

Do Banks Monitor Corporate Decisions? Evidence from Bank Financing of Mergers and Acquisitions

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Abstract

We examine whether banks, in providing financing for the deals, monitor firms mergers and acquisitions to the extent that will benefit acquirers shareholders. Inconsistent with the conventional theoretical argument, we do not find that bank-financed deals are associated with better stock or accounting performance than bond-financed deals or deals paid with internal cash. There is strong evidence instead that banks tighten up the loan contract terms in financing the deals, such as cutting short the loan maturity and imposing higher collateral requirement and more covenant restrictions. However, bank-financed deals are more likely to be terminated when they experience more negative stock market reactions to deal announcements, suggesting that banks may be subject to the pressure of shareholder dissent. Overall, our results suggest that banks do not monitor to enhance firm value but rather protect themselves from downside risks through more stringent loan contract terms. This study highlights the passive role of banks in corporate decisions outside of credit default states and covenant violations.

1 Introduction

Theories have long suggested that banks screen/monitor borrowers, which certifies/enhances borrowers value (e.g. Diamond, 1984; Ramakrishnan and Thakor, 1984). Existing empirical evidence that is usually suggested as being supportive of the above argument is that stock prices of borrowers respond favorably when borrowers announce bank loans (e.g. James, 1987; Billett et al., 1995) and unfavorably on the news of the failure of relationship banks (e.g. Slovin et al., 1993). Yet, a more recent event study by Maskara and Mullineaux (2011) calls into question the specialness of banks based on a larger sample and argues that firms would only announce loans that are likely to generate positive announcement returns. Moreover, the positive (negative) market response to loans announced (relationship bank failure) may capture benefits, which we will discuss in Section 2, other than monitoring/certification by banks. On the other hand, there is also lack of more direct evidence that banks monitor corporate decisions to the extent that enhances the firm value. This paper attempts to fill this gap in the literature.

Specifically, we examine whether banks, while providing financing for firms mergers and acquisitions (M&As), monitor this corporate decision and add value for acquiring borrowers. Focusing on M&As has several advantages. First, M&As are one of the most important decisions that firms make. There is a large literature that documents that M&As often create zero or even negative value for acquiring firms. Thus, if banks monitoring were to add value to shareholders, then M&As would be one where the scope for adding value is quite high. Second, an important limitation with the loan announcement studies is that it is often difficult to identify the loan announcement dates¹. In contrast, we have a relatively comprehensive sample of M&As where announcement is required due to regulatory reasons.

¹This is why even the relatively large sample event study by Maskara and Mullineaux (2011) uses around 1000 observations which is significantly smaller than the universe of loans in the LPC Dealscan data set.

Third, by linking the returns to the acquiring firms to the resulting contract terms of loans used to finance the deals, we can discern more sharply banks incentives in providing the loans.

The hypotheses we test are three fold. First, going by earlier results in the literature, bank financing should add value, as banks can monitor and potentially block value reducing acquisitions by withholding financing. Thus, acquisitions financed by banks should have more positive value implication for shareholders, which may arise either due to the certification benefits that a bank is willing to finance the deal, or due to potential monitoring of the management to keep value-reducing deals that are motivated by private benefits from occurring. We refer to this hypothesis as the bank monitoring hypothesis.

Second, banks may substitute for due diligence and monitoring by changing the loan contract terms. In particular, Manove et al. (2001) presents a model of lazy banks where banks may substitute monitoring by increasing covenants and collateral whereby they are protected from downside risk. In this case, banks should not be associated with any positive value creation for acquiring firm shareholders. Rather, one should observe loan contract terms to be significantly different for bank loans that finance acquisitions relative to other banks loans. Henceforth, we refer to this as the lazy bank hypothesis.

Third, the interests of equity holders and debt holders are understandably not always aligned. The equity-debt conflict of interest suggests that banks may refrain from financing deals that are risky but value-enhancing for equity holders. Also, to the extent that concurrent lending may lead to more current and future businesses (e.g. Drucker and Puri, 2005), this may further incentivize them to provide financing even if they perceive the M&As as value reducing from the shareholders perspective. We refer to this as the conflict of interest hypothesis.

Note that these hypotheses are not necessarily mutually exclusive. Banks could be non-

itoring in ways that increase the value for shareholders, but at the same time, also changing loan contract terms in a way that protect themselves from downside risks. Ultimately, it is an empirical question as to which or all of these hypotheses has an economically important effect. The empirical prediction by all three hypotheses are summarized in table 1.

To test these hypotheses, we obtain a sample of 2709 M&As from the SDC database where the method of payment involves at least some cash payment (thus we exclude all stock deals) for the period 1990-2009. We need this restriction as bank financing would be relevant only if the acquiring firm requires cash financing. Using the LPC Dealscan database, we identify all loans taken by an acquiring firm from one year prior to the deal announcement to the deal completion date as being used to finance the M&A². Accordingly, we define 563 deals as being bank financed, and the remaining 2146 deals as being non-bank financed (financed with internal cash or/and bond issuance).

Our main findings are as follows. First, relative to all non-bank financed deals as well as bond financed deals, bank financed deals do not experience higher abnormal stock returns both upon the deal announcement and over the next three years. Meanwhile, the acquiring firms do not have better operating performance in bank financed deals. The results are robust to banks reputation and prior relationship with acquirers. Also, the results hold among firms that are small, have no (or low) credit ratings, and are financially constrained, where the scope of bank monitoring is supposed to be greater. Second, loans made for acquisition financing receive significantly more stringent contract terms, compared to all other loans in Dealscan or loans made one year earlier for non-acquisition purposes to the same firms. Specifically, while acquisition-related loans have the similar yield spreads, they have

²Alternative definitions have been used in identifying whether an acquisition is bank financed, e.g., loans obtained from one year before the deal announcement to the deal announcement, or loans with the reported purpose in Dealscan being that they are made to finance acquisitions. Our results are not sensitive to these alternative definitions.

significantly short maturities, are more likely to require collaterals, and have more covenants attached. Third, while bank financed deals are more likely to be completed unconditionally, they are more likely to be terminated when they experience more negative stock price reactions to the deal announcements.

Our findings suggest that, in the context of M&As outside of credit default states and covenant violations, banks may not screen or monitor the deals to the extent that shareholders of borrowers can free ride on banks due diligence³. Rather, banks appear to engage in business generation through acquisition financing and protect themselves from potential post-M&A credit risks. Given that bank financed deals are not fared worse either, our results seem to be more consistent with the lazy bank hypothesis than the conflict of interest hypothesis. However, the evidence also implies that banks are subject to the pressure of shareholder dissent in financing M&As, which suggests an interesting interaction between creditors and shareholders in corporate governance.

We further examine the robustness of our interpretation of the results. First, banks might have screened or monitored through private communication with management before M&As are announced, and as a result, may have prevented firms from even embarking on acquisitions that could result in a large destruction of value by refrain from financing the deals. Thus, deals with great value destruction would not occur and thus are not observed. If it were the case, however, it should have biased against us finding the results, because we should expect that bank financed deals on average are better deals than those otherwise similar but not financed by banks.

