

Bank Debt and Corporate Governance

Victoria Ivashina

Harvard University

Vinay B. Nair

Wharton School, University of Pennsylvania

Anthony Saunders

Leonard N. Stern School of Business, New York University

Nadia Massoud

Schulich School of Business, York University

Roger Stover

Iowa State University

In this paper, we investigate the disciplining role of banks and bank debt in the market for corporate control. We find that relationship bank lending intensity and bank client network have positive effects on the probability of a borrowing firm becoming a target. This effect is enhanced in cases where the target and acquirer have a relationship with the same bank. Moreover, we utilize an experiment to show that the effects of relationship bank lending intensity on takeover probability are not driven by endogeneity. Finally, we also investigate reasons motivating a bank's informational role in the market for corporate control. (*JEL* G10, G20, G21, G34)

As is well known, there is a long literature dating back to Fama (1985) and James (1987) that views banks as “insiders” to a firm. Specifically, in their role as suppliers of private debt (bank loans), they gather information that may well be unavailable to outside investors. Such information collection places them in the position of acting as firm monitors.¹ Banks, however, not only gather information but may also facilitate the transmission of this private information to potential acquirers. An example of such a private information transfer can

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¹ Thus, a large number of studies have shown that bank loan announcements of loan renewals are taken as positive signals by investors in the capital markets and *vice versa* for loan sales (see, e.g., Dahiya, Puri, and Saunders, 2003).

be found in the litigation between Dana Corporation and its lender UBS. In the course of Dana's banking relationship, UBS was given "substantial amounts of confidential information about Dana, its financial condition, its business plan and prospects, its competitive posture, its trade secrets, and its potential liabilities."² Dana claimed that UBS passed this information to a potential acquirer (Arvin Meritor Inc.) to facilitate a takeover attempt.

In this paper, we investigate whether the information transmission role of banks has an important effect in the market for corporate control.³ Unlike most of the recent corporate governance literature that views governance emanating from equity holders such as institutional investors, we examine the corporate governance role of private debt (in this case, bank debt). In particular, we examine the role of bank loans and their associated information production role in impacting the takeover probability of firms.⁴ In using a sample of merger targets over the 1992–2005 period, we document several findings consistent with a positive information-based corporate governance role of banks in impacting the probability of corporate takeovers.

First, we find that greater bank lending intensity to a firm results in a higher likelihood that it will receive a takeover bid. Second, we find that those (target) firms having lending relationships with banks that have more clients in the same industry are more likely to be subject to a takeover attempt.⁵ Third, we find that the role of bank lending intensity in predicting takeover attempts is stronger for those takeovers in which the target and acquirer have a relationship *with the same bank*. These results are robust to the inclusion of several controls shown to be important in predicting takeover targets (see, e.g., Palepu, 1986; Mikkelsen and Partch, 1989; and Ambrose and Megginson, 1992 among others). Fourth, we conduct an experiment that is likely to be free of endogeneity problems; specifically, we analyze the bidding behavior of potential acquirers that switch relationship banks. Since switching is likely to be for reasons other than targeting a particular firm, it allows us to examine whether postswitching a potential acquirer has a higher probability of bidding for a client (target) of its new relationship bank. Evidence supporting this effect will be consistent with an

² *Dana Corporation v. UBS Securities LLC, SEC file 5-10058.*

³ Easterbrook and Fischel (1991) and Jensen (1993) argue that takeovers constitute the critical mechanism in the United States and the U.K. without which managerial discretion cannot be controlled. Gompers, Ishii, and Metrick (2003) and Cremers, Nair, and John (2005) show a significant link between firm value, equity returns, and takeover vulnerability. The information we have in mind not only reflects the soft information that comes from close banking relationships (e.g., Stein, 2002; and Kano et al., 2006) but also private and early access to information that will eventually become public (e.g., banks often have access to firm cash-flow data on an interim period) (see Udell, 2004), as well as on business plans. Further, banks gain access to valuable information in their ability to monitor the size and variability of a firm's transaction accounts held at the bank (see Mester, Nakamura, and Renault, 2007).

⁴ In a recent paper, Santos and Rumble (2006) look at the role banks play via trust department equity holdings to gain access to corporate boards of directors (after controlling for the importance of bank lending). The role of banks in the collection and transfer of information in the context of small business is discussed in Berger, Klapper, and Udell (2001) among others.

⁵ We focus on clients in the same industry since it is in these cases where relationships that generate potential acquirers are most likely to be important.

informational role played by banks in the market for corporate control. Importantly, we find that firms with the characteristics of potential acquirers who switch to a new relationship bank are more likely to enter a bid for the clients of that new relationship bank.

Overall, our evidence is consistent with a role for banks in facilitating takeovers through information production via bank lending and the transmission of generated information to potential acquirers.⁶ A question naturally arises as to why banks would actively engage in the transmission of information regarding client targets to potential acquirers. There are at least three plausible reasons. The first is to generate takeover advisory fees. The second is to generate additional loan and relationship-based revenues through a financing role in the takeover. The third is to reduce the bank's exposure to default risk by transferring debt from *ex ante* weak borrowers to *ex ante* strong borrowers.⁷ These alternative motivational factors are analyzed in the final section of the paper. While we do not find evidence supporting the first two motives, it does appear that banks seek to transfer debt from *ex ante* weak borrowers to *ex ante* strong borrowers.

This documented "information intermediary" role of banks is not without controversy. Indeed, as noted above in the Dana example, there have been recent lawsuits in which target firms (or potential target firms) have sued their own bank over the transfer of "private" information regarding the firm to an outside acquirer. Since regulation does not prohibit commercial banks from providing M&A advisory services, nor is there a law against a bank "switching sides" and acting against its client in the role of advisor to a bidder, the courts have tended to look at case law to assess the merits of such complaints. The case filed by security systems company ADT Ltd against its long-time lender Chase Manhattan Corp in February 1997 received particular attention. ADT claimed Chase's managing directors repeatedly promised not to assist in any attempt to takeover the company. In that sense, this legal case was expected to set a precedent on lenders "duty of loyalty" to their borrowers.⁸ At the time of the filing of the complaint, ADT had \$1.1 billion in debt outstanding that it would have been forced to repay immediately if it lost the case. This included a repayment of its loans to Chase. Four months after the case filing, the court dismissed most of ADT's claims ruling that "a bank has no per se

⁶ Our findings add to the literature on predicting takeover targets following Palepu (1986); Stulz (1988); Mikkelsen and Partch (1989); and Ambrose and Meggison (1992). We find that in addition to factors such as leverage, industry, asset structure, and firm value, bank lending intensity as well as the presence of external blockholders is important in predicting takeover targets.

⁷ Note that the motive is to transfer debt from a bad debtor to a good debtor and not simply to transfer bad debt. In the former case, debt improves in quality simply because of the transfer (e.g., due to better management) while the latter view considers debt quality fixed. If the quality of debt cannot be changed, then it is not clear why an acquirer would be willing to purchase a firm with troubled debt.

⁸ *The Wall Street Journal*, February 11, 1997, "ADT sues Chase for aiding bidder seeking takeover"; *Bank Loan Report*, February 24, 1997, "ADT sues Chase over Western Resources Financing."

obligation to refrain from such participation, and that plaintiff has not pleaded the existence of a fiduciary relationship which might give rise to such an obligation.”⁹

Even though the ADT ruling has reduced the number of similar pleadings, there are other cases relating to similar issues involving banks both in the United States and abroad. Most of this centers on the supposed disclosure of confidential loan information. For example, in 1999, Mannesmann, the German telecommunications company, which was the target of an unsolicited takeover bid by Vodafone, sued Vodafone’s adviser Goldman Sachs arguing that Goldman used private information generated through a prior lending relationship without Mannesmann’s consent. A British court later dismissed the case calling it “hopeless.” For similar reasons, in 2000, Dime Bancorp sued Salomon Smith Barney on the grounds that it acted as an adviser to North Fork Bancorp in its unsolicited takeover attempt; this case was also dismissed. More recently, in August 2003, auto-parts maker Dana Corporation argued that UBS, which had a prior lending relationship with the company, used confidential information to help its rival Arvin Meritor Inc. to launch a \$2.2 billion unsolicited bid.¹⁰ This last case is still undetermined. The question thus arises as to whether these complaints are founded or are they just part of a target’s effort to thwart a takeover? Overall, it appears that the courts are seeking to make a legal distinction between the use of information generated in the course of a banking relationship and the use of information disclosed under a confidentiality agreement, the breach of which, if proven in Court, would be considered a breach of fiduciary duty. Clearly, where the line is drawn is fuzzy and the courts have so far appeared to side with the first view.¹¹

We proceed by outlining a simple framework to specify our hypotheses in Section 1. In Section 2, we discuss the data sources for our study, in particular the source of our takeover and loan data and the measurement of key variables. Using a sample of Compustat companies, Section 3 examines the impact of bank lending intensity and bank client networks on the probability of a takeover attempt occurring, using control variables from the existing literature on takeover activity in general. In that section, we also present a variety of robustness checks including controlling for equity-side corporate governance mechanisms and an experiment that looks at how the effect of a potential acquirer switching its relationship bank affects the probability of targeting a client of its new relationship bank. Section 4 looks at the motives for banks playing an informational role in the takeover market. Finally, Section 5 concludes.

⁹ *ADT Operations, Inc. v. Chase Manhattan Bank*, N.A. 662 N.Y.S. 2d 190 (1997).

¹⁰ *The New York Times*, August 5, 2003, “Auto part manufacturer sues banker of an unwanted suitor.”

¹¹ We thank William Allen, former Chancellor of the Delaware Court, for discussions and insights relating to the legal issues involved.

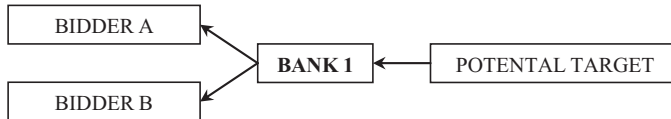
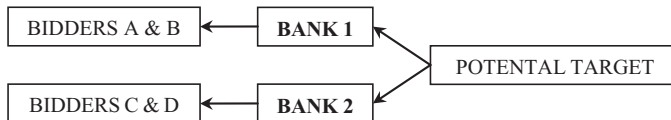
Banks as information intermediaries*Panel A:**Panel B:**B.1**B.2*

Figure 1
Banks as information intermediaries

1. Banks as Information Intermediaries

In this section, we specify our hypotheses that, if supported, would be consistent with the view that banks act not only as information collectors and monitors but also as information transmitters in the market for corporate control. If these hypotheses are left unsupported, then this latter role of information transmission is unlikely to be important in affecting the takeover mechanism.

