Informed Merger Trading by Investment Bank-Affiliated Mutual Funds

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Abstract:

We show that mutual funds buy or increase holdings of merger targets advised by their investment bank affiliate in advance of merger announcements, allowing them to capture positive and significant abnormal returns. Mergers with this informed trading are more likely to be completed successfully. Furthermore, mutual funds are far more likely to liquidate holdings of a target in advance of a merger withdrawal if the fund is affiliated with the target's investment bank advisor. Our findings provide new information about the nature of information sharing across divisions of financial conglomerates. Results also suggest that information barriers mandated within financial services firms are not entirely effective in isolating material non-public information.

EFM Classification Codes: 160, 370, 530, 540
Keywords: Mergers and Acquisitions, Mutual funds, Investment Banks, Informed Trading

1. Introduction

In this study, we examine how information about a pending merger announcement may be shared among different divisions within a financial services firm: specifically, investment banking and mutual fund management. As advisors to firms in mergers and acquisitions, investment banks are privy to material non-public information with substantial value implications for investors; announcement period abnormal returns for acquisition targets average 20%. In the absence of robust monitoring and enforcement (and assuming ethical motivations are insufficient), an investment bank may have an incentive to use its informational advantage for the benefit of the bank's other business lines. Clearly, a bank's mutual funds stand to gain from advance knowledge of a takeover. Although information barriers are mandated to isolate non-public information within financial services conglomerates, anecdotal evidence suggests these barriers are not always respected (e.g., Bain (2010), Lea (2014)). The scope for abuse of this potential conflict of interest is broad. Most major investment banks have asset management divisions that manage mutual funds. In 2018, six of the top ten investment banks by M&A

advisory volume had asset management divisions ranked in the top 50 by mutual fund assets, and these six banks alone managed a combined $5.6 trillion of the $49 trillion in global mutual fund assets.[1]

We find evidence consistent with the argument that mutual funds affiliated with a takeover target's investment bank advisor (we call such funds "affiliated mutual funds") act on advance knowledge of a pending merger announcement. These affiliated mutual funds buy or increase their holdings of over 22% of target firms advised by their investment bank affiliates leading up to a merger announcement. In contrast, mutual funds buy or increase holdings of just 2% of mergers where they are not affiliated with the target's advisor. Such informed trading by mutual fund affiliates allows them to earn highly positive announcement-period abnormal returns.

Next, we examine characteristics of mergers with informed trading. After controlling for other factors, mergers with informed trading by affiliated mutual funds do not appear to have robustly different announcement returns than mergers without informed trading by affiliates. Thus, affiliation with an investment bank does not seem to help fund managers identify mergers with the highest announcement returns. Nevertheless, funds still capture an abnormal return of almost 20%, ostensibly due to their affiliation with the target advisor. We also show evidence consistent with information sharing beyond the pre-announcement period by looking at merger withdrawals. Mutual funds are far more likely to liquidate holdings of targets advised by their affiliate prior to a merger being withdrawn compared to targets not advised by their affiliate. In doing so, affiliated mutual funds avoid negative abnormal returns around the merger withdrawal date. Finally, mergers with informed trading by affiliated mutual funds are more likely to be

[1] Investment bank rankings are taken from Dealogic's Investment Banking Scorecard. Mutual fund data are taken from the 2018 Investment Company Institute Factbook and MutualFundDirectory.org rankings.

completed successfully. These results on merger withdrawals and completion suggest investment banks may share non-public information about a merger with their mutual fund affiliates well past the announcement and up until merger completion or withdrawal is forthcoming.

Our results build on existing literature in two main areas. First, we expand on studies that examine affiliations between investment banking and asset management. Our study is the first to show evidence consistent with informed trading by mutual funds affiliated with a target's investment bank advisor. We distinguish our study from Bodnaruk, Massa, and Simonov (2009), who look at acquirer investment bank advisors and bank holdings of targets at the conglomerate level. In contrast, we focus on target advisors and changes in actively managed mutual fund holdings, which we argue are a more direct representation of informed trading than bank-level 13F holdings. Second, our study adds to the literature on M&A outcomes. To our knowledge, our study is the first to show that information sharing between investment banks and their mutual fund affiliates can cover value-sensitive time periods beyond the pre-announcement phase, as information sharing appears to help mutual funds avoid losses due to merger withdrawals. In further support for this, we show new evidence that informed trading by mutual fund affiliates is associated with more certain deal completion.

