Information Transmission between Banks and the Market for Corporate Control*

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Abstract

This paper provides evidence of deliberate private information disclosure within banks' business networks. Using supervisory trade-level data, we show that banks with closer ties to a target advisor in a takeover acquire more stocks of the target firm prior to the deal announcement, enabling them to benefit from the positive announcement return. We do not find such effects for bank connections to acquirer advisors or for trades in acquirer stocks. Target advisors benefit from leaking information about takeover bids to connected banks as it drives up the final offer price without compromising the probability of bid success.

JEL Codes: G11, G15, G21, G24

Keywords: bank networks, trading, information spillovers, mergers and acquisitions, syndicated lending

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1 Introduction

Banks' interconnectedness is often seen as a major determinant of financial stability. Typically, the focus is on banks' financial linkages as they give rise to pecuniary externalities on banks' asset and liability side. Much less is known about information spillovers among banks, in part because it is difficult to empirically capture such information flows.

In this paper, we use syndicated-loan networks of banks in conjunction with administrative security-transaction data to infer information flows around the announcement of corporate takeovers (M&A). Information regarding imminent takeovers may spill over to trading banks that (i) are connected to other banks that serve as advisors in the market for corporate control and (ii) are also active in the syndicated-loan market. We show that such information spillovers exist and economically benefit members of syndication networks: banks that are connected to advisors of takeover targets purchase the latter's shares at lower prices prior to takeover announcements and subsequently reap trading gains.

Our empirical strategy is centered on the idea that banks exchange information when engaging with one another in the process of syndication, and that some of these banks simultaneously act as advisors to target and acquirer firms in M&A transactions. The M&A context helps to identify the source of private information. In particular, we can keep constant private information while exploiting the fact that incentives for leaking information about imminent transactions vary across stocks and advisors. This is because announcement returns are positive primarily for target, rather than acquirer, stocks. As such, only target advisors have the incentive to leak related private information. If traders act on this information and buy target stocks prior to takeover announcements, the takeover price increases, which in turn implies that the target shareholders receive a larger share of the surplus. Therefore, the incentives of privately informed traders and target shareholders, which are represented by the respective advisor, are aligned.

To measure the strength of banks' ties to target and acquirer advisors, we use the fraction of jointly issued syndicated loans. In doing so, we can contrast the relative importance of trading banks for advisors—and vice versa. Consistent with the idea that advisors leak information to

trading banks as an exchange of favors, we find that trading banks that are more important for the target advisor's syndicated-loan business are more likely to obtain private information about imminent takeovers.

Using administrative data at the bank-security-date level from Germany, we can estimate the effect of banks' connectedness to target and acquirer advisors on their trades around international takeover announcements. The granularity of our data, and the fact that we exploit takeover-specific variation across banks, allows us to control for time-varying unobserved heterogeneity at the security and the (trading) bank level. Doing so, we find that banks closely connected to the target advisor acquire more shares of the target, but not of the acquirer, in the 30 days prior to the takeover announcement and, thus, at a lower price. In contrast, we find no such effects when considering the trading bank's degree of connectedness to the acquirer advisor. In line with our conjecture, these effects are stronger when the potential trading gains are larger, i.e., for higher announcement returns, deals that are completed in a shorter amount of time, and for cash, as opposed to stock, transactions.

We find that trading banks' connectedness to target advisors leads them to purchase target shares ahead of takeover announcements. We furthermore show that connected traders do not merely emulate advisors' trading behavior as we do not find the latter to act on their private information and purchase target shares themselves. This suggests that target advisors leak private information about imminent takeovers. At the deal level, we then show that they benefit from leaking said information to connected traders as it helps to drive up the pre-announcement stock price of the target and, as such, the final offer price. This does not come at the cost of lowered deal success probabilities, which would diminish the expected revenues accruing to the target advisor.

Our evidence therefore suggests that target advisors have an incentive to leak this private information, and they share it effectively with connected banks that actively trade shares of non-financial corporations. By affecting the offer premium, this has real implications for the division of surplus in M&A transactions, without any repercussions for the reputation of the target

advisor. On the contrary, our findings are consistent with a positive feedback effect for target advisors that successfully represent target shareholders' interests. In addition, connected banks' subsequent trading profits contribute to the stability of reciprocal exchange in loan-syndicate networks, which we use to capture private-information flows.

Our paper is related to the literature on the use and transmission of insider information (see Economist, 2018, for a general overview and the practical relevance of this subject matter). Various papers document such patterns in different financial markets and for different sources of private information. In the context of mergers and acquisitions, Augustin, Brenner, and Subrahmanyam (2019) report abnormally high trading volumes in out-of-the-money equity call options on targets prior to takeover announcements. Jegadeesh and Tang (2010) find that funds whose main broker is a target advisor are net buyers of target shares before announcement, while Lowry, Rossi, and Zhu (2019) present evidence suggesting informed trading by M&A advisors in options. Fich, Lantushenko, and Sialm (2020) and Dai, Massoud, Nandy, and Saunders (2017) show increases in holdings of future takeover targets prior to public announcements by hedge funds.

Outside of the market for corporate control, Barbon, Di Maggio, Franzoni, and Landier (2019) present evidence that brokers leak information on order flow of block trades, enabling connected traders to engage in predatory trading. Ivashina and Sun (2011) show that institutional investors who obtain private information in the syndicated-loan market recycle it in their securities trading.

With respect to bank trading, Acharya and Johnson (2007) and Haselmann, Leuz, and Schreiber (2021) provide evidence that banks use their private information on borrower firms, respectively, in the credit-derivatives market and in their securities trading around major corporate events, including mergers and acquisitions. Such trading behavior reflects a potential conflict of interest and would be a cause of regulatory concern, as has been argued by Puri (1996) with regard to universal-banking deregulation. Irrespective of whether banks holding private information trade on it themselves or privately disclose upcoming loan transactions to other banks that in turn trade on said information, such information leakage is unlikely to benefit the customer in question. In contrast, we show that information leakage emanating from the target advisor in our

M&A setting does benefit the target shareholders and, as such, does not reflect potential hold-up costs similar to those involved in arm's-length lending relationships.

Besides pointing to a stable economic incentive for information leakage, our paper identifies information transmission between, rather than within, banks. This highlights a potentially important side effect of the ever-increasing interconnectedness of the financial sector. We use the syndication process for loans to uncover such information networks on an international scale. This novel channel complements previously discussed information networks in the literature. For instance, Jagolinzer, Larcker, Ormazabal, and Taylor (2020) show that politically connected traders benefited from insider information on TARP. Cohen, Frazzini, and Malloy (2008) present evidence that fund managers hold larger positions, and realize excess returns, on stocks of firms with CEOs that share a common educational background with them. More generally, Ahern (2017) documents how information flows through strong social ties based on family, friends, and geographic proximity enable insider trading. Finally, Bradley, Jame, and Williams (forthcoming) argues that non-deal roadshows constitute a channel for the transmission of private information between firms' management and institutional investors, enabling the latter to trade profitably.

More generally, our paper also relates to the broad literature on insider trading. For instance, Meulbroek (1992) shows that markets take the possibility of informed trading into account and incorporate it in stock prices. Ali and Hirshleifer (2017) identify and quantify profits from insider trading. While insider trading contradicts banks' fiduciary duties, much like Suk and Wang (forthcoming), our paper points not only to the primary beneficiaries of insider trading but also to potentially limited downsides for the firms whose shares are traded.

2 Data Description

Our main data source covers all securities trading by German financial institutions. In accordance with the Markets in Financial Instruments Directive (MiFID),[1] German financial institutions are required to report each security transaction to the German Federal Financial Supervisory Au-

[1] https://www.bundesbank.de/en/bundesbank/research/rdsc/research-data/mifid-617976

thority (BaFin). One of the main purposes for the reporting requirement is to detect market manipulation and insider trading. The dataset contains information on the date, quantity, and price of a security traded by an institution. In addition, we use bank-level data (e.g., total assets, capitalization, asset composition) from BISTA.[2] (Gomolka, Schäfer, and Stahl, 2020)

We merge these data with information on international M&A deals from Securities Data Company (SDC) Platinum. The latter dataset includes information on takeovers, such as the announcement and effective date, the share acquired and owned after transaction, the offer price, the consideration structure (in particular cash vs. stock), and the advisors on the target and the acquirer side. We complement the merged dataset with security-specific daily return data from Thomson Reuters Eikon. As a final ingredient, we use syndicated-loan data from the DealScan database to empirically capture the possibility for information spillovers. In particular, we construct an exposure variable based on joint lending activity of trading banks and deal-specific advisors based on the year prior to the announcement of a given deal.

We restrict our sample to proprietary trading of stocks by banks with a trading book and that are active in the international syndicate-loan market. This leaves us with 37 German banks. The average bank has a balance-sheet size of € 81 bn, of which 5% are held as stocks, and a capital ratio of 10% (see Panel A of Table 1). More than half of these banks themselves act at least once as an advisor in an M&A transaction during our sample period between 2010 to 2016. For the main analysis, we exclude trading banks that are directly involved in takeovers as advisors, but analyze the trading behavior by target and acquirer advisors separately.

