymmetry

This table reports the results from Equation (1) examining the acquirer's choice of advisors in M&A using other measures of information asymmetry. 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. X represents the number of analysts (COV), analyst forecast error (ERR), and analyst forecast dispersion ($DISP$) for the target in the year before the bid in columns (1) to (3), respectively. Other variables are defined in Table 1. 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)
X=	COV	ERR	DISP
Connected (β_1)	4.553***	4.250***	4.275***
	(0.277)	(0.162)	(0.157)
Holding (β_2)	-3.678	2.956	-10.145
	(8.985)	(6.687)	(8.349)
Connect_X (β_3)	-0.027	0.313**	-0.660
	(0.018)	(0.137)	(0.452)
Holding_X (β_4)	0.607	-13.109	144.955
	(0.948)	(9.853)	(98.926)
Acquisition times	0.008	0.008	0.008
	(0.005)	(0.005)	(0.005)
Acquisition value	0.066***	0.066***	0.065***
	(0.010)	(0.010)	(0.010)
Prior advisor	1.268***	1.283***	1.310***
	(0.112)	(0.112)	(0.111)
Expertise	0.403***	0.407***	0.401***
	(0.045)	(0.045)	(0.045)
IMR	0.007	0.016	0.005
	(0.069)	(0.068)	(0.068)
Constant	-3.513	-4.284	-3.416
	(5.463)	(5.433)	(5.432)
Observations	47,499	48,044	48,028
Pseudo R2	0.547	0.545	0.547

Table 10: Changes in hedge fund holdings before the deal announcement: different measures of information asymmetry

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 using a sub-sample of targets with high or low degrees of information asymmetry. COV, ERR, and $DISP$ are the number of analysts, analyst forecast error, and analyst forecast dispersion for the target in the year before the bid. $\Delta Holding\_connected$ ($\Delta Holding\_unconnected$) represents the change in connected (unconnected) fund holdings. Other variables are defined in Table 1. 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)
	$\Delta Holding\_connected_{t-1}$ *in target*						$\Delta Holding\_connected_{t-1}$ *in acquirer*					
Sample=	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low
$\Delta Holding\_unconnected_{t-1}(\beta)$	0.002	-0.004	-0.009	-0.005	-0.001	-0.008	0.005	0.014	0.005	0.023	-0.007	0.026
	(0.009)	(0.009)	(0.026)	(0.012)	(0.015)	(0.014)	(0.006)	(0.016)	(0.024)	(0.024)	(0.012)	(0.017)
$\Delta Holding\_connected_{t-2}$	0.019*	-0.087**	-0.051	-0.048	0.019***	0.015***	0.005**	-0.026	-0.006	-0.009**	-0.001	0.007**
	(0.010)	(0.038)	(0.043)	(0.036)	(0.006)	(0.004)	(0.002)	(0.037)	(0.008)	(0.004)	(0.003)	(0.003)
$\Delta Holding\_unconnected_{t-2}$	0.000	-0.005	-0.018	-0.000	0.007	0.005	0.002	-0.011	-0.008	0.017	0.004	0.014
	(0.006)	(0.005)	(0.014)	(0.007)	(0.021)	(0.010)	(0.005)	(0.016)	(0.014)	(0.018)	(0.006)	(0.014)
Holding_acquirer$_{t-1}$	-0.000	0.001	0.001	0.000	0.001	0.000	0.000	-0.000	0.001	0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
ROA_t	-0.107	0.059	0.354**	0.041	-0.047	-0.106	0.100	-0.023	-0.068	-0.031	0.040	-0.040
	(0.263)	(0.160)	(0.176)	(0.075)	(0.160)	(0.134)	(0.078)	(0.052)	(0.067)	(0.034)	(0.054)	(0.033)
Leverage_t	-0.799*	0.208	1.277*	0.144	-0.043	-0.339	0.242	-0.095	-0.266	-0.118	0.020	-0.103
	(0.464)	(0.595)	(0.651)	(0.279)	(0.622)	(0.474)	(0.147)	(0.189)	(0.250)	(0.127)	(0.143)	(0.098)
Size_t	5.223	-1.479	-9.148**	-1.051	0.100	2.446	-1.844*	0.607	1.759	0.797	-0.133	0.794
	(3.243)	(4.138)	(4.524)	(1.943)	(4.264)	(3.339)	(1.004)	(1.323)	(1.724)	(0.886)	(1.040)	(0.716)
B/M_t	0.397	-0.134	-0.701**	-0.078	0.007	0.183	-0.141*	0.052	0.135	0.062	-0.010	0.048
	(0.248)	(0.319)	(0.346)	(0.155)	(0.326)	(0.250)	(0.077)	(0.102)	(0.132)	(0.066)	(0.080)	(0.054)
Size_a	-0.009**	-0.005	-0.003	-0.003	-0.000	-0.002	0.002	0.001	-0.000	0.002	0.002	0.003
	(0.004)	(0.005)	(0.003)	(0.003)	(0.006)	(0.007)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
