Loan underpricing and the provision of merger advisory services

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Abstract

This paper investigates the primary and secondary syndicated bank loan market to analyze the effect on pricing when the financial institution commingles syndicated lending with merger advisory services. In particular, we investigate the connection between the acquirer's choice of financial advisor in a merger and future financing commitments. We find evidence of underpricing of syndicated bank loans in both the primary and secondary market. In the primary market, we show that non-acquisition loans granted by merger advisors to acquiring firms after the merger announcement date are charged a lower all-in-spread relative to acquisition loans if there has been a prior lending relationship. Consistent with this finding, we find that syndicated bank loans for non-acquisition purposes arranged by the acquirer's advisor after the merger announcement date trade in the secondary market at a significant discount. Since the terms on these non-acquisition loans are not set upon merger announcement, they are most subject to risk shifting and underpricing agency problems. These findings offer evidence consistent with the existence of loss leader and potentially conflicted loans (priced at below market terms) that are offered by the acquirer's relationship bank advisor in order to win merger advisory business.

Keyword: Relationship banking; Investment bank advisors; Commercial bank advisors; Conflicts of interest; Mergers; Acquisitions; Syndicated bank loans.

JEL Classification: G21

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1. Introduction

The Gramm-Leach-Bliley Act of 1999 expanded banking powers to include a broad range of banking, securities underwriting and dealing, and insurance activities. Many of these activities converge in the syndicated bank loan market, in which the lead arranger acts as relationship lender, underwriter, and market maker. Reusability of information and potential economies of scope may enable the lead arranger to offer all of these services at lower cost.[1] The potential for conflicts of interest and strategic pricing, however, may lead to mispricing.[2] This paper examines both the primary and secondary market pricing of syndicated bank loans in order to determine the impact on pricing when the financial institution combines the arranging of syndicated bank loans with merger advisory services. We examine the connection between the acquirer's choice of financial advisor in a merger and future financing commitments. In contrast to other studies that focus on either the acquiring and/or target firms, we investigate the impact on loan pricing of the commercial bank advisor's offering of both lending and merger advisory services in the context of a long-standing banking relationship.

Several academic studies have analyzed the role of advisors in enhancing the value of merger and acquisitions. Empirical evidence from many of these studies suggests that investment advisors contribute to the value of a merger transaction. For example, Bowers and Miller (1990) find positive abnormal returns for mergers that are advised by top tier investment banks. Several studies (Hunter and Walker (1990), Servaes and Zenner (1996), Hunter and Jagtiani (2001) and Saunders and Srinivasan (2001)) find that merger gains are related to investment banking advisory effort, as measured by fees. However, Rau (2000) finds no evidence of a relationship between advisors' fees and mergers returns, although Kale, Kini and

[1]Saunders and Stover (2001) find evidence of economies of scope between underwriting and commercial banking when the same bank serves as underwriter and as credit guarantor. Drucker and Puri (2005) document information economies of scope between lending and equity underwriting. Ljungqvist, Marston and Wilhelm (2006) argue that the strength of a prior banking relationship is an important determinant in the award of underwriting contracts. Bharath, et al (2004) and Yasuda (2005) also show banks are more likely to win underwriting engagements if they have established prior lending relationships. Although these relationship loan rates are, on average, lower than the rate on non-relationship bank lending, underwriting fees are significantly higher for relationship banks. Narayanan et al (2004) demonstrate that underwriting fees decline when banks co-manage new issues with high reputation non-lending underwriters.

[2]Kanatas and Qi (2003) describe possible conflicts of interest between lending and underwriting and claim that specialized financial intermediaries are more innovative than universal banks.

Ryan (2003), using a measure of relative reputation, find a positive relationship between advisor reputation and merger returns.

These studies focus on investment bank advisors. In contrast, commercial bank lending and other relationships are often long-standing and continuous, requiring the ongoing monitoring of the firm's activities, thereby producing private information about the firm's value. Allen et al. (2004) find that commercial banks have a net certification effect in advising target firms, stemming from private information gathered over the course of a prior banking/lending relationship. The authors demonstrate that target firms experience significant positive abnormal returns when they engage their own commercial bank as a financial advisor.

Despite these apparent benefits of target firm certification by the merger advisor, a number of studies also argue that misaligned incentives in investment banking contracts can create conflicts of interest between the shareholders of bank advisors and bank clients (see for example, McLaughlin (1990, 1992)). Allen et al. (2004) find that acquirers are more likely to use a commercial bank as a financial advisor if they have had a prior lending relationship with the bank. The motivation for this choice is potential access to future financing for the acquirer or for the merged entity. They present empirical evidence showing that acquirers expect, and are more likely to receive, future financing from the commercial bank chosen to advise the acquirer in a merger if there has been a prior lending relationship between the bank and the acquiring firm. Indeed, anecdotal evidence suggests that banks offer future lending as an inducement to win lucrative merger advisory contracts. As reported in the *Wall Street Journal,* "Banks are using loans like a loss leader, a teaser product to entice corporations into giving the bank more lucrative stock-and-bond underwriting or merger advisory business." (Jonathan Sapsford, "Banks Give Wall Street a Run for its Money," January 5, 2004, C1.)

In this paper, we utilize primary and secondary market prices for syndicated bank loans to determine whether there is systematic mispricing of loans to acquirers when the same financial institution both arranges the loan and acts as the acquirer's merger advisor. In order to fully characterize the information relationship between bank and borrower, we control for the existence of any prior lending relationships, the purpose of the loan (acquisition or non-acquisition related) and the timing of the loan (before or after the merger announcement date). We find that, in the presence of a prior lending relationship, primary market spreads on syndicated acquisition-related loans granted after the merger are significantly higher, both

economically and statistically, relative to non-acquisition (general purpose) syndicated loans provided to acquirers after the merger deal. Spreads on acquisition-related loans extended by relationship banks within one year after the merger announcement are about 36 basis points higher than the spreads for non-acquisition loans granted by non-agent banks. Consistent with the relative underpricing of these non-acquisition loans in the primary market, our results reveal that non-acquisition loans granted to acquirers by merger advisors exhibit significantly larger price declines when they begin trading in the secondary market. Our empirical analysis also reveals that loan market participants are particularly concerned about non-acquisition loans extended by merger advisors. We demonstrate that non-acquisition loans arranged by bank advisors up to one year after the merger announcement are sold at an average discount of around 11 percentage points in their first week of trading.

We consider two competing hypotheses to explain these findings. First, the *information hypothesis* suggests that the underpricing may reflect the lower cost of private information about the borrower's creditworthiness obtained over the course of a long-term banking relationship between the commercial bank advisor and the acquiring firm. Moreover, acquisitions may reduce the acquirer's informational captivity to its relationship bank, thereby reducing potential monopoly rents earned by the relationship bank. These synergistic cost reductions are then passed on to the borrower in the form of lower spreads on acquisition-related loans. Second, the *loss leader hypothesis* suggests that commercial banks may be attempting to expand their share of the merger advisory market by offering below-market loans to acquirers in order to win lucrative and prestigious merger advisory contracts. Moreover, potential internal agency problems in large complex banking organizations may result in below-market pricing of loans granted to inflate the P&L of the investment banking division (for merger advisory services) without being deducted from the bottom line of the lending division because of the loan officer's private information about the borrower's creditworthiness.[3]

We distinguish between these two competing hypotheses by contrasting syndicated bank loan pricing in acquisition-related and non-acquisition loans before and after the merger announcement date in both the primary and secondary markets. The *information hypothesis* is

[3]Potential conflicts of interest are exacerbated by intrafirm agency conflicts where one division gains at the expense of other divisions. Risk-adjusted internal capital charges, using concepts such as RAROC, may levy a shadow price for these intrafirm conflicts. However, the setting of these capital allocation charges is quite difficult in practice and becomes more difficult the more complex the institution.

consistent with primary market underpricing of spreads in all loans arranged by the acquirer's advisor shortly after the merger. That is, the lead arranger's information advantage is most pronounced for loans made after the merger by the acquirer's merger advisor and long-standing banking firm. In contrast, the *loss leader hypothesis* is most likely to be reflected in lower primary market spreads for non-acquisition loans (as opposed to acquisition-related loans) arranged by the acquirer's advisor after the merger. Moreover, the finding of negative returns in the secondary market is not consistent with the *information hypothesis,* although it is consistent with the *loss leader hypothesis.* If loans are underpriced in the primary market because of intrafirm agency conflicts or market building incentives, then the secondary market prices will be lower than if loans are underpriced in the primary market because of information synergies. Our findings of underpricing in both primary and secondary markets, particularly for non-acquisition loans arranged by the acquirer's advisor are, therefore, consistent with the *loss leader hypothesis.*[4]

We describe these hypotheses in Section 2. Section 3 describes the sources of our data. Sections 4 and 5 examine the underpricing on syndicated bank loans arranged by the acquirer's advisor in the primary and secondary markets respectively. The paper concludes in Section 6.

