Loan Sales and the Cost of Corporate Borrowing

A. Burak Güner
Barclays Global Investors, San Francisco

When a loan is sold, it goes to a lower-cost financing source than its originator. Yet, lending markets are less than perfectly competitive. Despite the lower funding cost, therefore, the loan price is not necessarily more favorable to the borrower. However, corporate borrowers are averse to the participation of their loans to other lenders because of the complexity of dealing with multiple banks and the potential information costs of the sale announcement. Consequently, I conjecture that the borrower extracts a price concession in exchange for allowing the bank to sell participations in the loan. Using a hand-matched dataset of loans, borrowers, and lenders, I find that the average yield spread on loans originated by active loan sellers is about 20 basis points lower than the average spread on loans originated by moderate loan sellers.

In a typical loan sale, the seller keeps a small portion of the loan and sells, or participates, the rest in smaller tranches to several lenders. The originating bank continues to service the loan—a process that entails monitoring the borrower, enforcing the covenants, and passing the cash stream to the buyers. A loan sale, even though providing no guarantee of the value of the loan, allows the bank to separate the financing decision from the process of originating the lending contract. Since these two components of bank lending are customarily considered inseparable, the growth of the secondary market for commercial and industrial loans in the last two decades has drawn the attention of academic researchers. While most studies have emphasized the motivations for loan sales and the implications for bank risk,[1] however, little thought has gone into understanding the effects on corporate borrowers.

In this article, I analyze the economics of loan sales from the borrowing firm's perspective. Although the bank has strong incentives to fund a loan by selling it—doing so is cheaper for the bank because of tax and accunting considerations than funding it on the balance sheet (e.g., Pennacchi, 1988)—the borrower might dislike to see its loan sold (discussed why

This article is derived from my doctoral dissertation at Stanford University. I thank Darrell Duffie, Leslie Hodder, Ilan Kremer, Ulrike Malmendier, Robert McDonald and Maureen O'Hara (the editors), George G. C. Parker, and an anonymous referee for helpful comments and suggestions. All errors are my own. Address correspondence to: Barclays Global Investors, 45 Fremont Street, 32nd Floor, San Francisco, CA 94105, or email: burak@alum.mit.edu.

[1] See Berger and Udell (1993) for a summary of the main hypotheses for banks' motivations for loan sales, and Gorton and Haubrich (1990) for a detailed description of the loan-sales market.

doi:10.1093/rfs/hhj017 Advance Access publication January 19, 2006

shortly). I conjecture that the loan price reflects at least a portion of the cost reduction, as the borrower demands and obtains a lower interest rate in exchange for *allowing* the bank to sell participations in the loan.[2] I test this hypothesis using a hand-matched dataset of borrowers, banks, and loans, and find that the yield spread on the loan is significantly lower when the loan is more likely to be originated for sale.

Earlier literature views the emergence of loan sales mainly as a response to the segmented nature of the loan markets, which stems from the differential regulatory costs and lending opportunities faced by financial intermediaries. The comparative advantage hypothesis[3] (Pennacchi, 1988; Carlstrom and Samolyk, 1995) posits that banks constrained by their funding capacities because of their rich loan-origination opportunities sell loans to those that have relatively cheap funding sources but poor loan-origination opportunities. This explanation accords well with the empirical-stylized facts of the loan-sales market. For instance, active loan sellers are typically large money-center banks, which can access numerous borrowers via their branches located in the financial centers of the world. Typical loan buyers, on the other hand, tend to be foreign banks and nonbank financial institutions, which seek increased exposure to US corporate loans. These motivations suggest that the buyer may demand a lower expected return on the loan than does the seller. Furthermore, by selling a loan, a bank saves on the regulatory costs of on-balance-sheet funding (i.e., minimum reserve requirements, minimum capital adequacy ratio, and the cost of federal deposit insurance).[4] In sum, by removing the loan from the balance sheet, the bank essentially obtains a fee income and increases return on assets and equity (Gorton and Haubrich, 1990). For a bank with rich lending opportunities, therefore, the marginal cost of funding a loan off the books (by selling it) is likely to be lower than funding it on the balance sheet (Pennacchi, 1988).

Yet, because loan markets are less than perfectly competitive, the potential benefits may not accrue to the borrower. The loan interest rate is typically a markup over the cost of originating, financing, and servicing the loan (e.g., Ho and Saunders, 1981), where the markup represents the possible rents to the bank depending on the degree of competition in the market. Because of this market power, a decrease in

[2] At the time of the loan origination, the borrower signs a contract that allows the bank to sell participations in the loan. At the event of the actual sale, however, the bank need not consult or even notify the borrower.

[3] While other (perhaps complementary) hypotheses on the motives for loan sales exist—such as portfolio rebalancing to shift asset risk or earning underwriting income that was otherwise banned by regulations until recently—the comparative advantage hypothesis finds the most support in the literature. See Demsetz (1993, 2000) and Haubrich and Thomson (1996) for empirical evidence.

[4] To remove a loan from the balance sheet, the sale must involve no explicit recourse (i.e., a guarantee to compensate the buyer in adverse cases). Consequently, most loans during the sample period used here (1987–1993) were sold with no recourse (Gorton and Haubrich, 1990).

the cost of financing the loan would not necessarily translate into a lower interest rate for the borrower.

In contrast with banks' strong incentives to sell loans, there are a couple of reasons why corporate borrowers dislike the sale of their loans. First, when a loan is sold, it is generally participated piecewise to many banks. If the borrower then demands to renegotiate the contract terms, the selling bank will need to get approval from all the banks that are holding the loan.[5] Financial distress is a typical, but not the only, case in which the borrower may ask for a renegotiation. Often, the borrower will ask to breach a loan covenant. This case occurs, for instance, when the borrower intends an investment that was previously ruled out by a covenant (e.g., opening of a plant in a foreign country). This complication of dealing with multiple banks, thus, makes the loan more expensive for the borrower, because of the expected costs of forgone investment opportunities and prolonged financial distress.[6]

Second, borrowers may incur information costs associated with the loan-sale announcement; Dahiya, Puri, and Saunders (2003) find significant negative stock returns for the borrower on the loan-sale announcement. They interpret this finding in light of the common view that banks are unique information producers about borrowers (e.g., Fama, 1985). As a loan initiation or renewal is a positive information event for the borrower,[7] a loan sale disseminates to the market the selling bank's private negative information on the borrower. Because a loan sale does not necessarily end the bank–borrower relationship, the announcement acts as a public signal (reliable or not) for the borrower's poor future performance.[8] This pure information effect, however, might imply a real cost to the borrowing firm's managers, because short-term stock performance is tightly linked to managerial compensation and the likelihood of retaining the firm's control (e.g., Stein, 1988). ("Managerial myopia" is also evident in the well-documented intertemporal smoothing of earnings.)

Given the potential costs of a loan sale, the borrower is likely to demand compensation in exchange for permitting the bank to sell

---

[5] A recent article in the Financial Times (November 19, 2003, pp. 27) explains that some companies are unhappy with the development of the European secondary market for syndicated loans, as "they prefer to see their loans held by a tight circle of relationship banks with which they have close ties."

[6] I thank George G. C. Parker for providing the arguments discussed in this paragraph.

[7] On the loan-announcement returns to borrowers, see James (1987), Lummer and McConnell (1989), Slovin, Johnson, and Glascock (1992), Best and Zhang (1993), Preece and Mullineaux (1994), and Billett, Flannery, and Garfinkel (1995).