B/M_a	-0.013	0.009	-0.005***	0.008	0.019	-0.036	-0.002	0.006	-0.000	0.009	0.009	0.036**
	(0.026)	(0.036)	(0.002)	(0.027)	(0.026)	(0.030)	(0.007)	(0.016)	(0.001)	(0.016)	(0.013)	(0.016)
Tangible_t	-31.883	9.124	55.950**	6.481	-0.609	-14.869	11.260*	-3.734	-10.772	-4.911	0.780	-4.944
	(19.815)	(25.312)	(27.707)	(11.889)	(26.112)	(20.421)	(6.147)	(8.104)	(10.552)	(5.426)	(6.370)	(4.386)
Valpct	-0.002	-0.005	-0.000	-0.000	0.013	0.022	0.000	-0.001	0.000	0.000**	0.013*	-0.017
	(0.004)	(0.005)	(0.001)	(0.000)	(0.023)	(0.031)	(0.001)	(0.003)	(0.000)	(0.000)	(0.008)	(0.015)
Holding_MF	-0.054	0.007	0.046	0.003	-0.011	-0.028	0.020*	-0.008	-0.012	-0.009	0.002	-0.009
	(0.036)	(0.045)	(0.067)	(0.026)	(0.045)	(0.037)	(0.011)	(0.015)	(0.026)	(0.011)	(0.013)	(0.008)
Pctcash	-0.002	0.008	0.008	0.006	0.005	0.005	-0.002	0.007	0.005	0.002	-0.010*	-0.007
	(0.013)	(0.033)	(0.016)	(0.021)	(0.017)	(0.017)	(0.009)	(0.015)	(0.013)	(0.010)	(0.006)	(0.007)
Hostile	-	-0.055	-	0.015	-	-0.150*	-	-0.109***	-	-0.013	-	-0.022
		(0.064)		(0.038)		(0.082)		(0.029)		(0.037)		(0.039)
Diffind	-0.001	-0.019	-0.027	-0.024*	-0.039**	-0.026	0.003	-0.005	-0.008	-0.002	0.001	0.000
	(0.006)	(0.021)	(0.021)	(0.014)	(0.018)	(0.020)	(0.004)	(0.006)	(0.008)	(0.006)	(0.008)	(0.006)
Merger of equals	-0.000	0.326***	-0.073	-0.020	-0.043	-0.009	-0.016	0.144	-0.019	-0.013	-0.021	0.025**
	(0.026)	(0.089)	(0.066)	(0.037)	(0.055)	(0.019)	(0.016)	(0.160)	(0.030)	(0.034)	(0.042)	(0.010)
Tender	0.037	0.015	0.011	-0.004	0.017	0.020	-0.005	-0.003	-0.001	0.003	0.002	-0.013*
	(0.029)	(0.031)	(0.025)	(0.011)	(0.019)	(0.018)	(0.010)	(0.008)	(0.010)	(0.005)	(0.009)	(0.006)
IMR	46.290	-13.170	-81.336**	-9.346	0.896	21.734	-16.362*	5.403	15.636	7.109	-1.135	7.123
	(28.764)	(36.786)	(40.201)	(17.250)	(37.898)	(29.640)	(8.921)	(11.759)	(15.316)	(7.879)	(9.246)	(6.359)
Year	0.000	-0.000	0.001	0.001	-0.000	0.000	0.000	-0.000	-0.002*	-0.001	-0.001	0.000
	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-3,675.131	1,045.661	6,456.363**	739.949	-70.129	-1,725.651	1,298.726*	-428.167	-1,237.367	-562.420	91.611	-566.001
	(2,284.187)	(2,921.647)	(3,191.230)	(1,369.356)	(3,007.337)	(2,351.978)	(708.678)	(932.748)	(1,215.516)	(624.992)	(733.988)	(504.299)
Observations	365	367	359	517	352	360	365	367	359	517	352	360
R-squared	0.720	0.689	0.691	0.576	0.604	0.550	0.736	0.691	0.653	0.553	0.606	0.622
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 11: Hedge fund holdings and deal duration: different measures of information asymmetry

This table reports the results from equation (3) examining the impact of connected fund holdings on deal duration using sub-sample of targets with high or low degrees of information asymmetry. COV, ERR, and $DISP$ are the number of analysts, analyst forecast error, and analyst forecast dispersion for the target in the year before the bid. $Duration$ is the number of days between the deal announcement and the deal final outcome. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 1. 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		
Sample=	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low
Holding_connected$_{t-1}(\beta)$	53.484	-100.802	69.206	-7.243	174.035	-141.117
	(203.452)	(180.859)	(307.331)	(152.468)	(221.332)	(155.822)
Holding_total$_{t-1}$	15.659	6.335	12.841	-7.071	29.825	28.488
	(40.825)	(54.325)	(67.526)	(42.094)	(43.081)	(47.162)
Holding_acquirer$_{t-1}$	-20.871	-14.632	-46.495	15.028	99.931**	29.054
	(29.320)	(62.330)	(104.989)	(57.922)	(46.341)	(72.743)
Deal value	-0.002	-0.000	0.001	0.001	0.001	0.000
	(0.008)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Termination fee	0.218	0.054**	0.043***	0.032*	0.019	0.024
	(0.312)	(0.025)	(0.015)	(0.017)	(0.016)	(0.017)
RELSIZE	13.213	-7.042	-2.691	-0.973	46.888***	45.238**