Second, one may argue that M&As are such a corporate setting where interest conflict between creditors and shareholders is likely severe. Being aware of this, banks may choose

³Empirically it is difficult to distinguish between bank screening and monitoring, as the implications on the deal outcome are the same. Thus, throughout the paper, we refer to bank screening/monitoring as monitoring.

to finance only less risky (and mediocre) M&As, which can explain the lack of superior stock performance. We conduct two checks to address this issue. (i) We first examine whether acquirers are diversifying into different industries through the acquisitions, which may be favored by banks. We find that about 40 percent of bank financed M&As are diversifying deals, a proportion similar to that for non-bank financed M&As. Moreover, even among those non-diversifying deals, bank financed ones do not outperform. (ii) We then investigate how bank financed deals perform in a subsample of financially distressed firms, where the interests of creditors and shareholders are likely the most aligned. We do not find outperformance by bank financed deals either. Overall, the lack of evidence on bank monitoring is unlikely to be driven by our selection of the corporate setting M&As in examining this issue. Further, conflict of interest alone cannot explain our findings.

Third, if banks do not specifically avert financing risky deals as shown above, one might be concerned that the more stringent loan contracts simply reflect higher credit risks that banks embrace due to the risk-taking incentives by equity holders. We compare the likelihood of a credit event occurred to the combined firms in the three years subsequent to the M&As, and find that bank financed deals are not more likely to observe a credit event during the examined period. Therefore, the stringent contract terms are not likely to be due to higher credit risks associated with the financed deals. It further strengthens the support for the lazy bank hypothesis.

Lastly, the choice of bank financing is not exogenous. The pecking order theory suggests that only cash-constrained firms may use bank loans to finance acquisitions. But such an endogeneity concern should have biased against us finding that bank financed deals are not better than other cash deals. This is because cash-rich firms are more likely to engage in acquisitions motivated by agency issues (e.g. Harford, 1999) and thus bank financed deals should be more likely to be value increasing. Nevertheless, we instrument the choice of bank

financing and find that our results continue to hold. The instruments we use include the distance between the acquirers and banks, whether a M&A is made during the credit bubble period 2005-2007, and whether the acquirers have borrowing experience with banks. That is, a firm is expected to be more likely to obtain bank financing when it is geographically closer to banks, when the deal is made during a time of ample cheap credit, and if it has borrowing relationship with banks before the deal.

The rest of the paper is organized as follows. Section 2 discusses the relation to the literature and delineates the contribution of our study. Section 3 describes the sample and variables used in the empirical tests. Section 4 presents our main findings. In Section 5 we conduct robustness checks and discuss the interpretation of our results. Section 6 concludes.

2 Relation to the literature and delineation of our contribution

There is a vast literature on the benefits and costs of bank lending and relationship banking⁴. We do not intend to provide a complete survey here, and rather discuss some of the studies that are most closely related. Generally, banks can reuse information collected through multiple interactions and add value by providing other information-sensitive services. For instance, studies such as Petersen and Rajan (1994), Berger and Udell (1995), Bharath et al. (2011) find that borrowers with a bank relationship can have better access to future loans. Bharath et al. (2007) document that such borrowers will also have better contract terms on future loans. Other studies suggest that borrowers enjoy better pricing on concurrent and future security issuances (e.g. Puri, 1996; Gande et al., 1997; Drucker and Puri, 2005). Dass and Massa (2011) find that a strong bank relation improves the borrowers corporate

⁴See, for instance, Boot (2000) for a summary of the literature.

governance.

We do not dispute the price-term and non-price-term benefits of bank lending and the value added from bank relationship. The positive market response to loan announcements documented in the earlier literature may well reflect the markets expectation of those benefits. In our study, we provide another view of bank behavior during the financing of a corporate activity. We find that, different from the general perception of banks active role in certifying firm quality and monitoring managerial decisions, the market does not endorse similarly banks role in financing M&As. The evidence strongly supports the notion of lazy banks that they substitute loan contract terms for their screening/monitoring. Of course, we are not to claim that banks do not do their due diligence. Banks may try to minimize their exposure to the credit risks in their financing decisions, but our evidence suggests that such an effort is not sufficient to benefit shareholders of the borrowers in the case of M&As.

Our study also adds to the growing literature on how creditors may exert their influence over firm financial and investment decisions outside of bankruptcy. Most of them focus on the impact of debt covenants and creditors control upon the violation of covenants (e.g. Chava and Roberts, 2008; Nini et al., 2009, 2012; Roberts and Sufi, 2009). We provide evidence of the impact of creditors on corporate decisions in normal time. Our findings suggest that the role of creditors (apart from providing financing) before payment defaults and covenant violations is rather limited, inconsistent with the theoretical argument. The exception is that banks may have firms terminate the acquisitions in the presence of great shareholder dissent. The overall lazy banks in the M&As do not create significantly positive externalities for borrowers shareholders to free ride on.

We also contribute to the literature of M&As by focusing on the source of financing in M&As. A related paper by Bharadwaj and Shivdasani (2003) examines bank financed tender-offer acquisitions during 1990-1996. They find that bank financing adds value, and

interpret this as the evidence that banks monitor and certify the deals. We attribute the difference of our findings to several aspects as follows. First, they focus on tender-offer acquisitions because they need to collect information about the financing source of the deals from the required firm disclosures for such deals. Tender-offer acquisitions only account for less than one sixth of all acquisitions recorded in SDC. We are able to circumvent this data constraint in utilizing the comprehensive loan data from Dealscan, and we cover all acquisitions in our sample. We find that bank financing does not add value if we extend their sample to all acquisitions even during their sample period 1990-1996.

Second, the banking industry has been undergoing dramatic changes since the time period of their sample (1990-1996), characterized by asset securitization and other financial innovations. Wang and Xia (2011) find that lenders, who are more actively engaged in securitization, exert less monitoring efforts to their portfolio loans. There have been also significant changes in the competitive landscape on the syndicated loan market. In untabulated analysis, we examine the syndicate structures of all deals reported in Dealscan over our sampler period 1990-2009. We find an interesting inter-temporal change, echoing the increase in credit supply: the decline in the share of loans taken by lead banks and accordingly the increase in the share by participant banks in an average deal over time⁵. The decline in the loan share, combined with securitization, might have attenuated lead banks monitoring/screening incentives.

⁵The number of participant banks in a deal increases as well over time.

3 Sample selection and variable construction

3.1 Sample construction

Our sample of acquisitions comes from the Securities Data Company's (SDC) U.S. Mergers and Acquisitions Database. We select domestic mergers and acquisitions with the announcement date between January 1, 1990 and December 31, 2009. We consider only acquisitions in which acquiring firms purchase all the shares of the acquired firm or subsidiary, and we require the acquiring firm to control less than 50% of the shares of the target firm before the announcement. We exclude financial firms (SIC code between 6000 and 6999) and utility firms (SIC code between 4900 and 4949). We further require that (1) the deal value is greater than US M&As \$1million, (2) the deal value is at least 1% of the acquirers market value of equity measured on the 11th trading day prior to the announcement date, (3) the target firms is a public U.S. firm or a non-public subsidiary of a US public or US private firm, and (4) the acquirer has annual financial statement information available from Compustat and stock return data (210 trading days prior to acquisition announcements) from Center for Research in Security Prices (CRSP). Finally, we restrict our sample of M&As to deals paid for either partly or completely with cash, as we are comparing bank financed deals with other cash deals. The final sample includes 2918 deals.