Figure 1 (panel A) depicts the information intermediary role that a main or relationship bank plays among firms in the takeover market. The bank shown (Bank 1) has one borrower and can transfer information about one firm (potential target) to another (Bidder A); the motivations for this, such as credit risk reduction, merger fee generation, and finance fee generation are analyzed later in the paper. More generally, since a bank has lending relationships with many firms, it can transfer information about any borrowing firm to a number of potential acquirers. Importantly, the more intensive the bank-borrower relationship, the more information about the borrower that can be generated and transferred to potential acquirers, that is, the more extensive a bank's information set is, the greater is the likelihood that an acquirer will appear. Our first hypothesis is then

Hypothesis 1. *Greater lending intensity by its relationship bank increases the probability of a borrower being a takeover target.*

If banks' act as information intermediaries and actively transfer information to potential acquirers, then a firm is more likely to be a target if it deals with a relationship bank that has many borrowing clients and hence many lending relationships. In Figure 1 (panel B.1), for example, if the relationship bank deals with both firms A and B, there is an additional potential acquirer and hence a greater likelihood of being taken over. This is particularly so if firms A and B are in the same industry as the potential target. Similarly (panel B.2), the pool of potential acquirers is likely to be greater when the target firm deals with more than one relationship bank (Banks 1 and 2 in Figure 1), each with its own client base. Since a greater pool of potential acquirers is likely to increase the chance of a bid, we hypothesize that

Hypothesis 2. *The larger the number of firms (client base) that the target relationship bank(s) deals with, the greater is the associated probability of being a takeover target.*

If a bank acts as an information intermediary, it is also more likely that the acquirer will appear from among the bank's own clients. Thus, we would expect to see a higher takeover probability when the acquirer and the target have a relationship with *the same relationship bank*. More importantly, in such takeovers, the predictive role of bank lending intensity would also be expected to be stronger, which leads us to our third hypothesis:

Hypothesis 3. *The importance of relationship bank lending intensity in predicting takeovers is higher for takeovers where the acquirer and the target share a relationship with the same bank.*

While confirming Hypotheses 1, 2, and 3 would provide evidence consistent with a bank's informational role in takeovers, they do not establish a clear *causal* relationship or link between bank information and the probability of an acquirer pursuing a particular target. In Hypothesis 4, we explore further banks' informational role in takeovers by constructing an experiment in which a potential acquirer (a firm matched by size and industry) switches its relationship bank and test whether *following the switch*, a potential acquirer is more likely to bid on a target that is a client of the new relationship bank (see Figure 2).¹² Since acquirers that switch banks are likely to do so for reasons *other than acquisition of a particular target*, we can view the decision (by a potential acquirer) to switch as *independent* of the decision to bid on a particular target. A switch represents an exogenous shift in the private information about a potential target that an acquirer could receive from its relationship bank. Thus, a finding that a potential acquirer, after switching to a new relationship bank, has a higher probability of acquiring potential client firms of its new relationship bank would be consistent with a causal link between bank

¹² A number of issues arise as to the degree to which this test of Hypothesis 4 is a "natural experiment." We examine this when we discuss our results of Hypothesis 4 later in the paper in Section 3.4.

Causality test: Switch of the relationship bank for acquirer

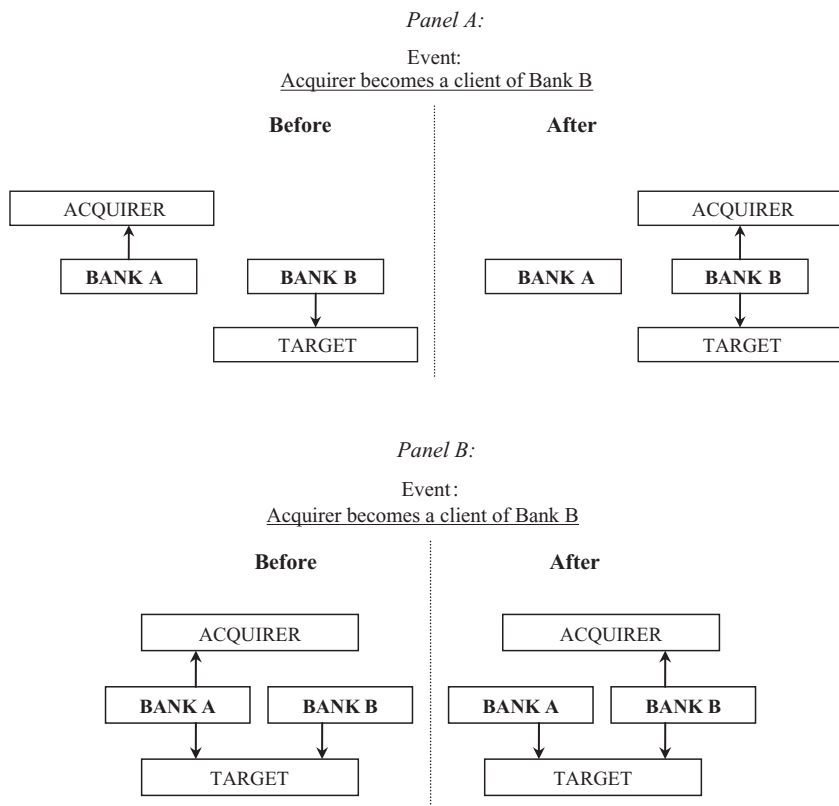


Figure 2
Causality test: switch of the relationship bank for acquirer

information production and the probability of a takeover. This leads to our fourth hypothesis:

Hypothesis 4. *A firm that switches relationship banks is more likely to acquire a client firm of its new relationship bank.*

2. Data and Methodology

2.1 Takeovers

A crucial issue is defining the set of takeovers relevant to our tests. In particular, hostile takeovers are most likely to reflect the type of information transfers that are of interest here. However, linking theory to the data is a little more difficult; specifically, in defining our sample of hostile takeovers, we use the SDC definition and data. In using SDC, we felt that there might be a “gray” area

that was worth exploring given our hypotheses that relate to private information transfers from a bank to potential acquirers. The gray area arises because of the difference between deal attitudes when initiated and when announced; SDC codes deal with attitude based on the *announcement* of the deal while we are interested in the *initiation*. There is a mismatch between these two because, in general, the deal could be initiated by the acquirer, the target, or the bank. Ideally, we would be interested in deals initiated by the bank and the acquirer; however, the “deal attitude” identified by the SDC often does not allow us to detect these deals in a precise manner. It is true that if the deal is initiated by the target, it is unambiguously classified as friendly. Yet if initiated by the acquirer, the deal could be classified as hostile (where the target resists), unsolicited, or even friendly since the first approach might then lead to friendly negotiations (this is consistent with Boone and Mulherin’s (2006) description of how deal activity evolves preannouncement).¹³ Similar possibilities exist for deals where the bank acts as the matchmaker. Further, based on our hypotheses, we might expect lesser resistance from weaker targets to acquirers (due to bank pressure) making the “deal attitude” variable in SDC somewhat noisy for our purposes. Thus, in our tables and hypothesis tests, we report the results for *both* the total and hostile takeover samples.¹⁴

To examine the impact of bank information transmission on takeovers, we employ a number of datasets, specifically focusing our tests on the acquisition activity of firms in the Compustat database over the 1992–2005 period. A full description of our data can be found in the Appendix, where the key variables employed in our (logit) tests are fully described. In addition, in Table 1 we present descriptive statistics and correlations for each explanatory variable.

2.2 Bank loans

To generate data on bank lenders and loans, we use the Loan Pricing Corporation’s (LPC) DealScan database for individual bank loans. These data track large loan originations made by banks to generally large companies from 1987 to the present. Currently, over 150,000 loans have been included in the LPC database, with U.S. loans accounting for 60% of these loans. LPC collects data from SEC filings, industry contacts, and directly from lenders. As LPC has established a reputation for tracking loans and publishing league tables that rate bankers, e.g., in syndications, banks have an incentive to voluntarily report their loans.¹⁵ These loans tend to be the largest and most important loans made by any bank.¹⁶

¹³ Boone and Mulherin (2006) also raise issues concerning gray areas in SDC’s definition of takeover terminations.

¹⁴ We exclude from the sample financial companies with two-digit SIC Codes 60 through 64. Between 1992 and 2005, our sample identifies 1,454 takeover attempts of which 330 are classified as hostile.

¹⁵ Note that even smaller banks have an incentive to report their large syndicated loans, as these ratings are important in syndications where smaller banks are often participants.

¹⁶ We looked at a sample of 10-K reports of one hundred randomly selected firms with zero loan intensity based on LPC’s DealScan and found that in 70% of the cases companies in fact don’t report having any loans outstanding,

Table 1
Descriptive statistics of the sample

Panel A: Sample characteristics			
Compustat sample (number of observations = 28,234)			
Variable	Median	Mean	Standard error
<i>Industry M&A intensity</i>	1	0.819	0.002
<i>ROA (adj.)</i>	0.010	−0.103	0.005
<i>Sales growth (adj.)</i>	0.003	0.176	0.005
<i>Market/Book assets (adj.)</i>	−0.022	0.703	0.027
<i>Ln (Assets)</i>	4.566	4.794	0.013
<i>Asset structure (PPE)</i>	0.180	0.276	0.001
<i>Cash</i>	0.149	0.242	0.001
<i>Leverage</i>	0.432	0.500	0.003
<i>Institutional blockholder</i>	0	0.471	0.003
<i>Rated</i>	0	0.142	0.002
<i>High yield</i>	0	0.070	0.002
<i>Bad z-score</i>	0	0.342	0.003
<i>Bank dependence</i>	0	0.131	0.002
<i>Short maturity</i>	0	0.121	0.002
<i>Loan intensity (Exposure)</i>	0	0.419	0.055
<i>Loan intensity (N)</i>	0	0.553	0.006
<i>Relation intensity (Exposure)</i>	0	0.165	0.030
<i>Relation intensity (N)</i>	0	0.405	0.004
<i>Bank net (log)</i>	−2.303	−1.262	0.011

Table 1
Continued

Panel B: Correlation coefficients										
		1	2	3	4	5	6	7	8	9
1	<i>Industry M&A intensity</i>									
2	<i>ROA (adj.)</i>	0.005								
3	<i>Sales growth (adj.)</i>	−0.003	0.022***							
4	<i>Market/Book assets (adj.)</i>	0.012**	−0.189***	0.120***						
5	<i>Ln(Assets)</i>	−0.002	0.241***	0.001	−0.113***					
6	<i>Asset structure (PPE)</i>	0.009	0.025***	−0.044***	−0.063***	0.274***				
7	<i>Cash</i>	0.070***	−0.039***	0.124***	0.137***	−0.241***	−0.488***			
8	<i>Leverage</i>	−0.022***	−0.452***	−0.074***	0.161***	−0.052***	0.103***	−0.237***		
9	<i>Institutional blockholder</i>	−0.007	0.104***	−0.016***	−0.055***	0.224***	−0.022***	0.037***	−0.099***	
10	<i>Rated</i>	−0.016***	0.069***	−0.035***	−0.035***	0.523***	0.250***	−0.228***	0.083***	0.056***
11	<i>High yield</i>	−0.028***	0.032***	−0.005	−0.037***	0.239***	0.138***	−0.129***	0.090***	0.080***
12	<i>Bad z-score</i>	−0.017***	−0.247***	−0.047***	−0.066***	−0.067***	0.200***	−0.148***	0.380***	−0.132***
13	<i>Bank dependence</i>	−0.007	0.024***	−0.012	−0.018***	−0.053***	−0.001	−0.052***	−0.008	0.091***
14	<i>Short maturity</i>	−0.002	0.029***	−0.013**	−0.013**	0.054***	0.018***	−0.073***	0.006	0.093***
15	<i>Loan intensity (Exposure)</i>	0.010	−0.029***	−0.005	0.009	−0.030***	0.001	−0.013**	0.039***	0.000
16	<i>Loan intensity (N)</i>	−0.027***	0.061***	−0.024***	−0.051***	0.331***	0.161***	−0.254***	0.082***	0.206***
17	<i>Relation intensity (Exposure)</i>	0.008	−0.021***	0.000	0.006	−0.023***	−0.002	−0.006	0.017***	0.002
18	<i>Relation intensity (N)</i>	−0.024***	0.067***	−0.027***	−0.051***	0.324***	0.151***	−0.254***	0.062***	0.226***
19	<i>Bank net</i>	0.001	0.060***	−0.039***	−0.050***	0.228***	0.099***	−0.208***	0.047***	0.221***

		10	11	12	13	14	15	16	17	18
10	<i>Rated</i>									
11	<i>High yield</i>	0.675***								
12	<i>Bad z-score</i>	0.042***	0.084***							
13	<i>Bank dependence</i>	-0.063***	-0.024***	-0.022***						
14	<i>Short maturity</i>	0.030***	-0.001	-0.027***	0.549***					
15	<i>Loan intensity</i> (<i>Exposure</i>)	0.006	0.000	0.027***	0.023***	0.025***				
16	<i>Loan intensity (N)</i>	0.277***	0.210***	0.041***	0.295***	0.337***	0.075***			
17	<i>Relation intensity</i> (<i>Exposure</i>)	0.005	-0.003	0.012**	0.026***	0.025***	0.861***	0.045***		
18	<i>Relation intensity (N)</i>	0.264***	0.179***	0.005	0.379***	0.412***	0.059***	0.887***	0.043***	
19	<i>Bank net</i>	0.165***	0.136***	-0.001	0.462***	0.443***	0.066***	0.649***	0.049***	0.712***

Panel A presents descriptive statistics for the all Compustat-based samples for 1992–2005. *Industry M&A intensity* is equal to 1 if there was an M&A in a firm's four-digit SIC industry in the year prior to the year of observation. *ROA (adj.)* is the industry-median-adjusted return on assets. *Sales growth (adj.)* is the industry-median-adjusted annual rate of change in the firm's net sales. *Market/Book assets (adj.)* is the industry-median-adjusted ratio of market-to-book value of assets, where market assets are defined as total assets plus market value of common stock minus book common equity and deferred taxes. Firm size is proxied by the natural logarithm of a firm's assets. *PPE* is property, plant, and equipment-to-assets ratio. *Cash* is cash and short-term investments-to-assets ratio. *Leverage* is book debt-to-assets ratio. *Institutional blockholder* is a dummy variable assigned the value 1 if at least one institutional investor holds more than 5% of the firm's stock and 0 otherwise. *Rated* is a dummy equal to 1 if the company has a debt rating. *High yield* is a dummy equal to 1 if the debt rating is below investment grade. *Bad z-score* is a dummy equal to 1 if the *z-score* is below 1.81. *Bank dependence*, *Short maturity*, *Bank net*, *Loan*, and *Relation intensity* are all defined in the Appendix. The sample includes firms that were targets of an M&A and the control sample is matched by industry and asset size, with valid accounting information in the event year excluding financial firms identified with two-digit SIC Codes 60 through 64.