	(15.370)	(11.253)	(14.736)	(10.746)	(17.147)	(17.275)
Pctcash	-0.283	-0.270**	-0.086	-0.121	-0.117	-0.285***
	(0.216)	(0.129)	(0.182)	(0.113)	(0.122)	(0.101)
Hostile	-	187.343***	-	227.007***	-	236.196***
		(52.798)		(59.606)		(34.904)
Diffind	2.638	4.611	14.442	3.311	-2.479	-3.345
	(4.675)	(10.054)	(18.136)	(9.860)	(13.451)	(10.865)
Merger of equals	-28.271	173.517***	18.686	0.136	-47.651	-80.892***
	(25.329)	(64.178)	(54.206)	(46.666)	(33.149)	(18.533)
Tender	-22.945***	-34.201***	-35.670*	-45.905***	-42.770***	-47.065***
	(8.525)	(12.875)	(20.307)	(12.436)	(14.476)	(9.553)
IMR	11.039	-14.226	-22.282	-60.606**	-72.583***	-32.125
	(21.377)	(26.603)	(37.401)	(23.380)	(20.256)	(22.092)
Year	0.643	1.115	2.042	0.208	-0.136	0.177
	(1.156)	(1.683)	(1.619)	(1.185)	(1.051)	(1.299)
Constant	-2,081.066	-1,016.465	-2,149.003	4,569.369	6,244.753***	2,331.573
	(3,367.893)	(4,265.697)	(5,059.546)	(3,447.420)	(2,189.816)	(3,124.402)
Observations	365	366	358	523	359	367
R-squared	0.757	0.780	0.764	0.718	0.797	0.782
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 12: Hedge fund holdings and target premium: different measures of information asymmetry

This table reports the results from equation (3) examining the impact of connected fund holdings on target premium using a sub-sample of targets with high or low degrees of information asymmetry. *COV*, *ERR*, and *DISP* are the number of analysts, analyst forecast error, and analyst forecast dispersion for the target in the year before the bid. *Premium* is the premium paid one day (week) 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 1. 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)
			Premium (one day)						Premium (one week)			
Sample=	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low
$Holding\_connected_{t-1}(\beta)$	-3.074***	-1.310**	-1.965*	-0.812	-0.476	-1.586*	-3.345***	-1.613*	-2.060**	-0.974*	-0.629	-1.664*
	(0.884)	(0.648)	(1.002)	(0.541)	(1.939)	(0.896)	(0.827)	(0.814)	(0.910)	(0.581)	(1.472)	(0.931)
$Holding\_total_{t-1}$	-0.541*	-0.203	-0.101	-0.315	-0.165	-0.231	-0.390**	-0.185	-0.003	-0.311	-0.175	-0.248
	(0.312)	(0.199)	(0.255)	(0.211)	(0.378)	(0.186)	(0.157)	(0.147)	(0.229)	(0.199)	(0.318)	(0.188)
$Holding\_acquirer_{t-1}$	0.019	0.517	-0.313	-0.044	0.157	0.352	0.129	0.579*	-0.260	-0.072	0.127	0.229
	(0.477)	(0.323)	(0.297)	(0.262)	(0.529)	(0.233)	(0.361)	(0.300)	(0.271)	(0.286)	(0.424)	(0.242)
ROA_t	0.395	-0.486	0.281	-0.231	-0.397	0.095	0.180	-0.695*	0.050	-0.278	-0.091	0.002
	(1.342)	(0.340)	(0.497)	(0.315)	(0.877)	(0.322)	(1.197)	(0.359)	(0.448)	(0.309)	(0.767)	(0.334)
Leverage_t	0.380	-1.784	0.903	-0.848	-0.937	-0.114	-0.262	-2.550*	0.067	-1.024	-0.439	-0.442
	(2.626)	(1.252)	(1.831)	(1.158)	(2.532)	(1.124)	(2.472)	(1.320)	(1.650)	(1.140)	(2.348)	(1.166)
Size_t	-2.977	12.409	-7.366	5.848	5.724	-0.234	1.621	17.797*	-1.395	7.097	2.307	2.099
	(18.943)	(8.762)	(12.806)	(8.078)	(18.102)	(7.931)	(17.582)	(9.234)	(11.534)	(7.947)	(16.691)	(8.228)
B/M_t	-0.224	0.957	-0.564	0.438	0.442	0.097	0.128	1.361*	-0.106	0.527	0.180	0.292
	(1.450)	(0.665)	(0.980)	(0.645)	(1.386)	(0.598)	(1.347)	(0.701)	(0.883)	(0.630)	(1.278)	(0.620)
Size_a	0.028	0.018	0.016	0.027**	0.039**	0.038**	0.034	0.014	0.032**	0.028**	0.046***	0.037**
	(0.035)	(0.022)	(0.016)	(0.012)	(0.017)	(0.015)	(0.022)	(0.020)	(0.015)	(0.013)	(0.014)	(0.016)
B/M_a	0.137**	0.056	0.005	0.044	0.060	-0.014	0.119	0.102	0.006	0.089	0.100	0.048
	(0.065)	(0.076)	(0.008)	(0.070)	(0.083)	(0.091)	(0.074)	(0.084)	(0.007)	(0.062)	(0.070)	(0.094)
Tangible_t	17.682	-76.021	45.127	-35.855	-35.074	1.223	-10.449	-109.042*	8.482	-43.512	-14.180	-13.079
	(116.065)	(53.668)	(78.409)	(49.360)	(110.831)	(48.551)	(107.751)	(56.555)	(70.623)	(48.590)	(102.157)	(50.372)