After restricting our sample to effective majority deals, leading to $> 50\%$ of the target shares being acquired and $> 50\%$ of the target being owned after the transaction, and excluding deals in the financial sector, we are left with 2,832 M&A deals from 2010 to 2016 (Panel B of Table 1). Target stocks have on average an announcement return of 13%, the length between effective and announcement dates is 113 days, and about two-thirds are cash deals (Panel B1). Acquirer stocks yield on average only a very small announcement return of 1% (Panel B2).

[2]Data ID: 10.12757/BBk.BISTA.99Q1-19Q4.01.01

3 Hypothesis Development and Empirical Strategy

We start out by showing that it is profitable to buy target, but not necessarily acquirer, stocks ahead of takeover announcements. As can be seen in Figure 1, target stocks have highly economically and statistically significant abnormal announcement returns, whereas this is not the case to the same extent for acquirer stocks (Figure 2). This suggests that trading on private information about imminent takeovers is profitable primarily in target stocks, i.e., by purchasing target stocks ahead of announcements.

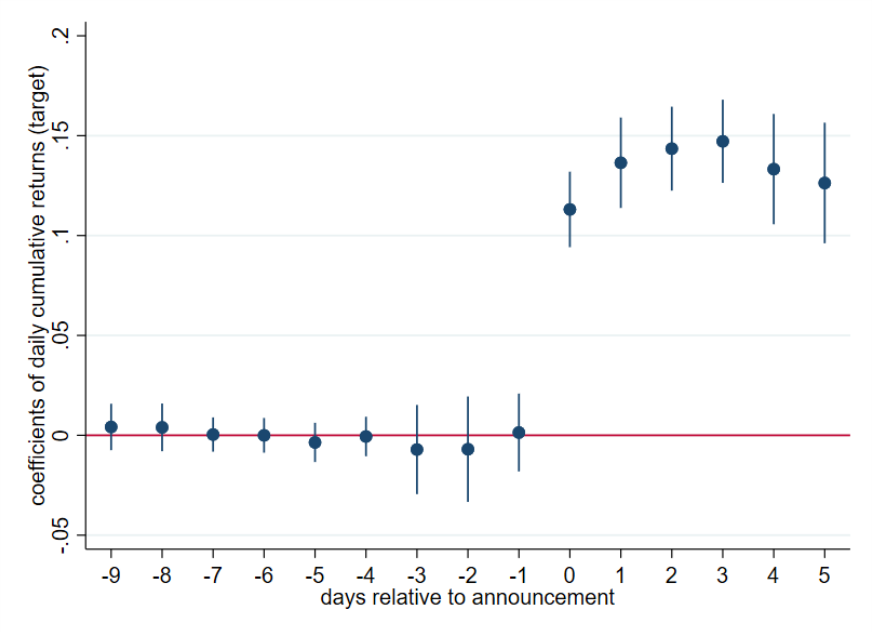

Figure 1: Daily (abnormal) cumulative returns in target stocks s around takeovers. The figure shows the point estimates and 95% confidence intervals for 9 days prior to the announcement and 5 days afterwards, based on the following regression specification: $Return\ (cumulative)_{st} = \beta_t \sum_{t=-9}^{5} Takeover_{st} + \delta_t + \gamma_s + \varepsilon_{st}$, on a sample at the bank-security level ranging from 30 days prior to 5 days after the announcement. Standard errors are clustered at the security and date level.

While fiduciary duties should, in principle, keep both acquirer and target advisors from trading themselves on private information regarding imminent takeovers, target advisors can benefit from elevated demand for target stocks and a subsequent increase in the target's stock price prior to takeover announcements, as this might lead to a higher offer price. As such, target advisors have an economic incentive to allow connected banks to reap trading profits from purchasing

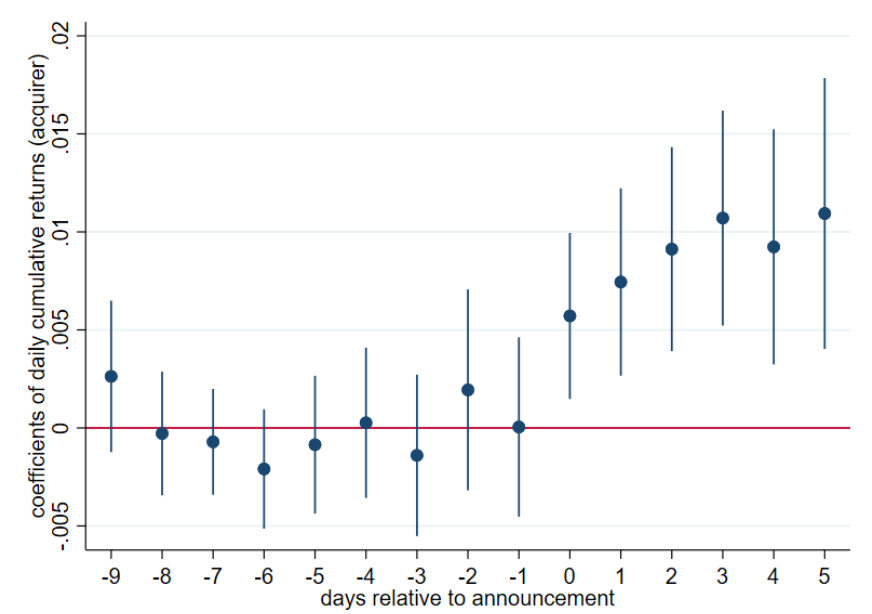

Figure 2: Daily (abnormal) cumulative returns in acquirer stocks s around takeovers. The figure shows the point estimates and 95% confidence intervals for 9 days prior to the announcement and 5 days afterwards, based on the following regression specification: $Return\ (cumulative)_{st} = \beta_t \sum_{t=-9}^{5} Takeover_{st} + \delta_t + \gamma_s + \varepsilon_{st}$, on a sample at the bank-security level ranging from 30 days prior to 5 days after the announcement. Standard errors are clustered at the security and date level.

target stocks ahead of takeovers. In contrast, acquirer advisors do not have strong incentives to leak information on imminent takeovers, as the induced trading behavior of informed traders would increase the costs of the merger for the acquirer and potentially render the takeover bid less likely to be successful. We therefore hypothesize that traders connected to the the target advisor are more likely to be informed and trade prior to takeover announcements.

To test this conjecture, we use bank-security-date level data and a symmetric time window of 30 days before and after a deal is announced. Descriptive statistics of the main dependent and explanatory variables are shown in Table 1, separately for trading in target (Panel C1) and acquirer stocks (Panel C2).

Our most important explanatory variable of interest measures the intensity of a connection between a trading bank and a given deal's M&A advisor by the number of joint syndicated loans scaled by the number of syndicated loans granted by the advisor or trading bank. As such, our

measure captures the relative importance of the trading bank for the advisor's syndicated-loan business, or the other way around. $Intensity_{abt-1y}$ in the sense of advisor $a \rightarrow$ bank (trader) b is calculated as number of joint syndicated loans by a and b relative to the number of syndicated loans by advisor a in the year prior to the deal announcement associated with security s.[3] Although we analyze the trading behavior of German banks, we do capture their relationships to international advisors (396 in total), which are also active in the syndicated-loan market.

To assess whether a trading bank b who is more important for the syndicated-loan business of target advisor a acquires more stocks of the target s prior to the announcement, we estimate the following baseline specification:

$$sgn(log(|netnominal|))_{bst} = \beta_1 PreAnnouncement30_{st} \times Intensity_{abt-1y} + \beta_2 Intensity_{abt-1y} + \theta_{st} + \mu_{bt} + \varepsilon_{bst}, \quad (1)$$

where $sgn(log(|netnominal|))_{bst}$ is the signed logarithm of purchases of stock s by trading bank b on date t, $Intensity_{abt-1y}$ is the fraction of syndicated loans jointly issued by the target advisor a and bank b out of all syndicated loans of the target advisor a in the year prior to that associated with date t, $PreAnnouncement30_{st}$ is a dummy variable that is equal to one for the 30 days prior to the announcement of the takeover bid for the firm associated with stock s, and θ_{st} and μ_{bt} denote, respectively, security by date and (trading) bank by date fixed effects.

As a placebo test, we estimate the same specification for acquirer stocks. In addition, we can vary the direction of $Intensity_{abt-1y}$ by scaling the number of syndicated loans jointly issued by the target advisor a and bank b by the total number of syndicated loans of bank b. Finally, we can construct the same variable for acquirer advisors.

[3] In case of multiple advisor relationships maintained by a trading bank, we use the maximum for the same direction.

4 Main Results

We start with graphical evidence, looking at the trading behavior of traders that are either connected or not connected to the advisor to the target firm of a given takeover. Figure 3 indicates that connected traders take advantage of private information, which may have accrued through their relationship with the target advisor, by acquiring target stocks prior to the announcement.