The rest of this paper proceeds as follows. Section 2 reviews relevant literature. Section 3 describes the data and presents summary statistics. Section 4 looks at informed trading and announcement returns. In Section 5 we examine informed trading and merger success and failure. Section 6 concludes.

2. Literature Review

Our study straddles two main areas of extant literature: (1) the relationship between investment banks and their affiliates, and (2) informed investor behavior around merger announcements.[2]

2.1. The relationship between investment banks and their affiliates

One area of literature particularly relevant to our study deals with conflicts of interest between different divisions of the same financial institution. Banks provide a diverse array of services to a wide spectrum of clients, and inevitably conflicts arise. Mehran and Stulz (2007) provide a general review of the literature on financial services conflicts of interest. Most pertinent to our work are studies focusing on investment banking and asset management. Bodnaruk, Massa, and Simonov (2009) find that advisors to acquiring firms build a stake in targets through aggregate shares held either directly or in a fiduciary capacity, for example through mutual funds, hedge funds, pensions, insurance company assets, or commercial banks. Acquirer advisors increase holdings of targets in the seven quarters leading up to a merger announcement. This broad measure of informed pre-merger investing activity helps form the basis for our analysis. Bodnaruk et al. report that an ownership stake by the acquirer's advisor is positively related to the likelihood of a takeover bid, and it is also positively related to the target's market-adjusted return in the three months prior to and two months following a merger announcement.

Other evidence on informed trading by a bank's affiliates is mixed. Griffin, Shu, and Topaloglu (2012) examine broker-level trading data do not find evidence of informed trading by institutions that are brokerage clients of target advisors. Mola and Guidolin (2009) show

[2] More general studies on M&A outcomes abound. Yaghoubi et al. (2016a, 2016b) provide an extensive review of the literature and discuss announcement period abnormal announcement returns at length.

evidence that mutual funds buy stock in advance of favorable ratings from sell-side analysts at the funds' brokerage affiliates. In fixed income markets, Kedia and Zhou (2014) find weak evidence that dealers affiliated with merger advisors engage in informed selling of corporate bonds prior to negative news. Ivashina and Sun (2011) present evidence that institutions participating in syndicated loans also engage in informed trading of the borrower's stock. Massa and Rehman (2008) report that mutual funds buy more stock of companies that initiate a borrowing relationship with the funds' affiliated bank. This trading appears to be informed, as those stocks tend to outperform similar stocks where there is no such lending relationship. Ritter and Zhang (2007) look at IPOs allocated to mutual funds affiliated with the issuer's lead underwriter. Given the substantial underpricing observed in IPOs, investment banks have discretion over which of its clients realize those positive and significant first-day returns. Ritter and Zhang find some evidence that investment banks allocate IPOs with better first-day returns to their mutual fund affiliates.

2.2. Informed investor behavior around merger announcements

Other studies of informed trading around merger announcements are relevant to our work. Agrawal and Nasser (2012) look for pre-announcement informed trading by target firm managers and other insiders. They report what they term "passive insider trading," where target insiders reduce sales of their firm's stock more than they reduce purchases, thus resulting in higher net purchases of firm stock in advance of merger announcements. Ashraf and Jayaraman (2007) study informed trading by institutional investors and show that active institutional investors increase their holdings of value-creating acquisitions in the two quarters leading up to a merger announcement. Li (2011) also provides evidence of informed trading of targets by institutional investors leading up to merger announcements. Cao, Chen, and Griffin (2005) and

Chan, Ge, and Lin (2015) find observable measures in options markets that predict acquirer and target abnormal announcement returns. Although outside the context of investment bank affiliations, these studies all report some evidence of informed trading of merging firms.

3. Data and Sample

We obtain merger data from the SDC Mergers & Acquisitions database. We consider deals announced between 1999 and 2014 where the target is listed on NYSE, AMEX, or NASDAQ. We exclude acquisitions of remaining interest, exchange offers, minority stake purchases, privatizations, recapitalizations, repurchases, self-tenders and spin-offs. We include mergers with a transaction value of at least $1 million, and transactions where the percent owned by the acquirer is less than 10 percent prior to the transaction and at least 50 percent afterwards. Holdings for actively-managed mutual funds are taken from the CRSP mutual fund database. We obtain stock price data from CRSP and financial data from COMPUSTAT. We estimate each target's announcement-period cumulative abnormal return (CAR) for the [-2, +2] day window surrounding the merger announcement date using the market model. Our initial sample consists of 3,846 mergers held across 10,803 mutual funds.