Valpct	-0.044*	-0.021	-0.006	-0.005***	0.026	0.034	-0.038**	-0.023	-0.005	-0.006***	0.038	0.012
	(0.026)	(0.015)	(0.004)	(0.001)	(0.051)	(0.069)	(0.018)	(0.016)	(0.003)	(0.001)	(0.038)	(0.070)
Holding_MF	0.028	-0.125	0.088	-0.072	-0.085	-0.012	-0.022	-0.180*	0.020	-0.091	-0.025	-0.032
	(0.201)	(0.101)	(0.158)	(0.095)	(0.192)	(0.087)	(0.188)	(0.108)	(0.142)	(0.091)	(0.182)	(0.091)
Pctcash	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.001*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Hostile	-	1.428***	-	0.861***	-	0.665**	-	1.535***	-	0.878***	-	0.849***
		(0.230)		(0.115)		(0.296)		(0.254)		(0.128)		(0.308)
Diffind	0.024	0.040	0.034	-0.002	-0.018	0.022	0.008	0.044	0.039	0.002	-0.012	0.035
	(0.028)	(0.050)	(0.047)	(0.031)	(0.041)	(0.036)	(0.029)	(0.052)	(0.042)	(0.026)	(0.034)	(0.037)
Merger of equals	0.290*	-0.266	-0.042	-0.075	-0.146	1.040***	0.247***	-0.257	-0.011	-0.128	-0.126	-0.192
	(0.146)	(0.346)	(0.153)	(0.080)	(0.179)	(0.317)	(0.070)	(0.353)	(0.140)	(0.094)	(0.128)	(0.232)
Tender	-0.150**	0.069	0.108*	0.093***	0.136*	0.119**	-0.171*	0.062	0.117**	0.122***	0.131**	0.100*
	(0.070)	(0.072)	(0.057)	(0.034)	(0.080)	(0.049)	(0.091)	(0.063)	(0.052)	(0.046)	(0.060)	(0.051)
IMR	-25.988	110.421	-65.501	52.202	51.198	-1.645	14.914	158.257*	-12.340	63.278	20.852	19.062
	(168.398)	(77.897)	(113.829)	(71.749)	(160.972)	(70.487)	(156.346)	(82.074)	(102.523)	(70.589)	(148.412)	(73.131)
Year	0.001	-0.003	0.002	0.004	0.007	0.004	-0.001	-0.005	-0.001	0.004	0.004	0.005
	(0.004)	(0.006)	(0.006)	(0.005)	(0.008)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.008)	(0.004)
Constant	2,062.254	-8,759.605	5,196.342	-4,153.061	-4,078.117	121.783	-1,181.502	-12,553.553*	981.374	-5,031.284	-1,664.255	-1,522.646
	(13,372.807)	(6,182.430)	(9,036.876)	(5,697.194)	(12,776.325)	(5,595.820)	(12,419.701)	(6,514.933)	(8,139.333)	(5,601.144)	(11,784.086)	(5,805.759)
Observations	342	355	339	499	335	351	348	360	345	506	339	354
R-squared	0.628	0.701	0.703	0.600	0.602	0.604	0.641	0.734	0.731	0.627	0.648	0.613
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 13: Hedge fund holdings and abnormal returns: different measures of information asymmetry

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 using a sub-sample of targets with high or low degrees of information asymmetry. COV, ERR, and $DISP$ are the number of analysts, analyst forecast error, and analyst forecast dispersion for the target in the year before the bid. $Holding\_connected_{t-1}$ ($Holding\_total_{t-1}$) represents the holdings of connected (all) hedge funds in a target firm one quarter before the acquisition announcement. Other variables are defined in Table 1. 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)
	TCAR						ACAR					
Sample=	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low	COV_low	ERR_high	DISP_high	COV_high	ERR_low	DISP_low
Holding_connected$_{t-1}(\beta)$	-4.227***	0.063	-1.075	-0.179	-0.672	0.055	0.534*	-0.021	0.017	-0.035	0.047	0.129
	(1.322)	(0.668)	(0.904)	(0.555)	(0.900)	(0.917)	(0.271)	(0.107)	(0.145)	(0.126)	(0.229)	(0.132)
Holding_total$_{t-1}$	-0.035	-0.557**	-0.017	-0.297**	-0.151	-0.502***	-0.024	0.016	0.034	0.019	0.029	-0.016
	(0.181)	(0.223)	(0.224)	(0.139)	(0.214)	(0.185)	(0.045)	(0.020)	(0.036)	(0.024)	(0.039)	(0.027)
Holding_acquirer$_{t-1}$	0.301	0.650**	0.267	0.256*	0.003	0.244	0.010	0.106**	0.030	0.028	0.015	0.017
	(0.610)	(0.319)	(0.266)	(0.152)	(0.295)	(0.236)	(0.030)	(0.043)	(0.043)	(0.056)	(0.051)	(0.034)
ROA_t	-0.630	-0.813*	0.383	-0.276	0.158	-0.503	0.100	0.026	-0.055	0.004	0.097	0.046
	(1.076)	(0.425)	(0.420)	(0.241)	(0.750)	(0.329)	(0.105)	(0.076)	(0.067)	(0.090)	(0.106)	(0.047)
Leverage_t	-3.426	-2.988*	1.338	-0.994	0.390	-2.210*	0.014	0.093	-0.214	0.010	0.052	0.171