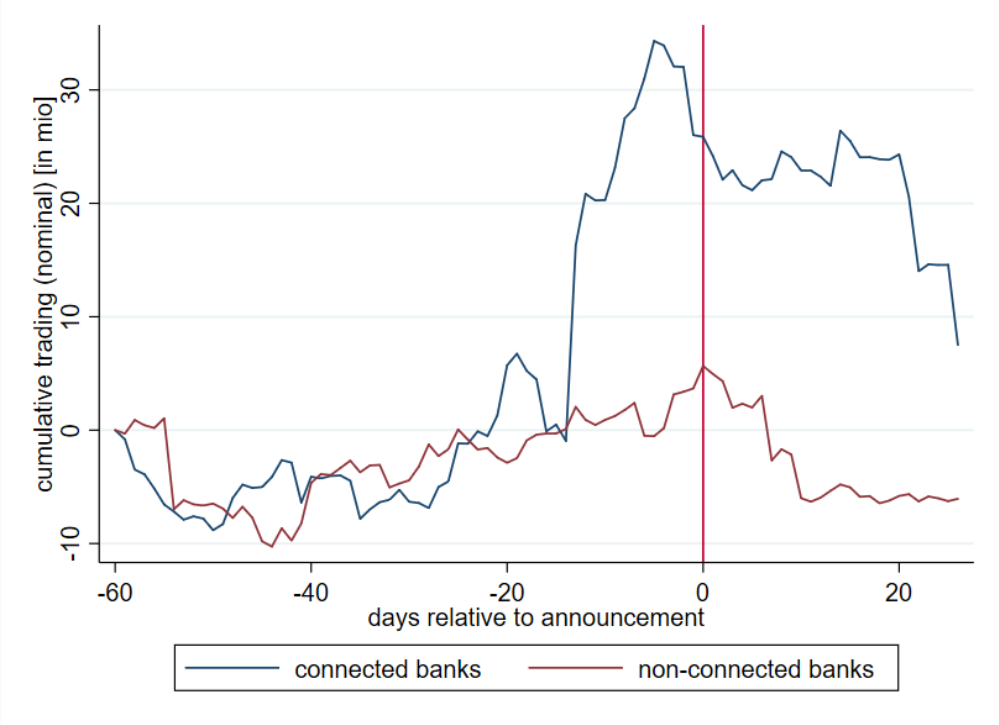

Figure 3: Cumulative nominal trading (in € m) in target stocks 60 days before and 30 days after the M&A announcement. Trading by connected banks refers to traders having joint syndicated-lending activity with at least one of the target advisors one year prior to the M&A announcement (blue line). Trading by non-connected banks is shown in red line.

To substantiate this finding, Table 2 shows our baseline results from estimating (1). Columns 1 and 2 report the results for regressions with less restrictive sets of fixed effects, while column 3 presents the results of our key specification. The coefficient β_1 for our key variable of interest is statistically highly significant irrespective of the set of fixed effects, and varies only slightly in size across specifications. Our estimates suggest that a trader who is more connected to the target advisor by one standard deviation purchases on average 54% more of the target stocks in the 30 days prior to the announcement. These results substantiate the view that traders who are

more important for the target advisor's syndicated-loan business are more likely to obtain private information about the imminent announcement of the takeover bid. This permits the trader to acquire target stocks and benefit from the significant announcement effects.

In order to test whether this effect is specific to the connection of the target advisor with a trader, in column 4 we estimate whether the importance of a trader to the acquirer advisor's syndicated-loan business also explains the pre-announcement acquisition of target stocks by the trader. When using the fraction of ratio of fraction of syndicated loans jointly issued by the acquirer advisor and the trading bank out of all syndicated loans of the acquirer advisor, we do not find evidence for pre-announcement stock purchases of traders more connected to the acquirer advisor. This suggests that only traders connected to the target advisor obtain private information. Using the reciprocal importance of advisors for traders' syndicated-loan business yields similar results. Column 6 reveals that traders who issued more syndicated loans with the acquirer advisor relative to the trader's total syndicated lending do not acquire more stocks of the target prior to the announcement of the takeover bid.[4] In contrast, a higher relative importance of the target advisor for the trader's syndicated-loan business is again correlated with a significantly larger acquisition of target stocks pre-announcement (column 5), highlighting again that it is the connection to the target advisor that seems to matter for the diffusion of the insider information.

Since the announcement effect is confided to target stocks, traders cannot exploit any private information on an imminent takeover bid by purchasing stocks of the acquirer. Thus, if connected traders use private information to profit from the announcement, we should only observe pre-announcement stock purchases of connected traders of target, but not acquirer, stocks. In columns 7 and 8, we use this rationale for a placebo test. Indeed, we do not find any evidence of pre-announcement purchases of acquirer stocks by traders more connected to the target advisor (column 7) or by traders more important for the acquirer advisor's syndicated-loan business (column 8).

As a first main robustness check, we estimate, instead of the amount purchased by a specific

[4]This also suggests that central acquirer advisors' information advantage (Yawson and Zhang, 2021) is not driving our results.

trader, her propensity to buy the target or acquirer stock, i.e., the extensive margin. For this purpose, we replace the dependent variable in our regressions with a dummy variable, BUY_{bst}, indicating whether trading bank b net-purchased stock s on date t. Table 3 reports the results and shows that the findings are qualitatively the same. The propensity to purchase the target stock prior to the takeover bid significantly increases the more the target advisor depends on the respective trading bank for her syndicated-loan business. This is again robust to the inclusion of various sets of fixed effects (columns 1 to 3), going so far as to control for time-varying unobserved heterogeneity at both the trader and the security level. In terms of economic magnitude, a trader with a one standard deviation more intense connection with the target advisor has, on average, a 2.6% higher propensity to purchase the target stock during the 30 days prior to the merger announcement. Again, the pre-announcement propensity to purchase target stocks is only correlated with the connection to the target advisor, but not the acquirer advisor (columns 4 to 6). In addition, we also do not find evidence that connected traders are more likely to buy acquirer stocks prior to the announcement. This holds for the connections to the target as well as the acquirer advisor (columns 7 and 8).

We are interested in the different incentives of the acquirer and the target advisor to disseminate any private information about the looming merger announcement. To this end, we test whether the distinct results we obtain in Table 2 (and Table 3) with respect to traders' connections to target advisors and acquirer advisors is only a mere result of the two being highly correlated, while connections to acquirer advisors are only more volatile. To do so, we include the intensity of a trader's connection to the target advisor and to the acquirer advisor simultaneously in the main regressions. Table 4 reports the results of this horse-race regression. The amount and propensity of a trader to buy target stocks before any merger announcement is only correlated with the intensity of her connection to the target advisor. The coefficient is still highly significant and even slightly larger in magnitude (columns 1 and 3). Conversely, there is no significant relationship between a trader's pre-announcement trading activity in a target stock and her connection to the acquirer advisor. Interestingly, when included in the joint estimation, the intensity

of the trader's connection with the acquirer advisor now has a negative, albeit statistically insignificant, coefficient. This suggests that when a trader is connected to both the target and the acquirer advisor, she is less likely to obtain private information or is less inclined to trade upon it. Columns 2 and 4 report the respective results for the placebo tests on the amount and the propensity to purchase stocks of the acquirer. Again, the intensity of the trader's connection to both the target and the acquirer advisor do not carry any significant effect.

In sum, these results support the view that target advisors are more likely to disseminate information about an imminent merger announcement particularly to other banks with which they are closely connected in the syndicated-loan market. Trading banks that are more closely connected to the target advisor in the syndicated-loan market and are, thus, more likely to learn about the looming announcement only buy target stocks, as acquirer stocks do not benefit on average from a positive announcement effect. This indicates that traders acquire positions prior to takeover announcements in an attempt to exploit their private information and to reap trading profits from positive announcement effects.

5 Robustness Checks

In order to further assess the robustness and validity of our results and conclusions, we perform a battery of robustness checks, which are summarized in Table 5. A main concern with regard to our key results is that the intensity of the trader's connection to the target advisor is, instead of a valid measure of private-information exchange, only a proxy for closer relationships that might involve institutional ties, such as the trader being the custodian bank or market maker for the advisor, that could in turn explain our results. In order to address this concern, we add to our baseline regression specification trader-advisor pair fixed effects. In this manner, we exploit only variation in the intensity of the trader's connection with the target advisor over time. Interestingly, after including trader-advisor fixed effects, our key results do not only prevail, but the main effect is economically even more pronounced. Thus, our syndicated-loan based measure for banks'

connectedness to target advisors is unlikely to explain their pre-announcement trading behavior through time-invariant aspects of their relationship. This renders it more likely that we, instead, capture (time-varying) information diffusion from the target advisor to certain traders.

A further concern relates to the fact that our trading data are confined to transactions of German banks only. German (universal) banks, however, maintain close ties to firms, i.e., they are represented on corporate boards and serve as relationship lenders. This might, in turn, imply that trading banks in Germany may have at their disposal alternative sources of private information regarding takeover announcements. After dropping German deals from the sample in column 2, our results remain remarkably similar to our baseline estimates (see column 3 in Table 2).