We use multiple sources to identify affiliations between underwriters and mutual funds, similar to Ritter and Zhang (2007) and Bodnaruk, Massa, and Simonov (2009). We examine annual reports, SEC filings, and company websites to obtain the names of asset management subsidiaries and mutual fund families. We also perform manual matching, identifying funds that contain the names of prestigious financial firms, and then using the auxiliary sources above to confirm the matching. In addition, we take into account major financial mergers and divestitures so that, for example, an acquired mutual fund is not treated as an affiliate of an investment bank until after the merger date.

Our main variable of interest is whether a mutual fund engages in informed trading in advance of a merger announcement. Following Bodnaruk, Massa, and Simonov (2009) and Ritter and Zhang (2007), we define informed trading as a fund either newly purchasing or increasing its holdings of a target's stock in the 180 days prior to a merger announcement. Agrawal and Nasser (2012) also support this 180-day window, reporting that "most of the abnormal insider trading is concentrated over the six months before takeover announcement."[3]

Table 1 presents summary statistics for the merger sample, divided according to whether or not informed trading is observed by mutual funds affiliated with the target's investment bank advisor (which we term "informed trading by affiliates"). A few differences between the sub-samples are noteworthy. First, mergers with informed trading by affiliates have lower announcement period abnormal returns (19.4%) than mergers without informed trading by an affiliate (25.3%), although abnormal returns for both groups are highly positive. Compared to mergers without it, mergers with informed trading by affiliates also tend to be much larger ($6.0 billion vs. $1.1 billion), take longer to complete, have targets operating in more industries, and are more likely to be viewed as hostile by the target.

Table 2 shows descriptive statistics for investment bank advisors, target firms advised and not advised by a bank, and the bank's mutual fund affiliates. Each of the 64 banks advises targets in 55.9 mergers on average during the sample period, and we identify an average of 38.3 mutual funds affiliated with each bank. The table clearly shows that mutual funds engage in informed trading of targets advised by their affiliated investment bank far more frequently than they do for targets not advised by an affiliate. We observe informed trading by bank-affiliated mutual funds in 22.5 percent of targets advised by a bank. In contrast, a bank's mutual fund

[3] We obtain very similar results and significance is unaffected when informed trading is defined as either the 90-day or 45-day window leading up to a merger announcement.

affiliates engage in informed trading of only 2.4 percent of targets where the bank is not the target's advisor. The magnitude of this difference warrants emphasis: on a univariate basis, funds are almost 10 times more likely to engage in informed trading of a target advised by their investment bank affiliate than they are for a target not advised by an affiliate. In doing so, funds capture announcement period abnormal returns of almost 20%. This evidence is consistent with our argument that mutual fund managers possess and act on advance knowledge of a merger announcement received through their investment bank affiliates.

4. Informed Trading and Target Announcement Returns

In the previous section, we reported that merger targets with informed trading by affiliates have significantly lower announcement period returns than targets without informed trading by affiliates. We further examine this by taking into account the myriad other factors associated with market reactions to merger announcements. We estimate an OLS regression where the dependent variable is a target firm's cumulative abnormal return over the [-2, +2] day window around a merger announcement. Our main explanatory variables of interest measure informed trading leading up to a merger announcement. We use an indicator variable that equals one if a mutual fund affiliated with the target firm's investment bank advisor newly purchases or increases holdings of the target in the 180 days leading up to the merger announcement. We use a similar indicator for informed trading by any mutual fund leading up to a merger announcement. We include control variables that have been shown in previous literature to be associated with target announcement returns. Variables are defined in the Appendix. In all model specifications, we employ year and industry fixed effects as well as heteroscedasticity- and autocorrelation-robust standard errors.