	(3.241)	(1.565)	(1.550)	(0.893)	(2.490)	(1.151)	(0.174)	(0.284)	(0.248)	(0.331)	(0.340)	(0.165)
Size_t	21.786	20.829*	-9.974	6.999	-3.425	14.662*	-0.032	-0.653	1.472	-0.083	-0.462	-1.200
	(22.771)	(10.946)	(10.815)	(6.213)	(17.392)	(8.119)	(1.137)	(1.975)	(1.730)	(2.306)	(2.337)	(1.167)
B/M_t	1.674	1.642**	-0.762	0.544	-0.260	1.206*	-0.002	-0.053	0.113	-0.009	-0.035	-0.087
	(1.743)	(0.821)	(0.828)	(0.477)	(1.332)	(0.612)	(0.087)	(0.153)	(0.132)	(0.177)	(0.179)	(0.088)
Size_a	0.024*	0.033***	0.023	0.031*	0.020	0.028*	0.002	0.003	-0.001	0.003	0.005	0.002
	(0.014)	(0.012)	(0.014)	(0.018)	(0.024)	(0.015)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
B/M_a	-0.029	-0.004	0.003	0.099*	0.039	-0.046	0.009	0.004	0.000	-0.013	-0.009	-0.012
	(0.072)	(0.092)	(0.007)	(0.057)	(0.055)	(0.091)	(0.010)	(0.010)	(0.001)	(0.011)	(0.013)	(0.013)
Tangible_t	-134.063	-127.771*	60.985	-42.896	21.056	-89.838*	0.173	3.975	-9.044	0.497	2.790	7.338
	(139.520)	(67.072)	(66.214)	(38.034)	(106.532)	(49.704)	(6.954)	(12.077)	(10.594)	(14.114)	(14.315)	(7.142)
Valpct	-0.025	-0.007	-0.005	-0.005***	-0.021	-0.067	-0.001	0.004**	0.000	0.001*	-0.000	-0.013
	(0.020)	(0.020)	(0.003)	(0.002)	(0.052)	(0.069)	(0.002)	(0.002)	(0.001)	(0.000)	(0.012)	(0.010)
Holding_MF	-0.248	-0.236*	0.090	-0.069	0.024	-0.166*	0.000	0.005	-0.022	-0.004	0.002	0.014
	(0.246)	(0.124)	(0.135)	(0.075)	(0.166)	(0.090)	(0.013)	(0.021)	(0.022)	(0.025)	(0.024)	(0.013)
Pctcash	0.001	-0.000	0.001	-0.000	0.001	-0.000	-0.000	0.000	0.000*	0.000*	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	-	0.919***	-	0.555***	-	0.553*	-	0.025	-	0.053**	-	-0.008
		(0.290)		(0.114)		(0.304)		(0.027)		(0.024)		(0.044)
Diffind	0.098	0.070*	-0.005	-0.032	-0.052	0.016	0.008	0.011	0.006	0.007	0.005	0.009*
	(0.068)	(0.039)	(0.041)	(0.025)	(0.033)	(0.036)	(0.007)	(0.007)	(0.007)	(0.005)	(0.009)	(0.005)
Merger of equals	0.037	-0.017	0.037	-0.038	-0.020	0.033	0.093***	0.010	0.017	0.044*	0.061***	0.095***
	(0.261)	(0.333)	(0.140)	(0.046)	(0.051)	(0.229)	(0.013)	(0.030)	(0.022)	(0.022)	(0.021)	(0.033)
Tender	-0.112	0.068	-0.011	0.054	0.007	0.137***	0.008	0.003	0.005	-0.001	-0.010	0.002
	(0.070)	(0.085)	(0.052)	(0.036)	(0.040)	(0.051)	(0.009)	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)
IMR	194.434	185.579*	-88.575	62.450	-30.214	130.640*	-0.281	-5.754	13.079	-0.714	-4.040	-10.629
	(202.395)	(97.312)	(96.119)	(55.238)	(154.589)	(72.161)	(10.096)	(17.537)	(15.379)	(20.490)	(20.778)	(10.369)
Year	-0.004	-0.003	-0.002	0.003	0.007	0.003	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000
	(0.005)	(0.006)	(0.005)	(0.004)	(0.008)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-15,428.262	-14,726.471*	7,035.955	-4,962.545	2,384.322	-10,377.742*	23.244	457.489	-1,035.691	56.927	321.131	844.444
	(16,068.903)	(7,723.440)	(7,630.596)	(4,382.487)	(12,258.525)	(5,728.719)	(801.980)	(1,392.167)	(1,220.896)	(1,626.217)	(1,649.010)	(823.173)
Observations	365	367	359	517	352	360	365	367	359	517	352	360
R-squared	0.605	0.655	0.654	0.581	0.554	0.541	0.628	0.689	0.633	0.551	0.558	0.616
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 14: 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 an event window of [-1,1]. Column (1) uses the whole sample, and columns (2) to (5) use sub-samples of targets with Amihud illiquidity measure or size 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 1. 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)
			TCAR					ACAR		
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large	All	Amihud_high	Size_small	Amihud_low	Size_large
Holding_connected$_{t-1}(\beta)$	-0.556	-2.822	-3.741	-0.505	-0.939	0.067	0.633	0.621	-0.156	-0.094
	(0.571)	(3.456)	(3.163)	(0.505)	(0.594)	(0.114)	(0.504)	(0.448)	(0.150)	(0.171)