[8] Despite the lack of an explicit recourse on a sold loan, banks overcome the adverse selection problem through a number of ways, such as selling short-term strips in a long-maturity loan and retaining a small portion of the loan. A loan sale typically occurs shortly after the origination, implying little change in borrower quality after the loan origination. Taken together, these arguments imply that the "lemons" discount on the resale price of the loan is likely to be minimal (or at least insignificant compared to the tax and accounting benefits to the bank of selling the loan). The sale announcement may still provide a negative signal to equity investors, however, to the extent that their information set is different than that of the bank, as the studies in the previous note suggest.

participations in the loan. Consistent anecdotal evidence is given by a Lending Practices Survey conducted in February 1986 (Gorton and Haubrich, 1990), which asked a sample of US banks if they "modified their behavior recently in order to promote loan sales." Ten out of the sixty respondent banks indicated that they had offered more attractive interest rates to borrowers in exchange for permission to sell participations in their loans. Among the nine large respondent banks, which were also the main suppliers of the loans sold during the period, the number of similar answers was seven. The July 1987 survey found an even higher fraction of banks that modified their contract terms favorably to borrowers.

In light of these arguments, I postulate that a saleable loan carries a lower interest rate than does an otherwise equivalent loan originated without the permission to sell. The empirical methodology is to test whether there is a negative correlation between the interest rate on the loan and the relative loan sales activity of the originating bank. Ideally, we would like to know whether each loan carries contractual terms that make the loan saleable, or, less preferably, whether the loan is eventually sold. Because of the lack of these data, I use the originating bank's volume of loan sales as a proxy for the likelihood that the loan is originated for sale. To test the hypothesis, I obtained a sample of loans from the Loan Pricing Corporation's Dealscan database and hand-matched borrowers to CRSP (Center for Research in Security Prices) and COMPUSTAT (Standard & Poor's Compustat), and lenders to bank call reports, which record the quarterly amount of commercial and industrial loans originated and sold by the bank. According to the variation in this variable, the data reveal three categories of banks: nonsellers, moderate sellers, and active sellers.

Because loan pools of loan-seller banks may contain higher quality borrowers than do those of nonsellers—as the comparative advantage hypothesis suggests—my empirical analysis focuses on loan sellers only. Ordinary least squares regressions that include an array of controls for borrower, bank, and contract characteristics show that the average at-issue yield spread (all-in-drawn yield) over LIBOR (London Inter-Bank Offered Rate) on loans extended by active sellers is about 20 basis points per year lower than the average spread on those lent by moderate sellers—that is, banks relatively inactive in the market. This empirical finding supports the hypothesis that the lower cost for the lender of funding a loan through a sale translates into lower loan prices for the borrowers. Without further analysis, however, it is difficult to say whether this reduction in the loan price implies a net benefit to the borrower—because of the aforementioned disadvantages of the loan sale for the borrower.

The rest of the article is organized as follows. Section 1 describes the sample construction. Section 2 explains the methodology. Section 3 presents the main results and Section 4 offers robustness checks. Section 5 closes with a brief conclusion.

1. Data and Sample Selection

I obtained a sample of corporate loans from the Loan Pricing Corporation's Dealscan database, along with data on the (publicly traded) borrowers from CRSP and COMPUSTAT. The main independent variable of the regression analysis, the amount of commercial and industrial (C&I) loans sold by bank, comes from the quarterly call reports that US commercial banks file to the Federal Deposit Insurance Corporation (FDIC). The Dealscan sample starts in 1987, and the loan-sales variable from the FDIC call reports ends in 1993—hence the sample period 1987 to 1993. The initial download yields 4942 sole-lender and 7890 syndicated loan facilities.

Dealscan reports detailed information about the nature of the loan contract such as the origination and maturity dates, the style and purpose of the loan, the size of the deal, and the pricing. Yet, the data provide scant information on lenders and borrowers beyond their names.[9] I thus hand-match the Dealscan lender names[10] to the bank names in the FDIC database of call reports, and the Dealscan borrower names[11] to CRSP and COMPUSTAT. The matching process yields approximately 1500 loan facilities for each of the sole-lender and the syndicated loan samples, where the exact number varies according to the data requirements of each statistical model. I run all the tests separately in the sole-lender and the syndicated loan samples, because the two types of loans differ significantly in terms of borrower and contract characteristics, as explained later.

Data do not indicate whether a loan is originated with a contractual feature that allows the loan's sale, or whether the loan is eventually sold or retained. Instead, the call reports reveal the loan originator's loan-sales volume. Consequently, as a proxy for the *likelihood* that a particular loan is originated for sale, I use the total amount of C&I loans originated and sold by the bank during the year of lending, scaled by the average level of C&I loans on the bank balance sheet ("SALES"). Although the definition of the loan-sales variable in call reports does not explicitly indicate that

[9] Although Dealscan provides a stock ticker for the borrowing firm, this variable is often missing, or is not sufficiently reliable to uniquely identify a firm.

[10] For syndicated loans, *lender* is the lead bank, which plays the main role in pricing the deal. For a clear interpretation of the results, I drop the cases where several banks share the lead role. In those cases where Dealscan does not report the location of the lender, the Dealscan lender name might yield several exact matches in the FDIC sample, if members of the same holding company are chartered in different states and therefore file separate call reports. Dropping these observations would cause considerable data loss, especially because some of these banks are active loan sellers, such as Security Pacific, Bankers Trust, Bank of America, etc. Instead, I consolidate the balance sheets for these banks. In most cases, each banking corporation has one main bank (usually the one identified as the national association) that accounts for most of the firm's assets and loans. For other cases, consolidating the data would only bias the results against finding the effects, thus rendering the procedure innocuous for the experiments.

[11] I do a first-order check on the borrower-name matching by comparing firm SIC codes and asset sizes between Dealscan and CRSP/COMPUSTAT.

the variable includes C&I loans only, earlier studies commonly interpret the variable as such.[12] If a loan is not sold entirely, as is the common case, the variable records only the sold portion of the loan. In particular, it excludes the portion of loans "syndicated" to the participants by the lead manager. Thus, the variable tracks secondary loan participations only.

In the sole-lender and the syndicated loans samples, separately, I sort all facilities into increasing SALES deciles.[13] The summary statistics for loan contracts, borrowers, and banks within each decile, reported in Tables 1 and 2, point to the distinct nature of the sole-lender and the syndicated loans. The former group tends to involve smaller borrowers, smaller deal sizes, shorter maturities, and a lower frequency of firms with an Standard & Poor's (S&P) credit rating than does the latter. In other words, sole-lender loans represent the "traditional" bank loan, whereas syndicated loans, extended to less opaque firms, are akin to public debt.[14]

The summary statistics show that most banks included in the Dealscan sample engage in loan sales. Loans from nonseller banks account for only 8 and 2%, respectively, of the observations in the sole-lender and the syndicated samples. Even though most banks sell loans, however, few of them are highly active in this market. The dramatic jump in the mean value of SALES between deciles 9 and 10, as shown in Table 1, allows us to distinguish the moderate sellers (SALES deciles 1 through 9) from the active sellers (the top decile). For moderate sellers, SALES ranges from 0.001 (SALES decile 1) to 1.40 (SALES decile 9), whereas this ratio rises to 10.0 for active sellers.[15] The distinction between the active and the moderate loan sellers has also been documented by Gorton and Haubrich (1990). For instance, the 16 banks[16] in the active-seller group (i.e., the top SALES decile) generated about 75% of the total loan-sales volume during the sample period. It is comforting that the data allow a distinct cutoff for an active- versus moderate-seller classification; the results thus do not depend on the precise value of the (noisy) loan-sales variable. The active-seller group is where we observe the lower loan prices.

[12] See item number 3431 in the dictionary files available from the Chicago Federal Reserve's web site at: http://www.chicagofed.org/economicresearchanddata/data/bhcdatabase/dictionary.cfm. The item excludes certain sales like consumer loans, residential mortgages, and federal funds. Although the loan-sales variable may also include commercial real estate loans, I employ the variable in a similar fashion to the previous studies; the added noise would only bias the tests against finding the documented results. Also, see Demsetz (2000), Berger and Udell (1993), and Cantor and Demsetz (1993) for prior empirical studies in which the variable functions as a proxy for the flow of C&I loan sales. My conversations with call analysts at the FDIC also confirmed this interpretation.