***, **, and* stand for significance at the 1%, 5%, and 10% levels, respectively.

Since bank information is likely to be related to its lending intensity to a particular firm, we begin by assuming that LPC loan activity (normalized by the borrowing firm's assets) is an appropriate proxy or indicator of a bank's incentive to gather information. Greater loan activity, all else equal, implies greater credit risk exposure and greater potential relationship banking activity.¹⁷

To measure lending intensity, we examine two key aspects of a lending relationship that are related to the amount of *private* information in the hands of a bank: (1) its dollar lending exposure to a borrower (*Loan intensity (Exposure)*) and (2) the frequency of its lending interaction with a borrower (*Loan intensity (N)*). The first measure, dollar exposure, reflects that the incentives banks have to collect information in the face of enhanced credit exposure. Using lending facility level data, we collect the amount and maturities of loans so as to calculate a measure of the maximum bank *exposure* (stock of loans) to a given company prior to the event (takeover). Thus, this measure reflects loans made in the prior year plus older loans that are still outstanding in the year prior to a takeover bid.¹⁸

The second measure reflects the frequency of a lender-borrower interaction and thus the flow of (new) private information in the hands of a bank generated as the result of each new loan. We use deal level information to compute the number of loans originated by the bank in the three years prior to a takeover attempt on a target firm. A three-year period was chosen for two reasons: (1) the period is sufficiently long enough to establish banking relationships that produce a flow of valuable private information to potential acquirers and (2) the mean maturity of a loan in the LPC database is approximately three years.¹⁹

While we utilize both measures for completeness, we recognize that the exposure variable may have some measurement problems. First, we are trying to proxy for a stock of loans' exposure using flow data from DealScan, which only allows us to observe new loan data at the time of origination. Second, some of these loans may be lines of credit (LCs) that are undrawn (although we deal with this issue later in the case of commercial paper backed LCs). Third, not all loans in DealScan may be new; in fact, some may be renegotiations of old loans. Fourth, some of the loans in the database are to finance prior loans, and to avoid double-counting, they cannot be added to new loans. While we are able to track loan renegotiations on DealScan, and there is no

including *credit lines* and term loan. Thus our search of the 10-Ks included LCs, as well as term loans. For those cases where companies report having some loans, but are not reflected in DealScan (30% of the cases), we found the amount of loans outstanding was economically very small. In fact, the median stock loan/assets ratio was close to 0% and the mean close to 9%. In the DealScan sample for companies with loans reported, the median loan exposure/assets ratio corresponds to nearly 100%.

¹⁷ In fact, banks commonly take a portfolio view (based on the law of large numbers) for small and medium enterprise loans. To ensure that our results are not driven by any omitted loan information, we use a narrower control for the target sample in Section 3 that is matched by propensity scores.

¹⁸ We tested the robustness of this result using various maturity limits.

¹⁹ The LPC database starts from 1987. We choose to focus on targets from 1992 to avoid the potential impact of Drexel Burnham on the takeover market.

double-counting there, it is not possible to identify refinancings, although a bank can be viewed as updating its information when it engages in a refinancing. As will be discussed below, it is the *Loan intensity (N)* variable (which reflects information updating) rather than *Loan intensity (Exposure)* variable that has the greatest impact on takeover probability and is the major focus of our tests.

The dollar amount of loans (*Loan intensity (Exposure)*) and frequency of lending (*Loan intensity (N)*) may reflect positions taken by all banks in the lending syndicate, including active relationship-based roles and passive or transactional roles. Hence, we use information on the role of the bank in the syndicate and the actual amount of the loan retained by the bank as the result of the syndication to distinguish between loan intensity and relationship intensity. Specifically, to define a relationship bank, we exclude all the syndicate members that act as “participants” and we look at the amount of the loan retained by each remaining bank to identify the banks with the largest exposures.²⁰ Because the lead bank might just play an administrative or underwriting role in the lending syndicate, an exposure-based variable is a better way to identify the relationship bank. Using this criterion, we identify a relationship bank for a borrower (loan) and use it to define *Relation intensity (Exposure)* and *Relation intensity (N)*. It is important to note, in passing, that the correlations of the loan intensity variables with firm overall leverage measures are very small (see Table 1, panel B), thus reducing concerns of multicollinearity in tests that involve both firm leverage and loan intensity.

A final key lending variable, in measuring the impact of bank-related information transmission effects on the probability of takeovers, is a measure of the target’s relationship banks’ links with their own clients who fit the characteristics of potential acquirers (*Bank net*). This is calculated by summing the number of potential acquirers that share a lending relationship with the *same* relationship bank as the potential target, where potential acquirers are selected

²⁰ To measure a relationship bank or banks to a particular firm, we need to designate a cutoff point to distinguish relationship banks from nonrelationship banks. To do this we first look at each firm’s syndicated loans over a three-year window. For each of these loans, we exclude banks designated as participants by DealScan and retain those lenders designated as either an arranger or coarranger. We then add the dollar amounts of loans made to that borrower by each arranger or coarranger bank during the three-year period. Second, we designate the largest dollar lender to the firm as having a scale of 100 (or 100%). The next largest lender is scaled to be a percentage of the largest lender (e.g., 80% as large, 70% as large, etc.). Third, this exercise is repeated for every borrower in our sample. We then aggregate the lender-scaled shares (below 100%) across all borrowing firms. This produces a distribution of scaled shares below the largest relationship bank (i.e., the 100% scaled bank). Examining this distribution, we find that the top decile of this empirical distribution has shares exceeding 80% of the largest relationship bank share. We then designate 80% as the cutoff point to identify the identity of relationship banks for each borrower. The characteristics of this variable are perhaps best explained by a simple example. If over the past three years there are two loans made to the same borrower, say, \$180 million and \$200 million, then in the first case Chase is the lead bank and it retains 50% of the loan (\$90 million); in the second case, Citi is the lead and it retains 50% of the loan (\$100 million). Under our criteria, both banks will be defined as relationship banks because Chase’s \$90 million retained is 90% as large as the \$100 million retained by Citi. While Chase’s exposure is smaller than Citi’s, it is sufficiently large to be viewed as a relationship bank along with Citi using the 80% cutoff point. However, if it retained \$70 million, it would not be a relationship bank because it does not correspond to the top decile of the empirical distribution of bank syndicate exposures (i.e., it doesn’t exceed the 80% cutoff relative to the largest bank’s lending exposure).

based on the commonality of their two-digit SIC Code and asset size to the target, over a three-year window prior to a takeover attempt.

While this variable measures both the extensive nature of the relationship bank's network of potential acquirers (and thus the takeover threat to the target), it is possible that the target's managers might seek to avoid a takeover by switching from a high "net" relationship bank to a low "net" relationship bank. If such switching is complete and includes both new loans and the refinancing of all old loans, then the value of the *Bank net* variable could fall. However, if switching is incomplete, e.g., some older loans remain with the original relationship bank, then both the old and new relationship banks will have incentives to disseminate information and *Bank net* would increase. Importantly, the *Bank net* variable is inclusive of old and new banks.²¹

2.3 Other loan-related control variables

In addition to our lending intensity and relationship variables, we also introduce *Short maturity*, dummy equal to 1 if the borrowing firm receives loans of a shorter maturity than the industry median and 0 otherwise. This controls for the fact the frequency of loan issues (N) is also likely to be related to the choice of maturity. In addition, a positive coefficient on this variable would be consistent with riskier borrowers being more likely to be the subject of a takeover bid since banks tend to lend shorter term to riskier borrowers. Secondly, we control for relationship bank dependence (*Bank dependence*) with a dummy equal to 1 if the borrower had only one relationship bank over the three years prior to a takeover attempt and 0 otherwise. The relationship bank dependence dummy is 1, if no other bank had an exposure (dollar amount) to the borrower within 80% of the dollar exposure of the main relationship bank.²² If other banks are above the 80% threshold, the borrowing firm is viewed as having multiple relationship banks (dummy is 0). An alternative measure of exclusivity or dependence would be one where the target had an exclusive relationship with its lead syndicate bank, i.e., lead bank exclusivity, as will be discussed later, the major results of the paper are unchanged whether we use relationship bank exclusivity or lead bank exclusivity to measure bank dependence.

2.4 Shareholder control

While our focus is on governance effects emanating from bank lending activity, we also collected data on shareholder (equity) control. It has been argued that takeovers are more likely to occur as shareholder control increases (Shleifer and Vishny, 1986). Cremers, Nair, and John (2005) also document supporting evidence that firms with a large external blockholder are more

²¹ As we show later in the paper, the role of banks in facilitating takeovers is more important for underperforming borrowers. In that sense, if managers use switching to prevent takeovers, this will create a large adverse selection cost.

²² See the earlier discussion on measuring the relationship bank, as well as the example provided justifying the 80% cutoff in Footnote 20.

likely to be takeover targets. Thus, we control for a large shareholder corporate governance effect by using a dummy for the existence of an institutional blockholder, denoted by *Institutional blockholder* = 1, if such an institutional blockholder is present and 0 otherwise. We define blockholders to be those institutional shareholders that have more than a 5% ownership stake in the firm's outstanding shares. To construct this measure, we use data on institutional share holdings from Thompson/CDA Spectrum, which collects quarterly information from SEC 13f filings.²³ By using institutional blockholdings rather than simply institutional ownership, we mitigate the problem that institutions with small equity stakes have little incentive to be involved in firm-specific decisions. Furthermore, Shleifer and Vishny (1986) argue that blockholders often have substantial voting control, thereby enabling them to pressure a firm's management. Such control rights can be especially valuable in a proxy fight.

2.5 Other control variables

In addition to the bank-side information production and equity-side corporate governance variables, we utilize a number of other control variables that have been used in the prior literature seeking to explain the probability of takeovers in general; these variables might thus also be expected to impact the probability of a takeover bid occurring (see, for example, Hasbrouck, 1985; Palepu, 1986; Mikkelsen and Partch, 1989; and Ambrose and Megginson, 1992, among others). The additional variables introduced, based on the existing takeover literature, are a takeover intensity dummy that measures whether a takeover attempt occurred in the same four-digit SIC industry in the year prior to the takeover event, the return on assets (ROA) of the firm (adjusted for the industry median), annual sales growth (adjusted for the industry median), firm leverage (measured by the book debt-to-assets ratio), cash (the cash and short-term investments-to-assets ratio), firm size (measured by the log of assets), the ratio of market-to-book value of assets (industry-median-adjusted), asset structure (measured by the property, plant, and equipment-to-assets ratio), and sales growth (industry-median-adjusted). Finally, we introduce a number of controls for the credit quality of the borrower including a dummy of 1 if its rated, and a credit-quality-related variable based on the Altman (1968) *z*-score model, which is *Bad z-score*, a dummy of 1, if the *z*-score falls below the Altman threshold value of $z = 1.81$, denoting that the firm is in the bad creditworthiness (high default probability) region. We also introduce a high-yield dummy that is 1 if the target is rated below investment grade. Table 1A provides the mean, median, and standard error of the Compustat sample variables used in our tests, as well as the correlations among these variables (Table 1B).