2. Literature review

One of the primary motivations for the Gramm-Leach-Bliley Act of 1999 was the potential realization of cost and profit synergies that could be obtained from combining financial services resulting from the reusability of information (see Chan, Greenbaum and Thakor (1986) for an early discussion of the reusability of information). There is an extensive literature documenting the information gains that are generated during the course of a banking relationship (see Boot (2000)). The potential for this benefit should be particularly true if a long-standing lending relationship predates the merger advisory activity. The *information hypothesis* specifies that both the commercial bank advisor and the acquiring firm benefit from the reuse of information obtained during the course of a prior lending relationship. If the commercial bank has a prior lending/banking relationship with the acquiring firm, it can better advise the firm in the merger (at lower cost of information acquisition), as well as more effectively price the new

[4]Our finding of underpricing at both the primary and secondary market levels is inconsistent with a lemons problem concern of buyers wary about purchasing on the secondary market non-acquisition related loans from lenders who have private information. Procedures in the syndicated bank loan market reduce the information asymmetry

loans that are subsequently made to the merged entity. Because loans extended subsequent to the merger announcement benefit from the private information generated by a prior lending relationship, we should find a positive return on these loans in secondary markets, particularly if they are originated by the advising bank that had a prior lending relationship with the acquirer. This synergistic information advantage should be most pronounced for acquisition-related loans arranged by the acquirer's advisor because of the added information about the merged firm gathered during the due diligence process undertaken by the acquirer's advisor.

However, monopoly rents and hold-up problems have also been associated with reliance on bank lending relationships. Berger and Udell (1995), Petersen and Rajan (1994) and Berger et al. (2005) show that small firms are more dependent upon relationship loans for financing, and are therefore most susceptible to being informationally captured by their relationship bank. These studies argue that because of the absence of alternative sources of financing, relationship banks can extract monopoly rents from small business borrowers. Acquisitions increase the firm's size as well as its visibility and potential access to alternative sources of capital, thereby reducing the cost of borrowing.[5] The *information hypothesis* also specifies that acquisitions will reduce the acquirer's informational captivity to its relationship bank, thereby reducing potential monopoly rents earned by the relationship bank. Since the bank advisor prices and structures subsequent loans to the merged entity using its superior information without the hold-up problem, then both the primary and secondary loan markets should have a positive reaction to these relationship loans.[6]

Information hypothesis: *Primary market spreads reflect information cost savings/rent reductions and therefore should be lowest, ceteris paribus, for acquisition-related loans arranged by the acquirer's advisor after the merger. Due to the low cost and high quality of information possessed by the lead arranger, secondary market prices should be relatively high for these loans, ceteris paribus.*

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between loan buyer and seller by requiring that all private syndicate information be fully revealed to the loan assignment buyer prior to completion of the transaction.

[5]The borrower's increased access to external capital markets should increase the value of its bank loans since loans are typically senior to publicly held debt. Therefore, reduction of relationship rents increases loan return both directly and indirectly.

[6]Informational advantages and rent reduction should be most evident after the merger transaction. Potential conflicts of interest and promises of future loans to attract merger advisory business are typically realized in loans granted after the merger transaction. Therefore, our analysis of both the *information* and the *loss leader hypotheses* focuses on the pricing of loans granted after the merger.

Although commercial banks were not prohibited by Glass-Steagall restrictions from advising merger counterparties, historically, they did not have a large presence in this line of business. Starting in the late 1980s, however, banks made a concerted effort using their Section 20 subsidiaries to boost their share of the merger advisory business. The share of M&A volume advised by commercial banks soared from 12.6% in 1989-1994 to 23.5% in 1995-2000.[7] A competing hypothesis, the *loss leader hypothesis,* states that the decision to offer below market loans to merger advisory clients is a value-maximizing decision by bank management to build the bank's visibility and ranking in the merger advisory tables. Indeed, the relationship manager may coordinate this activity in order to maximize the value to the bank of the array of services bundled together in the banking relationship.

Internal agency problems within large complex banking organizations can also lead the bank to over-expand its merger advisory business by underpricing loans extended to the acquirer in order to win merger advisory business. In such instances, the potential future loan losses exceed the acquirer advisor's merger advisory fees, thereby reducing overall bank value.[8] Typically, the merger advisory department earns credit (say, toward the department's P&L) for the fees earned, but does not bear the cost of subsequent loan losses or inappropriately priced loan commitments. This mispricing is difficult to detect because of the private information obtained by the loan officer in the course of a prior lending relationship. We posit that loans made to a merged entity by the acquirer's advisor are potentially conflicted if there had been a prior lending relationship between the acquirer and the bank advisor.[9] Loan losses ultimately realized on these underpriced loans to acquirers with which the bank has had a prior relationship cannot be "charged to" either the investment banking or lending divisions of the bank.

The deterioration of the loan several years after the merger deal (measured as negative returns in the secondary loan market) cannot be traced to the original underpricing of the loan's

[7]Market shares are based on the volume (transaction value) provided to acquiring firms. Overall, banks achieved comparable gain as target advisors, increasing their share from 8.3% in 1989-1994 to 16.6% in 1995-2000.
[8]Bharath, et al (2004) show that loans to relationship borrowers have a 10-16 basis point lower interest rate, but that fees on investment banking services tend to be 14% higher. However, they do not examine whether relationships provide the bank with an overall net gain or loss (due to potential intrafirm agency problems).
[9]The potential for conflicts of interest was raised in the case of Lehman Brothers, the advisor for Dynegy, the erstwhile acquirer of Enron Corporation in the context of repayment of a $179 million swap transaction. Citigroup and JP Morgan Chase had been acting as both merger advisors and lenders to Enron. After Enron sought bankruptcy-law protection from creditors, those two banking firms were precluded from serving as advisors because of their creditor status (Randall Smith "Enron's Collapse Roils Insiders and Wall Street: Lehman Faced Possible Conflict as Merger Failed," *Wall Street Journal,* December 5, 2001, p. C1).

terms because of the uncertainty surrounding the merger, as well as the private information that is unobservable to the bank's shareholders. The loan officer (relationship manager) and the merger advisory departments of the bank jointly undertake value reducing activities in order to enhance their own compensation at the expense of bank shareholders. This potential mispricing should be most evident for loans granted shortly after the merger with terms that are not publicly revealed at the merger announcement; i.e., non-acquisition related loans granted after the announcement of a merger that was arranged by the acquirer's relationship bank and advisor.

Loss Leader Hypothesis: *Primary market spreads reflect potential conflicts and discounts and should be lowest for non-acquisition loans granted after the merger by the acquirer's advisor. Secondary market prices should be lowest, ceteris paribus, for these underpriced loans.*

Both the *information hypothesis* and the *loss leader hypothesis* are consistent with lower all-in-spreads on the primary market pricing of syndicated bank loans for loans made by banks with prior lending relationships with the borrower. However, the *information hypothesis* expects to find that underpricing of primary market spreads for the most informationally-advantaged acquisition loans, whereas the *loss leader hypothesis* expects it for the concealed, potentially conflicted non-acquisition loans. Moreover, only the *loss leader hypothesis* is consistent with subsequent price declines in the secondary market trading of these loans. Secondary market purchasers of loan participations will discount the loan price to reflect possible conflicts of interest and market-share building incentives.[10] We show in this paper that the *loss leader hypothesis* is consistent with our finding of underpricing at both the primary and secondary market levels, particularly for non-acquisition loans extended within a year of a merger to the acquiring firm by the acquirer's advisor.

3. Data

The primary source of syndicated loan information is Loan Pricing Corporation's (LPC) Dealscan database. Dealscan contains information on most syndicated loan deals as well as occasionally includes some non-syndicated loan deals. The sample period for this study is

[10]We consider sales of participations in syndicated bank loans, rather than outright loan sales, in which the bank originates the loan, but then sells it off either whole or in pieces. Loan sales differ from loan syndications in that the buyer of the loan has no direct lending relationship to the borrower, whereas each financial intermediary in the loan syndicate is a direct lender to the borrower. Outright loan sales send a negative signal to equity markets, as shown in Slovin, Shushka and Polonchek (1993). Dahiya, Puri and Saunders (2003) show that stock returns are negatively impacted by the announcement of a loan sale or termination of a lending relationship.

confined to syndicated bank loans between 1994 and 2003. As noted above, this period corresponds to the time during which commercial banks began to aggressively expand their merger advisory services. The Dealscan database contains an extensive array of facility attributes: loan price defined by the all-in-spread (spread over Libor), loan structure variables (such as covenant information, sponsors), purpose of loan (acquisition or other non-acquisition purposes such as debt repayment), maturity and type of loan (term loans, 365-day facilities, revolving loans) that essentially determine the loan's pricing.

In addition to the extensive loan characteristics included in Dealscan, our analysis also uses several data sources to compile information on the creditworthiness of the borrowing firm in order to more effectively determine the price of the syndicated bank loan. Additional information on borrower firm characteristics is obtained from the Standard and Poor's *Compustat* and the *Center for Research in Securities Prices* (CRSP) database. Because both Compustat and CRSP databases include information on publicly traded firms, our final sample examined in this paper is therefore confined only to syndicated loan deals in which the borrower is a publicly traded company.