[13] The sorting procedure here pools all years. Sorting the observations separately in each year yields similar results.

[14] See Jones, Lang, and Nigro (2000) and Dennis and Mullineaux (2000) for more discussion of this issue.

[15] Note that a value of SALES greater than 1 is not anomalous, because the numerator of SALES measures flow, whereas the denominator measures stock.

[16] The top five sellers alone (Security Pacific, 24.8%; Citibank, 12.6%; Bankers Trust, 12.4%; Chemical Bank, 6.3%; and Chase Manhattan, 5.4%) together accounted for 61% of the total sales volume.

Table 1
Sole-lender loans

	Sales deciles	Nonsellers	1	2	3	4	5	6	7	8	9	10
	Mean (SALES)	0.00	0.001	0.02	0.05	0.08	0.12	0.19	0.32	0.60	1.40	10.0
BANK												
	# of banks	56	19	80	68	75	68	69	68	63	33	16
	Assets	3489	5385	7467	7951	11,229	14,678	13,814	17,205	29,156	51,653	68,365
CONTRACT												
	# of deals	127	36	165	155	152	157	162	157	168	173	143
	Deal size	6.7	7.2	7.8	6.7	8.1	7.6	7.7	8.6	8.7	10.0	9.7
	# of facilities	155	45	202	201	196	200	204	193	201	206	177
	Facility size	5.6	5.5	6.0	5.3	6.3	6.1	6.0	7.0	7.3	8.7	11.7
	Spread (basis point)	319.2	286.2	289.9	297.5	294.8	285.6	293.8	277.2	269.2	247.9	240.0
	Maturity (years)	2.7	2.7	2.5	2.6	2.7	2.4	2.4	2.6	2.5	2.8	3.1
BORROWER												
	# of borrowers	108	34	149	139	141	143	152	146	150	154	124
	# of observations with a long-term crediting rating	10	3	8	12	8	14	12	12	16	30	20
	Assets	176.4	194.8	168.0	297.0	52.2	133.1	136.6	166.8	159.2	307.5	174.4
	Stock return volume	0.18	0.16	0.15	0.17	0.18	0.16	0.15	0.15	0.16	0.15	0.15
	% Average monthly return	1.31	0.52	2.16	1.58	2.71	1.98	1.51	1.41	1.82	1.15	2.10
	Return on assets (%)	0.38	1.4	1.3	0.90	1.34	0.71	0.33	1.55	1.72	1.47	1.64
	Interest coverage > 2	0.52	0.36	0.65	0.54	0.63	0.63	0.62	0.63	0.62	0.62	0.66
	Leverage	0.53	0.53	0.52	0.56	0.51	0.54	0.52	0.56	0.53	0.54	0.52
	Current ratio > 2	0.44	0.42	0.55	0.42	0.49	0.42	0.46	0.41	0.48	0.50	0.52

This table presents the sample means or counts of variables for which data exist in the intersection of the FDIC Call Reports, CRSP, COMPUSTAT, and the Loan Pricing Corporation's Dealscan. The sample period is 1987 to 1993. SALES denotes the amount of loans sold in the year of lending divided by the average level of C&I loans outstanding on the bank balance sheet. The whole sample of loan facilities is sorted into SALES deciles. SALES decile 1 starts at the 8th percentile, since loan sales below this percentile are zero. All monetary values are given in USD millions. Borrower stock volatility and average stock returns are measured during the 12 months before the loan origination. Accounting variables are averaged over the four quarters before the loan origination.

Table 2
Syndicated loans

	SALES deciles	Nonsellers	1	2	3	4	5	6	7	8	9	10
	Mean (SALES)	0.00	0.04	0.10	0.20	0.42	0.66	1.11	1.54	2.12	2.85	12.55
LEAD Bank												
	# of banks	10	35	40	32	25	14	14	9	8	7	6
	Assets	2967	17,056	20,957	23,471	30,263	50,260	37,292	95,579	128,272	94,925	48,496
CONTRACT												
	# of deals	28	118	136	133	138	135	123	178	159	133	141
	Deal size	166.3	102.8	143.6	113.6	162.4	496.8	276.9	458.0	452.1	597.0	430.2
	# of facilities	35	166	174	172	171	186	156	222	197	182	189
	Facility size	116.7	76.0	108.5	78.9	132.2	230.9	196.0	358.4	359.4	451.5	316.7
	Spread (basis points)	156.0	191.7	184.0	171.5	184.0	206.4	155.7	139.3	128.2	160.2	154.7
	Maturity (years)	3.8	4.0	3.9	3.7	4.0	3.7	4.0	4.1	4.2	4.8	4.3
BORROWER												
	# of borrowers	24	103	124	116	120	116	107	158	141	114	103
	# of observations with a long-term crediting rating	19	38	49	48	53	85	73	114	115	93	95
	Assets	4371.5	1066.0	663.8	718.8	1301.8	1867.7	2161.3	3486.3	3278.2	3937.1	2267.0
	Stock return volume	0.10	0.12	0.14	0.12	0.13	0.12	0.11	0.11	0.11	0.13	0.13
	% Average monthly returns	1.57	2.07	1.61	0.92	1.70	1.44	0.91	0.62	1.92	2.87	1.94
	Return on assets (%)	1.20	1.72	2.00	1.15	1.46	1.14	1.50	1.34	1.63	1.77	1.72
	Interest coverage > 2	0.68	0.69	0.64	0.58	0.69	0.53	0.61	0.62	0.65	0.65	0.59
	Leverage	0.61	0.58	0.59	0.62	0.62	0.64	0.63	0.61	0.62	0.67	0.63
	Current ratio > 2	0.50	0.49	0.42	0.39	0.39	0.29	0.42	0.32	0.39	0.25	0.44

This table presents the sample means or counts of variables for which data exist in the intersection of the FDIC Call Reports, CRSP, COMPUSTAT, and the Loan Pricing Corporation's Dealscan. Sample period is 1987 to 1993. SALES denotes the amount of loans sold in the year of lending divided by the average level of C&I loans outstanding on the bank balance sheet. The whole sample of loan facilities is sorted into SALES deciles. SALES decile 1 starts at the 2nd percentile, since loan sales below this cutoff are zero. All monetary values are given in USD millions. Borrower stock volatility and average stock returns are measured during the 12 months before the loan origination. Accounting variables are averaged over the four quarters before the loan origination.

Since I analyze the syndicated loans as a separate sample from the sole-lender loans, it is necessary to distinguish moderate loan sellers from active sellers within the syndicated sample in a manner consistent with the methodology employed for the sole-lender loans. Somewhat arbitrarily, I choose SALES decile 6, rather than the top decile, as the threshold to define active sellers among the syndicated loans. The SALES ratio now ranges from 0.04 to 1.11 among moderate sellers (SALES deciles 1 through 6), and from 1.54 to 12.55 among active sellers (SALES deciles 7 through 10). The reason for this lower threshold is that the active sellers of the sole-lender sample account for a higher proportion of the syndicated loans—the 16 banks that are in the top SALES decile of the sole-lender sample are among the 20 banks[17] that are in the top four SALES deciles of the syndicated-loans sample.[18]

2. Methodology

The empirical tests examine whether the yield spread on a loan that is originated with the intention of sale is lower than that on an otherwise equivalent loan. Since we do not observe whether the contractual terms include a permission to sell the loan, or whether a loan is eventually sold, I use the originating bank's SALES rank in the sample as a proxy for the likelihood that the loan is originated for sale. For a clear interpretation of the results, the regressions control for an array of borrower risk characteristics, in addition to various lender and contract features. However, a potential sample-selection bias in unobserved borrower heterogeneity might influence the results in at least a couple of ways.