²³ The 1978 amendment to the Security and Exchange Act of 1934 requires all institutional investors with more than \$100 million under management to report their shareholdings to the SEC.

2.6 Logit methodology

To analyze the impact of a banking relationship on the probability of becoming a target, we use a logit methodology. Two methods of selecting the control sample were employed. In the first method, we select companies that were not a target of a takeover attempt in the entire sample period, starting with all the companies reported in Compustat that are not included in the takeover target sample. To ensure that the control sample contains similar companies to the targets, we identify control firms with the same four-digit SIC Code as the target in the same event year.²⁴ Thus, we use SIC Code (four-digit) and year as matching variables to generate 26,780 such control firms; based on this sample, each firm has approximately a 0.5% average probability of being a target each year. The cumulative probability of becoming a target between 1992 and 2005 is much higher and equal to 51%. In the second method, we utilize a logit analysis as a first step in *propensity score* matching, where matching occurs over an array of financial characteristics of target and matching firms.

An issue of concern is that certain industries have more control firms than others, thus leading to a different number of matches for different targets. To deal with this issue, we use industry dummies (not reported in the tables) that control for differences in the number of firms across industries and other industry-specific effects.²⁵

3. Results

3.1 Relationship bank lending intensity and the likelihood of becoming a target (Hypothesis 1)

Our first set of tests focus on bank lending intensity and the probability of an acquisition occurring over the 1992–2005 period. A logit model is used to detect the probability of a firm being the target of a bid, where a target firm receiving a bid has a dummy of 1 and 0 otherwise; the target dummy is the dependent variable in the logit model.²⁶ The probability of becoming a target in year t is estimated annually. Table 2 shows the logit test results for the total sample of 1,454 targets and 28,234 firm observations.

The first column of coefficients in Table 2 reports the results without bank lending intensity variables. The statistically significant variable coefficients in column 1 are ROA, market-to-book ratio, asset size, cash, the presence of a large institutional blockholder, existence of a debt rating, and a dummy of 1 if the target's debt is below investment grade quality (high yield). These results indicate that firms that are profitable (high industry-adjusted ROA) with cash

²⁴ Targets for which we are unable to find at least one matching control company with valid accounting information are dropped.

²⁵ Using a one-to-one matching technique, utilizing a Barber-Lyon (1996) matching methodology, also produced similar results. These results are available from the authors on request.

²⁶ We used the four-digit SIC match to construct a control sample. This is because we want the control sample (companies that don't become targets) to be very similar to the cases where they are targets.

Table 2
Bank lending intensity and takeover probability

Variable	1		2		3		4		5		6	
	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	0.06	0.1	0.04	0.0	0.03	0.0	0.03	0.0	0.03	0.0	−0.57	6.6***
<i>ROA (adj.)</i>	0.20	4.1**	0.19	3.7*	0.20	3.9**	0.20	3.9**	0.20	3.9**	0.33	1.6
<i>Sales growth (adj.)</i>	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	−0.12	1.2
<i>Market/Book assets (adj.)</i>	−0.06	12.0***	−0.06	12.5***	−0.06	12.5***	−0.06	12.5***	−0.06	12.5***	−0.23	15.0***
<i>Ln(Assets)</i>	0.04	3.5*	0.02	0.9	0.01	0.5	0.02	0.7	0.02	0.5	−0.01	0.0
<i>Asset structure (PPE)</i>	−0.16	0.5	−0.12	0.3	−0.12	0.3	−0.12	0.3	−0.12	0.3	−0.05	0.0
<i>Cash</i>	0.34	4.5**	0.46	7.8***	0.49	8.8***	0.49	8.8***	0.49	8.8***	−0.58	2.3
<i>Leverage</i>	−0.09	0.8	−0.12	1.2	−0.12	1.2	−0.13	1.3	−0.12	1.2	0.24	1.2
<i>Institutional blockholder</i>	0.83	175.4***	0.78	152.4***	0.77	147.0***	0.77	147.0***	0.77	147.0***	0.72	31.0***
<i>Rated</i>	−1.01	39.9***	−1.03	41.6***	−1.05	43.0***	−1.05	43.1***	−1.05	43.1***	−0.54	4.3**
<i>High yield</i>	0.60	10.4***	0.58	9.7***	0.60	10.3***	0.60	10.5***	0.60	10.5***	0.53	3.3*
<i>Bad z-score</i>	0.07	0.8	0.06	0.6	0.07	0.7	0.07	0.8	0.07	0.7	−0.16	1.1
<i>Bank dependence</i>			0.10	1.3	0.06	0.4	0.06	0.4	0.06	0.4	−0.14	0.6
<i>Short maturity</i>			0.19	4.2**	0.16	3.0*	0.16	3.0*	0.16	2.9***	0.18	1.0
<i>Loan intensity (Exposure)</i>			−0.02	0.6	0.00	0.0						
<i>Loan intensity (N)</i>			0.12	16.9***	0.02	0.1						
<i>Relation intensity (Exposure)</i>					−0.05	0.5			−0.06	0.9	−0.12	0.3
<i>Relation intensity (N)</i>					0.19	6.2***	0.20	21.9***	0.21	23.2***	0.33	15.8***
Observations		28,234		28,234		28,234		28,234		28,234		11,355
Targets		1,454		1,454		1,454		1,454		1,454		330
Pseudo R^2		0.64		0.64		0.64		0.64		0.64		0.68
Max.-rescaled R^2		0.85		0.85		0.85		0.85		0.85		0.91

This table presents results of the maximum likelihood estimates of the logit model for the sample of takeovers that occurred between 1992 and 2005 excluding financial firms identified with two-digit SIC Codes 60 through 64. The dependent variable is a dummy (*Target*) equal to 1 if the company is target of an attempted takeover or merger. The sample includes firms that were targets of a takeover or merger and the control sample is matched by industry and size with valid accounting information in the event year. Columns 1–5 test the robustness of alternative measures of lending intensity for all takeovers. Column 6 examines the case of unsolicited takeovers only. The point estimates and Wald chi-square statistics for industry effects are not reported, although they are included in the logit tests and they are jointly significant at the 1% level. Year effects are jointly insignificant and not included in the logit tests. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

but have low valuations (market-to-book) and a large external shareholder are more likely to become targets. Further, the *lack* of access to bond markets as indicated by the absence of a debt rating is also associated with a higher probability of becoming a target, while of those who are rated, lower rated quality issuers (high yield) have the highest probability of becoming targets.

The second column of Table 2 includes four additional variables that are related to bank lending intensity and hence a bank's information generation about a borrower. A bank's information about a borrower is likely to be a function of the amount of loans outstanding to that borrower (*Loan intensity (Exposure)*). Further, new information is collected at loan origination. Thus, lending frequency (*Loan intensity (N)*) captures the flow of new private information to the bank.

Specifically, as discussed above, *Loan intensity (Exposure)* is the maximum loan amount (estimated stock of loans) available to the borrower one year prior to the takeover date divided by the firm's assets. This reflects both loan transactions occurring within that (prior) year and loans made earlier to that year, where their maturities extend beyond the year of the proposed takeover. *Loan intensity (N)* is the number of loans issued by a bank to a borrower over a three-year window prior to the year of the takeover. Furthermore, we add two lending control variables: a *Short maturity* dummy, which equals 1 if the maturity of the loans made to the target are shorter than the industry median and a *Bank dependence* dummy, which equals 1 if the target had only one relationship bank in the three years prior to the takeover attempt. The *Bank dependence* variable reflects the target's reliance on a single relationship bank and controls for the potential effect of pressure being applied by the main relationship bank on the target to engage in a takeover deal.²⁷

As can be seen in column 2 of Table 2, it is the frequency (*N*) with which new loans are made to the target, rather than the dollar amount outstanding that is important in explaining the probability of a borrowing firm becoming a target. This is consistent with the argument made above regarding the link between informational disclosure at the time a loan is made and the probability that the bank will utilize that information to promote future takeover deals. Since banks are more likely to collect new and additional information at the time of loan origination, this finding is consistent with the presence of a bank-lending-related informational channel in the market for corporate control.

Since our focus is on the bank information channel, we refine our tests by focusing next on the intensity of a potential target's borrowing relationship with its *main* or *relationship* bank. We define a relationship bank, or banks, using actual exposure (dollar amount) loaned to the target as a syndicate lead arranger, measured over a three-year window (see Footnote 20).²⁸ Because

²⁷ This is the mirror image of the type of holdup problems considered by Rajan (1992).

²⁸ We use loan syndicate structure to calculate the actual exposure to the target. Multiple relationship banks are possible if there are other banks with exposure no less than 80% of the top relationship bank (see Footnote 20).

relationship banks are expected to generate more information about a borrower than other banks, we would expect the intensity with which a firm borrows from a relationship bank to be a superior indicator of bank information production than a general or transactional banking relationship (e.g., a syndicate participant or a bank with a small syndicate share). In column 3 of Table 2, we use variables capturing loan exposure and loan frequency but focus only on the lending by main or relationship banks. The results, reported in column 3 of Table 2, show that a higher frequency of borrowing from a relationship bank is associated with a greater likelihood of a target receiving a takeover bid. This can be seen by the large and highly significant positive sign of the *Relation intensity (N)* variable. Interestingly, the other measures of lending intensity—including the general measures of lending intensity, *Loan intensity (Exposure)*, and *Loan intensity (N)*—are now insignificantly different from zero. This suggests that the dominant factor underlying *Loan intensity (N)*'s earlier significance was emanating from lending interactions between the main relationship bank and the borrowing firm rather than from general bank lending activity.

Given the results in column 3 in Table 2, we next use a “baseline” model that focuses only on lending intensity by relationship banks (i.e., *Relation intensity (Exposure)* and *Relation intensity (N)*). The results of the baseline model are shown in column 4 of Table 2, which confirms the highly significant nature of the *Relationship intensity (N)* variable found in column 3. Column 5 further confirms the importance of the relation intensity (*N*) measure compared to the relation intensity (exposure) measure, by showing the statistical insignificance of the latter in the presence of the former. In column 6 of Table 2, we consider only unsolicited takeover bids. As noted earlier, unsolicited or hostile takeovers are the subsamples where one would expect the impact of bank lending intensity and relationships to be the strongest. Indeed, we find that the coefficient on *Relation intensity (N)* is larger than that for the total takeover sample as a whole such that a firm with just one loan over three years has a 4.1% probability of becoming an unsolicited target each year, while a firm with no bank loans has a 3.3% probability of becoming a target each year.²⁹ This represents a 6.2% increase in the cumulative probability of becoming a target over the entire 1992–2005 sample period.

There are four potential concerns regarding our “baseline” model in column 4 of Table 2. The first concern is that our matching criteria used in the logit tests may be too general to pick up the true underlying relationship between loan intensity and takeover probability. Accordingly, we use a propensity-score-matching procedure that matches firms with targets along a number of financial characteristic dimensions (see Leuven and Sianesi, 2003; Drucker and Puri, 2005; and Aggarwal et al., 2007, among others). The propensity score tests involve three steps. We first run a logit test for all potentially matching firms (restricting these firms to the same four-digit SIC Code and year). We

²⁹ We use average variable values to calculate probabilities.

run the logit model based on *ROA (adj.)*, *Sales growth (adj.)*, *Market/Book assets (adj.)*, *Ln(Assets)*, *Asset structure (PPE)*, *Cash*, *Leverage*, and with and without *Bad z-score*. Second, in order to implement propensity matching, we calculate each firm's propensity score. This is computed based on the probability (p) that a firm with given characteristics is a target of an attempted takeover computed using the firm's financial characteristics denoted above. The propensity score is computed as $\ln((1-p)/p)$. Firms are then matched again using Leuven and Sianesi's (2003) propensity-score-matching procedure (at the nearest neighborhood caliper of 0.1), again restricting by year and two-digit SIC Code.³⁰ Then, we compare the average difference between the sample target firms and their matches for the variables that we did not use in the computation of the propensity score itself (i.e., the loan intensity variables). We report the result in Table 3, where we present a paired mean comparison between the sample of takeovers and their propensity score matches with respect to bank lending intensity. Panel 1 of Table 3 shows the matched results for unsolicited takeovers, while panel 2 shows results for all takeovers. As can be seen, there is a significant difference between the loan intensity variables for the target firms compared to the propensity-score-matched sample of nontarget firms. Specifically, for both the unsolicited and all takeover samples, both *Loan intensity (N)* and *Relationship intensity (N)* are significantly larger for target firms than for matched firms, consistent with our results in Table 2.