The second part of our analysis focuses on the secondary syndicated loan market. The information on mark-to-market prices is compiled by LPC in association with the Loan Syndication Trading Association (LSTA). The LPC secondary market database allows us to examine both the secondary market pricing of syndicated bank loans extended to acquiring firms. The LPC database includes mark-to-market information on bid/ask quotation averages observed daily, on a weekly basis, during the period 1998-2003 for roughly 2,500 loans. Pricing information consists of bid/ask quotes that are averaged across all quoting broker-dealers for each loan facility. Our sample includes only weekly observations of those loan facilities on days with a minimum of 2 bid/ask quotes. Overall, more than 30 dealers submitted quotes to LPC on a daily basis. On average, the loan facilities in our sample received roughly four quotes per day. The LPC mark-to-market database provides the average bid/ask prices. As an estimate of market prices, we utilize the mean of the mean bid and ask quotes.

4. Modeling loan credit spreads in the primary market

To examine the information hypothesis and loss leader hypothesis, we augment a fairly straightforward model applied in the literature for analyzing the determinants of loan credit

spreads (see for example, Santos and Winton (2006)). The basic form of this regression specification is defined as follows:

$$LOAN_SPREAD_{tij} = \beta_0 + \beta_\tau d_{t\bullet} + \beta_1 x_{ti\bullet} + \beta_2 z_{tj\bullet} + \gamma_1 AGENT_{tij} + \gamma_2 ACQ_{tij} + \varepsilon_{tij}. \qquad (1)$$

The dependent variable in the model ($LOAN_SPREAD_{tij}$) is the all-in-spread (spread over Libor) of the i-th syndicated bank loan borrowed by firm (j) at time (t). The loan spread is fundamentally determined by the explanatory vectors $x_{ti\bullet}$, representing loan-specific characteristics; $z_{tj\bullet}$ capturing the credit quality of the firm at the time of issue; $d_{t\bullet}$ measuring macroeconomic fluctuations or other market developments, and ε_{tij} representing random error.

We divided our sample of loans into two groups: agent loans and non-agent loans, measured by the binary explanatory variable AGENT. Agent loans are our empirical proxy for loans granted to acquiring firms in which the acquirer's advisor had a prior lending relationship with the borrower and was also one of the lead arrangers of the syndicated loan.[11] These loans are either synergistic or potentially conflicted because the lead arranger, as the informed lender, can set favorable terms for syndicated bank loans extended to acquirers in accordance with any implicit or explicit loan commitments or private information obtained in the course of the merger advisory agreement and prior lending activity. In contrast, we classified non-agent loans as those extended by commercial or investment banks that had no advisory role in the merger. We also distinguish between loans that state acquisition as the loan's purpose (ACQ) and other, non-acquisition purposes (NONACQ).

Clearly, the timing of the loan facility is important in determining whether loans are correctly priced. To test the implications of the timing of loan extensions, we differentiate between loans granted over or within one year before (after) the merger announcement date, measured by the binary variables $I_{OVER_1Y_BEFORE,i}$, $I_{1Y_BEFORE,i}$, $I_{1Y_AFTER,i}$, and $I_{OVER_1Y_AFTER,i}$. In particular, this broader model specification is defined as:

[11]When designating a bank as the lead arranger, we included other syndication agent roles (e.g., administrative agent, etc.). Thus, the agent loan group consists of those loans for which the acquirer advisor had the ability (as lead arranger) to alter the terms of the loan; that is, all members of the loan syndicate excluding participants. Yasuda (2005) finds that the participant relationship has no information impact on the choice of underwriter in the corporate bond market.

$$
\begin{aligned}
\text{LOAN_SPREAD}_{tij} = {} & \beta_0 + \beta_\tau d_{t\bullet} + \beta_1 x_{ti\bullet} + \beta_2 z_{tj\bullet} + \gamma_0 \text{ACQ}_{tij} \times (1\text{-AGENT}_{tij}) + \\
& \gamma_1 \text{AGENT}_{tij} \times \text{ACQ}_{tij} \times \text{I}_{\text{OVER_1Y_BEFORE},i} + \gamma_2 \text{AGENT}_{tij} \times \text{ACQ}_{tij} \times \text{I}_{\text{1Y_BEFORE},i} + \\
& \gamma_3 \text{AGENT}_{tij} \times \text{ACQ}_{tij} \times \text{I}_{\text{1Y_AFTER},i} + \gamma_4 \text{AGENT}_{tij} \times \text{ACQ}_{tij} \times \text{I}_{\text{OVER_1Y_AFTER},i} + \\
& \gamma_5 \text{AGENT}_{tij} \times \text{NONACQ}_{tij} \times \text{I}_{\text{OVER_1Y_BEFORE},i} + \gamma_6 \text{AGENT}_{tij} \times \text{NONACQ}_{tij} \times \text{I}_{\text{1Y_BEFORE},i} + \\
& \gamma_7 \text{AGENT}_{tij} \times \text{NONACQ}_{tij} \times \text{I}_{\text{1Y_AFTER},i} + \gamma_8 \text{AGENT}_{tij} \times \text{NONACQ}_{tij} \times \text{I}_{\text{OVER_1Y_AFTER},i} + \varepsilon_{tij}.
\end{aligned} \tag{2}
$$

Both the *information hypothesis* and the *loss leader hypothesis* assert that the primary market all-in-spread on agent loans will be lower than the spread on syndicated bank loans arranged by financial institutions with no prior relationship with the borrower. However, our distinction between acquisition-related and non-acquisition loans, measured by the explanatory variables ACQ and NONACQ, respectively, as well as the timing (before or after the merger announcement) allows us to distinguish between these two competing hypotheses. The *information hypothesis* is consistent with lower primary market spreads for acquisition-related loans, especially for loans extended after the merger announcement date, whereas the *loss leader hypothesis* is consistent with lower primary market spreads for non-acquisition loans arranged by the acquirer's advisor after the merger announcement date.

To fully capture the riskiness of borrowing firms, we included in $z_{tj\bullet}$ several measures of financial performance. These firm-specific measures represent the performance of the borrowing firm in the year before the loan is granted. The regression specification controls for the size of the borrower measured by the logarithm of sales (SALES). Equally important, the specification includes a measure of profitability, defined by the return on assets (ROA). The variable INT_COVERAGE (interest expenses plus after-tax earning divided by interest expenses) gauges the ability of the borrowing firm to service its debt. We control for the credit quality of the borrower using a number of direct and indirect measures of default and capital health. The equity-to-assets ratio (EQA) assesses the capitalization strength of borrowing firms. A market-based indicator of firm risk is given by the stock price volatility (STD_RET), measured by the standard deviation of stock returns.

To obtain a more direct measure of default, we use a Black-Scholes option-theoretic model, as proposed by Merton (1974). In his seminal paper, Merton models a firm's equity as a call option on the value of assets. The strike price of the option is determined by the firm's contractual liabilities. Crosbie and Bohn (2002) demonstrate that we can apply the Black-

Scholes-Merton framework to estimate the implied probability of default (IPD) for a given period. [12]

In addition to the financial strength of the borrower, the all-in-spread depends on the nature and structure of the loan. The regression specification includes an array of dummy variables summarizing these loan attributes. The variables TERMLOAN, 365_DAY_FACILITY, and REVOLVER indicate whether the loan is term loan, 365-day facility, or a revolver loan, respectively. The model includes dummy variables for loans with covenants (COVENANT), secured loans (SECURED), refinancing loans (REFI), sponsored loans (SPONSORED), and hybrid loans (HYBRID). The exact purpose of the loan is further captured by dummy variables indicating whether the proceeds are intended for working capital (WORKING_CAP), general corporate business (CORPORATE), or debt repayment (DEBT_REPAY), as well as acquisition-related (ACQ). Bigger and perhaps more creditworthy borrowers are more likely to receive larger loans measured by the logarithm of loan facility amount (LOAN_SIZE) or granted loans with longer maturity measured by the logarithm of maturity (MATURITY). To control for the nature of the loan syndicate, we included in the specification the logarithm of the number of arranger and participant lenders (NUMBER_LENDERS).

The regression model also controls for time variation resulting from macroeconomic fluctuations or other market developments represented by the explanatory vector ($d_{t\bullet}$). In