3.2 Definitions of key variables

We define a merger as being bank financed if the acquiring firm takes any loans from one year prior to the merger announcement to the deal completion date. This is to take in account the two possible scenarios: (i) firms may have secured bank financing before announcing the deals, or (ii) may announce the deals before seeking for financing of the deal.

Totally 563 deals are classified as being bank financed and the remainder are financed either through bond issuances (431 deals) or by internal cash. We define bond financed acquisitions similarly. Alternative definitions have also been used in identifying whether an acquisition is bank financed, e.g., loans obtained from one year before the deal announcement to the deal announcement date, or loans with the reported purpose in Dealscan being that they are made to finance acquisitions. Our results are not sensitive to these alternative definitions.

We measure the acquirers performance in several ways. One is the cumulative abnormal returns (CARs) over the three-day event window (-1, +1), estimated using the market model with the benchmark returns being the CRSP equally-weighted index returns. The market model parameters are estimated over the 200-day period from event day -210 to event day -11, where event day 0 is the acquisition announcement date. The second measure is the three-year buy-and-hold abnormal stock returns (BHARs) subsequent to the deal announcement. We follow Lyon et al. (1999) and estimate the BHARs relative to control firms matched on size, book-to-market, and prior six-month returns. Our last measure examines the change in the average operating performance (ROA) from the three years prior to the deal announcement to the three years after the announcement. The operating performance (ROA) is measured as the ratio of earnings before interest and taxes to total assets (EBIT/assets). ROA could be affected by industry-wide factors. Therefore, we subtract the median ROA of firms with the same primary two-digit SIC code.

For loan contract terms, we use the all-in-spread drawn variable from the LPC as the yield spread measure of the loan. We define a dummy variable for collateral that takes the value of 1 if the loan is classified as secured and 0 otherwise. We construct an index that sums up all the covenants present in the loan, and we construct two sub-indices that sum up the total number of financial and general covenants, respectively. Detailed definitions of all variables used in this paper are in Appendix A.

3.3 Summary statistics

Table 2 presents summary statistics of acquirers characteristics. Bank financed firms are not significantly different from other firms in many dimensions, except that they have greater asset tangibility, are more profitable, and have higher leverage ratios as well as more free cash flows.

From table 3, we find that bank financed deals (hereinafter BF) are slightly larger than non-bank financed deals (NBF). Moreover, consistent with the literature, the average cash deal experiences significantly positive CARs around the deal announcement for both BF and NBF, but the median BF CARs are not significant. NBF CARs are even higher than BF ones, although the differences are not statistically significant. It suggests that the market does not believe that banks endorse the deals despite providing financing for them. table 3 also presents the incidence of diversifying vs. non-diversifying deals. An acquisition is defined to be diversifying if the bidder and the target do not share the identical 48 Fama-French industries. This is particularly relevant as banks may prefer to fund acquisitions that are less risky from their stand point of view. However, there is no significant difference in the proportion of diversifying deals between BF and NBF (both are around 40%).

Table 4 shows the univariate comparison of loan contract terms (yield spread, maturity, collateral, and covenant). In Panel A, the comparison is made between loans used to finance acquisitions in our sample and all other loans in Dealscan. In Panel B, in order to control for the impact of the borrower fixed effect and the time effect on loan contract terms, we contrast the acquisition-related loans to loans made to the same firm in the second year prior to the deal announcement. Recall that we define loans made in the year prior to the deal announcement as being acquisition related. Both panels yield similar results. That is, acquisition-related loans have significantly more collaterals and covenants. The difference in

loan maturity is mixed, but insignificant in either panel. The yield spread of acquisition-related loans is lower, but the difference is only significant in Panel A.

4 Main analysis and findings

4.1 Bidder performance

The univariate evidence shows that the announcement CARs are not significantly different between BF and NBF. We now conduct a multivariate regression of the announcement CARs, controlling for other variables that have been shown to be significant in explaining bidder returns. The key variable of interest, bank financing, is a dummy that equals one if a deal is bank financed and zero otherwise. The control variables, motivated by prior studies, include target ownership status, a dummy for diversifying acquisition, relative size of the acquisition, as well as bidder characteristics like firm size, Tobins Q, book leverage ratio, and profitability. In all regressions, we control for year and industry fixed effects and report the standard errors clustered at the firm level.

Results are reported in table 5. From the baseline regressions on the full sample of M&As in Panel A, we find that bank financing has no significant effect on the CARs, consistent with the univariate evidence. The finding is unaffected when we control for a proxy for information asymmetry of the bidder earnings residual. Following Moeller et al. (2007), it is defined as the standard deviation of the three-day cumulative abnormal returns around earnings announcements over the 5-year period preceding the acquisition announcement.

Furthermore, following Masulis et al. (2007), we also include GIM index and board independence to control for the effect of internal governance on deal quality. Datta et al. (2001) find a significantly positive relation between bidder managers equity-based compensation

(EBC) and bidder announcement returns. Similar to Datta et al. (2001), we define EBC as the percentage of equity-based compensation in a CEO's annual compensation package, with equity-based pay being defined as the value of stock options and restricted stock grants. Our finding is unaffected with these controls.

One might be concerned that deals financed with internal cash may not be a good benchmark for bank financed deals. In examining the role of banks, it is better to have an alternative external source of financing as a proper benchmark. We therefore focus on comparing deals financed by banks vs. those by bond issuances. From the results reported in the last column of Panel A, we find that banks are not adding more value than public financing.

In table 6, we complement the announcement returns with the other two performance measures. Consistent with the results of the announcement returns, we do not find any evidence of value addition from bank financing, regardless of whether the benchmark is all non-bank financed deals or bond financed deals. For the rest of the analysis in the paper, we find that the results on the other two measures mimic those on the announcement returns, and thus we choose not to report them for brevity.

The evidence so far suggests that banks may not screen or monitor to the extent that shareholders of the bidder will benefit from. We further examine the robustness of this finding by focusing on several special circumstances, under which the scope for banks to add value is greater. Basically, we interact the bank financing variable with the related variables and see whether the interaction term has any incremental power in explaining the firm performance.

First, we investigate whether reputable banks and banks having a prior relationship with the bidders will add more value. More reputable banks may have greater incentives to monitor due to their reputation concern, or they may have more expertise in monitoring. Prior studies (e.g. Boot and Thakor, 1997; Berger and Udell, 1995; Boot, 2000) argue that

relationship banks have more information about their borrowers, which can be used in more efficient monitoring. We define a reputable bank dummy that equals one if a bank has a market share greater than the sample median in the prior year.

Second, we posit that bank financing might be a more valuable certification device about the deal quality for bidders that are financially constrained or more opaque (having a higher degree of information asymmetry) to investors. These firms are also more bank dependent. We proxy for these situations if firms are small, not rated or have below-investment ratings, do not pay dividends.

Third, if banks monitor, they should have more incentives to do so when their interests are better aligned with shareholders. Financial distress is such a circumstance, as loan payment may be defaulted if firms continue to perform financially poorly. We define a distress dummy that equals one if the Z-score is above the sample median and zero otherwise.

The results obtained from testing the above circumstances using the CARs as the performance measure are shown in table 7. None of the interaction terms with the bank financing variable are significant. This finding casts further doubt on the bank monitoring hypothesis. Overall, our findings so far do not support the conflict of interest hypothesis either, as bank financed deals are not fared worse as this hypothesis would suggest.