In order to improve upon the external validity of our trader-time and security-time fixed effects—which are in our baseline setup naturally estimated using only observed, and not, for instance, intended, transactions—we next run our baseline regression also on an unrestricted sample that comprises all trades in every stock by each reporting bank (column 3). On this extended sample, we can also include trader-security fixed effects in our regressions (column 4). This allows us to control for instances in which banks serve as a market maker for the target stock and, as a consequence, hold inventory in this stock prior to the takeover announcement. Again, our key results remain unaffected: even with this much larger sample and additional fixed effects, traders more closely connected to the target advisor through their syndicated-loan business acquire more target stocks prior to the merger announcement. The economic magnitude is roughly similar to that of our baseline estimates.

Mergers often affect certain industries and occur in waves. Banks may specialize in a certain industry and, as such, be in a better position to learn in advance about takeovers in this industry. At the same time, specialized banks might also be better connected to certain industries through syndicated loans. In order to rule out that our results are confounded by trading banks' industry knowledge providing the latter with private information about takeovers, we add interactions of trader by industry fixed effects with a dummy variable for a given merger's pre-announcement period (column 5), which control, among others, for a given trader's purchases of target stocks

in a given industry prior to each takeover announcement. In column 6, we include even more granular trader by industry by date fixed effects to ensure that our findings are not driven by developments in a bank's trading strategy across stocks within a given industry. Interestingly, while the effects of our main variable of interest remain highly significant in both cases, their economic magnitude increases with this even more restrictive set of fixed effects.

Finally, we test whether it is indeed the connection of a trader to the target advisor that matters for the trader's pre-announcement target-stock acquisitions. For this purpose, we compute different measures for the intensity of the connection between any pair of banks. We re-define our intensity measure for the target as the maximum of the fraction of syndicated loans jointly issued by the target advisor and the trading bank out of all syndicated loans (i) of the target advisor and (ii) of the trader. Similarly, for the acquirer, we consider the maximum of the differently normalized connection intensities between the trader and the acquirer advisor. In contrast, for the advisor, we define the intensity measure as the maximum of the syndicated-loan portfolio overlap between the trader and the two advisors, i.e., the target and the acquirer advisor, relative to the respective advisor's total syndicated lending. Analogously, for the trading bank, the respective intensity measure refers to the maximum of the connection intensities between the trader and the two advisors normalized by the trader's total syndicated lending.

The results using these alternative measures for the connection intensity between traders and advisors are remarkably similar to those of our baseline regressions. First of all, we use the maximum of all four before-mentioned intensity measures. Doing so, we find in column 7 that the intensity in the syndicated-loan connection between a given trading bank and *any* advisor, irrespective of direction and type of advisor, matters for whether the trader purchases target stocks prior to the announcement. In the remaining columns, we use, in turn, the four concrete intensity measures. Columns 8 and 9 reveal that the trader's purchasing behavior is driven entirely by her connection to the target, rather than the acquirer, advisor. In addition, columns 10 and 11 suggest that the relative importance of the trader for the advisor's syndicated-loan business, rather than the other way around, is the more significant determinant for whether

the trader obtains private information.

6 Supporting Evidence

In this section, we present further regression results that provide corroborating evidence for our conclusions drawn from the baseline analysis.

If traders closely connected to a target advisor indeed acquire target stocks pre announcement because they trade on private information obtained from the advisor, they should be more inclined to purchase target stocks when expected profits from trading on private information are largest. To test this idea, we use as a first order of approximation the actual announcement return for target stocks. Columns 1 and 2 in Table 6 present the results when we run our baseline regression for banks' trading target stocks on a split sample for takeover announcements with an above-median and below-median announcement return, respectively. More connected traders only acquire significantly more stocks pre announcement of those targets that indeed experience a relatively large announcement return (column 1). This not only suggests that informed traders can anticipate which target stocks will experience a sizable positive announcement return, but it also shows that the informed trading and the associated information revelation do not lead to a (full) incorporation of the information in the stock prices before the announcement, thereby eliminating the positive announcement effect.

It is not clear, however, that informed traders can perfectly anticipate which takeover announcements will have a particularly high announcement return. Against this background, we use alternative parameters of takeovers that are more likely to be known by the trading bank and that are also correlated with announcement returns. For instance, deals that are unlikely to go through—e.g., difficult or more complicated transactions—tend to generate lower announcement returns, in part because the latter incorporate the reduced likelihood of deal success. Thus, we split our sample into M&A transactions that were effective within 120 days after announcement (column 3) and 'difficult deals' that were not effective even 120 days after announcement (column

4). In line with their profit motive, traders more closely connected to the target advisor acquired stocks of targets solely ahead of 'non-difficult' takeovers that could be executed within 120 days (column 3).

Similarly, the positive announcement return of target stocks is concentrated among takeover bids made as cash offers, in line with the model of Shleifer and Vishny (2003) and empirical evidence (Huang and Walkling, 1987; Yook, 2003; Malmendier, Opp, and Saidi, 2016). To examine whether trading banks exploit pre-announcement information primarily for cash takeovers with higher announcement returns, we split the sample into takeover bids with a cash component (column 5) vs. pure stock bids (column 6).[5] Indeed, the effect on connected banks' trading behavior is confined to takeover bids with a cash component. As it is likely that if the target advisor leaks information on the imminent takeover bid, she will also know about the medium of exchange and share this information with connected banks. Our evidence suggests that connected traders also seem to obtain this private information, and subsequently use it in their trading decisions.

Our baseline results indicate that traders connected to the target advisor purchase more shares of the target prior to the announcement. In order to provide further corroborating evidence that these trades are indeed induced by private information and that the trading banks aim at benefiting from the announcement return, we dissect the pre-announcement period and study whether the stock purchases of connected traders are particularly pronounced closer to the announcement date.

Table 7 reports our regression results for banks' trading target stocks, and considers only a 15-day (columns 1), 30-day (column 2), 60-day (column 3), or 100-day (column 4) pre-announcement period. The comparison of the regression coefficients shows that the effect is economically substantially stronger the shorter the definition of the pre-announcement period. This implies that closer to the announcement date connected traders' purchases of target stocks become more and more prominent. In column 5, we use in the same regression dummy variables defining distinct time windows prior to the announcement, i.e., $100 - 61$ days, $60 - 31$ days, $30 - 16$ days and

[5] As most deals have a cash structure, and for the sake of comparability across columns, we use a less restrictive fixed-effects structure so as to avoid having too few observations in column 6.

$15 - 0$ days before announcement, and interact those with the importance of the trader for the target advisors' syndicated-loan business. In line with our prior interpretation and conclusions drawn from Figure 3, we find that only in the 0 to 15 and 16 to 30 days prior to the announcement do connected traders purchase significantly more target stocks.

In columns 6 to 10, we re-estimate the same regression specifications for the extensive margin, i.e., the trader's propensity to buy the target stock, and obtain very similar results. The propensity to buy target stocks is elevated closer to the announcement date. Long before the announcement ($100 - 31$ days before) there is no evidence that traders that are more connected to the target advisor have a stronger tendency to purchase target stocks. These results also hold up to replacing the continuous variable $Intensity_{abt-1y}$ with a dummy variable that equals one for any non-zero value thereof (Table 8). In particular, the effect—in terms of both statistical and economic significance—is concentrated in the 15 days prior to the announcement (see columns 5 and 10 of Table 8). An underlying assumption of our reasoning is that advisors do not violate their fiduciary duties and refrain from trading themselves on their private information about an imminent merger. However, this is at odds with existing evidence that suggests that banks might exploit in their proprietary trading private information obtained from close relationships with their non-financial customers (as shown most recently by Haselmann, Leuz, and Schreiber, 2021). If advisor banks do trade based on their private information, our results could simply reflect that connected traders only imitate advisors' trading behavior.

In order to evaluate this possibility, we re-run our baseline regression (1) using instead of the $Intensity_{abt-1y}$ measure, a dummy variable identifying whether a trader b is at the same time also either a target advisor (Table 9, columns 1 and 3) or acquirer advisor (columns 2 and 4) in the deal involving stock s as target (columns 1 and 2) or acquirer (columns 3 and 4). As the results show, neither acquirer nor target advisors boost their stock positions prior to merger announcements, irrespective of whether we consider target or acquirer stocks.

In columns $1 - 4$, we effectively compare the trading behavior of advisors with that of non-advisors with different degrees of connectedness to the respective advisors. If connected traders

only mimic the trading behavior of advisors, then we are less likely to detect differential trading behavior by advisors in the pre-announcement period. However, even after restricting the sample further to include only non-advisors that are not connected to either one of the advisors (columns $5-8$), our results remain robust. Thus, the fact only the connected traders seem to exploit the private information rather suggests that especially target advisors disseminate the information about an imminent merger announcement only to their peers without exploiting the private information themselves. In Section 8, we further investigate why particularly the target advisors might have an incentive to leak this private information.