First, banks that sell no loans are typically the small, regional banks, whose loan-origination opportunities might be more limited than those of banks that sell loans (Pennacchi, 1988). If a positive amount of loan sales indicates better access to creditworthy companies, loans of sellers might be of higher quality than are those of nonsellers. To deal with this issue, I concentrate on banks that do sell loans. Accordingly, in the sole-lender loans sample, I introduce a dummy, SELLER, that is equal to 1 for banks with a positive amount of loan sales. In the syndicated-loans sample, I drop loans of nonsellers, as this group constitutes only 2% of the sample.

Second, loans originated for sale might be unobservably safer than the rest, if the process of loan sales is a method for alleviating banks' underinvestment in safe loans—loans that would transfer wealth from equity

[17] Simply adding up the number of banks in each SALES decile in Tables 1 and 2 does not yield the total number of banks in the sample, since banks may appear in different loan-sales deciles in different years. The same comment applies to borrowers.

[18] For a robustness check on this particular cutoff, in untabulated estimations I experimented with the logarithm of SALES as the explanatory variable. This change had no effect on the results. Furthermore, I tried deciles 7 and higher as the active-seller cutoff. As expected, the results are stronger; the higher is the cutoff point.

holders to other claimants on the bank (James, 1988). Moreover, the comparative advantage hypothesis of loan sales might imply that loans of active sellers are of higher quality than are those of moderate sellers, because the former group has better lending opportunities than does the latter.

In response to these concerns, however, there are theoretical arguments for why loans of active sellers might in fact be riskier than those of moderate sellers (Güner, 2005). Banks possess a costly credit-screening technology that reveals the type of the loan applicant, good or bad. As a result, credit-screening standards can be nonmonotonic in the quality of the bank's pool of potential borrowers (i.e., the exogenous probability that a loan applicant will be of the good type). If this probability is too low or too high (consider values close to 0 or 1, for instance), the marginal benefits of screening out bad projects will be lower than the marginal costs of credit verification. When the lending opportunities are toward the middle of the quality spectrum, however, the bank has the highest incentives to screen. Consequently, loan portfolio quality can be first increasing and then decreasing in the quality of the bank's loan pool. Since loan sales are a proxy for loan-origination opportunities (e.g., Pennacchi, 1988), it is possible that loan portfolios of active sellers have *lower* quality than do those of moderate sellers. In Section 4, together with other robustness checks, I provide some of the empirical evidence consistent with the hypothesis that banks with good lending opportunities (active sellers) may originate lower quality loans than do banks with poorer lending opportunities (moderate sellers). Until then, however, I present the main analysis with the assumption that the results are not driven by a sample selection bias.

2.1 Statistical methods

I use the ordinary-least-squares regression model[19] to analyze the link between the loan yield and the likelihood of sale (SALES), controlling for borrower, bank, and contract features. The dependent variable is the yield spread (in basis points, typically over LIBOR) that a borrower pays each year to the lender for each dollar borrowed in the case of a term loan, and each dollar drawn off a credit line in the case of a loan commitment.[20] The explanatory variable of interest is ACTIVE, which is a dummy that is equal to 1 if a loan is extended by a bank that is in the top SALES decile of the sole-lender loans sample, or by a bank that is in the top four SALES deciles of the syndicated loans sample.

[19] The results are robust to the econometric matching methodology of Heckman, Ichimura, and Todd (1997). See Drucker and Puri (2005) and Gottesman and Roberts (2002) for applications of the matching technique in the loan-pricing context.

[20] See the appendix for a more detailed definition.

2.2 Control variables

For a clear interpretation of the results, the tests control for an array of likely determinants of loan prices such as borrower, bank, and contract features. In what follows, I describe these variables after grouping them under three broad categories: bank, borrower, and contract. (Expected sign on each variable is given in parentheses.)

2.2.1 Bank controls. # of Lenders (−): The total number of lenders (lead manager and participants) in a syndicate. This variable is a proxy for the ease of syndicating a loan. If safer loans are easier to syndicate, then syndicate size should provide an additional control for unobserved borrower risk.

RELATION (−): Natural logarithm of (1 + relationship length), where relationship length is the number of months between the current loan and the first time that the firm borrowed from the same bank in the Dealscan sample. If screening and monitoring costs of lending decrease through repeat business, relationship lending might be associated with lower interest rates (e.g., Boot and Thakor, 1994).

HERFINDAHL (+): Statewide competitiveness of the banking industry, measured by banks' C&I-loan-portfolio sizes. A lower value indicates a less concentrated industry structure.

Log (Bank Size) (−): Natural logarithm of total book value of bank assets during the year of lending. Since larger banks tend to be more active in loan sales,[21] it is important to control for bank size. This variable can be associated with loan price in at least two ways. First, if large banks tend to be located in more competitive areas (Ho and Saunders, 1981), loan price might be negatively correlated with bank size. Bank size can thus provide extra control for market power. Second, if there are economies of scale in banking, larger banks might be able to offer lower interest rates.

CAPITAL (+): Dummy variable that is equal to 1 for banks with equity-to-assets ratio below 6%. This variable is a proxy for the financial health of the bank, and is included in the model because Hubbard, Kuttner, and Palia (2002) document that low-capital banks tend to charge higher loan rates than do well-capitalized banks.

2.2.2 Borrower controls. All accounting variables, except the ones marked as ex post, are averaged over the four quarters before the loan origination. Ex-post accounting variables are averaged over the four quarters after the lending.

Log (Firm Size) (−): Natural logarithm of total book value of assets.

[21] For instance, the correlation coefficient between SALES and log(Bank Assets) is 0.22 in the sole-lender sample and 0.20 in the syndicated sample.

ICOV (−): Interest coverage, defined as earnings before extraordinary items before interest expense divided by interest expense. To deal with outliers in this variable, I use it as a dummy that is equal to 1 if ICOV > 2.

ROA (−): Return on assets.

Current Ratio (−): Current assets over current liabilities. To deal with outliers in this variable, I use it as a dummy that is equal to 1 if current ratio is greater than 2.

Leverage (+): Total liabilities over total assets. Since leverage might have a nonlinear effect, in addition to this variable, I include a dummy that is equal to 1 if leverage is greater than 0.80.

Volatility (prior) (+): Monthly standard deviation of borrower stock returns as of the 12 months before the loan origination.

Credit Rating: Dummy variables for each of the S&P issuer credit ratings. If a borrower has no rating, then all the credit rating dummy variables for that observation are equal to zero.

Industry: Dummy variables for one-digit SIC (Standard Industrial Classification) industry code (1 through 8).

Firm Fixed Effects: Dummy variables for borrowers. By including firm identifiers, we can observe the variation in loan price when the same firm borrows from banks in different loan-sales categories. Note that the sample size for this analysis may drop by as much as 90% depending on the model specification as I eliminate one-time borrowers and those that invariably borrow from the same category.

Because of their unique capacity in credit screening, banks gather "soft" information that is missed by the accounting measures of firm performance observed at the time of lending. If soft information is useful because it helps predict the borrower's future performance, it is then likely to affect the loan pricing. As further controls for unobserved borrower quality, I use several measures of post-issue financial performance that are likely to be predicted by (hence correlated with) the bank's soft information on the borrower:

Volatility (ex post) (+): Monthly standard deviation of borrower stock returns as of the 12 months after the loan origination. This variable is a proxy for borrower's default risk measured after the loan origination.

Returns (ex post) (−): Average monthly stock returns during the 12 months after the loan origination. This variable indicates how stock market investors interpret the new information on the borrower's economic prospects.

ROA (ex post) (−): Average profitability during the four consecutive quarters after the loan origination. This variable measures the borrower's ability to generate funds to pay back the loan.

ICOV (ex post) (−): Average interest coverage during the four consecutive quarters after the loan origination. As done for ICOV (ex ante), I use this variable as a dummy that is equal to 1 if ICOV > 2. Like ROA (ex post), this variable is also a proxy for the borrower's payback risk.

2.2.3 Loan contract features. Year: Dummy variables for the calendar year in which the loan agreement is signed.

Loan Style: Dummy variables for Revolver, Limited line, Bridge loan, Demand loan, 364-day facility, and other. The omitted case is Term Loan.