4.2 Loan contract term regression

We have shown that bank financing has no wealth effects on average. The question is that, as a stakeholder, how may banks deal with the downside risks (credit defaults) if they are not so concerned with the deal quality? We therefore test the lazy bank hypothesis to see whether banks can protect themselves from such risks through more stringent loan contract terms, and thus de facto effectively substitute efforts on monitoring. The univariate evidence

in table 4 supports this conjecture. We conduct this test in the multivariate context.

We use several firm-specific characteristics to control for their impact on loan terms. Larger, more profitable, and less leveraged firms are likely to borrow from banks on better terms. Because lenders can recover tangible assets should a firm default, we expect firms with more tangible assets to have better terms. Cash flow volatility is used to proxy for a firm's earnings risk and is expected to be positively correlated with the cost of debt. We control for loan maturity in months in regressing the yield spread, because a lender requires a liquidity premium for longer term debt and this liquidity premium translates into a higher loan spread. We also include loan size, which captures economies of scale in bank lending and thus is expected to be inversely related to the loan rate. Performance pricing is a dummy variable that equals one if a loan contract has the performance pricing feature⁶. This is to control for the possibility that lenders price loans differently if they contain performance pricing clauses.

Macroeconomic conditions can affect debt pricing. We use three different variables to control for macroeconomic cycles. Credit spread is the difference between the yields of BAA and AAA corporate bonds. Term spread is the difference between the yields of 10 year treasury bonds and 2 year treasury bonds. The literature suggests that credit spread and term spread are good proxies of macroeconomic conditions and help explain stock and bond returns (e.g. Chen et al., 1986; Fama and French, 1993). Specifically, credit spreads tend to widen in recessions and to shrink in expansions (e.g. Collin-Dufresne et al., 2001). This is because investors require more compensation for increased default risk in bad economic times. High (low) term spreads are often used as an indicator of good (bad) economic prospects. In the regressions, we measure credit spread and term spread one month before

⁶The performance pricing feature makes the loan interest rate step up in the event of adverse shocks to the borrower's credit risk. This feature has been shown to have a significant effect on the loan interest rate (Asquith et. al., 2005).

the time the loan becomes active.

Finally, we control for loan type, loan purpose, and industry effects. Because loans with different types and purposes and in different industries are associated with different risks, they may be evaluated differently. To ensure that our inference is not confounded by any unobservable firm-specific factors, we employ a firm fixed-effect estimation in regressing the loan contract terms.

Table 8 presents our regression analyses on the loan contract terms for all loans in Dealscans. In untabulated results, we also conduct the same analysis on the sample of loans that are made to sample firms in the second year prior to the M&A announcements as well as loans used to finance the M&As, and the results are similar. We find that the banks don't charge higher yield spreads for M&A loans, but protect themselves by imposing more stringent requirements on other contract terms. Specifically, consistent with the univariate evidence, acquisition loans are required to have significantly more collaterals and covenants. We differentiate between financial and general covenants, and find that both increase for acquisition loans. Also, we find that banks impose shorter maturities to acquisition loans after controlling for other factors.

Most of the control variables yield a similar result to the literature (e.g. Graham et al., 2008). Non-price terms of the loan contract are equally important in explaining the cross section of loan spreads. The performance pricing dummy is negative and significant in explaining the variation in loan spreads. Interestingly, the negative (and significant) coefficient for maturity and the positive (significant) coefficient for collateral are inconsistent with the notion that these non-price terms can be used as trade-off features for price terms⁷.

⁷Paper such as Stulz and Johnson (1985) and others model the collateral decision as one where higher quality borrowers signal their decision by pledging collateral. On the other hand, models of collateral based on risk shifting have riskier borrowers pledging collateral. Empirically, several papers starting with Berger and Udell (1990) and Jimnez et al. (2006) find that collateral has a positive impact on loan rate, more consistent with the risk shifting model rather than the signaling models of collateral.

4.3 Interaction of banks and shareholders: Deal completion analysis

The evidence so far suggests that banks may substitute monitoring for stringent loan contract terms, which is socially inefficient as banks could have used their information and expertise in screening out deals that do not create value. It would be intriguing to see how banks may respond when shareholders strongly disagree with the announced M&A as a strong negative signal of the deal quality. Do banks listen to the market? How likely may banks be subject to the pressure from shareholders? We do not observe the interaction between banks and managers. So we exploit the deal completion/termination decision to see whether banks are receptive to the negative signal. If so, a deal which is value destroying for shareholders is more likely to be terminated if banks monitor under pressure to call off the deal.

Specifically, we examine the impact of bank financing on the likelihood of deal completion. If banks were monitoring under pressure, then bank financing should increase the likelihood of terminating value-reducing acquisitions. We conduct a probit regression of deal completion, where the dependent variable is a dummy that equals one if the announced deal is completed, and 0 if it is terminated. We define, as one of the explanatory variables, a value-losing dummy that equals one if the announcement CARs are negative, indicating the poor quality of the deal and shareholder dissent on the deal news. This variable is then interacted with the bank financing variable to examine the conjecture discussed above.

The regression results are present in table 9. We find that, unconditionally, bank financed deals are more likely to be completed. However, conditional on a deal being announced with negative stock response, bank financed deals are more likely to be terminated. This finding suggests an interesting interaction between shareholders and creditors: banks sometimes are

subject to the shareholder dissent, and may monitor under pressure.

In sum, we do not find that bank financing has positive wealth effect for acquirers shareholders on average, implying the lack of evidence on bank monitoring. Banks seem to substitute monitoring with long contract terms. Nevertheless, there is evidence that banks may monitor to the interest of shareholders under the pressure from shareholders.

5 Robustness checks and discussions

5.1 Selection bias: Monitoring unobserved?

Banks might have screened or monitored, but it was unobserved. As such, our finding is subject to a selection bias. For instance, banks could have communicated with management privately and prevented firms, by refraining from financing the deals, from even embarking on acquisitions that could result in large value destruction. If it were the case, however, it should have biased against us finding that bank financed deals perform similarly to non-bank financed deals, because we should expect that bank financed deals on average are better deals as value-losing deals have been netted out.

5.2 Lack of superior performance due to low risks?

One may argue that M&As are such a corporate setting where interest conflict between creditors and shareholders is likely severe. Being aware of this, banks may choose to finance only less risky (and mediocre) M&As, which can explain the lack of superior stock performance. However, as table 3 shows, only about 40 percent of bank financed M&As are diversifying deals, a proportion similar to that for non-bank financed M&As. Moreover, the finding on the subsample of financially distressed firms in table 7 suggests that bank financed

deals do not outperform even in the case where the interests of creditors and shareholders are likely the most aligned.

5.3 Stringent contract terms reflect higher credit risks?

If banks do not specifically avert financing risky deals as shown above, one might be concerned that the more stringent loan contracts simply reflect higher credit risks that banks embrace due to the risk-taking incentives by equity holders. To address this issue, we follow Acharya et al. (2007) and gauge the acquiring firms post-acquisition credit risks by estimating the firms distress probability in the three years subsequent to the deals. We then run a regression of this distress probability on the bank financing variable to see whether bank financed deals are more likely to observe a credit event during the examined period.