7 Prices and Trading Gains

Figure 1, in conjunction with our baseline results, already suggests that traders closely connected to the target advisor acquire more shares prior to the announcement and, thus, at a lower price. In order to more explicitly assess whether connected traders indeed pay less for target stocks than other traders, because they use the private information to time the purchase of target stocks prior to the announcement, we first calculate the volume-weighted average price a trader b pays for her purchases of stock s on date t. We then estimate a trader's daily purchase price of a target stock 30 days before and after the announcement as a function of her importance for the target advisor's syndicated-loan business, while using different sets of fixed effects and daily transaction controls at the stock-trader level sb (daily transaction volume and number of daily trades).

As our results in Table 10 show within the 60-day window around announcements, traders that are more connected to the target advisor pay significantly less when purchasing the target stock than do other traders. This suggests that connected traders buy larger proportions prior to the announcement. This finding not only holds when including security fixed effects (column 1), but also after adding trader fixed effects (column 2). The latter suggests that the trading gains reaped by connected traders cannot be simply attributed to their time-invariant characteristics, e.g., their size, general degree of connectedness, or any particular trading style. The results are

also robust to the inclusion of year fixed effects (column 3), taking care of variations in annual market returns, and to using year-trader fixed effects (column 4), accounting for changes in a bank's general trading strategy (e.g., deleveraging) and access to information. This also precludes that our results are driven by time-varying characteristics of trading banks that may be correlated with their connections in the syndicated-loan market. Overall, a trader more connected by one standard deviation to the target advisor earns a trading gain of 0.67 EUR on the average daily trades of the target stock (based on column 2).

In contrast, when we include security-date fixed effects in the last column, our key variable of interest, the connection between the trader and the target advisor, is no longer a significant determinant of the price at which the trader acquires target stocks around the announcement date. This evidence supports our interpretation: connected traders only make a trading profit because their private information permits them to acquire stocks before the announcement. When trading on the same day as other traders, the connected traders do not manage to purchase target stocks at a lower price. This also highlights that connected traders are not generally (through their connection to the target advisor) in a position to reap trading gains in target stocks, e.g., by front-running elevated order flow around the announcement.

8 Advisors' Incentives

Reciprocal favors—e.g., in their syndicated-loan business—might be a motive for banks to disclose confidential M&A-related information to their closely connected business partners. However, this reasoning would hold for both acquirer as well as target advisors. Our previous findings suggest, however, that primarily target advisors reveal such private information to connected traders. This raises the question as to whether there are special incentives for target advisors to leak the information of an imminent merger. One reason might be that leaking the private information to connected traders helps to drive up the pre-announcement stock price of the target and, thereby, also the final offer price. Given that target advisors' fee income is typically linked to

the transaction value (see, among others, McLaughlin, 1990), this will boost the target advisors' revenues.

In order to test this hypothesis, we estimate the relationship between the 30-day offer premium and the relative trading volume in the target stocks by banks connected to the target advisor. More precisely, we use the offer premium $Premium_d$ of deal d, defined as

$$Premium_d = \frac{(Initial\,Offer\,Price_{st} - Price_{st-30})}{Price_{st-30}},$$

and regress it on $Informed\,Trading\,Exposure_d$, which is the weighted sum of all of trading bank b's purchases of target stock s within the 30-day window prior to the announcement of deal d ($Trading_{bst}$) relative to the total purchases by any bank of target stock s in this period ($Trading_{st}$) scaled by 1,000 over the market capitalization of stock s. For the weights we use the $Intensity_{aby-1y}$ of the connection between the trader b and the target advisor a, which is defined as the respective trader b's number of joint syndicated loans with the target advisor in the year prior to the announcement (year $y-1$) relative to the total number of syndicated loans granted by the target advisor in the same period:

$$Informed\,Trading\,Exposure_d = \frac{\sum_b \sum_{t\in T(30)} Intensity_{aby-1} \times Trading_{bst}}{\sum_{t\in T(30)} Trading_{st}} \Big/ \frac{1,000}{MarketCap_s}.$$

Since our previous analysis has shown that most of the transactions of informed traders occur 15 days before the announcement (Table 8), we hypothesize that the price 30 days before the announcement is not significantly affected by information leakage. Hence, if the dissemination of private information about an imminent merger indeed drives up the offer price, this should be captured by a higher 30-day offer premium. The sample consists of M&A deals between 2010 and 2016. Descriptive statistics of the main dependent and explanatory variables are shown in Panel D of Table 1. Our sample contains 667 deals, of which 638 are effective while 29 are withdrawn; 43 deals are labeled as competing offers, of which 26 are effective and 17 are withdrawn.

Table 11 summarizes our regression results. Column 1 reveals that without any additional

controls, there is a positive correlation between the offer premium and the transaction volume of traders closely connected to the target advisor. This suggests that, indeed, by disseminating information about an imminent merger to connected traders, the target advisor can help achieve a higher merger premium.

The trading volume of connected traders could also be elevated simply because their are (already) announced competing offers for the target, inducing traders to acquire the stocks of the target without having private information. To control for this, we control for an indicator variable, $Competing\ Offer_d$, which equals one in case we record more than one bid per target security within one year. As can be seen in column 2, our finding is robust to including this control variable.

Our results are also robust to including year fixed effects in column 3. In columns $4-6$, we include more granular fixed effects. While our coefficient of interest becomes insignificant and smaller in size when controlling for time-varying unobserved heterogeneity at the country level (column 4), it increases somewhat when incorporating target-industry by year fixed effets (column 5). This precludes that our results simply reflect merger waves in certain industries. What is more, in column 6, the economic and statistical significance of our estimate increase further after including target advisor by year fixed effects, which attests to the idea that our results are not a mere artefact of certain advisors' gaining market share.

While leaking information about an imminent merger to connected traders might help drive up the offer premium for target shareholders, a higher price prior to the announcement drives up the acquisition costs and, as such, might compromise the chances that a deal is actually closed. This would, in turn, also diminish expected revenues accruing to the target advisor as advisory fees are tend to be conditional on a takeover being successful (McLaughlin, 1990).

To test whether elevated trading activity of traders that are connected to the target advisor reduces the probability that a takeover is successful, we estimate a linear probability model on the sample of all successful and failed bids. For this purpose, we use the same regression specification as before, but replace the dependent variable with an indicator variable for a successful bid.

As the results in Table 12 highlight, greater trading activity by connected and, thus, presumably better informed traders does not lower the chances that an offer becomes effective. On the contrary, a larger transaction volume of connected traders does not only drive up the price prior to the announcement, but it also increases the chances that a deal goes through.

In sum, the evidence supports the view that especially target advisors benefit from leaking information about the imminent merger by driving up the transaction value which is closely linked to the target advisors' fee income. Interestingly, while more trading activities of informed traders do drive up the target stock price prior to the announcement, this does not diminish the chances that the takeover becomes effective, which would also have a negative bearing on the expected revenues of the target advisor. Thus, our findings support the view that the target advisor does, indeed, have an economic incentive to leak information about imminent M&A announcements to connected traders.

9 Conclusion

In this paper, we provide evidence that M&A advisors share private information about imminent mergers to closely connected banks, and that they do so in an incentive-compatible fashion. Advisors only disclose this information to other banks that are important for their syndicated-loan business. Most relevantly, only target, rather than acquirer, advisors share the information with connected banks who purchase additional target stocks before the announcement and, as such, at lower prices. These effects are more emphasized when takeover announcements are associated with higher announcement returns, which is the case when deals are completed faster or are in cash. The additional pre-announcement demand drives up the pre-announcement price and thereby contributes to a higher offer premium without diminishing the probability of a successful takeover bid. Information leakage thus benefits target shareholders and ultimately the target advisor, reflecting the idea that bank networks aid the establishment of mutually beneficial relations.

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Tables

Table 1: **Summary Statistics:** Panel A presents summary statistics at the bank level, for all German banks with a trading book, proprietary trading and syndicated lending. Panel B presents summary statistics at the M&A deal level separately for target (Panel B1) and acquirer deals (Panel B2). Panel C presents summary statistics at the bank-security-day level based on the main sample with 30 days before and after the announcement of a deal. Panel C1 refers to trading in target securities, and Panel C2 refers to trading in acquirer securities. Panel D presents summary statistics for the cross-sectional analyses in Tables 11 and 12.