Loan Purpose: Dummy variables for Acquisition line, CP backup, Debt repay, Debtor-in-possession financing, ESOP (Employee Stock Ownership Plans), LBO/MBO (Leveraged/Management Buyout), Project finance, Real estate, Recapitalization, Securities purchase, Spinoff, Stock buyback, Takeover, and Working capital. The omitted case is Corporate purposes.

Prior studies such as Strahan (1999) and Gottesman and Roberts (2002) suggest that the nonprice terms of loan contracts, listed next, are likely to be determined simultaneously with price. Despite this endogeneity, I include these variables as further controls since they are associated with loan prices. The predicted sign in parentheses simply reflects the result documented by earlier studies, as opposed to the variable's hypothetical effect on interest rate.

Log (Maturity) (−): Natural logarithm of the number of days between the date of the loan origination and the maturity.

Log (Deal Size) (−): Natural logarithm of the total deal size in US dollars. A deal may include several loan facilities at the same time. The most typical arrangement is a loan agreement that consists of a term loan and a revolver credit line.

Senior: Dummy variable that is equal to 1 if the loan is senior.

Secured (+): Dummy variable that is equal to 1 if the loan is secured. Since this variable is often missing (for about one-third of the sample), I follow Strahan (1999) and include in all regressions a dummy for missing cases so that I retain the sample size.

3. Results

To test the hypothesis that loans originated for sale carry lower yield spreads than do others, I estimate an OLS regression model where the dependent variable is the (all-in-drawn) yield spread over LIBOR in basis points, and the primary independent variable of interest is ACTIVE (indicator for a high likelihood of sale), while controlling for the array of borrower, bank, and contractual characteristics listed above. For robustness, I try alternative specifications with different subsets of these control variables.

Tables 3 and 4 report the results in the sole-lender- and the syndicated-loans samples, respectively. The consistent message of these findings is that the coefficient estimate of ACTIVE is invariably negative and statistically significant. In other words, borrowers of the most influential loan sellers tend to get price discounts on their loan rates relative to borrowers of banks that are inactive in the loan-sales market.

Table 3
OLS regression results (sample: sole-lender loans)

		Panel A		Panel B		Panel C		Panel D	
		coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
BANK									
	SELLER	−28.84	(1.79)	−15.55	(1.02)	−14.05	(0.78)	−19.59	(1.61)
	ACTIVE	−33.46	(3.68)	−28.81	(2.89)	−20.60	(2.27)	−25.71	(2.80)
	RELATION					−4.88	(1.71)		
	HERFINDAHL					0.02	(0.36)		
	Log(bank size)					−5.79	(2.11)		
	CAPITAL					−13.06	(1.71)		
BORROWER	Log(firm size)			−38.83	(12.41)	−25.83	(6.29)	−26.63	(7.36)
	ICOV > 2			−49.84	(4.86)	−38.86	(4.62)	−33.20	(3.94)
	ROA			−252.55	(1.58)	−175.71	(1.20)	−99.84	(0.75)
	Current ratio>2			−17.62	(2.10)	−15.99	(2.06)	−17.96	(2.42)
	Leverage			31.23	(1.25)	27.08	(1.12)	23.44	(1.05)
	Leverage > 0.80			31.66	(1.89)	28.99	(1.48)	27.52	(1.77)
	Volatility (prior)			99.76	(2.80)	56.71	(1.77)		
	Volatility (ex post)							49.30	(1.30)
	Returns (ex post)							−55.63	(0.81)
	ROA (ex post)							−12.81	(0.71)
	ICOV > 2 (ex post)							−0.01	(0.58)
CONTRACT									
	Log(maturity)					−17.00	(3.53)	−17.24	(4.07)
	Log(deal size)					−13.53	(2.54)	−17.01	(3.32)
	Senior dummy					−20.86	(1.38)	−12.10	(0.93)
	Secured dummy					44.04	(3.85)	53.12	(5.66)
OTHER									
	Credit spread	−0.04	(0.13)	−0.12	(0.40)	−0.08	(0.23)	−0.15	(0.45)
	Credit rating	Yes		Yes		Yes		Yes	
	Borrower industry	Yes		Yes		Yes		Yes	
	Loan style	Yes		Yes		Yes		Yes	
	Loan purpose	Yes		Yes		Yes		Yes	
	Year	Yes		Yes		Yes		Yes	
	# of loan facilities	1980		1245		1172		1341	
	Adjusted R^2	0.20		0.47		0.50		0.48	

Constant included, and *t*(statistics are corrected for heteroscedasticity and within-bank non-independence of observations.

The first specification uses a minimal set of controls: Dummy variables for credit rating, industry, loan style, loan purpose, and year. As shown in Table 3, Panel A, ACTIVE appears statistically significant (*t*-statistic = 3.69), with a coefficient estimate of –33.46 basis points. We see in Panels B and C that adding further controls for borrower, bank, and contract characteristics do not change the results. ACTIVE remains statistically significant at the 5% level, with coefficient estimates of –28.81 and –20.60 basis points, respectively.

To minimize a potential bias stemming from unobserved variation in borrower risk, I reestimate the model after including the post-issue measures of borrower financial performance. Panels D, E, and F show that the results hold up to this robustness check.

Table 3
(continued)
OLS estimation results (sample: sole-lender loans)

		Panel E		Panel F		Panel G		Panel H	
		coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
BANK	SELLER	−19.59	(1.61)	−18.59	(1.26)	−24.74	(0.72)	32.98	(1.34)
	ACTIVE	−25.71	(2.80)	−17.35	(1.95)	−35.85	(1.66)	−43.67	(1.96)
	RELATION			−6.17	(2.10)	4.12	(0.27)		
	HERFINDAHL			0.03	(0.59)	−0.39	(2.76)		
	Log (Bank Size)			−5.82	(2.40)	3.54	(0.53)		
	CAPITAL			−12.27	(1.81)	−40.68	(2.44)		
BORROWER	Log (Firm Size)	−26.63	(7.36)	−25.10	(6.76)			−23.29	(0.55)
	ICOV > 2	−33.20	(3.94)	−33.00	(4.06)			−87.27	(2.63)
	ROA	−99.84	(0.75)	−116.99	(0.92)			1026.60	(1.61)
	Current ratio>2	−17.96	(2.42)	−18.28	(2.41)			−37.94	(1.09)
	Leverage	23.44	(1.05)	19.36	(0.87)			−128.36	(0.48)
	Leverage > 0.80	27.52	(1.77)	28.27	(1.78)			85.98	(1.00)
	Volatility (prior)								
	Volatility (ex post)	49.30	(1.30)	41.89	(1.11)			−1169.82	(2.51)
	Returns (ex post)	−55.63	(0.81)	−58.32	(0.88)			1364.03	(2.55)
	ROA (ex post)	−12.81	(0.71)	−11.37	(0.67)			2991.10	(1.44)
	ICOV > 2 (ex post)	−0.01	(0.58)	−0.01	(0.60)			−64.94	(1.41)
CONTRACT									
	Log(maturity)	−17.24	(4.07)	−17.15	(4.06)	−18.09	(1.03)		
	Log(deal size)	−17.01	(3.32)	−15.06	(3.10)	−13.97	(1.30)		
	Senior dummy	−12.10	(0.93)	−11.16	(0.85)	−47.41	(2.58)		
	Secured dummy	53.12	(5.66)	53.09	(5.65)	−16.95	(0.59)		
OTHER									
	Credit spread	−0.15	(0.45)	−0.09	(0.26)	0.22	(0.13)	0.39	(0.20)
	Credit rating	Yes		Yes		Yes		Yes	
	Borrower industry	Yes		Yes		Yes		Yes	
	Loan style	Yes		Yes		Yes		Yes	
	Loan purpose	Yes		Yes		Yes		Yes	
	Year	Yes		Yes		Yes		Yes	
	Firm fixed effects	Yes		Yes		Yes		Yes	
	# of loan facilities	1341		1318		170		132	
	Adjusted R^{2-}	0.48		0.49		0.74		0.77	

Constant included, and *t*(statistics are corrected for heteroscedasticity and within-bank non-independence of observations. The dependent variable is the drawn all-in spread (in basis points) of sole-lender loan facilities in the 1987–1993 Dealscan sample. Dummy variables for borrower credit ratings, years, borrower SIC (one-digit), loan style, and purpose are included in all specifications. SELLER dummy indicates that SALES is positive, and ACTIVE indicates that SALES is in the top SALES decile of the sample. SALES denotes the total amount of C&I loans sold by the bank during the year of lending divided by the average C&I loans on the balance sheet. See the appendix for more details on the variables.