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[12]The contingent claims indicator of default is backed out from a nonlinear system of two equations: $V_{Eti} = V_{Ati}\ N(D_{1ti}) - e^{-rT} L_{ti}\ N(D_{2ti})$, and $\sigma_{Eit} = (V_{Ait} / V_{Eit})\, N(D_{1it})\, \sigma_{Ait}$. The variable N(•) is the normal distribution $D_{1it} = [\ln(V_{Ait} / L_{it}) + T(r_t + 0.5\sigma^2_{Ait})] / \sigma_{Ait}\sqrt{T}$, and $D_{2ti} = D_{1ti} - \sigma_{Ait}\sqrt{T}$. The variables V_{Eit} (market value equity of firm (i) at time (t)), σ_{Eit} (volatility of firm's equity), L_{it} (firm's total debt), and r_t (risk free rate of return) are all known or estimated from a firm's equity price over the period T (in our monthly framework $T = 1/12$). Estimates for the firm's asset value ($\tilde{V}_{Ait}$) and volatility ($\tilde{\sigma}_{Ait}$) can be solved using Newton's nonlinear approximation technique. The market variables V_{Eit} and σ_{Eit} were computed monthly using daily stock return information from CRSP (to obtain a more stable measure of volatility, we used a rolling 6-month horizon). The risk-free rate is measured by the 1-year Treasury bill rate. We use COMPUSTAT information on long-term debt to measure L_{it} as the total debt obligations with maturity greater than one year (primarily, outstanding bonds and loans). The implied default probability is $IDP_{it} = N(-DD_{it})$ where $DD_{ti} = [\ln(V_{Ati} / D_{ti}) + T(\mu - 0.5\sigma^2_{Ati})] / \sigma_{Ati}\sqrt{T}$. The parameter μ representing the instantaneous drift of V_A can be estimated by calculating the average change in $\log(\tilde{V}_{Ait})$. In reality, this implied measure of default does not correspond to the true probability of default because of the normality assumption. Moody's KMV uses a large proprietary database of defaults to calibrate the distance-to-default to the actual experience. For our purpose, however, IPD_{it} provides a time-consistent indicator that allows us to measure

particular, the explanatory vector $d_{t\bullet}$ includes real GDP growth, unemployment rate, and the slope of the yield curve (10-year minus 3-month constant maturity Treasury yields). Moreover, the specification includes year and quarterly dummy variables. Admittedly, the yearly and quarterly dummies probably take away a lot of the aggregate economic variation from the macroeconomic explanatory variables. However, our ultimate estimation objective is to explain away time variation irrespective of whether this done by time dummies or the actual macroeconomic measures. Because we are not particularly interested in interpreting the impact or significance of these time explanatory variables, for the sake of brevity, these estimates are not reported in the tables.

4.1 *Descriptive statistics*

Table 1 provides summary statistics for regression variables. The table summarizes the information by AGENT status of the loan; that is, loans received by the acquiring firms that are arranged by the acquirer's merger advisor. The LPC database includes roughly 16,290 loan facilities between 1994 and 2003. However, once LPC is merged with Compustat and CRSP information, the number of observations in the regression sample declines to 9,997 (representing about 2,540 firms). Of these loans, 503 facilities have existing AGENT relationships. Not surprisingly, acquiring firms with agent relationships are bigger than other borrowing companies. Similarly, AGENT loans are significantly larger than non-AGENT loans and, as expected, a larger fraction is used for acquisition purposes. AGENT loans exhibit a lower implied default probability and therefore, pay a lower all-in-spread than non-AGENT loan facilities.

Insert Table 1 around here

Figures 1 and 2 present the magnitude (in terms of both number and volume) of syndicated bank lending to acquirers by agent banks and non-agent banks. The figures reveal that agent banks are more likely to make acquisition-related syndicated bank loans to acquirers than non-agent banks. Panels A and B of Figure 1 show that agent banks extended 157 acquisition-related loans while non-agent institutions made only 15 such loans in the first 12 months after the merger announcement.[13] Panels A and B of Figure 2 show a similar disparity in lending by agent

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variations in the solvency of the firm. For a discussion of the options-theoretic approach to credit risk measurement, see Chapter 4 of Saunders and Allen (2002).

[13]To better capture the interactions of agent and non-agent lending, we focus only on acquiring firms that had an existing agent relationship with their merger advisors. For the graphical analysis, there is no need to confine our sample to firms that have Compustat information and we can therefore analyze all loans reported in LPC Dealscan during this period. Overall, there were 1,279 loan facilities granted to acquiring firms, with 680 of these loans

versus non-agent banks using the volume of lending, as opposed to the number of loans. This large discrepancy in acquisition lending is consistent with the findings of Allen et al. (2004), suggesting that acquirers choose banks as merger advisors in order to gain access to financing. One striking finding of Figure 1 is that the volume of non-acquisition loans granted by agent banks surges immediately following the merger. In contrast, we see no significant rise in non-acquisition loans furnished by non-agent banks, as they appear to continue to underwrite the same number of loans before and after the merger events. The significant increase of non-acquisition loans extended by agent advisors may reflect the implicit or explicit commitment by the advising bank to extend future loans to the acquirer. This is consistent with both the *information and loss leader hypotheses*.

The large concentration of AGENT acquisition loans during the merger period may not be necessarily disconcerting to market participants. The purpose of these loans is, after all, to facilitate the successful completion of the proposed merger deal. Because the bank serves both as the lender and the merger advisor, it is better positioned to monitor these acquisition loans. In contrast, agency problems are more likely to emerge in non-acquisition loans as borrowers are free to use these funds in riskier projects. Moreover, the terms of these non-acquisition loans are set after the merger announcement date, and therefore are not revealed in the merger documentation.

Insert Figures 1 and 2 around here

4.2 *Primary market pricing: Regression results*

Table 2 presents estimates for the loan spread regression model defined by equations (1) and (2). Panel A summarizes the regression results when the model is estimated over the entire sample of syndicated loans. In contrast, Panel B estimates the regression model for only the subset of borrowers that acquired another firm during this period irrespective of whether they had existing agent relationships. Overall, parameter estimates are very robust for all model specifications. The large and significant likelihood F-statistics, as well as fairly high adjusted R^2 coefficient, reported at the bottom of each table, signify that the regression specification fits the data very well.

Insert Table 2 around here

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coming form their merger advisors and the remaining 599 facilities granted by non-agent banks.

As expected, the all-in-spread is closely linked to firm and loan characteristics. Loan spreads are negatively related with $\log(\text{SALES})$, indicating that larger firms are able to receive cheaper funding. We observe a similar effect for more profitable firms (higher ROA), firms with higher equity-to-asset ratios, and firms better able to service their debt (INT_COVERAGE). Companies with higher implied default probability (IDP) have greater borrowing costs. Similarly, we find that spreads also greatly depend on loan attributes. Shorter maturity loans such as revolver and 365-day facilities pay a lower rate. The result that log(MATURITY) has a negative impact on loan spreads and that sponsored loans demand a larger spread appear at first glance to be counterintuitive. However, these results reflect adverse selection because only weaker borrowers are required to get sponsoring and because it is more difficult for riskier firms to obtain long-term funding.

Controlling for other factors, the basic specification reveals that acquisition loans pay a higher all-in-spread. To better differentiate the information and loss leader hypotheses, we also examine the interaction between AGENT, ACQ/NONACQ, and the timing of the lending activity. Our regression findings reveal that agent acquisition loans pay larger spreads, around 36-38 basis points higher than the base case, when the loan is granted after the merger. In contrast, agent loans provided for non-acquisition purposes do not pay a higher spread premium. These results are consistent with the *loss leader hypothesis* in which underpriced and hidden, potentially conflicted loans are charged a lower spread – i.e., 36-38 basis points lower than similar acquisition related loans. The higher spread for the informationally rich acquisition loans is not consistent with the *information hypothesis*.

5. Syndicated bank loan underpricing in the secondary market

The clustering of loans around the merger announcement date is consistent with the premise that banks are eager to extend credit to gain lucrative merger advisory business. The concentration in lending, however, does not necessarily prove that these loans are priced at below market loan terms. In addition to specifying lower loan spreads for non-acquisition loans originated by the acquirer's advisor after the merger, the *loss leader hypothesis* (but not the *information hypothesis*) anticipates underpricing in secondary market prices. That is, the *loss leader hypothesis* specifies that secondary market prices will be lower for AGENT loans (particularly non-acquisition loans), *ceteris paribus*, because of the primary market underpricing of these loans' all-in-spreads. In contrast, the *information hypothesis* is consistent with higher

secondary market prices for informationally-advantaged AGENT loans, particularly if they are acquisition-related. Thus, we can distinguish between our two hypotheses by examining the secondary loan market price reaction to the sale of participations in these syndicated bank loans.

We utilize the LPC secondary market loan price database to calculate the loan return in order to determine the change in loan price from origination to the first week of secondary market trading. As noted previously, the LPC secondary market database includes roughly 2,500 loans between 1998 and 2003. More important for our analysis, 216 of these secondary market loans were made to 64 acquiring firms included in our sample of mergers and acquisitions. Typically, loans traded in the secondary market are of somewhat lower quality. The mean implied default probability for borrowing firms whose loans are traded in the secondary market during 1998-2003 is about 4.8% compared to 3.1% for firms with non-traded loans.