A second concern relates to possible missing governance-related control variables in Tables 2 and 3. While we have used an equity-related blockholder dummy, one equity-related governance variable possibly missing from our logit model is that of managerial ownership. We now include variables relating to managerial ownership but note that theoretically, the impact of managerial ownership on takeover probability is ambiguous. On the one hand, a higher ownership stake allows a manager to gain from a takeover since the individual now receives an equity-related payoff share of any takeover premium. On the other hand, since takeovers might be accompanied by the loss of private benefits for the manager, the individual may use voting power to thwart any takeover attempt.

Using the Compustat Executive Compensation (Execucomp) dataset, we measured managerial ownership in two ways: percentage of shares owned by top management (results reported in column 2 of Table 4) and percentage of shares owned by the CEO (results reported in column 3 of Table 4). Column 1 shows the results without the management ownership variables. While the signs on both of these managerial ownership variables are negative, they are statistically insignificant. Moreover, including these variables radically lowers the sample size (to only 5,314) since we are now constrained by the Execucomp dataset, which is limited to firms in S&P's large-cap, mid-cap, and

³⁰ A caliper is a tolerance level for acceptable matches defined in terms of the empirical variance of the propensity score. In the second step, we also restrict the propensity score matching to two-digit SIC Codes.

Table 3
Bank lending intensity and takeover probability: alternative construction of the control sample

Variable	1		2		3		4	
	Difference	Standard error	Difference	Standard error	Difference	Standard error	Difference	Standard error
<i>Industry M&A intensity</i>	0.03	0.01**	0.00	0.01	−0.04	0.03*	−0.06	0.03**
<i>Institutional blockholder</i>	0.15	0.01***	0.17	0.02***	0.12	0.03***	0.15	0.03***
<i>Rated</i>	−0.03	0.01***	−0.04	0.01***	−0.01	0.02	−0.03	0.03
<i>High yield</i>	−0.01	0.01	−0.01	0.01	0.00	0.02	−0.01	0.02
<i>Bad z-score</i>	−0.02	0.02	—	—	0.01	0.03	—	—
<i>Bank dependence</i>	0.02	0.01*	0.03	0.01***	0.02	0.02	0.03	0.02
<i>Short maturity</i>	0.03	0.01***	0.05	0.01***	0.02	0.03	0.05	0.03**
<i>Loan intensity (Exposure)</i>	0.03	0.01**	0.00	0.05	0.03	0.04	0.09	0.04**
<i>Loan intensity (N)</i>	0.13	0.03***	0.18	0.04***	0.22	0.08***	0.34	0.08***
<i>Relation intensity (Exposure)</i>	0.01	0.01**	−0.03	0.04	−0.01	0.03	0.03	0.02**
<i>Relation intensity (N)</i>	0.10	0.02***	0.15	0.03***	0.12	0.05**	0.20	0.05***
<i>Paired observations</i>		2,113		1,496		426		340

The table presents a paired mean comparison between the sample of takeovers that occurred between 1992 and 2005 and their propensity-score-matching firms with respect to bank lending intensity governance variables and loan-related measures. We excluded financial firms identified with two-digit SIC Codes 60 through 64. Columns 1 and 2 present the results for all takeovers and columns 3 and 4 present the result only for unsolicited takeovers. We consider two different models for the *p*-score. Model 1 (columns 1 and 3) includes only financial characteristics variables (*ROA (adj.)*, *Sales growth (adj.)*, *Market/Book assets (adj.)*, *Ln(Assets)*, *Asset structure (PPE)*, *Cash*, and *Leverage*). Model 2 (columns 2 and 4) includes, in addition to the variables in model 1, *Bad z-score* variable. In all models, controls are also matched by the two-digit SIC Code and year. The matching is within the nearest neighborhood of 0.1 caliper. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

Table 4
Bank lending intensity, managerial ownership and takeover probability

Variable	1		2		3		4		5		6	
	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	−0.33	4.3**	−0.33	4.3**	−0.33	4.3**	−0.45	0.6	−0.44	0.5	−0.45	0.6
<i>ROA (adj.)</i>	0.10	0.1	0.10	0.1	0.10	0.1	−0.52	1.5	−0.52	1.4	−0.52	1.5
<i>Sales growth (adj.)</i>	−0.08	0.3	−0.07	0.3	−0.07	0.3	−0.11	0.1	−0.09	0.1	−0.11	0.1
<i>Market/Book assets (adj.)</i>	−0.08	3.5*	−0.08	3.5*	−0.08	3.4**	−0.21	2.8*	−0.21	2.8*	−0.21	2.8*
<i>Ln (Assets)</i>	0.00	0.0	0.00	0.0	0.00	0.0	−0.03	0.1	−0.04	0.1	−0.03	0.1
<i>Asset structure (PPE)</i>	−0.28	0.4	−0.27	0.3	−0.27	0.3	0.23	0.1	0.25	0.1	0.24	0.1
<i>Cash</i>	−0.42	1.0	−0.43	1.1	−0.43	1.1	−1.66	2.6	−1.67	2.6	−1.67	2.6
<i>Leverage</i>	0.58	3.8*	0.57	3.8**	0.57	3.7**	0.92	2.9*	0.91	2.8*	0.91	2.8*
<i>Institutional blockholder</i>	0.84	27.2***	0.84	26.7***	0.84	26.6***	1.28	14.9***	1.27	14.7***	1.27	14.9***
<i>Managerial ownership (total)</i>			−0.25	0.1					−0.85	0.3		
<i>Managerial ownership (CEO)</i>					−0.49	0.3					−0.17	0.0
<i>Rated</i>	−0.82	18.3***	−0.83	18.4***	−0.83	18.5***	−0.31	0.9	−0.33	1.0	−0.31	0.9
<i>High yield</i>	0.42	3.1*	0.43	3.1*	0.43	3.1*	0.28	0.5	0.28	0.5	0.28	0.5
<i>Bad z-score</i>	−0.11	0.4	−0.12	0.4	−0.12	0.4	−0.14	0.2	−0.14	0.2	−0.14	0.2
<i>Bank dependence</i>	−0.21	1.2	−0.21	1.2	−0.21	1.2	−0.16	0.2	−0.16	0.2	−0.16	0.2
<i>Short maturity</i>	0.13	0.6	0.13	0.6	0.13	0.6	−0.10	0.1	−0.09	0.1	−0.10	0.1
<i>Relation intensity (Exposure)</i>	−0.05	0.1	−0.05	0.1	−0.05	0.1	−0.36	0.2	−0.35	0.2	−0.36	0.2
<i>Relation intensity (N)</i>	0.12	2.7*	0.12	2.8*	0.12	2.8*	0.16	1.2	0.16	1.1	0.16	1.2
Observations		5,314		5,314		5,314		1,038		1,038		1,038
Targets		337		337		337		103		103		103
Pseudo R^2		0.61		0.61		0.61		0.56		0.56		0.56
Max.-rescaled R^2		0.82		0.82		0.82		0.75		0.75		0.75

This table analyzes robustness of the results in Table 2 to the presence of *Managerial ownership*. The sample is based on Compustat for the M&A period 1992–2005. *Managerial ownership* is computed using Compustat Executive Compensation (Execucomp) and corresponds to shares owned by executives (excluding stock options) as a fraction of total shares outstanding. *Managerial ownership (total)* corresponds to the total shares held by executives. *Managerial ownership (CEO)* corresponds to the fraction of shares held by CEO. All other variables are the same as in Table 2. The sample includes firms that were targets of a takeover and the control sample is matched by industry and size, with valid accounting information in the event year, excluding financial firms identified with two-digit SIC Codes 60 through 64. The point estimates and Wald chi-square statistics for the industry effects are not reported although they are included in the logit tests and are jointly significant at the 1% level. Year effects are jointly insignificant and not included in the logit tests. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

small-cap indices. Despite the significant reduction in sample size, the *Relationship intensity* (N) variable remains positive and significant at the 10% level whether these management variables are included or excluded (see column 1, Table 4). We also reran these results for the unsolicited takeover subsample. Column 4 of Table 4 shows the results without the managerial ownership variables, while columns 5 and 6 include them. As can be seen, the results for the managerial ownership variable are qualitatively similar to all takeover samples (i.e., they are statistically significant). Although the *Relationship intensity* (N) variable has the expected positive sign, it loses statistical significance due to the small sample size (103 observations).

A third concern is that there may in part be an investment banking explanation here, along with a commercial banking explanation. That is, there may be a difference in the type of information flows provided by larger universal banks through their M&A activity and/or underwriting activity compared to the information flows produced by commercial banks through their loan activity alone.

To examine this concern, we reran our tests of Table 2 in Table 5 excluding target deals linked to the top ten M&A banks in each year as defined by *Mergers and Acquisitions* magazine (column 1) and excluding the top ten securities underwriters in each year as measured by the amount of debt and equity underwritten by these banks in the SDC database (column 2). The *Relation intensity* (N) variable remains positive and statistically significant. We also reran similar tests focusing on the subsample of unsolicited targets (columns 3 and 4) and found the *Relation intensity* (N) variable result to be robust.³¹

A fourth concern relates to the possibility that some of these loans may be to back up commercial paper issues that never get drawn down. To examine whether these type of loans affect our results, in Table 6 we exclude all commercial paper backup loans identified in DealScan, as well as look at the impact of a variable that measures the interaction between loan intensity and a dummy variable as to whether a target has a commercial paper rating or not.

As can be seen, the strong results found for the *Relation intensity* (N) variable in the sample that included CP-related loans hold up in column 1 of Table 6 when these loans are excluded. In addition, we find that interacting our relation intensity measures with a dummy that is 1 if there is a CP rating and 0 otherwise is statistically insignificant.³² Conducting similar tests for the unsolicited hostile subsample produced qualitatively similar results. Overall, our results are consistent with Hypothesis 1, i.e., greater lending intensity by

³¹ The hypotheses discussed below are also robust to the exclusion of the top ten M&A and investment banks. We do not include these results for reasons of space, but they are available from the authors on request.

³² We also experimented with splitting the sample into different firm-size-based groups. We did not find any qualitative difference of the impact of the loan intensity variables on takeover probability according to these size splits. This may be because the smallest firms that utilize syndicated loans and are on DealScan are large compared to the type of small business loans analyzed in the small business finance literature.