Panel A: Bank level	mean	sd	p25	p75	*N*
total assets [€ bn.]	81.37	122.10	3.36	115.74	37
capital ratio	.10	.16	.04	.06	37
stock ratio	.05	.07	.01	.06	37
advisor activity (in SDC)	.59	.50	0	1	37

Panel B1: Deal level (Target)	mean	sd	p10	p90	*N*
announcement return	.13	.21	-.02	.34	829
length (effective - announcement)	113.30	93.92	23	231	861
cash structure	.67	.47	0	1	861
stock structure (disjunct)	.11	.31	0	1	861
German deal	.04	.19	0	0	861
U.S. deal	.42	.49	0	1	861
Panel B2: Deal level (Acquirer)	mean	sd	p10	p90	*N*
announcement return	.01	.07	-.05	.07	1,876
length (effective - announcement)	71.95	98.16	0	173	1,971
cash structure	.53	.50	0	1	1,971
stock structure (disjunct)	.06	.24	0	0	1,971
German deal	.03	.18	0	0	1,971
U.S. deal	.45	.50	0	1	1,971

Panel C1: Trading level (Target)	mean	sd	p10	p90	*N*
sgn(log(| net nominal |))	.29	7.44	-9.13	9.21	21,065
BUY (1 if net nominal $>$ 0, else 0)	.49	.50	0	1	21,781
Intensity (Target Adv $\rightarrow Trader$)	.05	.10	0	.15	21,781
Intensity (Acquirer Adv $\rightarrow Trader$)	.04	.10	0	.15	21,781
Intensity (Trader $\rightarrow TargetAdv$)	.07	.13	0	.29	21,781
Intensity (Trader $\rightarrow AcquirerAdv$)	.08	.14	0	.32	21,781
Panel C2: Trading level (Acquirer)	mean	sd	p10	p90	*N*
sgn(log(| net nominal |))	.16	7.19	-8.84	8.93	79,278
BUY (1 if net nominal $>$ 0, else 0)	.48	.50	0	1	81,583
Intensity (Target Adv $\rightarrow Trader$)	.04	.10	0	.14	81,583
Intensity (Acquirer Adv $\rightarrow Trader$)	.03	.09	0	.13	81,583
Intensity (Trader $\rightarrow TargetAdv$)	.05	.11	0	.25	81,583
Intensity (Trader $\rightarrow AcquirerAdv$)	.05	.12	0	.27	81,583

Panel D: Cross Section (Target)	mean	sd	p10	p90	*N*
Dummy Effective	.96	.20	1	1	667
Informed Trading Exposure	1.9	10.91	0	2.97	667
Dummy Competing Offer	.06	.25	0	0	667
Premium [in %]	43.25	33.45	9.61	85.71	638

Table 2: **Effect of Bank Connectedness to Advisor on Stock Trading:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities 30 days before and after an M&A announcement of the given security. $PreAnnouncement30_{st}$ equals 1 for days within 30 days prior to an M&A announcement of security *s*, else 0. $Intensity_{abt-1y}$ in the sense of advisor $a \rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by advisor *a* in the year prior to the deal announcement of security s. The dependent variable is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. Specifications vary by its focus on target stocks (T) [column 1-6]/ acquirer stocks (A) [column 7-8], $Intensity_{abt-1y}$ (type of advisor and direction) and fixed effects. Standard errors are clustered at the bank (trader) and security level.

$sgn(log(\|netnominal\|))_{bst}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$	5.536***	4.972***	5.386***	3.061	5.363**	2.303	0.359	-0.808
	(4.50)	(3.62)	(3.27)	(1.32)	(2.54)	(1.30)	(0.43)	(-0.78)
$Intensity_{abt-1y}$	-1.187	-1.198	1.785	-1.201	0.065	-0.378	0.004	0.503
	(-1.10)	(-1.02)	(1.04)	(-0.56)	(0.04)	(-0.30)	(0.01)	(0.49)
$PreAnnouncement30_{st}$	0.042							
	(0.25)							
N	20,937	13,205	6,141	6,141	6,141	6,141	48,882	48,882
R-squared	0.135	0.262	0.633	0.631	0.632	0.631	0.531	0.531
Trader FE	yes	yes	-	-	-	-	-	-
Security FE	yes	-	-	-	-	-	-	-
Date FE	yes	-	-	-	-	-	-	-
Security-Date FE	-	yes	yes	yes	yes	yes	yes	yes
Trader-Date FE	-	-	yes	yes	yes	yes	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security
target (T)/ acquirer (A) stock	T	T	T	T	T	T	A	A
$Intensity_{abt-1y}$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Acquirer Adv $\rightarrow Trader$	Trader $\rightarrow TargetAdv$	Trader $\rightarrow AcquirerAdv$	Target Adv $\rightarrow Trader$	Acquirer Adv $\rightarrow Trader$

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 3: **Effect of Bank Connectedness to Advisor on Stock Purchases:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities 30 days before and after an M&A announcement of the given security. $PreAnnouncement30_{st}$ equals 1 for days within 30 days prior to an M&A announcement of security *s*, else 0. $Intensity_{abt-1y}$ in the sense of advisor $a \rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by advisor *a* in the year prior to the deal announcement of security s. The dependent variable is BUY_{bst}, which equals 1 for a positive net nominal amount traded by bank *b* in security *s* at date *t* and 0 otherwise. Specifications vary by its focus on target stocks (T) [column 1-6]/ acquirer stocks (A) [column 7-8], $Intensity_{abt-1y}$ (type of advisor and direction) and fixed effects. Standard errors are clustered at the bank (trader) and security level.

BUY_{bst} (1 if net nominal >0, else 0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$	0.369***	0.312***	0.258**	0.172	0.289**	0.066	0.014	-0.021
	(4.86)	(3.70)	(2.63)	(1.09)	(2.64)	(0.64)	(0.28)	(-0.29)
$Intensity_{abt-1y}$	-0.094	-0.078	0.148	-0.001	0.016	0.045	-0.023	0.028
	(-1.31)	(-1.02)	(1.30)	(-0.01)	(0.17)	(0.59)	(-0.59)	(0.54)
$PreAnnouncement30_{st}$	-0.011							
	(-0.99)							
N	21,658	13,737	6,615	6,615	6,615	6,615	50,994	50,994
R-squared	0.143	0.284	0.646	0.645	0.646	0.645	0.538	0.538
Trader FE	yes	yes	-	-	-	-	-	-
Security FE	yes	-	-	-	-	-	-	-
Date FE	yes	-	-	-	-	-	-	-
Security-Date FE	-	yes	yes	yes	yes	yes	yes	yes
Trader-Date FE	-	-	yes	yes	yes	yes	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security
target (T)/ acquirer (A) stock	T	T	T	T	T	T	A	A
$Intensity_{abt-1y}$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Acquirer Adv $\rightarrow Trader$	Trader $\rightarrow TargetAdv$	Trader $\rightarrow AcquirerAdv$	Target Adv $\rightarrow Trader$	Acquirer Adv $\rightarrow Trader$

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 4: **Effect of Bank Connectedness to Target vs. Acquirer Advisor on Stock Trading:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities 30 days before and after an M&A announcement of the given security. $PreAnnouncement30_{st}$ equals 1 for days within 30 days prior to an M&A announcement of security *s*, else 0. $Intensity_{abt-1y}$ in the sense of (target/ acquirer) advisor $a \rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by (target/ acquirer) advisor *a* in the year prior to the deal announcement of security s. The dependent variable in column 1-2 is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. For column 3-4 the dependent variable is BUY_{bst}, which equals 1 for a positive net nominal amount traded by bank *b* in security *s* at date *t* and 0 otherwise. Specifications vary by its focus on target stocks (T) [column 1 and 3]/ acquirer stocks (A) [column 2 and 4] and fixed effects. Standard errors are clustered at the bank (trader) and security level.

$sgn(log(\|netnominal\|))_{bst}$ [1-2] and BUY_{bst} [3-4]	(1)	(2)	(3)	(4)
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$ (Target Adv $\rightarrow Trader$)	6.204***	0.768	0.317**	0.045
	(3.08)	(0.83)	(2.69)	(0.87)
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$ (Acquirer Adv $\rightarrow Trader$)	-1.658	-1.170	-0.065	-0.043
	(-0.68)	(-1.01)	(-0.34)	(-0.63)
$Intensity_{abt-1y}$ (Target Adv $\rightarrow Trader$)	1.405	-0.202	0.200	-0.027
	(0.80)	(-0.26)	(1.69)	(-0.63)
$Intensity_{abt-1y}$ (Acquirer Adv $\rightarrow Trader$)	1.066	0.668	0.140	0.038
	(0.54)	(0.63)	(1.16)	(0.60)
N	6,141	48,882	6,367	49,587
R-squared	0.633	0.531	0.649	0.535
Security-Date FE	yes	yes	yes	yes
Trader-Date FE	yes	yes	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security
target (T)/ acquirer (A) stock	T	A	T	A

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 5: **Effect of Bank Connectedness to Advisor on Stock Trading—Robustness:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample in column 1-2 and 5-11 contains trading in securities 30 days before and after an M&A announcement of the given security. In column 2 German deals are excluded. In column 3-4 the sample takes trading in all securities into account by replacing missing intensities with 0 (filled sample). The table focuses on trading in target stocks. $PreAnnouncement30_{st}$ equals 1 for days within 30 days prior to an M&A announcement of security *s*, else 0. $Intensity_{abt-1y}$ in the sense of advisor *a* $\rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by advisor *a* in the year prior to the deal announcement of security s. Intensity *trader* is the maximum of trader $\rightarrow$ target advisor and trader $\rightarrow$ acquirer advisor. Intensity *advisor* is the maximum of target advisor $\rightarrow$ trader and acquirer advisor $\rightarrow$ trader. Intensity *target (acquirer)* is the maximum of target (acquirer) advisor $\rightarrow$ trader and trader $\rightarrow$ target (acquirer) advisor. Intensity *overall* is the maximum intensity between trader and advisor, irrespective of direction and type of advisor. The relevant period for the calculation always refers to the year prior to the deal announcement. The dependent variable is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. Specifications vary by $Intensity_{abt-1y}$ (type of advisor and direction) and fixed effects. Standard errors are clustered at the bank (trader) and security level.