Holding_total$_{t-1}$	-0.148	-0.235	-0.308	-0.303*	-0.221	0.027	-0.036	-0.046	0.072	0.063*
	(0.224)	(0.452)	(0.431)	(0.176)	(0.169)	(0.038)	(0.056)	(0.047)	(0.047)	(0.034)
Holding_acquirer$_{t-1}$	0.351	0.544	0.758	0.036	-0.052	0.029	-0.004	0.013	0.019	-0.032
	(0.335)	(0.888)	(0.721)	(0.311)	(0.348)	(0.032)	(0.051)	(0.044)	(0.065)	(0.054)
ROA_t	-1.407**	-2.413*	2.470	0.104	-0.284	0.048	0.031	0.336	0.103	0.207**
	(0.641)	(1.240)	(3.543)	(0.195)	(0.473)	(0.054)	(0.089)	(0.416)	(0.103)	(0.103)
Leverage_t	-5.198**	-8.255***	8.798	0.410	-1.116	0.171	0.095	1.217	0.371	0.772**
	(2.369)	(2.960)	(13.281)	(0.722)	(1.776)	(0.200)	(0.227)	(1.570)	(0.381)	(0.385)
Size_t	36.227**	56.622***	-62.232	-2.786	7.156	-1.209	-0.680	-8.532	-2.613	-5.288**
	(16.523)	(20.039)	(92.390)	(5.025)	(12.170)	(1.390)	(1.559)	(10.887)	(2.647)	(2.666)
B/M_t	2.780**	4.355**	-4.743	-0.210	0.552	-0.092	-0.053	-0.655	-0.200	-0.405**
	(1.266)	(1.658)	(7.051)	(0.385)	(0.934)	(0.106)	(0.118)	(0.844)	(0.203)	(0.204)
Size_a	0.027*	0.024	0.008	0.038*	0.043*	0.002	0.001	0.001	0.001	0.001
	(0.015)	(0.017)	(0.018)	(0.022)	(0.024)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)
B/M_a	0.011**	-0.077	-0.183	0.054	0.093	0.000	0.001	0.009	-0.004	0.003
	(0.005)	(0.255)	(0.193)	(0.045)	(0.060)	(0.001)	(0.016)	(0.019)	(0.016)	(0.015)
Tangible_t	-222.372**	-347.696***	379.636	16.911	-44.093	7.347	4.156	52.258	15.945	32.351*
	(101.338)	(122.981)	(565.277)	(30.756)	(74.650)	(8.501)	(9.533)	(66.623)	(16.195)	(16.332)
Valpct	-0.005**	-0.051	-0.058	-0.004**	-0.004**	0.001***	-0.003	-0.002	0.001***	0.001***
	(0.002)	(0.041)	(0.052)	(0.002)	(0.002)	(0.000)	(0.002)	(0.002)	(0.000)	(0.000)
Holding_MF	-0.402**	-0.697***	0.604	0.031	-0.079	0.013	0.009	0.095	0.028	0.057*
	(0.183)	(0.220)	(1.013)	(0.055)	(0.133)	(0.015)	(0.018)	(0.119)	(0.029)	(0.029)
Pctcash	0.001	0.002*	0.002	0.000	0.000	0.000	0.000	-0.000	0.000	0.000*
	(0.001)	(0.001)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	0.795***	-	-	0.520***	0.449***	0.087***	-	-	0.058**	0.073**
	(0.237)			(0.126)	(0.152)	(0.024)			(0.028)	(0.032)
Diffind	0.054	0.108	0.144	-0.032	-0.048	0.006	0.005	0.009	0.009*	0.005
	(0.071)	(0.124)	(0.118)	(0.025)	(0.029)	(0.004)	(0.008)	(0.008)	(0.005)	(0.006)
Merger of equals	0.054	0.077	-0.009	-0.026	-0.011	0.058	0.127***	0.107***	0.079*	0.117***
	(0.058)	(0.323)	(0.315)	(0.090)	(0.078)	(0.040)	(0.024)	(0.020)	(0.043)	(0.023)
Tender	0.037	-0.084	-0.104	0.087	0.103**	0.009	0.014	0.022**	0.008	0.002
	(0.041)	(0.132)	(0.109)	(0.062)	(0.042)	(0.008)	(0.011)	(0.011)	(0.012)	(0.007)
IMR	322.798**	504.260***	-550.420	-24.430	64.154	-10.699	-6.048	-75.748	-23.193	-47.020**
	(147.013)	(178.211)	(819.271)	(44.704)	(108.457)	(12.349)	(13.837)	(96.576)	(23.521)	(23.714)
Year	0.003	0.011*	0.006	0.003	0.004	-0.001	-0.000	-0.000	-0.001	-0.001
	(0.002)	(0.006)	(0.008)	(0.004)	(0.005)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-25,631.704**	-40,054.320***	43,685.699	1,933.853	-5,101.289	850.556	480.344	6,014.009	1,842.724	3,734.801**
	(11,668.845)	(14,150.059)	(65,034.633)	(3,552.047)	(8,617.472)	(980.525)	(1,098.134)	(7,667.300)	(1,867.219)	(1,882.812)
Observations	882	399	392	487	490	882	399	392	487	490
R-squared	0.473	0.523	0.534	0.563	0.570	0.463	0.599	0.578	0.573	0.619
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 15: 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 an event window of [-3,3]. Column (1) uses the whole sample, and columns (2) to (5) use sub-samples of targets with Amihud illiquidity measure or size 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 1. 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)
			TCAR					ACAR		
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large	All	Amihud_high	Size_small	Amihud_low	Size_large