In Panels G and H, the estimations include firm fixed effects—a method that dramatically reduces the sample size because of the data hurdle. (I drop one-time borrowers and those that borrow invariably from banks in the same loan-sales category.) Despite the low precision of the statistical estimates, I report these results for completeness. In Panel G, the model includes bank and contract controls. In a sample of 170 observations, ACTIVE still appears with a negative coefficient estimate (–35.85 basis points), although with only marginal significance (*t*-statistic = 1.66). When the model includes borrower controls (and fixed effects) but excludes bank and contract variables, as shown in

Table 4
OLS estimation results (sample: syndicated Loans)

		Panel A		Panel B		Panel C		Panel D	
		coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
BANK									
	ACTIVE	−23.03	(3.13)	−16.47	(2.28)	−21.58	(3.39)	−13.69	(2.33)
	# of lenders					0.70	(2.53)	0.67	(3.25)
	RELATION					2.96	(1.45)	3.01	(1.22)
	HERFINDAHL					−0.05	(0.76)	−0.01	(0.24)
	Log(bank size)					6.66	(2.12)	4.59	(1.62)
	CAPITAL					−0.75	(0.11)	−1.89	(0.26)
BORROWER									
	Log(firm size)			−28.27	(7.83)	−23.48	(6.02)	−24.62	(5.99)
	ICOV > 2			−44.51	(5.02)	−35.61	(4.32)	−21.54	(2.50)
	ROA			−484.83	(2.38)	−383.64	(2.04)	−507.98	(2.92)
	Current ratio>2			−15.37	(2.35)	−16.22	(2.48)	−24.03	(3.39)
	Leverage			139.15	(5.93)	111.08	(4.75)	89.78	(3.86)
	Leverage > 0.80			19.85	(1.68)	29.64	(2.40)	31.80	(2.61)
	Volatility (prior)			217.20	(3.71)	198.68	(3.80)		
	Volatility (ex post)							243.63	(3.21)
	Returns (ex post)							−112.08	(1.45)
	ROA (ex post)							−81.19	(1.04)
	ICOV > 2 (ex post)							−24.38	(3.29)
CONTRACT						−28.12	(6.33)	−25.31	(4.97)
	Log(maturity)					−6.59	(1.75)	−6.10	(1.60)
	Log(deal size)					−13.64	(1.49)	−12.99	(1.56)
	Senior dummy					43.78	(5.12)	43.08	(5.07)
	Secured dummy								
OTHER									
	Credit spread	0.05	(0.19)	−0.19	(0.92)	−0.09	(0.43)	0.18	(0.78)
	Credit rating	Yes		Yes		Yes		Yes	
	Borrower industry	Yes		Yes		Yes		Yes	
	Loan style	Yes		Yes		Yes		Yes	
	Loan purpose	Yes		Yes		Yes		Yes	
	Year	Yes		Yes		Yes		Yes	
	# of loan facilities	1815		1377		1358		1393	
	Adjusted R^2	0.34		0.54		0.58		0.59	

Constant included and *t*–statistics are corrected for heteroscedasticity and within-bank non-independence of observations.

Panel H, the coefficient estimate on ACTIVE is still negative and significant, despite the sample size of 132. Further adding to the model the bank and contract controls admittedly lowers the significance of ACTIVE under the 10% level (untabulated); however, that experiment also lowers the sample size down to 110.

The control variables in general carry the expected signs, and appear statistically significant in most cases. Consistent with Hubbard, Kuttner, and Palia (2002), for instance, all-in-drawn spread decreases as bank size and capital-to-assets ratio increase. Spread tends to decrease in relationship length, and increase in industry concentration. As to the borrower variables, spread increases in volatility and leverage, and decreases in firm size, interest coverage, return on assets, and current ratio. The coefficient estimates on the

Table 4
(continued)
OLS estimation results (sample: syndicated loans)

		Panel E		Panel F		Panel G		Panel H	
		coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
BANK									
	ACTIVE	−17.64	(2.21)	−22.35	(2.51)	−21.68	(2.20)	−27.41	(3.02)
	# of lenders							−0.84	(1.60)
	RELATION							−1.36	(0.34)
	HERFINDAHL							−0.03	(0.25)
	Log(bank size)							7.32	(2.19)
	CAPITAL							−15.23	(1.35)
BORROWER									
	Log(firm size)	−34.23	(1.86)	−25.88	(0.85)	−29.56	(1.18)	−32.77	(1.33)
	ICOV > 2	−27.75	(1.48)	−25.35	(1.17)	−17.17	(0.90)	−12.42	(0.65)
	ROA	−655.49	(1.44)	−621.12	(1.23)	−837.80	(1.98)	−805.32	(1.70)
	Current ratio>2	−5.30	(0.39)	−10.98	(0.60)	−11.50	(0.58)	−11.88	(0.59)
	Leverage	−14.56	(0.14)	−24.83	(0.25)	−11.48	(0.12)	−0.49	(0.02)
	Leverage > 0.80	0.98	(0.03)	7.11	(0.22)	5.13	(0.19)	6.52	(0.22)
	Volatility (prior)	289.65	(2.27)						
	Volatility (ex post)			69.62	(0.42)	51.96	(0.34)	82.32	(0.55)
	Returns (ex post)			−200.19	(1.49)	−251.86	(1.79)	−190.04	(1.20)
	ROA (ex post)			−403.05	(0.43)	−124.45	(0.16)	−54.17	(0.07)
	ICOV > 2 (ex post)			16.24	(0.99)	11.92	(0.72)	6.13	(0.37)
CONTRACT									
	Log(maturity)	−23.40	(1.46)			−26.43	(1.52)	−28.42	(1.73)
	Log(deal size)	9.36	(1.05)			11.07	(1.24)	14.85	(1.46)
	Senior dummy	−37.48	(1.99)			−37.33	(2.33)	−31.19	(1.95)
	Secured dummy	16.70	(0.78)			7.23	(0.34)	0.60	(0.03)
OTHER									
	Credit spread	0.44	(0.64)	0.09	(0.15)	0.24	(0.37)	0.22	(0.35)
	Credit rating	Yes		Yes		Yes		Yes	
	Borrower industry	Yes		Yes		Yes		Yes	
	Loan style	Yes		Yes		Yes		Yes	
	Loan purpose	Yes		Yes		Yes		Yes	
	Year	Yes		Yes		Yes		Yes	
	Firm fixed effects	Yes		Yes		Yes		Yes	
	# of loan facilities	412		419		411		411	
	Adjusted R^2	0.76		0.72		0.74		0.75	

Constant included, *t*–statistics are corrected for heteroscedasticity and within-bank non-independence of observations. The dependent variable is the drawn all-in spread (in basis points) of syndicated loan facilities in the 1987–1993 Dealscan sample. Deals with more than one lead-manager and those from nonsellers are excluded. Dummy variables for borrower credit ratings, years, borrower SIC (one-digit), loan style and purpose are included in all specifications. SALES denotes the total amount of C&I loans sold by the lead bank during the year of lending divided by the average C&I loans on the balance sheet. ACTIVE indicates that SALES is in the top four SALES deciles in the sample. See the appendix for more details on the variables.

contractual features are consistent with those reported in Strahan (1999) and Gottesman and Roberts (2002). Longer maturity and larger loans tend to carry lower spreads, whereas those secured by assets have higher spreads.