Consistent with our analysis of the primary market loan spreads, we again use regression analysis to examine the impact of the advisor/lending relationship on the secondary price of loans. In particular, we use a similar regression framework to test our maintained hypotheses. The basic specification is defined by:

$$\Delta PRICE_{tij} = \beta_0 + \beta_\tau d_{t\bullet} + \beta_1 x_{ti\bullet} + \beta_2 z_{tj\bullet} + \gamma_1 AGENT_{tij} + \gamma_2 ACQ_{tij} + \varepsilon_{tij}. \qquad (3)$$

The dependent variable in the regression model equation (3) is the difference between the par value of the loan (the price of the loan at the time it was originated) and the first weekly price quoted in the secondary market $(\Delta PRICE)$. As seen from Figures 1 and 2, most loans are granted within the first 12 months after the merger announcement. These loans are often sold a few months after they are syndicated, with 75% of these loans trading within one year after their syndication date. In general, these loans begin trading below par value with only about one fourth of them priced higher than 100. For our sample of 216 traded loans, the average price in the first week of trading is 95.85 (with a median price of 99.50).[14]

The agent relationship (AGENT=1) again indicates loans received by acquirers arranged by their relationship bank merger advisors. Thus, the agent indicator in the regression allows us to differentiate between the *information and loss leader hypotheses*. Similarly, the binary variable ACQ equals 1 if the stated purpose of the loan facility was acquisition-related. The

[14]It is interesting to note that the largest first week price discount was for Enron's two bank loans granted on May 14, 2001, that were quoted 80 points below par.

change in secondary market prices is also determined by the loan-specific characteristics vector $x_{ti\bullet}$. Similar to the primary market regression mode, the explanatory vector $d_{t\bullet}$ controls for macroeconomic fluctuations (real GDP growth, unemployment rate, and yield curve slope) as well as includes yearly time dummies. To control for loan liquidity, the vector $x_{ti\bullet}$ includes the logarithm of the loan facility size (LOAN_SIZE). Presumably, larger loans are also more liquid in secondary market trading. Several other contracting features of the loan may also be important determinants of the pricing process. The regression specification controls for the maturity of the loan (MATURITY). One would expect that creditworthy borrowers might be granted longer maturity loans. The regression specification includes the usual array of loan dummy variables (TERMLOAN, REVOLVER, REFI, and SECURED), controlling for loan structure.[15]

Any adverse change in the financial condition of the borrower in the interim period between the loan origination date and the time it first traded would, of course, influence how the loan is priced in the secondary market. The explanatory vector $z_{tj\bullet}$ controls for this potential deterioration in the borrower's credit risk exposure. We rely again on Merton's option-theoretic model to measure changes in credit risk. A simple measure of the change in default probability is given by the change in the implied default probability $(\Delta\,\mathrm{IDP})$ measured by the difference in the implied default probabilities at the quote and active dates; that is (assuming a normal probability distribution $N(\bullet)$):

$$\Delta\,\mathrm{IDP} = \mathrm{IDP}_{\mathrm{QUOTE}} - \mathrm{IDP}_{\mathrm{ACTIVE}} = N(-\mathrm{DD}_{\mathrm{QUOTE}}) - N(-\mathrm{DD}_{\mathrm{ACTIVE}}). \qquad (4)$$

The average $\Delta\,\mathrm{IDP}$ is positive, indicating that the probability of default rises over the period of time from loan origination to first trading in the secondary market.[16]

Consistent with our primary market analysis, we also estimate a specification that is better designed to investigate our hypothesis that non-acquisition AGENT loans traded after the merger are sold at a bigger discount in the secondary market than non-relationship loans.

[15]In alternative specifications, we also controlled in the regression for the entire array of loan characteristics defined in Table 1. Generally, most loan characteristics do not appear to explain price changes in the secondary market.
[16]On average, commercial banks advise higher risk acquirers than do investment banks, as shown by the average DD (IDP) of 4.33 (0.0072) for loans resulting from investment bank-advised mergers, as compared to 2.91 (0.0413) for commercial bank-advised mergers. We therefore control for the implied probability of default in our regressions.

$$\Delta PRICE_{tij} = \beta_0 + \beta_\tau d_{t\bullet} + \beta_1 x_{ti\bullet} + \beta_2 z_{tj\bullet} + \delta_1 ACQ_{tij} \times (1 - AGENT_{tij}) + \delta_2 I_{1Y_AFTER,i} + \gamma_1 AGENT_{tij} \times ACQ_{tij} \times I_{1Y_AFTER,i} + \gamma_2 AGENT_{tij} \times ACQ_{tij} \times I_{OVER_1Y_AFTER,i} + \gamma_3 AGENT_{tij} \times NONACQ_{tij} \times I_{1Y_AFTER,i} + \gamma_4 AGENT_{tij} \times NONACQ_{tij} \times I_{OVER_1Y_AFTER,i} + \varepsilon_{tij}. \quad (5)$$

This specification designates: (1) the AGENT loans that were extended within either one year before or one year after the merger (specifically, within 12 months of the merger announcement date); and (2) the AGENT loans for acquisition and non-acquisition purposes. The *information hypothesis* anticipates the greatest increase in loan price for the informationally-advantaged acquisition loans arranged by the acquirer's agent bank within one year after the merger announcement. The *loss leader hypothesis* anticipates the greatest decrease in loan price for the potentially conflicted non-acquisition loans arranged by the acquirer's agent bank within one year after the merger announcement.

Table 3 presents summary statistics for the sub-sample of traded loans. Roughly 60% of the loan facilities are term loans while 32% are revolvers. The mean value of the syndicated loan is $749 million. This sample of traded loans, however, is fairly representative of the syndicated loan market as it encompasses small and large borrowers, ranging from a $14 million loan to Atrium Corporation to a $25 billion revolver loan granted to ATT Corporation.

Insert Table 3 around here

5.1 *Regression results*

The findings of our regression analysis of the change in the loan price from the syndication date to the first trading date $\Delta PRICE$ are presented in Table 4. The first column in the table summarizes the regression estimates defined by the fundamental terms of equation (3) for the combined sample of all loans (originated either before or after the merger announcement). Looking at the sub-sample of loans granted prior to the merger announcement (second column of Table 4), we observe that the coefficient on the AGENT dummy variable is positive and significant (at the 10% level). However, statistical inference for this sub-period is limited by the small sample of loans extended before the merger announcement. The positive coefficient on AGENT suggests that secondary market participants are not concerned that these agent-related are improperly priced. This finding is not surprising because the *loss leader hypothesis* expects underpriced loans to be granted after the merger deal is announced.[17]

[17]Indeed, the positive coefficient is consistent with the positive monitoring and certification functions associated with relationship banking.

Insert Table 4 around here

The statistical power of the regression model is significantly higher for the larger sample of loans that were granted after the merger deal. The coefficient on the AGENT dummy variable (in column (3) of Table 4) is negative and statistically significant at the 1% level. In particular, the regression results demonstrate that loans to acquirers that are arranged by their merger advisor experienced an average first-week price discount of 4.06 percentage points, holding other factors constant. This price discount is not only statistically significant, but also important economically. Our finding is consistent with the hypothesis that loans arranged by acquirer advisors are tarnished by the perception of conflicts of interest and market share building, as bank advisors may utilize the promise of below-market loan terms in order to generate merger advisory fees. Thus, we find evidence in support of the *loss leader hypothesis.*

As expected, a worsening in the credit quality of the borrower results in a greater loan price discount. The negative and significant (at the 1% level) coefficient on ΔIDP indicates that a one-percentage rise in the implied probability of default (i.e., credit quality) reduces the first-week quote price of the loan by about 50 basis points. Changes in credit risk are therefore a significant determinant of loan prices in the secondary market for loans granted after the merger announcement. We also find that longer-maturity loans are priced at a premium. This result suggests that longer-term loans are typically offered to safer borrowers.

An important finding is that the ACQ dummy variable is positive and statistically significant (at the 5% level). The positive coefficient indicates that loans issued to finance acquisitions tend to trade at a premium during their first week of trading. This positive coefficient also implies that non-acquisition loans are sold in the secondary market at a deep discount. This regression outcome underscores the result that market participants are concerned about purchasing non-acquisition loans made by merger advisors to their acquirer clients. To explore this disparity in the price discount further, we estimate the full version of the regression model defined by equation (3) interacting the acquisition/non-acquisition loan purpose indicators with the AGENT dummy variable.

As seen from the last column of Table 4, non-acquisition loans arranged by agent advisors within 12 months after the merger deal (represented by the interaction variable $AGENT_{tij} \times NONACQ_{tij} \times I_{1Y_AFTER,i}$) are priced at very deep discounts averaging 11.02 percentage

points.[18] Moreover, general purpose loans extended more than one year after the merger by the acquirer's advisor ($AGENT_{tij} \times NONACQ_{tij} \times I_{OVER_1Y_AFTER,i}$) also trade at a statistically significant (at the 5% level) discount of 6.42%. These results are consistent with the *loss leader hypothesis* that the incidence of underpriced lending is likely to be higher in non-acquisition loans offered shortly after mergers that are arranged by the acquirer's advisor. In particular, non-acquisition loans arranged by the acquirer's advisor in the period following the merger are the most underpriced of all loans because the arranging bank has the most discretion in setting the loan terms. In contrast, the terms associated with acquisition loans are often set in the course of the merger deal. Because these acquisition loans are transparent, the potential intra-bank and intertemporal agency problems are less applicable. Non-acquisition loans granted immediately following the merger announcement are most susceptible to the risk shifting and underpricing problems associated with lending motivated by potential conflicts or market-share building. The large and economically significant drop in the price of non-acquisition loans is consistent with the hypothesis that market participants are indeed aware of these potential pricing discrepancies.

Because many of the ΔPRICE outliers in our sample are linked with borrower defaults, one could argue that regression results presented above may be driven by these adverse events. In Table 5, we re-estimate the model by excluding from our sample all loans that eventually defaulted.[19] The results in Panel A of Table 5 reveal that non-defaulted loans originated by acquirer advisors trade at an average discount of 3.1% during their first week of trading. Moreover, general-purpose loans granted within one year by acquirer advisors with prior lending relationships to the acquirer trade at an average discount of 6.53%. Indeed, general-purpose loans extended more than one year after the merger to the acquirer by the acquirer's advisor trade at a significant (at the 5% level) discount of 7.41%.