Holding_connected$_{t-1}(\beta)$	-0.898	-5.209	-5.876	-0.698	-1.158*	0.127	0.753*	0.554	-0.063	-0.015
	(0.700)	(6.021)	(5.598)	(0.552)	(0.649)	(0.117)	(0.448)	(0.462)	(0.148)	(0.151)
Holding_total$_{t-1}$	-0.074	-0.133	-0.253	-0.229	-0.137	0.026	-0.022	-0.033	0.055	0.061*
	(0.282)	(0.564)	(0.387)	(0.218)	(0.206)	(0.033)	(0.039)	(0.041)	(0.051)	(0.035)
Holding_acquirer$_{t-1}$	0.372	0.626	0.902	0.030	-0.063	0.037	0.027	0.047	0.024	-0.013
	(0.478)	(1.367)	(1.065)	(0.309)	(0.347)	(0.034)	(0.045)	(0.043)	(0.058)	(0.062)
ROA_t	-2.278*	-3.370**	3.311	0.211	-0.161	0.040	0.064	0.550	0.062	0.155
	(1.217)	(1.589)	(4.752)	(0.267)	(0.616)	(0.060)	(0.165)	(0.474)	(0.116)	(0.107)
Leverage_t	-8.437*	-12.596**	12.102	0.786	-0.723	0.146	0.142	1.948	0.223	0.574
	(4.494)	(5.738)	(17.844)	(0.974)	(2.251)	(0.221)	(0.396)	(1.774)	(0.430)	(0.393)
Size_t	58.710*	86.863**	-85.036	-5.514	3.990	-0.995	-1.043	-13.706	-1.537	-3.967
	(31.347)	(38.867)	(124.072)	(6.829)	(15.836)	(1.539)	(2.690)	(12.331)	(2.994)	(2.743)
B/M_t	4.502*	6.755**	-6.413	-0.420	0.309	-0.076	-0.087	-1.056	-0.117	-0.304
	(2.402)	(3.156)	(9.417)	(0.523)	(1.214)	(0.118)	(0.209)	(0.954)	(0.229)	(0.210)
Size_a	0.017	0.003	-0.007	0.042*	0.048*	0.002	0.000	-0.001	0.001	0.001
	(0.019)	(0.026)	(0.036)	(0.025)	(0.028)	(0.002)	(0.003)	(0.004)	(0.003)	(0.002)
B/M_a	0.017*	-0.185	-0.392	0.074	0.105*	0.000	0.000	0.013	-0.008	-0.008
	(0.009)	(0.388)	(0.328)	(0.046)	(0.062)	(0.001)	(0.014)	(0.022)	(0.020)	(0.017)
Tangible_t	-360.306*	-533.444**	518.435	33.586	-24.751	6.039	6.345	83.902	9.365	24.257
	(192.257)	(238.869)	(758.789)	(41.800)	(97.070)	(9.414)	(16.475)	(75.498)	(18.316)	(16.796)
Valpct	-0.006*	-0.073	-0.073	-0.005***	-0.005***	0.001**	-0.000	0.001	0.001***	0.001***
	(0.003)	(0.058)	(0.072)	(0.002)	(0.002)	(0.000)	(0.003)	(0.003)	(0.000)	(0.000)
Holding_MF	-0.647*	-1.035**	0.846	0.060	-0.044	0.011	0.012	0.150	0.016	0.043
	(0.345)	(0.420)	(1.364)	(0.075)	(0.173)	(0.017)	(0.029)	(0.135)	(0.033)	(0.030)
Pctcash	0.001	0.002	0.002	0.001	0.000	0.000	0.000	-0.000	0.000	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	0.927***	-	-	0.598***	0.517***	0.084***	-	-	0.057*	0.072**
	(0.330)			(0.137)	(0.166)	(0.025)			(0.030)	(0.029)
Diffind	0.096	0.148	0.216	-0.007	-0.026	0.005	0.001	0.005	0.011**	0.006
	(0.136)	(0.284)	(0.282)	(0.030)	(0.031)	(0.004)	(0.007)	(0.007)	(0.005)	(0.006)
Merger of equals	0.078	0.113	-0.043	0.006	-0.004	0.073**	0.146***	0.125***	0.084**	0.112***
	(0.096)	(0.516)	(0.487)	(0.101)	(0.098)	(0.035)	(0.024)	(0.028)	(0.040)	(0.031)
Tender	0.081*	0.038	-0.036	0.102	0.124***	0.015*	0.019	0.029*	0.013	0.007
	(0.047)	(0.141)	(0.102)	(0.071)	(0.046)	(0.008)	(0.014)	(0.015)	(0.012)	(0.008)
IMR	522.924*	773.613**	-751.624	-48.691	36.013	-8.807	-9.266	-121.642	-13.624	-35.261
	(278.928)	(346.028)	(1,099.906)	(60.779)	(141.066)	(13.674)	(23.881)	(109.420)	(26.607)	(24.395)
Year	0.000	0.009	0.008	0.003	0.004	-0.000	-0.000	-0.000	-0.001	-0.001
	(0.003)	(0.010)	(0.009)	(0.005)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-41,513.822*	-61,433.867**	59,656.978	3,860.586	-2,866.655	700.020	735.583	9,657.955	1,082.732	2,800.661
	(22,140.773)	(27,483.124)	(87,311.716)	(4,829.595)	(11,207.966)	(1,086.045)	(1,895.606)	(8,687.554)	(2,112.105)	(1,936.542)
Observations	882	399	392	487	490	882	399	392	487	490
R-squared	0.485	0.537	0.553	0.514	0.531	0.450	0.587	0.577	0.556	0.590
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	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 an event window of [-5,5]. Column (1) uses the whole sample, and columns (2) to (5) use sub-samples of targets with Amihud illiquidity measure or size 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 1. 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)