Table 5
Bank lending intensity, M&A, and investment banking expertise

Variable	1		2		3		4	
	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	0.06	0.1	0.08	0.1	−0.62	7.2***	−0.61	6.7***
<i>ROA (adj.)</i>	0.20	4.1**	0.22	4.4**	0.30	1.4	0.35	1.6
<i>Sales growth (adj.)</i>	0.00	0.0	0.00	0.0	−0.08	0.5	−0.06	0.3
<i>Market/Book assets (adj.)</i>	−0.06	11.6***	−0.05	10.5***	−0.25	16.2***	−0.23	14.0***
<i>Ln (Assets)</i>	0.01	0.3	0.02	0.7	−0.02	0.1	−0.01	0.1
<i>Asset structure (PPE)</i>	−0.21	0.8	−0.11	0.2	−0.20	0.2	−0.08	0.0
<i>Cash</i>	0.45	7.1***	0.48	7.8***	−0.62	2.5	−0.63	2.5
<i>Leverage</i>	−0.12	1.0	−0.16	1.7	0.26	1.3	0.16	0.5
<i>Institutional blockholder</i>	0.81	152.6***	0.79	141.9***	0.74	29.6***	0.71	26.4***
<i>Rated</i>	−0.97	26.2***	−1.05	26.3***	−0.35	1.4	−0.50	2.4
<i>High yield</i>	0.56	6.6***	0.67	8.4***	0.52	2.5	0.76	4.5**
<i>Bad z-score</i>	0.07	0.7	0.11	1.7	−0.20	1.4	−0.15	0.7
<i>Bank dependence</i>	0.07	0.6	0.06	0.4	−0.08	0.2	−0.15	0.5
<i>Short maturity</i>	0.10	1.0	0.16	2.4	0.04	0.0	0.17	0.7
<i>Relation intensity (Exposure)</i>	−0.05	0.9	−0.05	0.7	−0.09	0.2	−0.11	0.2
<i>Relation intensity (N)</i>	0.22	20.5***	0.22	18.4***	0.32	12.9***	0.33	11.9***
Observations		25,818		25,020		10,164		9,756
Targets		1,344		1,301		298		281
Pseudo R^2		0.64		0.64		0.68		0.68
Max.-rescaled R^2		0.85		0.85		0.91		0.91

This table analyzes robustness of the results in Table 2 to the exclusion of the top ten M&A banks (columns 1 and 3) and exclusion of the top ten investment banks (columns 2 and 4) each year. The sample is based on Compustat for the M&A period 1992–2005. Columns 1 and 2 look at the sample of all takeovers. Columns 3 and 4 look at the subsample of hostile takeovers. All variables are the same as in Table 2. The sample includes firms that were targets of a takeover and the control sample is matched by industry and size, with valid accounting information in the event year, excluding financial firms identified with two-digit SIC Codes 60 through 64. The point estimates and Wald chi-square statistics for the industry effects are not reported although they are included in the logit tests and are jointly significant at the 1% level. Year effects are jointly insignificant and not included in the logit tests. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

Table 6
Bank lending intensity and commercial paper

Variable	1		2		3		4		5		6	
	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	0.02	0.0	0.03	0.0	0.03	0.0	-0.57	6.7***	-0.56	6.5***	-0.57	6.5***
<i>ROA (adj.)</i>	0.20	3.9**	0.20	4.1**	0.20	4.0**	0.32	1.5	0.34	1.7	0.34	1.7
<i>Sales growth (adj.)</i>	0.00	0.0	0.00	0.0	0.00	0.0	-0.12	1.2	-0.11	1.1	-0.11	1.1
<i>Market/Book assets (adj.)</i>	-0.06	12.4***	-0.06	12.5***	-0.06	12.6***	-0.22	14.8***	-0.23	15.2***	-0.23	15.3***
<i>Ln (Assets)</i>	0.02	0.9	0.01	0.3	0.01	0.2	0.01	0.1	-0.01	0.1	-0.02	0.2
<i>Asset structure (PPE)</i>	-0.12	0.3	-0.13	0.3	-0.13	0.3	-0.05	0.0	-0.04	0.0	-0.04	0.0
<i>Cash</i>	0.46	7.9***	0.49	8.9***	0.49	8.9***	-0.60	2.5	-0.58	2.3	-0.58	2.3
<i>Leverage</i>	-0.12	1.2	-0.13	1.4	-0.13	1.3	0.25	1.3	0.23	1.2	0.24	1.2
<i>Institutional blockholder</i>	0.78	149.2***	0.77	147.7***	0.77	147.7***	0.73	31.5***	0.73	31.6***	0.73	31.5***
<i>Rated</i>	-1.02	41.1***	-1.12	42.6***	-1.12	42.6***	-0.50	3.6*	-0.69	5.8**	-0.69	5.7**
<i>High yield</i>	0.57	9.4***	0.68	11.6***	0.68	11.6***	0.50	2.9*	0.70	4.7**	0.70	4.7**
<i>Bad z-score</i>	0.07	0.7	0.07	0.8	0.07	0.8	-0.17	1.1	-0.17	1.1	-0.17	1.1
<i>Bank dependence</i>	-0.13	1.8	0.06	0.4	0.06	0.4	-0.08	0.2	-0.12	0.5	-0.12	0.4
<i>Short maturity</i>	0.24	8.6***	0.15	2.8*	0.15	2.7*	0.18	1.3	0.17	0.9	0.17	0.9
<i>CP rating</i>			0.32	1.9	0.33	2.1			0.25	0.4	0.26	0.4
<i>Relation intensity (Exposure)</i>	-0.05	0.8			-0.06	0.8	-0.12	0.2			-0.13	0.2
<i>Relation intensity (N)</i>	0.21	18.7***	0.21	19.2***	0.22	20.4***	0.29	9.6***	0.29	10.9***	0.31	10.9***
<i>CP rating * Relation intensity (Exposure)</i>					-0.01	0.0					0.07	0.0
<i>CP rating * Relation intensity (N)</i>			-0.09	0.5	-0.09	0.6			0.07	0.1	0.06	0.1
Observations		28,234		28,234		28,234		11,355		11,355		11,355
Targets		1,454		1,454		1,454		330		330		330
Pseudo R^2		0.64		0.64		0.64		0.68		0.68		0.68
Max.-rescaled R^2		0.85		0.85		0.85		0.91		0.91		0.91

This table analyzes robustness of the results in Table 2. Column 1 excludes all loans used as commercial paper backup. Columns 2 and 3 add an interaction term between relationship intensity variables and commercial paper rating to the test presented in Table 2 (columns 4 and 5, respectively). The sample is based on Compustat for the M&A period 1992–2005. All variables are the same as in Table 2. The sample includes firms that were targets of a takeover and the control sample is matched by industry and size, with valid accounting information in the event year, excluding financial firms identified with two-digit SIC Codes 60 through 64. The point estimates and Wald chi-square statistics for the industry effects are not reported, although they are included in the logit tests and are jointly significant at the 1% level. Year effects are jointly insignificant and not included in the logit tests. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

a relationship bank increases the probability of a borrower being a takeover target.

3.2 The number of potential acquirers (Hypothesis 2)

While Hypothesis 1 examines the linkage between a target and its relationship bank(s), we next analyze the extent to which a relationship bank client network—the number of target bank clients that *have the characteristics to become a potential acquirer*—affect the probability of a takeover. Controlling for *bank size*, we expect that the greater the relationship bank's client base, the greater the probability of a borrowing firm receiving a takeover bid. Accordingly, Hypothesis 2 states that the larger the client base the relationship bank has, the greater is the associated probability of a borrowing firm becoming a takeover target. To examine Hypothesis 2, we need a measure of the number of client firms dealing with the target's relationship bank that have the characteristics to become an acquirer of the target. We call this measure *Bank net*, which is equal to the log of the number of potential acquirers that exclusively borrow from the same relationship bank as a potential target over a three-year window. Potential acquirers are selected based on the two-digit SIC Code and asset size.³³ Since a bank's information about a target is more valuable to an acquirer in the same industry, we look at the number of the target's relationship bank clients in the same industry as the target firm, *controlling for bank size*. Since a larger number of lending relationships increases the number of potential acquirers to whom the target's bank (or banks) can transfer private information, we expect the *Bank net* variable to have a positive effect on the probability of becoming a takeover candidate.

Table 7 presents the results for Hypothesis 2. As can be seen in Table 7, columns 1 and 3, we find a positive and statistically significant coefficient on the probability of being acquired resulting from the size of the target relationship bank's client network (i.e., *Bank net*) for both the all-takeover and hostile takeover samples. Furthermore, the *Relationship intensity (N)* variable remains statistically significant for both the hostile and all-takeover samples. One concern might be that larger banks, which are prominent in the takeover market, simply have larger client networks and consequently are more likely to be involved in acquisition activity. To address this issue, we add a variable that controls for the size of the relationship bank as measured by a bank's market share in the takeover market based on the number of deals it engaged in during the takeover year.³⁴ As can be seen in Table 7, column 2, the likelihood of a takeover is negatively related to bank size. In other words, firms that deal with

³³ We allow the potential acquirer to be in the same two-digit SIC Code as the target. This criterion is based on observable data. According to SDC, close to 60% of hostile takeover and M&A activity in general happens between a target and an acquirer with the same two-digit SIC Code and only 30% corresponds to targets and acquirers with the same four-digit SIC Code.

³⁴ We also controlled for bank asset size (as an alternative measure). This variable was found to be statistically insignificant.

Table 7
Bank client network and takeover probability

Variable	1		2		3	
	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	0.02	0.0	0.02	0.0	-0.57	6.6***
<i>ROA (adj.)</i>	0.20	3.9**	0.19	3.7**	0.32	1.5
<i>Sales growth (adj.)</i>	0.00	0.0	0.00	0.0	-0.11	1.1
<i>Market/Book assets (adj.)</i>	-0.06	12.4***	-0.06	12.2***	-0.23	15.2***
<i>Ln (Assets)</i>	0.01	0.4	0.02	0.8	-0.01	0.1
<i>Asset structure (PPE)</i>	-0.12	0.3	-0.13	0.4	-0.04	0.0
<i>Cash</i>	0.51	9.6***	0.50	9.1***	-0.50	1.7
<i>Leverage</i>	-0.13	1.4	-0.14	1.5	0.21	0.9
<i>Institutional blockholder</i>	0.76	141.5***	0.76	141.2***	0.69	27.9***
<i>Rated</i>	-1.04	41.8***	-1.02	40.3***	-0.51	3.8**
<i>High yield</i>	0.58	9.7***	0.57	9.2***	0.49	2.7*
<i>Bad z-score</i>	0.07	0.8	0.07	0.8	-0.15	0.9
<i>Bank dependence</i>	0.01	0.0	-0.01	0.0	-0.23	1.5
<i>Short maturity</i>	0.13	1.9	0.12	1.7	0.11	0.4
<i>Relation intensity (Exposure)</i>	-0.06	1.0	-0.07	1.1	-0.14	0.3
<i>Relation intensity (N)</i>	0.15	8.4***	0.16	8.8***	0.21	4.9**
<i>Bank net</i>	0.05	4.9**	0.08	9.5***	0.09	3.5*
<i>Bank size</i>			-1.75	5.0**	0.34	0.1
Observations		28,234		28,234		11,355
Targets		1,454		1,454		330
Pseudo R^2		0.64		0.64		0.68
Max.-rescaled R^2		0.85		0.85		0.91

The focus of this table is the *Bank net* variable. *Bank net* is computed separately for each observation in the sample and is the logarithm of the number of potential acquirers that share the same relationship bank with the potential target. Potential acquirers are selected based on the two-digit SIC Code and asset size. *Bank net* is measured over a three-year window. *Bank size* is the relationship bank's market share based on number of deals in the year of the takeover event. All other variables are the same as in Table 2. Columns 1 and 2 look at the sample of all takeovers. Column 3 looks at the subsample of hostile takeovers. The point estimates and Wald chi-square statistics for the industry effects are not reported, although they are included in the logit tests and they are jointly significant at the 1% level. Year effects are jointly insignificant and not included in the logit tests. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

a smaller bank (in a takeover market share sense) with a relatively large client network are more likely to be acquired.

Looking at economic significance, we find that the impact of a bank's network is economically important in explaining the probability of a takeover bid in general. Conditional on *Loan intensity* being equal to 1 (number of loans (*N*) received in the past three years is equal to 1), a company is exposed to approximately three potential acquirers through its relationship bank. For this average relationship bank client network, a firm faces a 4.8% annual average probability of becoming a target. If the firm were to deal with an additional relationship bank with a similar number of clients in its network, the probability of facing a takeover increases by 1.0% per annum.

Given these results, and their support for Hypothesis 2, comparing the economic impact in Table 7 with the economic impact when we consider acquisitions *where both the acquirer and the target deal with the same bank* (i.e., have a shared lending relationship) will provide more concrete evidence of the importance of the bank information channel in effecting takeover bids.

3.3 Shared lending relationships (Hypothesis 3)

In focusing on Hypothesis 3, we test whether a bank's transmission of information about one client to another client is enhanced by the presence of a (shared) bank lending relationship with both the target and acquirer. If this hypothesis is to be supported, we should expect the bank lending relationship intensity (N) variable to be more important in takeovers where the acquirer has a lending relationship with the *same bank* as the target. To test Hypothesis 3, we analyze those takeover bids where the bidder and the target have established a prior lending relationship with the same bank over a three-year window prior to the takeover bid.