$sgn(log(\|netnominal\|))_{bst}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$	10.454***	6.589*	4.770***	4.050***	14.829***	31.175**	3.111**	4.645***	1.190	4.521**	3.759**
	(3.22)	(1.97)	(3.21)	(2.88)	(2.85)	(3.04)	(2.21)	(3.17)	(0.85)	(2.42)	(2.20)
$Intensity_{abt-1y}$	3.572	1.699	-2.780**	-1.610	-5.990*	-25.947**	0.895	1.688	0.236	1.547	-0.758
	(0.16)	(0.53)	(-2.33)	(-1.34)	(-2.02)	(-2.67)	(0.61)	(1.09)	(0.19)	(0.89)	(-0.60)
N	6,141	2,840	7,064,681	7,035,796	5,749	432	6,141	6,141	6,141	6,141	6,141
R-squared	0.698	0.696	0.293	0.310	0.696	0.679	0.632	0.633	0.631	0.632	0.632
Trader-Date FE	yes	yes	yes	yes	yes	-	yes	yes	yes	yes	yes
Trader-Industry-PreAnnouncement FE	-	-	-	-	yes	-	-	-	-	-	-
Trader-Industry-Date FE	-	-	-	-	-	yes	-	-	-	-	-
Security-Date FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Trader-Advisor FE	yes	-	-	-	-	-	-	-	-	-	-
Trader-Security FE	-	-	-	yes	-	-	-	-	-	-	-
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security
Sample adjustment	-	DE deals excluded	filled	filled	-	-	-	-	-	-	-
$Intensity_{abt-1y}$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	Target Adv $\rightarrow Trader$	overall	target	acquirer	advisor	trader

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 6: **Effect of Bank Connectedness to Advisor on Stock Trading—Deal Heterogeneity:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities 30 days before and after an M&A announcement of the given security. The table focuses on trading in target stocks. $PreAnnouncement30_{st}$ equals 1 for days within 30 days prior to an M&A announcement of security *s*, else 0. $Intensity_{abt-1y}$ in the sense of target advisor $a \rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by target advisor *a* in the year prior to the deal announcement of security s ($TargetAdv \rightarrow Trader$). The dependent variable is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. Deal heterogeneity is characterised by return (column 1-2), length (column 3-4) and structure (column 5-6). Return refers to the announcement return and is split by the median into high (1) and low return (2). Length refers to the period between effective and announcement date and is split by 120 days (3, 4). In column 5, only deals with cash components in the consideration structure are taken into account, whereas (6) only considers the categories 'stock only' and 'choice between type of shares/ stocks'. Standard errors are clustered at the bank (trader) and security level.

	high return	low return	length ≤ 120	length > 120	cash structure	stock structure
$sgn(log(\|netnominal\|))_{bst}$	(1)	(2)	(3)	(4)	(5)	(6)
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$	5.918***	3.743	7.725**	-0.837	7.162***	-2.569
	(3.11)	(0.71)	(2.48)	(-0.16)	(4.38)	(-0.65)
$Intensity_{abt-1y}$	2.775	4.454	2.849	-4.741	-0.983	6.867
	(0.55)	(0.92)	(0.68)	(-0.81)	(-0.53)	(1.37)
N	1,775	2,070	2,266	857	8,310	1,151
R-squared	0.691	0.659	0.631	0.721	0.269	0.379
Security-Date FE	yes	yes	yes	yes	yes	yes
Trader-Date FE	yes	yes	yes	yes	-	-
Trader FE	-	-	-	-	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 7: **Effect of Bank Connectedness to Advisor on Stock Trading—Timing:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities X days before and after an M&A announcement of the given security. The table focuses on trading in target stocks. $PreAnnouncementX_{st}$ equals 1 for days within X days prior to an M&A announcement of security *s*, else 0. Where X equals 15 days in column 1 and 6, 30 days in column 2 and 7, 60 days in column 3 and 8 and 100 days in column 4 and 8. Time period definitions used in column 5 and 10 are disjunct. $Intensity_{abt-1y}$ in the sense of target advisor $a \rightarrow$ bank (trader) b is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by target advisor *a* in the year prior to the deal announcement of security s ($TargetAdv \rightarrow Trader$). The dependent variable in column 1-5 is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. For column 6-10 the dependent variable is BUY_{bst}, which equals 1 for a positive net nominal amount traded by bank *b* in security *s* at date *t* and 0 otherwise. Standard errors are clustered at the bank (trader) and security level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$sgn(log(\|netnominal\|))_{bst}$					BUY_{bst}				
$PreAnnouncement15_{st}$ * $Intensity_{abt-1y}$	11.891***					0.572**				
	(2.95)					(2.37)				
$PreAnnouncement30_{st}$ * $Intensity_{abt-1y}$		5.386***					0.252***			
		(3.26)					(3.01)			
$PreAnnouncement60_{st}$ * $Intensity_{abt-1y}$			3.420***					0.239***		
			(2.94)					(3.37)		
$PreAnnouncement100_{st}$ * $Intensity_{abt-1y}$				2.587**					0.146**	
				(2.41)					(2.19)	
$PreAnnouncement15_{st}$ * $Intensity_{abt-1y}$					5.643***					0.281**
					(3.14)					(2.43)
$PreAnnouncement30_{st}$ (disjunct) * $Intensity_{abt-1y}$					4.363*					0.355**
					(1.75)					(2.44)
$PreAnnouncement60_{st}$ (disjunct) * $Intensity_{abt-1y}$					1.766					0.100
					(1.04)					(1.09)
$PreAnnouncement100_{st}$ (disjunct) * $Intensity_{abt-1y}$					1.060					0.032
					(0.62)					(0.34)
$Intensity_{abt-1y}$	-3.545	1.785	1.067	-1.131	-1.159	-0.246	0.239**	0.063	-0.054	-0.057
	(-1.03)	(1.03)	(0.82)	(-0.93)	(-0.95)	(-0.94)	(2.35)	(0.78)	(-0.78)	(-0.83)
N	2,300	6,141	13,784	22,018	22,018	2,380	6,367	14,178	22,535	22,535
R-squared	0.699	0.633	0.597	0.575	0.575	0.700	0.648	0.604	0.581	0.581
Trader-Date FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Security-Date FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 8: **Effect of Bank Connectedness to Advisor on Stock Trading—Timing and Discrete Intensity:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities *X* days before and after an M&A announcement of the given security. The table focuses on trading in target stocks. $PreAnnouncementX_{st}$ equals 1 for days within *X* days prior to an M&A announcement of security *s*, else 0. Where *X* equals 15 days in column 1 and 6, 30 days in column 2 and 7, 60 days in column 3 and 8 and 100 days in column 4 and 8. Time period definitions used in column 5 and 10 are disjunct. $Relationship_{abt-1y}$ equals 1 if $Intensity_{abt-1y} >$ zero, where $Intensity_{abt-1y}$ in the sense of target advisor $a \rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by target advisor *a* in the year prior to the deal announcement of security s ($TargetAdv \rightarrow Trader$). The dependent variable in column 1-5 is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. For column 6-10 the dependent variable is BUY_{bst}, which equals 1 for a positive net nominal amount traded by bank *b* in security *s* at date *t* and 0 otherwise. Standard errors are clustered at the bank (trader) and security level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	$sgn(log(\|netnominal\|))_{bst}$					BUY_{bst}				
$PreAnnouncement15_{st}$ * $Relationship_{abt-1y}$	2.433**					0.150**				
	(2.36)					(2.59)				
$PreAnnouncement30_{st}$ * $Relationship_{abt-1y}$		0.799					0.040			
		(1.53)					(1.26)			
$PreAnnouncement60_{st}$ * $Relationship_{abt-1y}$			0.335					0.041**		
			(1.09)					(2.16)		
$PreAnnouncement100_{st}$ * $Relationship_{abt-1y}$				0.160					0.014	
				(0.49)					(0.74)	
$PreAnnouncement15_{st}$ * $Relationship_{abt-1y}$					0.757*					0.041
					(1.86)					(1.42)
$PreAnnouncement30_{st}$ (disjunct) * $Relationship_{abt-1y}$					0.145					0.013
					(0.35)					(0.41)
$PreAnnouncement60_{st}$ (disjunct) * $Relationship_{abt-1y}$					0.080					0.026
					(0.14)					(0.87)
$PreAnnouncement100_{st}$ (disjunct) * $Relationship_{abt-1y}$					0.006					-0.005
					(0.01)					(-0.18)
$Relationship_{abt-1y}$	-0.265	0.827*	0.621**	0.430	0.426	-0.035	0.052*	0.027	0.018	0.018
	(-0.31)	(1.73)	(2.28)	(1.45)	(1.44)	(-0.77)	(1.91)	(1.68)	(1.09)	(1.07)
N	2,300	6,141	15,161	28,289	28,289	2,380	6,367	15,571	28,943	28,943
R-squared	0.699	0.632	0.590	0.553	0.553	0.700	0.648	0.596	0.562	0.562
Trader-Date FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Security-Date FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 9: **Trading by Advisors:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains trading in securities 30 days before and after an M&A announcement of the given security (column 1-4). In addition the sample in column 5-8 excludes observations by non-advisors with intensity $>$ zero. $PreAnnouncement30_{st}$ equals 1 for days within 30 days prior to an M&A announcement of security *s*, else 0. $TraderIsAdvisor_{bst}$ equals 1 if trader *b* is advisor of a deal in security *s*, else 0. We differentiate between trader being target or acquirer advisor. The dependent variable is $sgn(log(|netnominal|))_{bst}$. For the net nominal being positive it is calculated as the logarithm of net nominal traded by bank *b* in security *s* at date *t*. For negative net nominal amounts, the logarithm is calculated for its absolute value and then multiplied by -1. Specifications vary by its focus on target stocks (T) [column 1-2 and 5-6]/ acquirer stocks (A) [column 3-4 and 7-8]. Standard errors are clustered at the bank (trader) and security level.