The results are shown in table 10. We find that the likelihood of distress is not significantly higher for bank financed firms in every of the post-acquisition three years or in the overall three-year period. Therefore, the stringent contract terms are not likely to be due to higher credit risks associated with the financed deals.

5.4 Endogeneity of bank financing

The choice of bank financing is not exogenous. There may be a common unobserved factor that drives both the bank financing decision and the announcement abnormal returns. We instrument the choice of bank financing and re-examine its wealth effect using the Heckman two-stage method. We use three instrumental variables which we justify economically. The first is the average geographical distance between the acquirers and all banks in the region of the acquirers headquarter. A firm is expected to be more likely to obtain bank financing when it is located closer to banks, but its location should not affect investors response to its

acquisition announcement. The second is whether a M&A is made during the credit bubble period 2005-2007. A firm is more likely to get financing from banks due to the greater availability of cheap capital during the credit bubble period. Lastly, the third instrument is whether the acquirer has borrowing experience with banks. It is intuitive that the firm will have better access to new loans with its prior experience. Table 11 presents the results of the treatment effect regressions for the CAR. These three IVs yield similar results that the first stage F-statistics are all larger than 10 and reject the null that the coefficient on the instruments are insignificantly different from 0 at the 1% level. More importantly, the second step estimation all have consistent results that bank financing does not add value. Overall, the two-step regression finding is consistent with that obtained from the OLS regression.

6 Conclusion

We examine the impact of bank financing on bidder value in M&A. In contrast with the conventional theoretical argument, we fail to find that banks screen or monitor firms acquisition decisions, to the extent that shareholders of acquirers can benefit. Instead, banks impose more stringent loan contract terms in financing the acquisitions. Our findings are more consistent with the theoretical arguments in Seward (1990) and Besanko and Kanatas (1993) who argue that bank monitoring incentives differ significantly from monitoring incentives of shareholders, and Manove et al. (2001) who argue that banks may substitute monitoring by tightening up loan contract terms. We believe our results highlight an important limitation of evaluating the benefits of bank lending using stock price data. Further research would examine the circumstances under which bank financing would add value for shareholders and where it does not add value.

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Table 1: Empirical prediction of three hypotheses

This table summarizes the empirical prediction of the three hypotheses tested in this paper. + denotes the hypothesis predict a positive effect on the variable. - denotes the hypothesis predict a negative effect on the variable. 0 denotes the hypothesis predict a no effect on the variable. N.A. denotes the hypothesis has no prediction on the variable.

Hypothesis	CAR	Loan Fee	Maturity	Collateral	Covenant
Screening/Monitoring Hypothesis	+	N.A	N.A	N.A	N.A
Lazy bank Hypothesis	0	N.A	-	+	+
Conflict of interest Hypothesis	0	+	-	+	+

Table 2: Summary statistics:Acquirers characteristics

The sample consists of M&A using non-zero cash announced during the period January 1, 1990-December 31, 2009. The bidders are listed in the Securities Data Companys Mergers and Acquisitions database and have trading data in CRSP and annual financial report data in Compustat. Bank-financed is a dummy variable equal 1 for there is at least one loan issued during (-12 month, deal completion) M&A event window and 0 otherwise. Leverage is the ratio of book value debt to market value of equity. Total asset is the book value of the asset. Tobins q is the bidders market value divided by the book value of asset. FCF is the Operating income before depreciation minus interest expenses, income taxes, and capital expenditures, scaled by book value of total assets. Managerial ownership is Bidder managers' percentage ownership of the firm, including both stock and stock options. Independent board is a dummy variable equaling 1 if over 50% of bidder directors are independent. G-index is number of antitakeover provisions. Profitability is the ratio of EBITDA to sales. Tangibility is the ratio of NPPE to total assets. Current ratio is the ratio of current assets to current liabilities. Market-to-book is the ratio of (book value of assets minus book value of equity plus market value of equity) to the book value of assets. See Appendix A for a detailed definition of all variables. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	Mean	Std.	No. Obs.	Non-bank-financed (Mean)	bank-financed (Mean)	Mean Diff.
Total assets(\$ million)	6861	21648	2709	7024	6185	839.5
Tangibility	0.25	0.22	2706	0.24	0.28	-0.04***
Profitability	0.13	0.12	2709	0.12	0.16	-0.04***
Book to market Ratio	0.47	0.36	2709	0.48	0.45	0.03
Leverage	0.40	0.19	2709	0.40	0.43	-0.03***
Free Cash Flow	0.04	0.12	2709	0.04	0.06	-0.03***
Independent board	0.30	0.46	2709	0.28	0.37	-0.09***
Zscore (modified)	6.31	8.36	2709	6.56	5.26	1.30**
Current ratio	2.75	2.62	2614	2.90	2.14	0.76***
Asset maturity	7.49	7.07	2599	7.48	7.51	-0.03
GIM index	9.15	2.63	1407	9.19	9.03	0.16
No. of directors	9.20	2.76	1015	9.24	9.08	0.16
Managerial Ownership(%)	0.003%	0.01%	1459	0.003%	0.003%	0.000

Table 3: Summary statistics: deal characteristics

CAR is the abnormal return of the acquiring firm in a time window from -1 to +1 day relative to the announcement date of the merger. Relative Deal Size is the deal size divided by the total asset. Diversifying Deal equal to 1 if the merger does not have same FamaFrench 48 industry code. Diff. is the mean difference between the bank financed deal and non-bank financed deal. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

		Bank-financed		
		0	1	Diff.
CAR(mean)		0.007***	0.006**	0.001
CAR(median)		0.0035***	0.0027	0.0008
Relative Deal Size(mean)		0.362	0.458	-0.09***
Relative Deal Size(median)		0.13	0.18	-0.05
Diversifying Deal	0	1308	315	
	1	875	211	
Target Type	Joint Venture	21	2	
	Private	816	175	
	Public	1098	289	
	Subsidiary	248	60	

Table 4: Summary statistics: loan characteristics

Loan spread is measured as all-in spread drawn in the Dealscan database. Collateral is a dummy variable that equals one if the loan facility is secured by collateral and zero otherwise. Maturity is debt maturity measured in months. Number of Covenants is the total number of covenants included in the debt agreement. Number of General (Financial) Covenants is the total number of general (financial) covenants in the debt agreement. Panel A compare the M&A loan and non-M&A loans. Panel B compare the M&A loans with loan issued to the same borrower but in the second year prior to the deal announcement. Mean Diff. is the mean difference between the M&A loans and non-M&A loans. A detailed definition of all variables is reported in Appendix A. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A				
	Overall sample	Non M&A loan	M&A loan	Mean Diff.
Loan Spread	192.2	194.4	163.4	31.07***
Collateral	0.249	0.242	0.389	-0.147***
Maturity in months	47.24	47.29	46.24	1.055
Number of Financial Covenants	0.185	0.173	0.416	-0.243***
Number of General Covenants	1.059	0.978	2.743	-1.765***
Total number of covenants	1.244	1.152	3.159	-2.008***
N	33906	32909	997	
Panel B				
	Loan made in the second year prior to the M&A announcement date and issued to same borrower		M&A loan	Mean Diff.
Loan Spread	174.3		171.6	2.738
Collateral	0.318		0.417	-0.0991***
Maturity in months	43.64		44.55	-0.903
Number of Financial Covenants	0.329		0.444	-0.115*
Number of General Covenants	1.814		2.801	-0.987***
Total number of covenants	2.143		3.245	-1.101***
N	1697		997	