For the 1,454 acquisition bids in the Compustat sample, we identified the acquirer in each case and checked if the acquirer's main bank was the same as the target's main bank and found 107 such cases (of which 26 cases were for unsolicited (hostile) takeovers). In all other cases, the target and acquirer did not share a relationship with the target's bank. The results are shown in Table 8.

Column 1 of Table 8 looks at the 107 takeovers in which the target firm had a lending relationship with a bank that also had a lending relationship with the acquirer.³⁵ Firms were matched to these 107 cases based on event year and four-digit SIC Codes to get 3,699 control firms that did not face any takeover attempt. The dependent variable is *Bank link*, which has a value of 1 if the target and acquirer have a common banking relationship and 0 otherwise. To see the economic importance of relationship intensity (N), in the case of shared target-acquirer lending relationships, note that a firm with a single loan issued has an annual average probability of 5.3% of facing a takeover attempt by an acquirer who deals with the target's relationship bank.³⁶ That is, *Bank link* is both statistically and economically important.

We also examine the impact of a shared lending relationship in the case of the unsolicited takeover subsample. As can be seen in column 2 of Table 8, the results for relation intensity are very similar for those 26 out of 107 cases that are defined as hostile by SDC.

3.4 New relationships, new targets?

While the panel-based logit analysis presented above is instructive, it is also susceptible to criticisms of *endogeneity*. To mitigate this concern, we now take a different approach to check whether bank relationship intensity (and the related transmission of information) affects takeover vulnerability. Hypothesis 4 examines whether a potential acquiring firm that *switches* to a new relationship bank has a higher probability of entering a takeover bid for a target that transacts with its new relationship bank after the new lending relationship is

³⁵ We do not use a dummy for a common target and acquirer bank as an independent variable since this information is not known at time " $t-1$ " for takeovers that happen at time " t ". Thus, such a dummy cannot be used in these predictive logit regressions as an independent variable or to interact with other independent variables.

³⁶ All other variables are at the average levels.

Table 8
The probability of a takeover when the acquirer and target share the same relationship bank

Variable	1		2		3	
	Coefficient	Wald	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	-0.59	3.0*	0.37	0.1	-0.57	2.7*
<i>ROA (adj.)</i>	0.88	1.2	2.75	0.9	0.81	0.8
<i>Sales growth (adj.)</i>	-0.21	0.6	-0.10	0.0	-0.19	0.4
<i>Market/Book assets (adj.)</i>	-0.14	1.4	0.04	0.0	-0.13	1.1
<i>Ln (Assets)</i>	0.18	5.6**	0.36	3.8**	0.27	9.8***
<i>Asset structure (PPE)</i>	0.60	0.6	0.26	0.0	0.64	0.6
<i>Cash</i>	-2.70	6.7***	-2.05	0.7	-2.17	4.1**
<i>Leverage</i>	-0.41	0.6	0.18	0.0	-0.52	0.9
<i>Institutional blockholder</i>	0.66	6.6***	0.91	2.1	0.48	3.4*
<i>Rated</i>	-1.37	12.1***	-3.03	7.1***	-1.17	8.9***
<i>High yield</i>	1.42	10.2***	2.73	4.8**	1.14	6.5***
<i>Bad z-score</i>	0.40	1.8	0.57	0.8	0.39	1.6
<i>Bank dependence</i>	0.50	2.7*	0.33	0.3	0.28	0.8
<i>Short maturity</i>	0.45	2.9*	0.09	0.0	0.24	0.8
<i>Relation intensity (Exposure)</i>	-0.01	0.1	-1.14	0.5	-0.01	0.0
<i>Relation intensity (N)</i>	0.78	42.8***	0.98	9.1***	0.44	10.2***
<i>Bank net</i>					0.44	26.2***
<i>Bank size</i>					-2.99	2.7*
Observations		3,806		769		3,806
Targets		107		26		107
Pseudo R^2		0.70		0.69		0.70
Max.-rescaled R^2		0.93		0.92		0.93

This table presents results of the maximum likelihood estimates of the logit model for the 1992–2005 subsample, where the acquirer and target share the same relationship bank, excluding financial firms identified with two-digit SIC Codes 60 through 65. The subsample includes 107 takeovers in which the target firm had a lending relationship with a bank that also had a lending relationship with the acquirer. Firms were matched to these 107 cases based on event year and industry and size to get 3,699 control firms that did not face any takeover attempt. The dependent variable is *Bank link*, which has a value of 1 if the target and acquirer have a common banking relationship and 0 otherwise. Column 1 looks at the sample of all takeovers. Column 2 looks at the subsample of hostile takeovers. This point estimates and Wald chi-square statistics for the industry effects are not reported, although they are included in the logit tests and are jointly significant at the 1% level. Year effects are jointly insignificant and not included in the logit tests. Model 2 looks at hostile takeovers only. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

established. The basic structure of the test is illustrated in Figure 2, panel A. As discussed, the decision of the acquirer to switch its relationship bank is likely to be independent (exogenous) of any particular decision to acquire a client of its new relationship bank.

In order to conduct this switching experiment, we first identify events where a firm switches its relationship bank. To identify the time of the firm's switch, we look at all companies that have lending relationships and pick the dates when companies switch relationship banks. We then identify all takeovers in a three-year window before and after the switching event date and exclude switching events linked to bank mergers. We ensure that the switcher is a potential acquirer for a specific firm by matching by industry (two-digit SIC Code) and size to the target. Thus, this test is conditional on a takeover taking place and each observation in the sample (of which there are 649) is a takeover of a client of the new (switched-to) bank. We estimate the probability that the

Table 9
The effect of an acquirer switching relationship banks on the probability of a takeover

Variable	1		2	
	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	-1.96	114.0***	-12.57	0.0
<i>After switch</i>	1.82	43.9***	0.89	3.9**
Observations		649		54
Cases		39		7
Pseudo R^2		0.56		0.34
Max.-rescaled R^2		0.74		0.45

This table tests how a potential acquirer switching to a new relationship bank affects the probability of it bidding for a client target of the new relationship bank. The dependent variable equals 1 if the bidder is the switching firm and 0 otherwise. Of particular interest is the dummy variable *After switch*, which identifies the period after the switch has occurred. This variable takes the value 1 if the takeover occurs in the three years after the switching event and 0 otherwise. We identify all takeovers in a three-year window before and after companies switch relationship banks. Each observation in the sample is a takeover of a client of the new/switched to bank. We ensure that the switcher is a potential acquirer for a specific firm by matching by industry (the two-digit SIC Code) and size to the target. Column 1 corresponds to all takeovers and column 2 corresponds to hostile takeovers. The table presents results of the maximum likelihood estimates of the logit model for the 1992–2005 sample, excluding financial firms identified with two-digit SIC Codes 60 through 64. Each observation in the sample is the takeover of a client of the switched-to bank. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

bidder is the switching firm. Accordingly, the dependent variable is equal to 1 if the bidder is the switching firm (thirty-nine observations) and 0 otherwise. We hypothesize that the probability of bidding on a client of a certain bank increases when the potential bidder establishes a relationship with the new bank. To test this, we focus on the dummy variable *After switch*, which is equal to 1 for the three years following the bank switch, and 0 before that. In addition, we control for industry takeover activity.

We ensure that targets are not connected by any other banking relationship (arranging bank or participant) to the acquirer. As illustrated in panel B of Figure 2, if the switching firm and the target shared any relationship bank before the switch, this takeover is excluded from the sample. Only takeovers of the firms that were in no way connected to the potential acquirer before the switch and became connected *as a consequence* of the switch of relationship bank by the potential acquirer are included in the sample.

The results of the logit test are presented in Table 9. As can be seen, conditional on an acquirer switching to a new relationship bank, we find that the coefficient on the *After switch* variable is significant and positive. This implies that the probability that the acquirer firm will target one of its new bank's clients is enhanced as the result of the new information regarding the target acquired postswitching.

It may reasonably be argued that there are caveats to the results in Table 9. First, it might be argued that thirty-nine switching observations for all takeovers and seven observations for hostile takeovers are small. We agree that the sample is limited due to the highly restrictive criteria we impose: (1) the target and potential acquirer must be borrowing from the same bank, (2) the potential

acquirer must be the switcher, and (3) the target and potential acquirer cannot be linked through any other banking relationship. Also, we note that our earlier tests are consistent with bank information dissemination for both the total sample and the hostile subsample.

Second, there might be an unobservable characteristic (e.g., “good” companies) that correlates with both bank switching and the probability of extending a takeover bid. However, such a characteristic does not explain why the acquirer is bidding on a particular target client of the new bank rather than targets in general. Also, switching might be induced by sweetened loan terms offered by the new bank that is eager to attract “good” companies. To examine this, we investigated the all-in-spread drawn (AISD) on the first loan offered by the new bank relative to the last loan offered by the old bank to the switching firm. After controlling for the main determinants of the loan spread (i.e., (log) loan amount, maturity, and leverage, as well as year-fixed effects), we found that a dummy that was 1 for a new loan spread and 0 otherwise was insignificantly different from 0.³⁷ That is, there is no evidence of a lower loan spread being offered by the new bank as a sweetener for the borrower to switch.

3.5 Summary of logit tests

Overall we find evidence consistent with an informational role of banks in the market for corporate control. In particular, we find the probability of a target being subject to a takeover bid to be increasing (1) in the degree of lending intensity by its relationship bank, (2) in the size of the target bank’s client network, (3) when the acquirer and target have the same (linked) relationship bank, and (4) when a potential acquiring firm switches to a new relationship bank of which the target is a client.

4. Bank Motives

While the above tests are consistent with an informational role for banks in the market for corporate control, they do not explain the underlying motives for banks to engage in such information transmission.

4.1 Default risk motive

We next attempt to shed more light on a bank’s motives for transferring information about the target. In particular, a bank might transmit information about one client to another so as to increase the probability of transferring loans from

³⁷ We tested the following regression equation controlling for year-fixed effects where the dependent variable is AISD (over LIBOR):

Variable	Coeff.	<i>t</i> -stat	
<i>New/switched load</i> (dummy)	11.28	0.9	
<i>Ln</i> (Loan amount)	−35.11	−9.8	***
<i>Maturity</i>	0.52	2.5	**
<i>Leverage</i>	1.37	2.2	**

Table 10
Bank's motives for informational transfer: multivariate analysis

Variable	1		2	
	Coefficient	Wald	Coefficient	Wald
<i>Industry M&A intensity</i>	0.02	0.0	-0.57	6.6***
<i>ROA (adj.)</i>	0.17	3.1*	0.30	1.3
<i>Sales growth (adj.)</i>	0.00	0.0	-0.12	1.2
<i>Market/Book assets (adj.)</i>	-0.06	12.9***	-0.23	15.1***
<i>Ln (Assets)</i>	0.02	0.6	-0.01	0.0
<i>Asset structure (PPE)</i>	-0.12	0.3	-0.03	0.0
<i>Cash</i>	0.46	7.9***	-0.62	2.6*
<i>Leverage</i>	-0.11	1.1	0.25	1.3
<i>Institutional blockholder</i>	0.77	145.0***	0.72	30.6***
<i>Rated</i>	-1.04	42.3***	-0.52	3.9**
<i>High yield</i>	0.57	9.4***	0.48	2.6*
<i>Bad z-score</i>	-0.05	0.2	-0.33	3.0*
<i>Short maturity</i>	0.07	0.5	-0.13	0.5
<i>Bank dependence</i>	0.17	3.3*	0.19	1.1
<i>Relation intensity (Exposure)</i>	-0.06	1.0	-0.11	0.3
<i>Relation intensity (N)</i>	0.15	7.7***	0.24	5.9**
<i>Relation intensity (N) * Bad z-score</i>	0.18	6.3**	0.23	2.8*
Observations		28,234		11,355
Targets		1,454		330
Pseudo R^2		0.64		0.68
Max.-rescaled R^2		0.85		0.91

This table presents the results of maximum likelihood estimates of a logit model that reestimates our benchmark model (Table 2, column 5) with the addition of the interaction variable *Relation intensity (N) * Bad z-score*. Column 1 corresponds to all takeovers and column 2 corresponds to hostile takeovers. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

an *ex ante* bad borrower to an *ex ante* good borrower so as to reduce its overall credit risk. It is worth noting that this possibility assumes that the nature of the debt can be changed by the transfer (e.g., by better management), or else the acquirer will not be willing to take on unchangeable bad debt.