$sgn(log(\|netnominal\|))_{bst}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PreAnnouncement30_{st} * TraderIsAdvisor_{bst}$	-3.344***	2.387	-1.598	-1.297	-3.492	-5.854	-1.704	-1.338
	(-4.51)	(1.23)	(-0.47)	(-0.85)	(-1.21)	(-0.82)	(-0.44)	(-0.85)
$TraderIsAdvisor_{bst}$	0.936*	-0.793	1.658	-1.150	4.072***	9.227***	0.906	-1.617*
	(1.81)	(-1.15)	(1.37)	(-1.30)	(3.08)	(2.87)	(0.61)	(-1.83)
N	6,496	6,496	49,675	49,675	3,479	3,479	39,553	39,553
R-squared	0.625	0.625	0.527	0.527	0.633	0.633	0.549	0.550
Trader-Date FE	yes	yes	yes	yes	yes	yes	yes	yes
Security-Date FE	yes	yes	yes	yes	yes	yes	yes	yes
SE Cluster	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security	Trader, Security
Sample adjustment	-	-	-	-	non-advisor with intensity $>$ 0 excluded			
target (T)/ acquirer (A) stock	T	T	A	A	T	T	A	A
$TraderIsAdvisor_{bst}$	Target Adv.	Acquirer Adv.	Target Adv.	Acquirer Adv.	Target Adv.	Acquirer Adv.	Target Adv.	Acquirer Adv.

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 10: **Effect of Bank Connectedness to Advisor Stock Prices Paid:** The sample is a panel at the bank (trader) - security - date level *bst* from 2010 to 2016, i.e., security *s* traded by bank *b* at date *t* with daily frequency. The sample contains purchase transactions in securities 30 days before and after an M&A announcement of the given security. The table focuses on trading in target stocks. $Intensity_{abt-1y}$ in the sense of advisor *a* $\rightarrow$ bank (trader) *b* is calculated as number of joint syndicated loans by *a* and *b* relative to the number of syndicated loans by advisor *a* in the year prior to the deal announcement of security s ($TargetAdv \rightarrow Trader$). The dependent variable $price(vol.wgt.)_{bst}$ is the volume-weighted price paid by the trader *b* for a given security *s* at date *t*. Specifications vary by fixed effects. Standard errors are clustered at the bank (trader) and security level.

$price(vol.wgt.)_{bst}$	(1)	(2)	(3)	(4)	(5)
$Intensity_{abt-1y}$	-4.001**	-6.718**	-1.290*	-1.400*	0.545
	(-2.17)	(-2.06)	(-1.78)	(-1.85)	(0.90)
N	15,865	15,865	15,865	15,853	9,322
R-squared	0.914	0.917	0.918	0.942	0.938
Security FE	yes	yes	yes	yes	-
Trader FE	-	yes	yes	-	-
Year FE	-	-	yes	-	-
Trader-Year FE	-	-	-	yes	yes
Security-Date FE	-	-	-	-	yes
Controls	*log nominal* and *number of trades*				
SE Cluster	Trader, Security				

*** p<0.01, ** p<0.05, * p<0.1
(t-statistics in parentheses)

Table 11: **Effect of Informed Trading on Offer Premia:** The level of observation is the deal level d. The sample contains effective M&A deals between 2010 and 2016. The dependent variable $Premium_d$ is the acquisition premium of a deal and defined as $(InitialOfferPrice_{st}\text{-}Price_{st-30})/Price_{st-30}$. We use connected trading 30 days before the deal is announced to construct the explanatory variable $InformedTrading\,Exposure_d$, an intensity-weighted exposure measure to informed trading (winsorized at the 1st and 99th percentile, and scaled by 1,000 over the market capitalization of stock s): $\sum_s \sum_{t\in T(30)} Intensity_{abt-1y} \times Trading_{bst} / \sum_{t\in T(30)} Trading_{st}$. $Intensity_{abt-1y}$ in the sense of target advisor $a \rightarrow$ bank (trader) b is calculated as number of joint syndicated loans by a and b relative to the number of syndicated loans by target advisor a in the year prior to the deal announcement of security s ($TargetAdv \rightarrow Trader$). $Trading_{bst}$ captures all of trading bank b's purchases of target stock s at date t, and $Trading_{st}$ denotes total purchases by any bank of target stock s at date t. $Competing\,Offer_d$ is a dummy variable that equals 1 if there exist multiple deals for the respective target of deal d within one year and 0 otherwise.

$Premium_d$	(1)	(2)	(3)	(4)	(5)	(6)
$InformedTrading\,Exposure_d$	0.364***	0.363***	0.306***	0.116	0.339***	0.415***
	(4.89)	(4.88)	(4.04)	(1.05)	(3.62)	(3.51)
$Competing\,Offer_d$		-8.564	-8.318	-15.155***	-11.493	-15.067**
		(-1.14)	(-1.11)	(-3.37)	(-1.28)	(-2.03)
N	638	638	638	591	542	445
R-squared	0.015	0.017	0.050	0.188	0.274	0.261
FE	no	no	Year	Year*Country(T)	Year*Industry(T)	Year*Advisor(T)
Deals				Effective		
Cluster				Security		

*** p<0.01, ** p<0.05, * p<0.1
(Robust t-statistics in parentheses)

Table 12: **Effect of Informed Trading on Success of Takeover Bids:** The level of observation is the deal level d. The sample contains effective and withdrawn M&A deals between 2010 and 2016. The dependent variable $Effective_d$ is a dummy variable that equals 1 in case of an effective deal and 0 otherwise. We use connected trading 30 days before the deal is announced to construct the explanatory variable $Informed Trading Exposure_d$, an intensity-weighted exposure measure to informed trading (winsorized at the 1st and 99th percentile, and scaled by 1,000 over the market capitalization of stock s): $\sum_s \sum_{t \in T(30)} Intensity_{abt-1y} \times Trading_{bst} / \sum_{t \in T(30)} Trading_{st}$. $Intensity_{abt-1y}$ in the sense of target advisor $a \rightarrow$ bank (trader) b is calculated as number of joint syndicated loans by a and b relative to the number of syndicated loans by target advisor a in the year prior to the deal announcement of security s ($TargetAdv \rightarrow Trader$). $Trading_{bst}$ captures all of trading bank b's purchases of target stock s at date t, and $Trading_{st}$ denotes total purchases by any bank of target stock s at date t. $Competing Offer_d$ is a dummy variable that equals 1 if there exist multiple deals for the respective target of deal d within one year and 0 otherwise.

$Effective_d$	(1)	(2)	(3)	(4)	(5)	(6)
$Informed Trading Exposure_d$	0.001**	0.001*	0.001**	0.001*	0.001*	0.004***
	(2.50)	(1.92)	(2.54)	(1.96)	(1.81)	(3.31)
$Competing Offer_d$		-0.376***	-0.361***	-0.376***	-0.356***	-0.263***
		(-6.31)	(-6.50)	(-5.87)	(-7.16)	(-3.19)
N	667	667	667	623	567	462
R-squared	0.001	0.206	0.236	0.273	0.385	0.595
FE	no	no	Year	Year*Country(T)	Year*Industry(T)	Year*Advisor(T)
Deals				Effective and Withdrawn		
Cluster				Security		

*** p<0.01, ** p<0.05, * p<0.1
(Robust t-statistics in parentheses)