Insert Table 5 here

[18]The large magnitude of the price declines should not be surprising because the period of study includes some spectacular company bankruptcies many of which had outstanding syndicated loans. Roughly half of the 11.02 percent decline in the price of agent non-acquisition loans can be attributed directly to defaulting companies.

[19]We used several sources to compile a comprehensive sample of defaults. A list of bankruptcies is obtained from the SDC database on corporate restructurings. This information is furthermore cross checked with a similar bankruptcy database provided by *Bankrupcty.Com*. In addition to corporate bankruptcy, we also used bond-level information available from Standard and Poor's (CreditPro database) and Bloomberg Financial to identify defaults. Overall, six firms have defaulted in our sample during this period (Enron Corp, ICG Communications Inc, Sun Healthcare Group Inc, Superior Telecom Inc, UAL Corp, Global Crossing), accounting for a total of 22 sample loan observations.

The results in Tables 4 may be also driven by aggregate changes in loan prices over the period. In Panel B of Table 5, we utilized an index-adjusted price change as the dependent variable in the regression. This variable was calculated as the change in the loan price from origination to the first week of trading minus the change in the S&P/LSTA syndicated loan index value over the period from origination to the first trading week. If anything, this index adjustment strengthens our result by increasing the magnitude of the negative coefficients on the AGENT and $AGENT_{tij} \times NONACQ_{tij} \times I_{1Y_AFTER,i}$ variables.

6. Conclusion

Using both the primary and secondary market pricing of syndicated bank loans, we are able to differentiate among two competing hypotheses: the *information hypothesis* (information reusability permits the relationship bank to provide both lending and merger advisory services at low information costs, and acquisitions reduce the potential hold-up power of the bank to extract monopoly rents from relationship borrowers); and the *loss leader hypothesis* (underpriced loans are used to attract merger advisory business). Our findings demonstrate that the non-acquisition loans arranged by the acquirer's advisor shortly after the merger announcement are subject to the steepest discount in terms of both all-in-spread primary market and secondary market pricing. This is consistent with the advisor's implicit (or explicit) promise to provide credit at below-market prices (the *loss leader hypothesis* and not the *information hypothesis*). Using the Enron-Dynegy merger as an example, a *Wall Street Journal* article notes that:[20]

> JP Morgan and Citigroup, who have served as the top underwriters of [Enron's] debt, would rather avoid being blamed for letting Enron's debt go bad. Even more importantly, they also hold their own portion of that debt. Thus, both banks recently provided an additional credit line to Enron totaling $1 billion … [S]peaking privately, bankers concede that a failure of the Enron deal would smart beyond what the damage might be to the banks' loan portfolio. "If it falls apart," says Mr. Hayes, the Harvard professor, "it will be a source of embarrassment."

Our results suggest that the Enron loans are not isolated examples. We find that acquirer advisors are more likely to arrange syndicated bank loans for acquiring firms in the post-merger period. We find that general-purpose, non-acquisition loans to acquirers arranged by the

[20] Jonathan Sapsford and Kara Scannell, "Banks, Too, Have Stake in Enron Merger: Stature, Money Are Both on the Line," Wall Street Journal, November 28, 2001, C1.

acquirer's advisors are more likely to trade in secondary markets at considerable discounts from par value and more likely to have below-market all-in-spreads in primary markets. This suggests that commercial banks may offer loans to acquirers at terms considerably below market in order to obtain merger advisory business.

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Table 1. Summary statistics of the primary syndicated loan market

Variable	Mean/ Frequency	Q1	Q3	Minimum	Maximum	Mean/ Frequency	Q1	Q3	Minimum	Maximum
	Non-Agent Loans, N=9,294					**Agent Loans, N=503**				
Firm Characteristics										
SALES	760.5	32.8	514.4	0.003	82,742	2,047.90	203.9	1,857.10	10.1	33,246
EQA	0.371	0.25	0.52	-4.51	0.98	0.354	0.26	0.44	-0.49	0.94
ROA	0.008	0	0.02	-4.18	1.05	0.013	0.01	0.02	-0.16	0.09
INT_COVERAGE	5.40	1.09	4.90	-20.1	222	1.39	1.24	4.81	-3.48	53.26
STD_RET	49.06	27.95	61.04	0.87	441.3	42.09	28.39	49.11	9.18	137.2
IDP	2.202	1.18E-14	0.101	0	99.43	0.945	1.25E-13	0.032	0	52.26
Loan Characteristics										
SPREAD	164.29	62.5	250	5	1200	136.77	37.5	225	15	800
LOAN_SIZE	290.83	40	300	0.14	10,000	825.23	200	1000	5	25,000
MATURITY	40.82	15	60	1	480	42.74	12	60	2	108
NUMBER_LENDERS	7.76	2	11	1	100	15.746	6	21	1	108
ACQ	0.201					0.392				
365_DAY_FACILITIY	0.173					0.32				
REVOLVER	0.576					0.368				
REFI	0.555					0.621				
SPONSORED	0.05					0.058				
COVENANT	0.601					0.608				
SECURED	0.437					0.356				
HYBRID	0.003					0.000				
TERMLOAN	0.231					0.258				
WORKING_CAP	0.121					0.056				
CORPORATE	0.231					0.163				
DEBT_REPAY	0.292					0.147				

Note: SPREAD = all-in-spread (spread over Libor). A loan is defined as AGENT if the acquirer advisor is a relationship bank that is also a lead arranger in the loan facility granted to the acquirer. EQA = borrowing firm's equity-to-asset ratio. SALES = borrower's total sales ($ millions). IDP = borrower's implied default probability (percent). ROA = borrower's return on asset. INT_COVERAGE = after-tax interest coverage (interest expenses plus EBITA divided by interest expenses). STD_RET = stock return volatility (computed on a quarterly basis as a percent). LOAN_SIZE= size of loan facility ($ millions), MATURITY= maturity of loan (in months), TERMLOAN= 1 if loan facility is term loan; 0 otherwise. SECURED=1 if loan is secured; 0 otherwise. 365_DAY_FACILITY = binary indicator for 365 day facility. HYBRID = indicates a hybrid loan. REVOLVER = 1 if loan facility is a revolver. 0 otherwise, REFI= binary indicator of refinancing option. WORKING_CAP = 1 if purpose of loan is for working capital; 0 otherwise. CORPORATE = 1 if purpose of loan is for corporate purposes; 0 otherwise. DEBT_REPAY = indicator that loan is used to repay debt. ACQ = 1 if purpose of loan is acquisition-related; 0 otherwise. NUMBER_LENDERS = number of syndicate members. COVENANT = 1 if the loan has financial or general covenants; 0 otherwise. SPONSORED = 1 if the loan has a sponsor; 0 otherwise. Q1 and Q3 represent the lower and upper quartiles (25-th and 75-th percentiles), respectively.

Table 2. Determinants of syndicated loan spreads

Dependent variable = SPREAD, all-in-spread (basis points)

Independent Variables	Entire Sample		Only Borrowers Participating in Merger Acquisitions	
INTERCEPT	474.4***	475.5***	441.2***	439.3***
	(13.4)	(13.4)	(7.73)	(7.6)
Firm Characteristics				
EQA	-33.4***	-33.4***	-62.5***	-63.0***
	(-10.1)	(-10.1)	(-9.5)	(-9.6)
log(SALES)	-9.7***	-9.7***	-10.9***	-11.1***
	(-15.3)	(-15.3)	(-9.4)	(-9.4)
IPD	1.01***	-95.8***	-261.7***	-258.0***
	(7.2)	(-7.1)	(-6.2)	(-6.1)
ROA	-95.9***	1.01***	1.66***	1.63***
	(-7.8)	(7.1)	(5.5)	(5.4)
STD_RET	0.610***	0.612***	0.516***	0.527***
	(13.9)	(14.0)	(6.1)	(6.1)
INT_COVERAGE	-0.303***	-0.303***	-0.186***	-0.186***
	(-8.4)	(-8.3)	(2.7)	(-2.6)
Loan Characteristics				
log(LOAN_SIZE)	-11.2***	-11.2***	-12.0***	-12.1***
	(-12.5)	(-12.6)	(-7.9)	(-7.8)
log(MATURITY)	-9.5***	-9.4***	-1.15	-0.87
	(-6.2)	(-6.1)	(-0.4)	(-0.3)
TERMLOAN	5.34	5.38	6.43	6.66
	(1.4)	(1.39)	(1.0)	(1.1)
365_DAY_FACILITY	-88.3***	-88.2***	-65.1***	-65.2***
	(-20.4)	(-20.2)	(-9.7)	(-9.6)
REFI	2.41	2.27	3.47	4.17
	(0.97)	(0.92)	(0.9)	(1.1)
SPONSORED	42.63***	42.95***	34.7***	34.5***
	(10.7)	(10.6)	(5.0)	(4.9)
COVENANT	-11.2***	-11.2***	-8.3**	-8.5**
	(-5.3)	(-5.35)	(-2.5)	(-2.5)
REVOLVER	-42.6***	-42.6***	-39.8***	-39.9***
	(-11.5)	(-11.5)	(-6.6)	(-6.5)
SECURED	63.7***	63.6***	69.8***	70.1****
	(29.7)	(29.6)	(19.1)	(18.9)
HYBRID	156.9***	156.9***	260.7***	260.5***
	(9.5)	(9.5)	(10.1)	(10.1)
WORKING_CAP	17.5***	17.5***	19.1***	19.4***
	(4.9)	(4.9)	(3.2)	(3.2)
CORPORATE	10.4***	10.3***	12.8***	13.3***
	(3.5)	(3.5)	(2.8)	(2.9)
DEBT_REPAY	12.8***	12.7***	10.2*	9.7*
	(3.9)	(3.8)	(1.9)	(1.8)
log(NUMBER_LENDERS)	2.21**	2.24**	-0.385	-0.320
	(2.0)	(2.1)	(-0.2)	(-0.2)