			TCAR					ACAR		
Sample=	All	Amihud_high	Size_small	Amihud_low	Size_large	All	Amihud_high	Size_small	Amihud_low	Size_large
Holding_connected$_{t-1}(\beta)$	-1.125	-5.907	-6.963	-0.698	-1.148*	0.184	0.874	0.758	-0.028	-0.004
	(0.839)	(7.685)	(7.362)	(0.579)	(0.681)	(0.135)	(0.560)	(0.550)	(0.182)	(0.184)
Holding_total$_{t-1}$	-0.046	-0.059	-0.204	-0.240	-0.163	0.041	-0.021	-0.038	0.086	0.103**
	(0.334)	(0.609)	(0.490)	(0.228)	(0.207)	(0.034)	(0.035)	(0.038)	(0.052)	(0.041)
Holding_acquirer$_{t-1}$	0.378	0.510	0.905	0.033	-0.078	0.046	0.068	0.078	-0.004	-0.040
	(0.515)	(1.382)	(1.085)	(0.329)	(0.351)	(0.037)	(0.047)	(0.050)	(0.067)	(0.069)
ROA_t	-2.910**	-3.661**	4.370	0.209	-0.102	0.023	-0.030	0.634	0.002	0.075
	(1.400)	(1.795)	(7.508)	(0.296)	(0.677)	(0.057)	(0.226)	(0.586)	(0.113)	(0.114)
Leverage_t	-10.787**	-15.315**	15.957	0.773	-0.544	0.082	-0.035	2.268	0.000	0.262
	(5.169)	(5.930)	(27.939)	(1.078)	(2.461)	(0.211)	(0.534)	(2.186)	(0.417)	(0.416)
Size_t	75.046**	104.824**	-112.151	-5.445	2.483	-0.547	0.221	-15.924	0.013	-1.905
	(36.060)	(39.947)	(194.788)	(7.574)	(17.409)	(1.476)	(3.690)	(15.215)	(2.908)	(2.933)
B/M_t	5.755**	8.235**	-8.413	-0.415	0.194	-0.042	0.010	-1.228	0.001	-0.146
	(2.764)	(3.245)	(14.730)	(0.580)	(1.335)	(0.113)	(0.287)	(1.178)	(0.223)	(0.225)
Size_a	0.016	0.016	0.000	0.039	0.043	0.003	0.003	0.000	-0.001	0.000
	(0.017)	(0.020)	(0.031)	(0.024)	(0.031)	(0.003)	(0.004)	(0.005)	(0.004)	(0.004)
B/M_a	0.017	-0.381	-0.646	0.064	0.099	-0.001	0.001	0.012	-0.013	-0.016
	(0.010)	(0.535)	(0.480)	(0.055)	(0.070)	(0.001)	(0.019)	(0.022)	(0.022)	(0.021)
Tangible_t	-460.574**	-644.156**	683.802	33.125	-15.544	3.290	-1.390	97.479	-0.130	11.620
	(221.253)	(245.690)	(1,191.382)	(46.355)	(106.707)	(9.027)	(22.583)	(93.160)	(17.790)	(17.953)
Valpct	-0.006*	-0.084	-0.088	-0.005***	-0.006***	0.001**	0.001	0.002	0.000*	0.001***
	(0.004)	(0.059)	(0.078)	(0.002)	(0.002)	(0.000)	(0.004)	(0.004)	(0.000)	(0.000)
Holding_MF	-0.825**	-1.247***	1.129	0.059	-0.027	0.006	-0.004	0.172	-0.000	0.021
	(0.397)	(0.439)	(2.145)	(0.083)	(0.190)	(0.016)	(0.041)	(0.166)	(0.031)	(0.032)
Pctcash	0.002*	0.002	0.003	0.001	0.000	0.000	-0.000	-0.000	0.000	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hostile	0.970**	-	-	0.603***	0.521***	0.028	-	-	0.004	0.018
	(0.399)			(0.146)	(0.171)	(0.029)			(0.039)	(0.033)
Diffind	0.127	0.205	0.280	-0.008	-0.027	0.003	-0.004	0.003	0.013	0.006
	(0.171)	(0.353)	(0.364)	(0.032)	(0.028)	(0.006)	(0.008)	(0.009)	(0.008)	(0.008)
Merger of equals	0.110	0.042	-0.115	0.036	0.014	0.080*	0.194***	0.178***	0.086*	0.113***
	(0.105)	(0.535)	(0.554)	(0.116)	(0.097)	(0.045)	(0.029)	(0.025)	(0.051)	(0.038)
Tender	0.086*	0.042	-0.035	0.096	0.124**	0.018**	0.019*	0.030**	0.019	0.013
	(0.051)	(0.148)	(0.106)	(0.073)	(0.050)	(0.007)	(0.011)	(0.012)	(0.013)	(0.009)
IMR	668.354**	933.804**	-991.473	-48.077	22.593	-4.813	1.957	-141.299	0.156	-16.907
	(320.948)	(355.755)	(1,727.149)	(67.404)	(155.067)	(13.113)	(32.750)	(135.019)	(25.849)	(26.085)
Year	-0.003	0.009	0.005	0.001	0.003	-0.001	0.000	-0.000	-0.001	-0.001
	(0.003)	(0.012)	(0.011)	(0.005)	(0.006)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Constant	-53,052.265**	-74,149.568**	78,703.909	3,814.549	-1,798.472	383.183	-156.349	11,217.686	-10.113	1,344.484
	(25,477.392)	(28,258.717)	(137,106.361)	(5,355.566)	(12,319.728)	(1,041.570)	(2,599.660)	(10,719.788)	(2,051.944)	(2,070.734)
Observations	882	399	392	487	490	882	399	392	487	490
R-squared	0.477	0.525	0.538	0.512	0.526	0.442	0.567	0.560	0.560	0.593
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advisor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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