The findings among the syndicated loans support the earlier results; the estimate on ACTIVE is statistically significant at the 5% level for all specifications. The model shown in Panel A includes a minimal set of controls, where the coefficient estimate on ACTIVE is –23.03 basis points, with a *t*-statistic of 3.13. As shown in Panels B and C, further including the borrower, bank, and contract controls yield similar results.

Moreover, ACTIVE retains its sign and significance, as evident in Panel D, after controlling for post-issue borrower performance.[22]

The four models shown in Panels E through H include dummy variables for borrowers, as a further control for unobserved borrower heterogeneity. As the sample-size reduction due to the data hurdle is less dramatic here than it is for the sole-lender sample, we obtain more reliable estimates. In samples of 411–419 observations, the coefficient estimate on ACTIVE varies between –17.64 and –27.41 basis points, in specifications with different sets of control variables.[23]

Overall, the data analysis supports the hypothesis that loans originated for sale are likely to carry lower yield spreads than do others. The economic significance of the spread discount is not trivial. In the sole-lender sample, ACTIVE has a coefficient estimate that varies between 17 and 43 basis points, which corresponds to 7 to 18% of 240 basis points, the sample average of all-in-drawn spread among loans originated by ACTIVE banks. Similarly, the coefficient estimate for ACTIVE in the syndicated sample is roughly 9 to 18% of the sample average among loans from ACTIVE banks (145 basis points). Given the average maturity of 4.36 years and the average loan size of $359 million, a back-of-the-envelope calculation suggests a cost reduction of $1.4 to $2.8 million for borrowers of active loan sellers.

4. Robustness Checks

In Section 4.1, I run split-sample regressions to check whether the effect is stronger in subsamples that are ex ante more likely to drive the results. In Section 4.2, to alleviate concerns about unobserved borrower heterogeneity, I present empirical results that suggest that active loan sellers do not necessarily follow a safer lending policy than do moderate sellers.

[22] As was the case in the sole-lender sample, the control variables in the syndicated-loans sample also mostly appear with the expected signs. One notable exception is the coefficient estimate for bank size. It appears positively in all the regressions that employ the syndicated-loans sample. Since larger banks tend to sell more loans, I checked whether the positive sign of the coefficient is due to the positive correlation between bank size and loan sales (0.20 among syndicated, and 0.22 among sole-lender loans). I excluded the loan-sales variable and reran the model, with various combinations of the controls on the right-hand side. The results indicate that bank size consistently has a positive sign (even if statistically insignificant in most models) in the syndicated-loans sample. Finally, to examine the effect of possible outliers, I dropped the top 1, 5, and 10% of the largest banks from the sample, and reestimated the models. The results (concerning bank-size and loan-sales coefficients) remain similar in all cases.

[23] Note that the results in Tables 3 and 4 do not exhaust all possible combinations of bank, borrower, and contract controls on the right-hand side of the model, due to space considerations. Although unreported, the results continue to hold for the omitted models. Moreover, further control variables that I tried but dropped because of sample-size and over-fitting considerations include borrower sales to assets, return on equity, tangible assets over total assets, and (for syndicated loans) the lead bank's retained share of the deal. The conclusions remain similar in all these cases.

4.1 Diagnostic tests

4.1.1 Firm bargaining power. To the extent that banks have market power in loan pricing, the lower cost of funding a loan through a sale might not benefit the borrowers. Price concessions, therefore, are more likely to be observed for firms that have high bargaining power, which, in turn, should depend on the degree of bank dependency of the firm. I, thus, use firm size and credit ratings as proxies for bank dependency. The assumption is that bargaining power increases in these two variables.

I first split the syndicated-loans sample according to the median firm size, and then rerun the specification with the full set of bank–borrower–contract controls (shown in Table 4, Panel D)[24] separately in the two subsamples. Omitting the other coefficient estimates for brevity, I discuss the estimates of ACTIVE only. As shown in Table 5, Panel A, the coefficient estimate on ACTIVE (–16.59 basis points) is significant only among large firms, with a *t*-statistic of 2.74. Among small firms, the estimated magnitude falls to –8.28 basis points, with a *t*-statistic of 0.71. As shown in Panel B, the result holds similarly in the sole-lender subsample.

Next, I experiment with credit ratings as a proxy for bank dependency. I split the syndicated-loans sample[25] into three groups of firms: those with no ratings, those with non-investment-grade ratings, and those with investment-grade ratings (BBB and above). Panel C shows that, as expected, the loan-pricing effect is driven by investment-grade borrowers. Among these firms, the estimated coefficient on ACTIVE is –24.59 basis points, with a *t*-statistic of 2.05. In comparison, among the unrated and non-investment-grade firms, the *t*-statistics are 1.00 and 0.17, respectively.

4.1.2 Bank private information. Here, I pursue the information-costs story in our hypothesis. If the announcement effect is a source of borrowers' aversion to loan sales, I expect to find stronger results when the bank is more likely to possess private information about the firm's prospects. Using the existence of a prior lending as a proxy for the degree of bank information (i.e., the firm borrowed from the same bank earlier in the sample), I estimate the model once for borrowers with a prior relationship with the bank, and once for those without. In Table 5, Panel D, we see that the effect is stronger among firms with existing ties to the bank (coefficient = –34.94 basis points, *t*-statistic = 2.49) than it is among firms with no relationship in place (coefficient = –5.20 basis points, *t*-statistic = 0.66).[26]

[24] The results discussed throughout Section 4.1 are robust to the variations on this specification shown in Table 4.

[25] Since most firms in the sole-lender sample are unrated, I use only the syndicated-loans for this exercise.

[26] These results are for the syndicated-loans sample. The findings are similar among the sole-lender loans.

Table 5
Robustness checks (sample: syndicated loans)

Diagnostic tests: subsample results

	Panel A: sample split by borrower assets		
Firm size	Small	Large	
Coef (ACTIVE)	–8.28	–16.59	
t-statistic	(0.71)	(2.74)	
# of loan facilities	760	633	
	Panel B: sample split by borrower assets (sole-lender loans)		
Firm size	Small	Large	
Coef (ACTIVE)	–9.43	–27.37	
t-statistic	(0.57)	(2.01)	
# of loan facilities	662	656	
	Panel C: sample split by borrower credit rating		
Credit rating	No rating	Junk	Investment grade
Coef (ACTIVE)	–10.74	–2.42	–24.59
t-statistic	(1.00)	(0.17)	(2.05)
# of loan facilities	802	275	316
	Panel D: sample split by prior relationship		
Prior relationship?	No	Yes	
Coef (ACTIVE)	–5.20	–34.93	
t-statistic	(0.66)	(2.49)	
# of loan facilities	1009	384	
	Panel E: sample split by loan type		
Likelihood of sale	Low	High	
Coef (ACTIVE)	–3.26	–65.64	
t-statistic	(0.47)	(4.24)	
# of loan facilities	1163	230	
	Panel F: sample split by market-to-book ratio of equity		
Growth opportunities	Low	Medium	High
Coef (ACTIVE)	–8.52	–33.97	–7.17
t-statistic	(0.95)	(3.26)	(0.72)
# of loan facilities	440	439	437

The specification with the full set of bank, borrower, and contract controls (i.e., the model given in Panel D of Table 4) is estimated in each subsample. For brevity, the table reports only the coefficient estimate and the *t*-statistic on ACTIVE, as well as the number of observations used in each regression. The analysis uses syndicated loans, except for the case shown in Panel B, where sole-lender loans are used. Borrowers are categorized as small or large according to the sample median for borrower total assets. Likelihood of a loan sale is high if Dealscan reports the loan purpose as "Acquisition line," "LBO/MBO," or "Takeover." Prior relationship indicates whether the firm obtained a loan from the same bank in the past (according to the Dealscan sample). Growth opportunities denote subsamples in an increasing order of borrower market-to-book ratio of equity. The *t*-statistics are corrected for heteroscedasticity and within-bank non-independence of observations.