Results are presented in Table 3. In contrast with univariate results, here we see the relation between informed trading by affiliates and target CAR is not robustly negative. The indicator for informed trading by affiliates is negative and significant in one out of three model specifications and is not statistically significant in the other two. The more general indicator for informed trading by any mutual funds regardless of their affiliation is not statistically significant in any model specifications. Coefficients on control variables are generally in line with existing literature. Targets that are larger—measured by either total assets or market capitalization—tend to have lower announcement returns, consistent with Ishii and Xuan (2014). The coefficient on relative size is negative and significant, meaning mergers where the target is larger relative to the acquirer also have lower CAR, consistent with Ishii and Xuan (2014) and Alexandridis et al. (2013). Stock-financed acquisitions are also associated with lower CAR, consistent with existing literature.

Overall, we do not find strong evidence that the mergers with informed trading by affiliates have different announcement-period abnormal returns than mergers without informed trading by affiliates. Mutual fund managers do not appear to be able to use their informational advantage from their investment bank affiliate to identify targets with the highest CAR in advance of merger announcement. However, after controlling for relevant factors mergers with informed trading do not have robustly lower CAR. This follows our intuition about opportunities for informed trading, because fund managers cannot choose which mergers their investment bank affiliates advise. Indeed, on average funds only engage in informed trading of about a quarter of the mergers advised by their affiliated bank. The evidence suggests fund managers do not gain advance information about all pending mergers involving targets advised by their investment bank affiliate, or at least they do not act on it. Nevertheless, informed trading is far

more prevalent among merger targets advised by a fund's affiliated investment bank, allowing funds to capture abnormal announcement returns much more frequently than they do for other targets.

5. Informed Trading and Merger Failure/Success

Because of their highly positive announcement returns, the ability to identify target firms in advance of merger announcements represents a profitable information advantage for mutual fund managers. Thus far, we have presented evidence consistent with the argument that mutual fund managers possess and act on an informational advantage stemming from their affiliation with an investment bank. We further explore informed trading in mutual funds by examining trading activity among withdrawn mergers. In our sample, about 16.5 percent of mergers are withdrawn.[4] Our attention to withdrawn mergers is twofold. First, we are interested in whether mutual funds affiliated with target firm advisors still engage in informed trading of targets even if a merger will ultimately be withdrawn. More importantly, we are curious about whether affiliated mutual funds are more likely to divest of these targets prior to the withdrawal announcement.

Table 4 shows summary statistics for withdrawn mergers, again presented by whether or not a target is advised by a bank. Among the 583 withdrawn mergers in our sample, the mean announcement-period target CAR is comparable to the full sample at around 18-19%. Mutual funds still engage in informed announcement-period trading of a high proportion of mergers where they are affiliated with the target's advisor: we observe informed trading by affiliated mutual funds in 26.1 percent of the sub-sample of withdrawn mergers. Similar to the full sample,

[4] In Table 1 we report that about 80 percent of mergers are completed successfully. The difference between the 16.5 percent of mergers that are withdrawn and the 20 percent that are not successfully completed is due to mergers where the final status is unknown in the SDC database.

a bank's mutual fund affiliates engage in informed announcement-period trading of only 3.4 percent of targets where the bank is not an advisor. Target CAR around the merger withdrawal date is negative, averaging -6.3 and -8 percent across the two groups, and this difference is not statistically insignificant.

We measure informed selling leading up to withdrawal announcements, which we define as a fund selling all of its holdings of the target between the merger announcement date and withdrawal date, and the sale must also be less than 180 days prior to the merger withdrawal. Note that this informed selling definition is more restrictive than our definition of informed trading around a merger announcement, which can include buying or increasing existing holdings. Remarkably, funds affiliated with a target's advisor sell all their target holdings 22.2 percent of the time in advance of a merger withdrawal, whereas funds engage in such informed withdrawal selling in only 3.2 percent of targets where they are not affiliated with the target advisor. This informed selling provides further support for our claim that investment banks may be sharing non-public merger information with their mutual fund affiliates. Based on this evidence, we argue that a mutual fund's informational advantage gained through its affiliated investment bank extends beyond the merger announcement period. This informational advantage through affiliation appears to help funds avoid the negative abnormal returns around merger withdrawals.