Table 5: Effect of bank-financing on acquirers performance—CAR

The dependent variable in all specifications is the abnormal return of the acquiring firm in a time window from -1 to +1 day relative to the announcement date of the merger. A bank financed merger is a merger paid for partly or completely by cash, and the acquiring firm took a loan from the LPC database during (-1yr, completion) M&A window. Bond-financed deal is defined as there is any bond issued during (-1yr, completion) cash M&A window. BHAR is the 3-year buy-and hold abnormal returns. Δ ROA is the changes in the industry-adjusted three year average ROA. A detailed definition of all variables is reported in Appendix A. All models have year, and industry fixed effects that are not reported in the table. Standard errors are all clustered at firm level and reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	Basic specification	Control Asy. Info. Measure	Control CG measure	Bank- vs Bond-financed
Bank financed	0.0027 (0.0041)	-0.00034 (0.0046)	0.00037 (0.0051)	0.0064 (0.0059)
Deal size	0.0042 (0.0034)	0.0023 (0.0049)	-0.020** (0.0096)	-0.0034 (0.0051)
Target is Private	0.018*** (0.0040)	0.022*** (0.0044)	0.014** (0.0053)	0.025*** (0.0071)
Target is a Subsidiary	0.023*** (0.0051)	0.024*** (0.0062)	0.015** (0.0069)	0.0062 (0.0084)
Tender Offer	0.0070* (0.0039)	0.0084* (0.0044)	0.0043 (0.0050)	-0.00059 (0.0064)
Diversifying merger	0.0015 (0.0032)	0.00013 (0.0038)	-0.0024 (0.0044)	-0.0049 (0.0057)
Log (Market Cap)	-0.0036*** (0.0010)	-0.0034*** (0.0013)	-0.0034** (0.0017)	-0.0035** (0.0018)
Tobins q	-0.000071 (0.0012)	-0.00027 (0.0015)	0.00054 (0.0017)	0.00075 (0.0021)
Leverage	0.0019 (0.0100)	0.0022 (0.012)	0.011 (0.015)	0.014 (0.018)
Free Cash Flow	-0.011 (0.019)	0.016 (0.028)	0.051 (0.031)	0.023 (0.036)
Earnings residual		-0.11* (0.064)	-0.034 (0.088)	
Independent Board			-0.0015 (0.0052)	
GIM index			-0.00077 (0.00073)	
Managerial ownership			20.4 (14.6)	
Constant	0.091*** (0.028)	0.073*** (0.026)	0.076* (0.045)	0.011 (0.032)
Number of observations	2709	1652	1052	994
adj. R-sq	0.047	0.064	0.035	0.082

Table 6: Effect of bank-financing on acquirers performance—long term

BHAR is the 3-year buy-and hold abnormal returns. Δ ROA is the changes in the industry-adjusted three year average ROA. A bank financed merger is a merger paid for partly or completely by cash, and the acquiring firm took a loan from the LPC database during (-1yr, completion) M&A window. Bond-financed deal is defined as there is any bond issued during (-1yr, completion) cash M&A window. A detailed definition of all variables is reported in Appendix A. All models have year, and industry fixed effects that are not reported in the table. Standard errors are all clustered at firm level and reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	BHAR Full sample	Δ ROA Full sample	BHAR Bank- vs. Bond- financed	Δ ROA Bank- vs. Bond- financed
Bank financed	0.021 (0.057)	-0.0059 (0.0052)	0.043 (0.080)	-0.011 (0.0068)
Deal size	0.033 (0.044)	0.0035 (0.0033)	-0.042 (0.076)	0.0028 (0.0060)
Target is Private	-0.087 (0.062)	0.00065 (0.0058)	-0.10 (0.095)	0.000034 (0.0079)
Target is a Subsidiary	-0.058 (0.083)	0.0048 (0.0069)	-0.033 (0.14)	0.0042 (0.011)
Tender Offer	0.0064 (0.068)	0.00080 (0.0055)	-0.067 (0.095)	-0.0040 (0.0080)
Diversifying merger	-0.048 (0.050)	0.000029 (0.0044)	0.054 (0.078)	0.0052 (0.0062)
Log (Market Capitalization)	0.0041 (0.017)	0.0011 (0.0016)	-0.0049 (0.027)	-0.0014 (0.0023)
Tobins q	-0.0025 (0.020)	-0.0019 (0.0026)	-0.023 (0.030)	-0.0011 (0.0044)
Leverage	0.21 (0.15)	0.065*** (0.014)	0.53** (0.24)	0.052*** (0.020)
Free Cash Flow	0.60** (0.26)	-0.21*** (0.034)	0.69 (0.55)	-0.098 (0.061)
Earnings residual	-0.64 (0.42)	-0.083*** (0.025)	-0.29 (0.53)	-0.064* (0.038)
Number of observations	2709	1652	1052	994
adj. R-sq	0.047	0.064	0.035	0.082

Table 7: Subsample analysis of acquiring firm abnormal return

The dependent variable in all specifications is the abnormal return of the acquiring firm in a time window from -1 to +1 day relative to the announcement date of the merger. A Bank financed merger is a merger paid for partly or completely by cash, and the acquiring firm took a loan from the LPC database during (-1yr, completion) M&A window. A detailed definition of all variables is reported in Appendix A. All models have year and industry fixed effects that are not reported in the table. Standard errors are all clustered at firm level and reported in parentheses. Other control variables in table 4 are also used in the empirical estimation but not reported to conserve space. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	CAR	CAR	CAR	CAR	CAR	CAR	CAR
Bank-financed	0.013 (0.0083)	0.0026 (0.0044)	0.0024 (0.0049)	-0.0013 (0.0050)	0.0026 (0.0045)	0.0045 (0.0060)	0.0025 (0.0042)
Bank Financed *	-0.015*						
Reputable bank	(0.0088)						
Bank Financed *		0.0013					
Relationship Bank		(0.0089)					
No rating			0.0011 (0.0043)				
Bank financed * No Rating			0.00074 (0.0079)				
Not investment grade				- 0.010** (0.0044)			
Bank financed *				0.0058 (0.0072)			
Not Investment Grade							
Small Firm					0.0044 (0.0050)		
Bank financed *					0.00037 (0.0089)		
Small							
Dividend payer						0.0076** (0.0038)	
Bank financed *						-0.0051 (0.0078)	
Dividend payer							
Distress							0.018 (0.023)
Bank Financed *							0.020 (0.052)
Distress							
N	2709	2709	2709	2709	2709	2709	2408
adj. R-sq	0.048	0.047	0.047	0.048	0.047	0.048	0.045