Table 2 continued

Independent Variables	Entire Sample		Only Borrowers Participating in Merger Acquisitions	
ACQ	34.1***		39.4***	
	(10.8)		(8.2)	
AGENT	2.1		0.829	
	(0.6)		(0.2)	
ACQ × (1-AGENT)		33.74***		40.1***
		(10.4)		(7.8)
AGENT×ACQ×$I_{OVER_1Y_BEFORE}$		25.1		21.05
		(1.5)		(1.3)
AGENT×ACQ×I_{1Y_BEFORE}		21.2		26.52
		(0.8)		1.17
AGENT×ACQ×I_{1Y_AFTER}		41.5***		42.15***
		(4.9)		(5.2)
AGENT×ACQ×$I_{OVER_1Y_AFTER}$		39.9***		40.24***
		(3.3)		(3.6)
AGENT×NONACQ×$I_{OVER_1Y_BEFORE}$		-10.5		-7.53
		(-0.7)		(-0.58)
AGENT×NONACQ×I_{1Y_BEFORE}		-5.0		-8.45
		(-0.3)		(-0.57)
AGENT×NONACQ×I_{1Y_AFTER}		5.3		6.44
		(0.5)		(0.75)
AGENT×NONACQ×$I_{OVER_1Y_AFTER}$		1.9		4.10
		(0.3)		(0.67)
NOBS	9,797	9,797	2,480	2,480
$\bar{R}^2$	0.548	0.549	0.628	0.629

Note**:** Variables definitions are provided at the bottom of Table 1. The dummy variable AGENT indicates agent loans. I_{1Y_BEFORE} (I_{1Y_AFTER}) are binary indicators for loans granted within 12 months before (after) the merger announcement date. $I_{OVER_1Y_BEFORE}$ ($I_{OVER_1Y_AFTER}$) represents loans granted 12 months before (after) the merger deal. The symbols *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively (t-values are in parentheses).

TABLE 3. Descriptive statistics for sample of traded syndicated loans

	Mean/ Frequency	Q1	Q3	Minimum	Maximum
		Agent Loans N=95			
Δ PRICE	-4.203	-2.531	0.188	-80.000	1.073
ΔDD	-0.814	-0.756	0.489	-12.727	3.046
Δ IDP	2.010	-1.238	0.714	-27.860	56.539
DD_ANNOUNCE	3.252	1.702	3.603	-1.190	14.262
DD_QUOTE	2.432	1.642	3.308	-1.111	7.708
LOAN_SIZE	903	200.	850	50	25,000
MATURITY	70.1	60.0	87.0	8.0	109.0
TERMLOAN	0.600				
SECURED	0.779				
REVOLVER	0.316				
REFI	0.695				
ACQ	0.611				
		Non-Agent Loans N=121			
Δ PRICE	-4.093	-1.500	0.094	-80.000	0.781
ΔDD	-0.329	-0.497	0.550	-12.727	2.343
Δ IDP	1.797	-0.324	0.190	-3.634	56.000
DD_ANNOUNCE	3.355	2.236	3.639	1.559	14.262
DD_QUOTE	3.025	2.010	3.675	0.476	9.963
LOAN_SIZE	622	250	725	14	4,250
MATURITY	71.5	60.0	88.0	4.3	158.0
TERMLOAN	0.603				
SECURED	0.554				
REVOLVER	0.322				
REFI	0.463				
ACQ	0.355				

Note: Sample consists of all loans trading in the secondary market granted to acquiring firms. Δ PRICE = change in the price from syndication date (facility active date) to the first quoted price. Δ IDP = change in implied probability of default from time loan is made active to time of first quote (percent). ΔDD = change in distance-to-default from time loan is made active to time of first quote. DD_ANNOUNCE = distance-to-default score at facility announcement date. DD_QUOTE = distance-to-default score at loan quote date. LOAN_SIZE = size of loan facility ($ millions). MATURITY = Maturity of loan (in months). TERMLOAN = 1 if loan facility is term loan; 0 otherwise. SECURED = 1 if loan is secured; 0 otherwise. REVOLVER = 1 if loan facility is a revolver; 0 otherwise. REFI = 1 if loan facility has refinancing option; 0 otherwise. ACQ = 1 if purpose of loan is acquisition-related; 0 otherwise. AGENT = 1 if acquirer advisor is a lead arranger in the loan facility; 0 otherwise. Q1 denotes the lower quartile or the twenty-fifth percentile. Q3 is upper quartile or seventy-fifth percentile. The mean value for binary variables is equivalent to the frequency. Information on the distance-to-default credit measures is only available for 196 loan facilities extended to publicly-traded acquiring firms.

TABLE 4. Determinants of loan price granted before and after merger

The dependent variable is the change in the price from the time it became active (par value) to the first price quoted in the secondary market (ΔPRICE)

Variables	All Loans	Loans Before Merger	Loans After Merger	Loans After Merger
CONSTANT	-31.75*** (-3.55)	-51.22** (-2.09)	-32.79*** (-4.15)	-28.40*** (-3.57)
log(LOAN_SIZE)	1.23 (1.62)	3.96 (1.62)	1.34 (1.61)	1.03 (1.25)
log(MATURITY)	3.98*** (2.68)	5.85 (0.96)	3.92** (2.49)	3.85** (2.48)
ΔIDP	-0.562*** (-8.24)	0.11 (0.18)	-0.472*** (-8.51)	-0.593*** (-8.94)
TERMLOAN	4.77 (1.55)	-2.79 (-0.31)	5.06 (1.56)	4.91 (1.55)
REFI	0.78 (0.50)	-0.16 (-0.05)	1.44 (0.82)	1.43 (0.84)
REVOLVER	2.87 (0.97)	-9.33 (-1.08)	4.39 (1.40)	4.20 (1.37)
SECURED	0.42 (0.22)	4.34 (0.79)	0.31 (0.15)	-0.48 (-0.22)
ACQ	3.11** (2.00)	1.04 (0.24)	4.19** (2.51)	
AGENT	-2.11 (-1.50)	7.08* (1.82)	-4.15*** (-2.63)	
AGENT×ACQ×I_{1Y_AFTER}				1.02 (0.46)
AGENT×ACQ×$I_{OVER_1Y_AFTER}$				-0.69 (-0.23)
AGENT×NONACQ×I_{1Y_AFTER}				-11.02*** (-3.59)
AGENT×NONACQ×$I_{OVER_1Y_AFTER}$				-6.42** (2.16)
ACQ × (1-AGENT)				0.296 (0.14)
I_{1Y_AFTER}				-1.65 (-0.84)
NOBS	196	41	155	155
$\bar{R}^2$	0.345	0.038	0.417	0.448

Note: Regressions include year time dummies and selected macroeconomic controls. Loans denoted "before (after) mergers" are originated before (after) the merger announcement date. Variables are defined more extensively in Table 3. The dummy variable I_{1Y_AFTER} indicates a loan granted within 12 months of the merger announcement date. Similarly, $I_{OVER_1Y_AFTER}$ is a binary variable indicating a loan was received 13-60 months after the merger announcement deal. The symbols *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively (t-values are in parentheses).