We further explore informed trading and merger success or failure by examining the determinants of successful merger completion. We model a logistic regression where the dependent variable equals one if a merger is completed successfully and zero otherwise. Again, our main explanatory variables of interest measure informed trading leading up to a merger announcement. We include control variables shown to be associated with the likelihood of

merger success. Results are presented in Table 5 and are consistent with our main arguments. The coefficient on the indicator for informed trading by mutual funds affiliated with the target's advisor is positive and significant, meaning that such informed trading is associated with a higher likelihood of successful merger completion. In contrast, the coefficient on informed trading by any mutual funds regardless of affiliation is not statistically significant. Coefficients on control variables are in line with expectations. As the deal value relative to acquirer market cap increases, the likelihood of success declines. Hostile mergers are significantly less likely to be completed successfully. Finally, mergers taking longer to resolve are less likely to be completed successfully.

The evidence in earlier sections suggests that mutual funds can capture some target announcement-period abnormal returns by virtue of their affiliation with an investment bank. In this section, we have shown that these mutual funds also appear to avoid the negative returns around merger withdrawals. Moreover, mergers with informed trading by affiliates are more likely to be completed successfully, thus further avoiding the negative returns from merger withdrawals. Taken together, these results provide a compelling depiction of how information may be shared between an investment bank advisor and its affiliated mutual funds. This information-sharing appears to run deeper than just advance knowledge of the announcement—instead, the evidence is consistent with information sharing past announcement and up to the point where completion or withdrawal is pending.

6. Conclusion

In their role as advisors to target firms in mergers and acquisitions, investment banks have an incentive to use material non-public information for the benefit of their mutual fund management divisions. In this study, we show evidence consistent with banks acting on this

incentive. We find that mutual funds are far more likely to engage in pre-announcement informed trading of targets when the target is advised by the funds' investment bank affiliates. In doing so, these affiliated mutual funds capture an average announcement period abnormal return of almost 20% per target. Affiliated mutual funds engage in informed trading in 23 percent of the targets advised by their investment bank affiliates, whereas they engage in informed trading in only 2.3 percent of mergers not advised by an affiliate. We do not find robust evidence that announcement-period CAR is different for mergers with informed trading by affiliates versus mergers without it.

We also examine merger completion and withdrawals. As with merger announcements, we find evidence consistent with informed trading. We find that mutual funds are much more likely to liquidate holdings of targets advised by an affiliate in advance of those mergers being withdrawn, and in so doing affiliated mutual funds avoid negative abnormal returns around the merger withdrawal date. Furthermore, informed trading by affiliates leading up to a merger announcement is positively related to the likelihood of successful merger completion. Overall, our evidence is consistent with information sharing between investment banks and mutual funds spanning the pre-announcement period through the point in time when merger completion or withdrawal are imminent.

Our study advances the discordant literature on conflicts of interest within financial services firms. We build on Bodnaruk, Massa, and Simonov (2009), who report evidence of informed trading involving acquirer investment bank advisors using bank holdings at the conglomerate level. We focus on target firm advisors and mutual fund holdings, which we argue are more actively managed and represent stronger evidence of informed trading than enterprise-wide holdings of large financial services conglomerates. Our results contrast with Griffin, Shu,

and Topaloglu (2012), who do not find robust evidence of information spillover within banks. We also show new detail about the incidence and breadth of information sharing between investment banks and their mutual fund affiliates. Finally, our results validate and reinforce anecdotal reports in the popular press of ineffective information barriers.

This study provides compelling evidence that the material non-public information held by investment bank advisors may not be isolated effectively by information barriers. Further research in this area could improve our understanding of how information barriers work (or rather, do not work). Specifically, what factors are associated with material non-public information being shared across divisions? Can more granular data provide insight into when and how information is shared? Finally, how can policymakers and well-meaning investment bank and mutual fund managers mitigate the sharing of material non-public information across divisions? Our study also has implications for how other investors might use observable changes in mutual fund holdings as a signal about a firm's probability of becoming a takeover target, or a merger's chances of success or withdrawal. A strategy of buying potential takeover targets could be enhanced by trading behavior of mutual funds with investment bank affiliates, as could a strategy of shorting potential merger withdrawals. Future studies addressing these areas would be illuminating.