Table 8: Differences of M&A loans from other loans in loan contract terms

The dependent variable in each regression is reported at the top of the column. A detailed definition of all variables is reported in Appendix A. All models have firm, year, industry, loan type and loan purpose fixed effects that are not reported in the table. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	Loan Spread	Collateral	Log (maturity)	Financial Covenants	General Covenants	All covenants
M&A loan	0.024 (0.023)	0.72*** (0.18)	-0.065** (0.026)	0.28** (0.12)	0.089*** (0.034)	0.11*** (0.032)
Tangibility	-0.059 (0.10)	-0.35 (0.72)	-0.039 (0.11)	1.34*** (0.51)	0.028 (0.16)	0.11 (0.15)
Profitability	-0.25 (0.27)	3.40* (1.96)	0.31 (0.27)	-3.57*** (1.37)	0.035 (0.43)	-0.18 (0.39)
Coverage	-0.10*** (0.031)	-0.69*** (0.23)	-0.011 (0.031)	0.17 (0.17)	-0.070 (0.049)	-0.037 (0.045)
Current Ratio	-0.0075 (0.0073)	0.052 (0.050)	0.015* (0.0080)	0.013 (0.050)	-0.0021 (0.010)	-0.0017 (0.0099)
Collateral	0.23*** (0.018)		0.050*** (0.017)	1.05*** (0.081)	0.91*** (0.028)	0.91*** (0.026)
Log(asset)	-0.034 (0.036)	-0.092 (0.26)	0.020 (0.036)	-0.24 (0.19)	0.060 (0.057)	0.020 (0.052)
Book to Market	0.15*** (0.020)	0.48*** (0.13)	-0.021 (0.020)	-0.49*** (0.087)	0.0035 (0.028)	-0.031 (0.026)
Leverage	0.64*** (0.068)	1.35*** (0.47)	0.019 (0.073)	0.28 (0.33)	0.034 (0.10)	0.062 (0.093)
Log(maturity)	-0.066*** (0.013)	0.22*** (0.085)		-0.096* (0.057)	-0.012 (0.022)	-0.020 (0.020)
Log(loan size)	-0.052*** (0.0074)	0.074 (0.052)	0.039*** (0.0075)	0.014 (0.033)	0.057*** (0.013)	0.045*** (0.012)
Performance pricing	-0.055*** (0.016)	2.28*** (0.12)	0.087*** (0.017)	0.95*** (0.076)	1.08*** (0.026)	1.05*** (0.024)
Relationship Bank	-0.0097 (0.013)	0.21** (0.10)	-0.031** (0.015)	0.17*** (0.064)	0.072*** (0.022)	0.070*** (0.020)
Credit spread	0.17*** (0.042)	0.30 (0.32)	-0.078* (0.042)	0.10 (0.13)	0.14** (0.065)	0.16*** (0.056)
Term spread	0.044* (0.024)	0.40** (0.18)	-0.028 (0.025)	0.25 (0.19)	-0.0099 (0.038)	-0.0090 (0.036)
Constant	6.15*** (0.23)		3.90*** (0.36)			
Adjust/pseudo R2	0.056	0.341	0.271			
N	5884	4609	8229	3853	6122	6216

Table 9: Likelihood of deal completion

The dependent variable is the deal completion dummy. A detailed definition of all variables is reported in Appendix A. All models have year and industry fixed effects that are not reported in the table. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	Completion Dummy	Completion Dummy	Completion Dummy
Bank financed	0.22* (0.11)	0.22* (0.11)	0.56*** (0.19)
Value losing		-0.15* (0.083)	-0.066 (0.09)
Bank financed* value losing			-0.501*** (0.24)
Deal size	-0.14*** (0.051)	-0.14*** (0.051)	-0.13** (0.051)
Target is private	1.16*** (0.12)	1.14*** (0.12)	1.16*** (0.13)
Target is a subsidiary	0.88*** (0.16)	0.87*** (0.16)	0.88*** (0.16)
Log (market capitalization)	0.090*** (0.027)	0.095*** (0.027)	0.099*** (0.027)
Tobins q	-0.0092 (0.032)	-0.01 (0.032)	-0.012 (0.032)
Leverage	0.13 (0.24)	0.13 (0.24)	0.13 (0.24)
Free Cash flow	0.34 (0.37)	0.3 (0.37)	0.28 (0.37)
Tender offer	0.18* (0.10)	0.18* (0.10)	0.19* (0.10)
Constant	-0.56 (0.55)	-0.57 (0.55)	-0.63 (0.55)
N	2579	2579	2579
Pseudo-R2	0.199	0.201	0.205

Table 10: Prediction of distress after M&A

The dependent variable is the distress dummy. A detailed definition of all variables is reported in Appendix A. All models have year and industry fixed effects that are not reported in the table. Standard errors are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	Distress in first year after M&A	Distress in second Year after M&A	Distress in third year after M&A	Distress in three years after M&A
Bank Financed	0.24 (0.43)	0.084 (0.30)	-0.044 (0.35)	-0.045 (0.23)
Deal size	0.48** (0.20)	0.33** (0.16)	0.19 (0.16)	0.34*** (0.12)
Target is private	0.52 (0.49)	0.81** (0.35)	-0.86** (0.37)	0.012 (0.25)
Target is a subsidiary	0.39 (0.59)	0.013 (0.49)	-0.57 (0.45)	-0.18 (0.32)
Tender offer	0.65 (0.55)	0.88** (0.39)	-0.15 (0.37)	0.28 (0.28)
Diversifying Merger	0.30 (0.40)	-0.16 (0.28)	0.41 (0.29)	0.13 (0.21)
Log (Market Cap)	-0.72*** (0.20)	-0.45*** (0.17)	-0.56*** (0.19)	-0.60*** (0.13)
Tobins q	0.87*** (0.23)	0.30* (0.17)	0.45** (0.18)	0.58*** (0.14)
Leverage	-1.70 (1.43)	0.44 (0.94)	1.49 (1.08)	-0.098 (0.75)
Tangibility	-2.43** (1.17)	0.50 (0.77)	0.056 (0.85)	-0.19 (0.61)
Profitability	-2.22 (3.77)	-0.82 (2.50)	-2.04 (2.70)	-1.51 (1.92)
Coverage	0.46** (0.19)	0.062 (0.15)	0.25 (0.17)	0.28** (0.12)
Current Ratio	0.040 (0.092)	-0.050 (0.10)	0.030 (0.085)	0.027 (0.058)
Z-score	-0.40*** (0.13)	-0.085 (0.060)	-0.063 (0.062)	-0.14*** (0.048)
Free Cash Flow	-4.79* (2.89)	-2.23 (2.09)	-0.077 (2.45)	-3.47** (1.59)
Constant	5.18* (3.01)	2.41 (2.25)	2.91 (2.45)	2.03 (1.97)
N	1222	1518	1003	1738
Adjust/pseudo R2	0.336	0.242	0.192	0.231