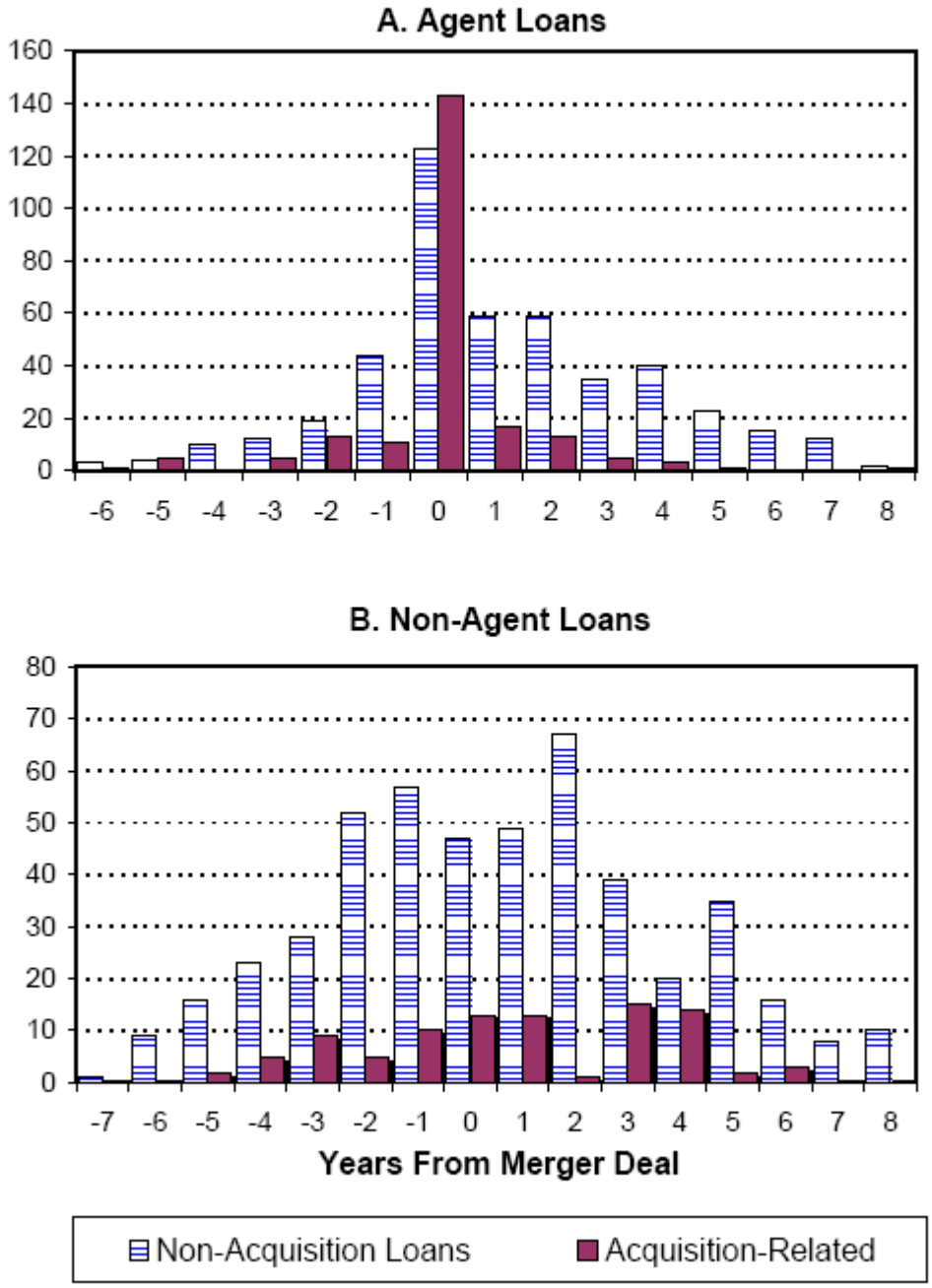
TABLE 5. Determinants of loan price granted after merger: Alternative specifications

The dependent variable is the change in the price from the time it became active (par value) to the first price quoted in the secondary market (ΔPRICE)

Variables	**A.** Excluding Defaults		**B.** Index-Adjusted Price Change	
CONSTANT	-10.65**	-7.72*	-32.49***	-28.16***
	(-2.26)	(-1.82)	(-4.51)	(-3.01)
log(LOAN SIZE)	0.62	0.53	1.09	0.691
	(1.35)	(1.26)	(1.13)	(0.69)
log(MATURITY)	2.38***	2.20***	4.93***	4.91***
	(2.64)	(2.65)	(3.02)	(2.94)
ΔIDP	-0.281***	-0.291***	-0.565***	-0.556***
	(-4.98)	(-5.58)	(-7.01)	(-6.91)
TERMLOAN	-2.48	-2.62	6.36**	5.62
	(-1.39)	(-1.61)	(1.85)	(1.66)
REFI	0.971	1.47	4.42**	5.06**
	(0.88)	(1.45)	(1.92)	(2.19)
REVOLVER	-4.64***	-4.71***	6.59**	6.02*
	(-2.71)	(-2.99)	(1.98)	(1.85)
SECURED	-2.06*	-2.02***	-3.34	-3.87
	(-1.72)	(-2.65)	(-1.31)	(-1.55)
ACQ	1.83*		6.24***	
	(1.85)		(3.22)	
AGENT	-3.10***		-6.14***	
	(-3.47)		(-3.48)	
AGENT×ACQ×I_{1Y_AFTER}		-1.88		-0.27
		(-1.53)		(-0.75)
AGENT×ACQ×$I_{OVER_1Y_AFTER}$		0.60		2.34
		(0.39)		(0.75)
AGENT×NONACQ×I_{1Y_AFTER}		-6.53***		-12.86***
		(-4.10)		(-3.65)
AGENT×NONACQ×$I_{OVER_1Y_AFTER}$		-7.41***		-6.02*
		(-4.73)		(-1.98)
(1-AGENT)×ACQ		-1.64		3.24
		(-1.40)		(1.31)
I_{1Y_AFTER}		-0.62		-1.65
		(-0.57)		(-0.84)
NOBS	133	133	123	123
$\bar{R}^2$	0.343	0.449	0.478	0.528

Note**:** In Panel B, changes in loan prices are adjusted for movements in the S&P/LSTA aggregate loan price index as follows: (ΔPRICE-ΔINDEX). The sample size for the index-adjusted is smaller because the S&P/LSTA syndicated loan index is only available after 1999. Regressions also control for macroeconomic changes and include yearly time dummies. Variables are defined extensively at the bottom of Tables 3 and 4. The symbols *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively (t-values are in parentheses).

Fig 1. Number of loans before and after merger deal



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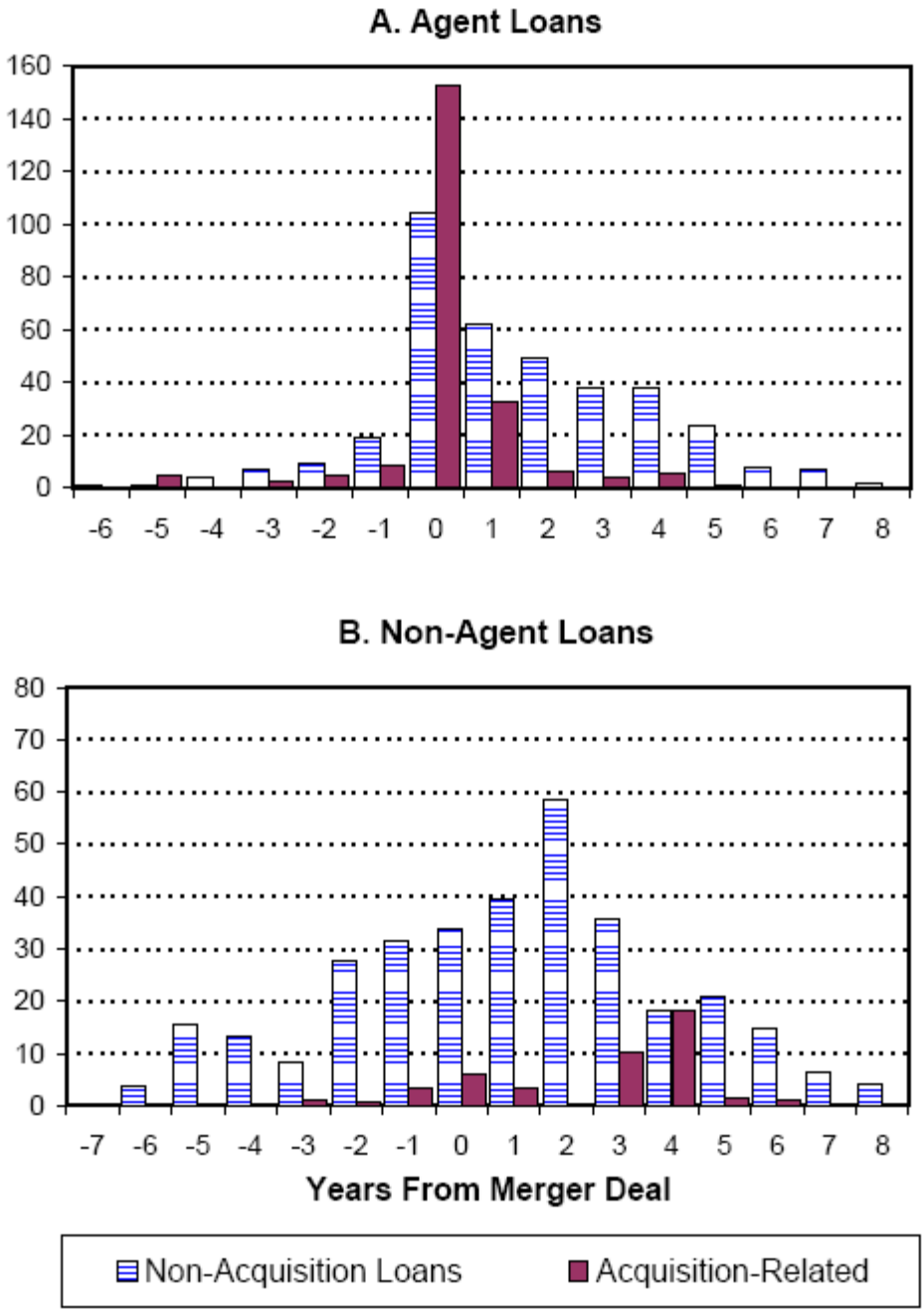
Fig 2. Volume of loans before and after merger deal ($ billions)