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Appendix: Variable Definitions

Variable	Definition
Cash deal	Indicator that equals 1 if a merger is 100% cash financed.
Days to resolution	Number of days between merger announcement date and completion/withdrawal date.
Hostile	Indicator that equals 1 if a merger is viewed as hostile
Informed trading by affiliates	Indicator that equals 1 if a mutual fund affiliated with the target advisor buys or increases holdings of the target within 180 days of a merger announcement.
Informed trading by any funds	Indicator that equals 1 if any mutual funds buy or increase holdings of a target within 180 days of a merger announcement.
Informed selling by affiliates	Indicator that equals 1 if a fund affiliated with the target advisor liquidates its target holdings after a merger is announced and within 180 days of its withdrawal.
LN(Acquirer market cap)	Natural log of acquirer market capitalization.
LN(Target market cap)	Natural log of acquirer target capitalization.
LN(Target total assets)	Natural log of acquirer target total assets.
Market value purchased by bank's funds ($ millions)	Value of target shares purchased by a bank's funds in the 180 days leading up to a merger announcement.
Number of target industries	Number of 4-digit SIC codes in which the target operates.
Relative transaction value	Ratio of the deal value to acquirer market capitalization.
Same industry deal	Indicator that equals one if acquirer and target share the same 2-digit SIC code.
Stock deal	Indicator that equals 1 if a merger is 100% stock financed.
Target announcement CAR [-2, +2]	Target cumulative abnormal stock return over the [-2, +2] day window around the merger announcement date.
Target withdrawal CAR [-2, +2]	Target cumulative abnormal stock return over the [-2, +2] day window around the merger withdrawal date.
Target Book-to-Market	Target book value of equity divided by market capitalization
Target CF/Assets	Ratio of target operating income before depreciation to total assets, as in Ishii and Xuan (2014)
Target Debt/Assets	Ratio of target long-term debt plus current portion of long-term debt to total assets.
Target Debt/Equity	Ratio of target long-term debt plus current portion of long-term debt to book value of equity.
Target P/E	Target price-earnings ratio.
Target Q	Target Q, computed as total assets minus book value of equity plus market value of equity, all divided by total assets.
Target ROE	Target return on equity.
Target stock performance	Target abnormal return in the period from 219 to 20 days before a merger announcement, as in Ishii and Xuan (2014).

Table 1: Summary statistics

This table presents summary statistics for the merger sample. The sample is divided according to whether informed trading is observed by mutual funds affiliated with the target advisor. Informed trading is defined as a fund buying or increasing holdings of a target in the 180 days leading up to a merger announcement. Variables are defined in the Appendix. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Mergers with informed trading by affiliates		No informed trading by affiliates			
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean Difference	t-value
Target CAR [-2, +2]	19.4%	21.0%	25.3%	31.3%	-5.8%	-5.07***
Cash deal	0.513	0.500	0.512	0.500	0.001	0.04
Proportion of deals completed	0.802	0.399	0.795	0.404	0.008	0.36
Days to resolution	146.7	99.3	124.9	90.6	21.8	4.26***
Hostile	0.120	0.325	0.075	0.263	0.045	2.75***
Number of target industries	3.786	2.466	3.072	2.039	0.714	5.73***
Same industry deal	0.551	0.498	0.527	0.499	0.023	0.91
Stock deal	0.132	0.339	0.195	0.396	-0.063	-3.54***
Deal value ($ millions)	6,054	10,600	1,131	4,619	4,923	9.46***
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Number of Mergers	425		3,421			

Table 2: Advisor descriptive statistics

This table presents descriptive statistics for target investment bank advisors, dividing the sample according to whether or not a bank serves as advisor to a target in a merger. Variables are defined in the Appendix. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Targets advised by a bank		advised by a bank			
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean Difference	t-value
Number of mergers per advisor	55.9	74.4				
Number of affiliated mutual funds per investment bank advisor	38.3	50.2				
Number of mergers with informed trading by a bank's affiliated funds	17.6	32.2	49.7	70.0	-32.1	-2.64**
Percentage of mergers with informed trading by a bank's affiliated funds	22.5%	0.29	2.4%	0.04	20.1%	4.32***
Number of bank's mutual funds with informed trading	2.63	2.19	1.90	1.63	0.73	1.39
Market value purchased by bank's funds ($ millions)	2.54	7.76	2.38	15.34	0.17	0.72