Table 11: Endogeneity of Bank Financing–Heckman Treatment Effect Model

IV_rel_5 is defined as 1 if the deal gets funding at least partially from relationship bank. IV_bubble is defined as 1 if the loan is issued between years 2005 and 2007. ln(mean distance) is defined as the log of mean difference between the firm and all the banks in LPC dataset. A detailed definition of all variables is reported in Appendix A. Standard errors are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	CAR	Bank financed	CAR	Bank financed	CAR	Bank financed
Bank financed	0.0065 (0.0080)		-0.023 (0.031)		0.021 (0.031)	
IV_rel_5		1.62*** (0.083)				
IV_bubble				0.83*** (0.20)		
ln(mean distance)						-0.85** (0.43)
Deal size	0.0041* (0.0023)	0.14*** (0.048)	0.0052** (0.0026)	0.14*** (0.044)	0.0056* (0.0032)	0.17*** (0.055)
Target is private	0.018*** (0.0038)	-0.050 (0.087)	0.018*** (0.0038)	-0.0094 (0.080)	0.018*** (0.0041)	-0.067 (0.085)
Target is a subsidiary	0.023*** (0.0051)	-0.016 (0.12)	0.024*** (0.0052)	0.066 (0.11)	0.024*** (0.0055)	0.0095 (0.11)
Tender offer	0.0068 (0.0042)	0.078 (0.095)	0.0079* (0.0044)	0.15* (0.087)	0.0080* (0.0048)	0.042 (0.098)
Diversifying Merger	0.0015 (0.0031)	-0.0085 (0.071)	0.0016 (0.0031)	-0.019 (0.066)	0.0014 (0.0034)	-0.017 (0.071)
Log (mcap)	-0.004*** (0.00095)	-0.006 (0.022)	-0.003*** (0.00097)	0.02 (0.020)	-0.004*** (0.0011)	-0.001 (0.022)
Tobins q	-0.000082 (0.0010)	0.036 (0.024)	-0.000 (0.0010)	0.0032 (0.023)	0.00036 (0.0011)	0.022 (0.025)
Leverage	0.0015 (0.0085)	0.12 (0.19)	0.0047 (0.0092)	0.45** (0.18)	0.0031 (0.0098)	0.40** (0.19)
Free Cash Flow	-0.012 (0.013)	1.36*** (0.37)	-0.0032 (0.016)	1.66*** (0.35)	-0.017 (0.016)	1.46*** (0.36)
Constant	0.091*** (0.023)	-2.21*** (0.52)	0.091*** (0.023)	-1.64*** (0.46)	0.098*** (0.024)	5.89 (3.68)
Lambda	-0.0027 (0.0049)		0.015 (0.018)		-0.010 (0.017)	
N	2709		2709		2340	

A APPENDIX: Variable Definition

- *Leverage*: $(\text{Long Term Debt} + \text{Debt in Current Liabilities}) / \text{Total Assets} = (\text{data9} + \text{data34}) / \text{data6}$
- *Log(Assets)*: Natural log of Total Assets = $\log(\text{data6})$
- *Tangibility*: $\text{Net Property, Plant and Equipment} / \text{Total assets} = \text{data8} / \text{data6}$
- *Profitability*: $\text{EBITDA} / \text{Total Assets} = \text{data13} / \text{data6}$
- *Market to Book*: $(\text{Market value of equity plus the book value of debt}) / \text{Total Assets} = (\text{data25} * \text{data199} + \text{data6} - \text{data60}) / \text{data6}$
- *Modified Altman's (1968) Z-score*: $(1.2 \text{working capital} + 1.4 \text{retained earnings} + 3.3 \text{EBIT} + 0.999 \text{Sales}) / \text{Total Assets} = (1.2 \text{data179} + 1.4 \text{data36} + 3.3 \text{data170} + 0.999 \text{data12}) / \text{data6}$
- *Small firm*: Dummy variable equal to one if the acquirer has a deflation total asset equal to or less than that of the median of all firms in the sample.
- *Earnings Residual*: The standard deviation of all three-day cumulative abnormal returns around earnings l announcements from I/B/E/S using the market model over the 5-year period preceding the acquisition announcement.
- *Idiosyncratic Volatility*: the standard deviation of the market-adjusted residuals of the daily stock returns measured during the period starting from 205 to six days prior to the acquisition announcement.
- *Free cash flow*: $(\text{Operating income before depreciation (item13)} - \text{interest expenses (item15)} - \text{income taxes (item16)} - \text{capital expenditures (item128)}) / \text{book value of total assets (item6)}$.
- *Market capitalization*: Number of shares outstanding multiplied by the stock price at the 11th trading day prior to announcement date.
- *Managerial equity ownership*: Bidder managers' percentage ownership of the firm, including both stock and stock options.
- *Board size*: Number of directors on bidders board.
- *Independent board*: Dummy variable: 1 if over 50% of bidder directors are independent, 0 otherwise.
- *GIM index*: Taken from GIM (2003), based on 24 antitakeover provisions. Higher index levels correspond to more managerial power.
- *Distress*: It is defined by the default probability estimated using Black-Scholes-Merton option pricing model. For each month the default probability is estimated and if in six or more months of a certain year the default probability is equal to or higher than the 90th percentile, that year is defined as a distress year. At the end of this process, each firm year when the firm has sufficient trading and accounting data available is either classified as distressed ($\text{Distress}=1$) or not distressed ($\text{Distress}=0$).

- *ln(mean distance)*: The log of mean geography distance between the firm headquarter and all the banks in LPC dataset.
- *Bank financed*: Dummy variable: 1 for there is at least one loan issued during (-12 month, deal completion) M&A event window.
- *Public target*: Dummy variable: 1 for public targets, 0 otherwise.
- *Target is private*: Dummy variable: 1 for private targets, 0 otherwise.
- *Target is a subsidiary*: Dummy variable: 1 for subsidiary targets, 0 otherwise.
- *All-cash deal*: Dummy variable: 1 for purely cash-financed deals, 0 otherwise.
- *Diversifying merger*: Dummy variable: 1 if bidder and target do not share a FamaFrench 48 industry, 0 otherwise.
- *Relative deal size*: Deal value (from SDC) over bidder market value of equity defined above.
- *CAR(1,+1)*: Denotes the three-day cumulative abnormal return (in percent) measured using market model residuals.
- *BHAR*: Denotes the three-year buy-and-hold abnormal returns difference between sample firm returns and corresponding contemporaneous control firm returns.
- ΔROA : Denotes the the difference between post- and pre-merger industry-adjusted three-year average ROA.
- *IV_rel.5*: *IV_rel.5* is defined as 1 if the deal gets funding at least partially from relationship bank.
- *IV_bubble*: *IV_bubble* is defined as 1 if the loan is issued between years 2005 and 2007.
- *M&A loan*: Dummy variable: 1 for the loan is issued during (-12 month, deal completion) M&A event window.
- *Loan Spread* : Loan spread is measured as all-in spread drawn in the Dealscan database. All-in spread drawn is defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. (For loans not based on LIBOR, LPC converts the spread into LIBOR terms by adding or subtracting a differential which is adjusted periodically.) This measure adds the borrowing spread of the loan over LIBOR with any annual fee paid to the bank group.
- *Log(Maturity)* : Natural log of the loan maturity. Maturity is measured in months.
- *Log(Loan Size)* : Natural log of the loan facility amount. Loan amount is measured in millions of dollars.
- *Collateral dummy* : A dummy variable that equals one if the loan facility is secured by collateral and zero otherwise.
- *Covenant*: Number of Covenants is the total number of covenants included in the debt agreement. Number of General (Financial) Covenants is the total number of general (financial) covenants in the debt agreement

- *Log (Maturity)*: Natural logarithm of debt maturity measured in months.
- *Performance Pricing dummy* : A dummy variable that equals one if the loan facility uses performance pricing.
- *Number of Lenders* : Total number of lenders in a single loan.
- *Loan Type Dummies* : Dummy variable for loan types, including term loan, revolver greater than one year, revolver less than one year, and 364 day facility.
- *Loan Purpose Dummies* : Dummy Variable for loan purposes, including corporate purposes, debt repayment, working capital, etc.
- *Credit Spread* : The difference between BAA corporate bond yield and AAA corporate bond yield. (Data source: Federal Reserve Board of Governors.)