We first check whether the link between relationship loan intensity and takeover probability is stronger for firms that have performed poorly. To do so, in the logit specification, we use an interaction term between the loan relationship intensity (N) variable and a “bad” Altman z -score dummy that reflects a high probability of a target firm defaulting. The results are shown in Table 10. In column 1, we show the results for all takeovers and in column 2 for the subsample of unsolicited takeovers. We focus on the *interaction term* between *Relationship intensity* and the *Bad z-score dummy*. While the *Bad z-score* variable on its own is insignificant in explaining takeovers in column 1, it can also be seen from column 1 that the interaction between this variable and *Relationship intensity (N)* is positive and significant. This suggests that in cases where a target firm's credit quality is low, a relationship bank has a greater incentive to transfer information to a potential acquirer and thus increase the probability of a target firm's takeover, a result that is consistent with the relationship bank seeking to preserve the credit quality of its overall loan portfolio. A similar, but less significant relationship effect appears to hold

Table 11
Bank's motives for informational transfer: comparison of acquirer and target

	Target		Acquirer		Difference	<i>t</i> -ratio
	Mean	<i>t</i> -ratio	Mean	<i>t</i> -ratio		
Panel A: Credit quality						
<i>z</i> -score	2.95	13.4***	3.69	13.2***	−0.75	−2.1**
S&P senior debt rating	11.18	20.0***	9.54	13.3***	1.64	1.8*
Panel B: Performance						
<i>ROA</i> (<i>adj.</i>)	0.025	2.8***	0.044	4.4***	−0.020	−1.5
<i>ROE</i> (<i>adj.</i>)	−0.011	−0.7	0.042	3.6***	−0.053	−2.6***
Net profit margin (<i>adj.</i>)	−0.043	−0.9	0.066	1.8*	−0.110	−1.8*
<i>Market/Book</i> (<i>adj.</i>)	−0.058	−0.8	0.281	2.9***	−0.339	−2.7***
Observations	107		98			
	Advisor = 1		Advisor = 0			
	Mean	<i>t</i> -ratio	Mean	<i>t</i> -ratio	Difference	<i>t</i> -ratio
Panel C: The impact of advising						
<i>ROA</i> (<i>adj.</i>)	0.021	1.2	0.021	1.6	−0.000	−0.0
<i>ROE</i> (<i>adj.</i>)	−0.050	−1.0	0.014	0.6	−0.064	−1.2
Net profit margin (<i>adj.</i>)	−0.043	−0.6	−0.011	−0.3	−0.032	−0.4
<i>Market/Book</i> (<i>adj.</i>)	−0.274	1.8*	0.065	0.7	−0.339	−1.8*
Observations	14		69			

This table uses a *t*-ratio difference in means tests to compare the credit quality of targets and acquirers for those cases where the target and potential acquirer share the same relationship bank (panels A and B). Panel C analyzes the credit quality of targets when the relationship bank is the merger advisor to the acquirer (bidder) versus where it is not. There are 98 acquirers with valid accounting information corresponding to the 107 targets. Only 83 cases (out of 107) had financial advisor information. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

for unsolicited takeovers in column 2 of Table 10. Finally, excluding the top ten M&A banks described earlier did not impact the positive and significant relationship of the relationship intensity-*z*-score interaction variable.³⁸

This raises an interesting question: Why do acquirers takeover poorly performing targets as Table 10 suggests? While we cannot address this question directly, we find evidence that acquiring firms may have an incentive to participate in this bad “debt transfer” if based on their performance (Table 11) they *ex ante* believe that they can improve the performance of the target (and by implication the credit quality of the bank’s debt).

Table 11 compares the relative performance of target and acquiring firms in the subsample where the acquirer and target have the same relationship bank (i.e., they are “linked”) using a variety of metrics. From Table 11, it can be seen, consistent with the notion that acquirers tend to be better “performers” than targets, that acquirers have a higher *ROA*, return on equity (*ROE*), net profit margins, and market-to-book ratios than targets (Table 11, panel B). In addition acquirers have higher (better) Altman *z*-scores and S&P senior debt ratings (see Table 11, panel A). This suggests that bank debt does get transferred from *ex ante* weaker clients of the bank to *ex ante* stronger clients.

³⁸ Results not shown for reasons of space, but available from the authors on request.

4.2 Financing and fee motives

In addition to the credit quality motive, a bank's incentive to facilitate a takeover of its client through the transfer of information to a potential acquirer may be due to two other reasons. First, a bank can transfer information to the acquirer because it benefits from financing a takeover and/or second, a bank may transfer information to an acquirer because it benefits from the fees resulting from its advisory role in the transaction.

To examine the potential impact of the financing motive among cases where the acquirer and the target had a lending relationship with the same bank, we first collected data on whether the acquirer received a new loan from the bank *in the same year* as a takeover bid was announced. We further checked the purpose of each loan to see whether a loan was issued for the purpose of financing a takeover. Among the seventy-five cases for which we were able to obtain these data, there were only eighteen such cases where the stated purpose of loans was to finance a takeover. Thus, the limited amount of data that is available suggests that the financing motive may not be a key motive in determining a bank's decision to channel information to a potential acquirer.

With respect to merger advisory fees, we could find only fourteen cases where the relationship bank was also serving as an advisor to the bidder (panel C, Table 11). This suggests that bidders frequently seek outside merger advice from banks other than their main or relationship bank and that any potential conflict of interest in this area is likely to be low. Moreover, as panel C of Table 11 shows, the financial conditions of targets, where the relationship bank acted as advisor to the acquirer (Acquirer 1) as opposed to where it did not (Acquirer 0), were not significantly different from each other at the 5% level.

Thus, the results for the linked bank sample are consistent with *ex ante* default risk motives largely driving the informational transfer from a relationship bank to a potential acquirer. Indeed, the fact that relationship banks do not act extensively as advisors or financiers to a particular takeover attempt is consistent with them seeking to avoid the type of lawsuit prevalent in a Dana Corp-like situation.

5. Conclusions

This paper is the first to establish the role of a private debt, or a bank lending channel, in the market for corporate control. We show that (1) bank lending intensity has a significant and positive effect on the probability of a firm becoming a target, (2) the number of same-industry client firms that a bank deals with is positively and significantly related to the takeover probability of a borrowing firm, (3) the importance of bank lending intensity in predicting a takeover is higher for those takeovers where the acquirer and the target share a lending relationship with the same bank, and (4) firms that switch relationship banks are more likely to acquire a client of its new bank as a target.

These results are consistent with banks impacting the probability of takeovers via a lending-related information channel. In addition, while the equity channel, operating through blockholder equity stakes, is found to be important, the bank lending channel effects are robust to the inclusion of equity channel variables, management control variables, and many other control variables.

From a policy perspective, the growing penetration of banks into the merger and investment banking arena in the United States since the passage of the Financial Services Modernization Act of 1999, along with a recent surge in takeovers, implies that the disciplining (or governance) role of banks and bank debt is likely to become even more prominent and controversial in the future.

Appendix

Variable	Source	Description
<i>Relationship bank</i>	LPC: DealScan	We define relationship bank based on syndicate role and actual exposure (dollar amount) to the target, measured over a three-year window. We exclude all participants. However, we allow for banks with secondary roles, such as coarranger to be a relationship bank. We define relationship banks based on actual dollar exposure. Multiple relationship banks are possible if there are other banks with exposure no less than 80% of the top relationship bank
<i>Bank dependence</i>	LPC: DealScan	Dummy, equals 1 if the target has one relationship bank over three years prior to a takeover attempt and 0 otherwise
<i>Bank link</i>	LPC: DealScan	Dummy, equal to 1 if the target and acquirer share the same relationship bank and 0 otherwise
<i>Short maturity</i>	LPC: DealScan	Dummy, equal to 1 if a target receives loans of a shorter maturity than the industry median and 0 otherwise
<i>Loan intensity (Exposure)</i>	LPC: DealScan	Measures maximum bank dollar exposure within one year prior to the takeover event. Counts all the loans outstanding (a proxy for dollar the stock of loans)
<i>Relation intensity (Exposure)</i>	LPC: DealScan	Measures maximum dollar exposure of the relationship bank available under commitment within one year prior to the takeover event. Only relationship bank share is counted. Counts all the loans outstanding
<i>Loan intensity (N)</i>	LPC: DealScan	Total number of loans issued over a three-year window prior to the takeover event
<i>Relation intensity (N)</i>	LPC: DealScan	Total number of loans over a three-year window prior to the takeover event issued by the relationship bank
<i>Bank net</i>	LPC: DealScan	<i>Bank net</i> is computed separately for each observation in the sample and is the logarithm of the number of potential acquirers that share the same relationship bank with the potential target. Potential acquirer's are selected based on the two-digit SIC Code and asset size. <i>Bank net</i> is measured over a three-year window.
<i>Bank size</i>	LPC: DealScan	<i>Bank size</i> is relationship bank market takeover share based on number of deals in the year of a takeover event
<i>After switch</i>	LPC: DealScan	<i>After switch</i> is a dummy variable equal to 1 if the takeover took place in a three-year period following an acquirer's switch of its relationship bank
<i>Industry M&A intensity</i>	SDC	Dummy, equal to 1 if there are takeovers within the same SIC four-digit industry in the year prior to the event. Identifies merger activity
<i>ROA</i>	Compustat	EBITD/Total assets: Data 18/Data 6

continued

<i>Ln (Assets)</i>	Compustat	$\text{Ln}(\text{Total assets}): \text{Ln}(\text{Data } 6)$
<i>Sales growth</i>	Compustat	$\Delta \text{Sales}/\text{Sales}: \Delta \text{Data } 12/\text{Data } 12$
<i>Leverage</i>	Compustat	$\text{Book debt}/\text{Total assets}: (\text{Data } 6 - (\text{Data } 60 + \text{Data } 74))/\text{Data } 6$
<i>ROA</i>	Compustat	$\text{EBITD}/\text{Total assets}: \text{Data } 18/\text{Data } 6$
<i>Ln (Assets)</i>	Compustat	$\text{Ln}(\text{Total assets}): \text{Ln}(\text{Data } 6)$
<i>Sales growth</i>	Compustat	$\Delta \text{Sales}/\text{Sales}: \Delta \text{Data } 12/\text{Data } 12$
<i>Leverage</i>	Compustat	$\text{Book debt}/\text{Total assets}: (\text{Data } 6 - (\text{Data } 60 + \text{Data } 74))/\text{Data } 6$
<i>Cash</i>	Compustat	$\text{Cash and Short-term investments}/\text{Total assets}: \text{Data } 1/\text{Data } 6$
<i>Ln (Equity)</i>	Compustat	$\text{Ln}(\text{Market equity}): \text{Ln}(\text{Data } 25 * \text{Data } 199)$
<i>Market/book assets</i>	Compustat	$\text{Market assets}/\text{Book assets}: (\text{Data } 6 - (\text{Data } 60 + \text{Data } 74) + \text{Data } 25 * \text{Data } 199)/\text{Data } 6$
<i>Asset structure (PPE)</i>	Compustat	$\text{Property, plant, and equipment}/\text{Total assets}: \text{Data } 7/\text{Data } 6$
<i>Bad z-score</i>	Compustat	Dummy equal to 1 if $z < 1.81$ and 0 otherwise.
<i>z-score</i>	Compustat	Following the Altman (1968) model, $z = 12 (\text{Working capital}/\text{Total assets}) + 1.4 (\text{Retained earnings}/\text{Total assets}) + 3.3 (\text{EBIT}/\text{Total assets}) + 0.6 (\text{Market value of equity}/\text{Book value of total liabilities}) + 1.0 (\text{Sales}/\text{Total assets})$
<i>Institutional blockholder</i>	Spectrum institutional (13f) holdings	Dummy equal to 1 if there is an institution holding over 5% of the company's shares
<i>Rated</i>	Standard & Poor's	Dummy equals 1 if the target has a bond rating and 0 otherwise
<i>High yield</i>	Standard & Poor's	Dummy equals 1 if the target has issued bonds with a below investment grade rating

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