Total target advisors	64					

Table 3: Determinants of merger announcement period abnormal returns

This table reports OLS regression results where the dependent variable is the target cumulative abnormal return over the [-2, +2] day window around a merger announcement date. Variables are defined in the Appendix. All model specifications employ year and industry fixed effects. Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Informed trading by affiliates	-0.0074		0.0016		-0.0458**	
	(0.024)		(0.017)		(0.022)	
Informed trading by any funds		0.0065		0.0034		-0.0175
		(0.017)		(0.011)		(0.016)
LN(Acquirer market cap)					0.0032	0.0016
					(0.004)	(0.004)
Target Q	-0.0093***	-0.0093***			-0.0018	-0.0018
	(0.003)	(0.003)			(0.001)	(0.001)
Target Debt/Assets	0.0547	0.0568				
	(0.037)	(0.037)				
Target CF/Assets	-0.0713**	-0.0713**				
	(0.032)	(0.032)				
Target stock performance	-0.0351***	-0.0353***				
	(0.010)	(0.010)				
Relative transaction value	-0.0533***	-0.0533***			-0.0599***	-0.0628***
	(0.011)	(0.011)			(0.011)	(0.011)
Stock deal	-0.1017***	-0.0999***	-0.0703***	-0.0696***	-0.0906***	-0.0938***
	(0.018)	(0.018)	(0.013)	(0.013)	(0.018)	(0.018)
Same industry deal	0.0213	0.0211	0.0354***	0.0355***	0.0236	0.0225
	(0.017)	(0.017)	(0.011)	(0.011)	(0.016)	(0.016)
Hostile	-0.0122	-0.0126	-0.0688***	-0.0687***	-0.0087	-0.0133
	(0.031)	(0.031)	(0.018)	(0.018)	(0.031)	(0.031)
LN(Target market cap)			-0.0249***	-0.0251***		
			(0.003)	(0.003)		
LN(Target total assets)	-0.0185***	-0.0196***				
	(0.006)	(0.005)				
Target ROE			-0.0028*	-0.0028*		
			(0.002)	(0.002)		
Target Book-to-Market			0.0029	0.0029		
			(0.003)	(0.003)		
Target P/E			0.0001	0.0001		
			(0.001)	(0.001)		
Target Debt/Equity			-0.0002	-0.0002		
			(0.000)	(0.000)		
R-Squared	0.1267	0.1268	0.0696	0.0696	0.1073	0.1056
Number of observations	1,531	1,531	3,751	3,751	1,618	1,618

Table 4: Advisor descriptive statistics for withdrawn mergers

This table presents descriptive statistics for withdrawn mergers, dividing the sample according to whether or not an investment bank serves as advisor to a target in a merger. Variables are defined in the Appendix. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Targets advised by a bank		Targets NOT advised by a bank			
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean Difference	t-value
Target announcement CAR [-2, +2]	19.2%	0.150	18.0%	0.289	1.2%	0.55
Target withdrawal CAR [-2, +2]	-8.0%	15.6%	-6.2%	17.3%	-1.8%	-0.79
Deals with informed ANNONUCEMENT buying by bank's affiliated funds	8.43	30.57	10.87	244.01	-2.44	-0.81
% of deals with informed ANNONUCEMENT buying by bank's affiliated funds	26.1%	0.924	3.4%	0.817	22.8%	4.78***
Deals with informed WITHDRAWAL selling by bank's affiliated funds	6.35	21.88	8.44	172.37	-2.08	-0.90
% of deals with informed WITHDRAWAL selling by bank's affiliated funds	22.2%	0.685	3.2%	0.696	19.0%	4.60***

Total number of withdrawn mergers	583					

Table 5: Determinants of successful merger completion

This table reports results of a logistic regression where the dependent variable equals 1 if a merger is completed successfully and 0 otherwise. Variables are defined in the Appendix. All model specifications employ year and industry fixed effects. Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	(1)	(2)
Informed trading by affiliates	0.8738**	
	(0.422)	
Informed trading by any funds		-0.0233
		(0.471)
Target CAR [-2, +2]	0.5294	0.5129
	(0.384)	(0.385)
Relative transaction value	-0.3203***	-0.3119***
	(0.075)	(0.075)
Stock deal	-0.3950*	-0.3947*
	(0.235)	(0.236)
Same industry deal	0.2391	0.2063
	(0.235)	(0.233)
LN(Number of target industries)	-0.1247	-0.1347
	(0.179)	(0.178)
Hostile	-3.9875***	-3.8932***
	(0.422)	(0.415)
LN(Days to resolution)	0.4971***	0.5296***
	(0.145)	(0.145)
Pseudo R-Squared	0.349	0.342
Number of observations	2,143	2,143