4.1.3 Likelihood of sale. I identify a subsample of loans that are particularly likely to be originated for sale. The results should be stronger in that subsample, if the loan-sales variable (ACTIVE) is indeed a good proxy for the likelihood of sale. Demsetz (1993) documents those loans that finance-leveraged transactions such as the M&A (Mergers and Acquisitions) activity of firms provided a main source of saleable loans during my sample period. Exploiting this observation, I assume that the likelihood of sale is high among those loans whose primary purpose is reported as "Acquisition line," "LBO/MBO," or "Takeover." Repeating the

Table 6
Pairwise correlations

	Large	Investment grade	Prior relationship	High likelihood of sale
Large	1			
Investment grade	0.52	1		
Prior relationship	0.13	0.06	1	
High likelihood of sale	−0.03	−0.05	−0.05	1

This table illustrates the pairwise correlations among the dummy variables that are used as sample-split criteria for the estimations reported in Table 5. Large firms are those that have total assets greater than the sample median. High likelihood of sale indicates that Dealscan reports the loan purpose as "Acquisition line," "LBO/MBO," or "Takeover." Prior relationship indicates that the firm obtained a loan from the same bank in the past (according to the Dealscan sample).

earlier specification with bank, borrower, and contract controls (given in Panel D of Table 4) among the high- and the low-likelihood-of-sale samples, I find that the results appear statistically significant only in the high-likelihood sample.[27] As we see in Panel E, ACTIVE has an estimated coefficient of –65.64 basis points (t-statistic = 4.24) among the loans extended for leveraged transactions, compared with –3.26 (t-statistic = 0.47) among the rest of the sample. Note that the loan-pricing effect is not driven solely by these 230 M&A-related loans; as shown in Table 3 above, the result holds in the sole-lender sample even though it contains few loans originated for leveraged transactions.

Finally, I check whether the sample-split criteria used here are independent of each another. Performing two- and three-way sample splits is not feasible given the sample size and the composition of the data. As a first-order check, therefore, I report in Table 6 the correlation coefficients among the size, credit-rating, relationship, and loan-type variables. As expected, size is highly correlated with credit rating (0.52); these variables both capture the bargaining power of the firm. In comparison, prior relationship and likelihood of sale do not appear to be dependent on each other or on the other variables, as the correlation coefficients vary between –0.05 and 0.13.

4.1.4 Growth opportunities and need for contract flexibility. For yet another clinical test, I consider a prime source of borrower aversion to loan sales; namely, the difficulty of dealing with multiple banks in case of a renegotiation of the loan covenants. I conjecture that contract flexibility has the highest value for "dynamic" firms that are in a growth phase, with new investment projects being initiated and old ones being discontinued. Thus, these firms might be more willing to pay a higher interest to avoid a loan sale, implying that the documented effect should be weaker among them. Reversing the argument, contract flexibility might mean little to firms with very few growth opportunities, minimizing their aversion to the sale of their loans and thus the

[27] I only examine syndicated loans for this exercise since the sole-lender sample contains few loans for leveraged transactions, preventing a meaningful sample split.

role of resale in loan pricing. The pricing effect, therefore, should be strongest among firms with growth opportunities toward the middle of the spectrum. To test this hypothesis, I employ borrower's market-to-book equity ratio as a proxy for growth opportunities to split the sample into low-, medium-, and high-growth firms (using the 33rd and 66th percentile cutoffs). The coefficient estimate on ACTIVE in each subsample among syndicated loans is shown in Panel F of Table 5. As conjectured, the effect is strongest among medium-growth firms, where ACTIVE has a coefficient estimate of –33.97 basis points (t-statistic = 3.26), compared with –8.52 (t-statistic = 0.95) and –7.17 (t-statistic = 0.72) among low- and high-growth firms, respectively. A similar picture emerges among the sole-lender firms: the coefficient estimates for ACTIVE among low-, medium-, and high-growth firms are, respectively, –6.04 (t-statistic = 0.35), –31.76 (t-statistic = 1.50), and –6.91 (t-statistic = 0.52).

4.2 Unobserved borrower heterogeneity

A potential concern for the interpretation of our results is the failure to control unobserved borrower risk. Active sellers might lend to safer firms than do moderate sellers, if active sellers have better loan-origination opportunities. A similar effect may arise if safe loans are easier to sell. Here, I rule out these alternative explanations by further analyzing the banks in my sample for the quality of their loan portfolios.

4.2.1 Bank loan-portfolio risk. To analyze the relation between bank loan-sales activity and loan-portfolio risk at the bank balance-sheet level, I employ the whole sample of quarterly call reports from 1984 to 1993, during which period the loan-sales variable is available in the data series. The methodology is to regress the nonperforming C&I loans ratio (nonaccruals plus 90-days-past-due C&I loans scaled by the total C&I loans on the balance sheet) on SELLER (a dummy variable that is equal to 1 if SALES is positive) and on dummy variables for each SALES decile (SALES 10 through SALES 90). The model also includes bank capital-to-assets ratio as a proxy for overall bank financial health, as well as other controls such as year dummies and the logarithm of bank size. Since bank assets are highly skewed as most banks have assets under \$100 million, for an easier interpretation of the results, I carry out the estimations (and the sorting of banks into loan-sales deciles) separately in different bank-size subsamples. I, thus, split the sample into the following size groups: Assets $<$ \$100 million, \$100 million $<$ Assets $<$ \$500 million, \$500 million $<$ Assets $<$ \$1 billion, and Assets $>$ \$1 billion.

The results shown in Table 7 indicate that, in each size sample, loan sellers indeed have safer C&I loan portfolios than do nonsellers. This finding supports the comparative advantage hypothesis of loan sales

Table 7
Bank loan portfolio quality and loan sales (sample: FDIC quarterly call reports, 1984–1993)

	Panel A		Panel B		Panel C		Panel D	
	Size < $100m		$100m < Size < $500m		$500m < Size < $1bn		Size > $1bn	
	coef	*t*-stat	coef	*t*-stat	coef	*t*-stat	coef	*t*-stat
SELLER	−0.033	(6.87)	0.011	(3.78)	0.006	(2.50)	−0.008	(2.39)
SALES *10*								
SALES *20*								
SALES *30*							0.000	(0.19)
SALES *40*							−0.001	(0.99)
SALES *50*					−0.001	(0.51)	0.001	(0.55)
SALES *60*			0.001	(0.61)	0.001	(0.35)	0.001	(0.50)
SALES *70*	0.000	(0.12)	0.002	(1.50)	0.001	(0.74)	−0.002	(1.05)
SALES *80*	0.005	(2.73)	0.001	(1.05)	0.001	(0.30)	0.003	(1.79)
SALES *90*	0.072	(5.11)	0.011	(2.77)	0.008	(2.71)	0.005	(2.10)
Log(bank size)	−0.039	(9.28)	0.012	(3.37)	0.005	(1.04)	0.002	(1.78)
Capital/assets	−0.488	(12.99)	−0.378	(4.64)	−0.155	(1.46)	0.047	(0.43)
Year dummies	Yes		Yes		Yes		Yes	
# of observations from nonsellers	221,764		49,114		3,525		3,472	
Sample size	341,137		87,826		8,765		13,478	
Adjusted R^2	0.003		0.003		0.03		0.02	

Constant included; *t*–statistics are corrected for heteroscedasticity and within-bank non-independence of observations. This table presents the OLS regression results, where the dependent variable is a proxy for the risk of the bank's C&I loan portfolio. This variable is constructed as the sum of nonaccrual and 90-days-past-due C&I loans scaled by the total amount of C&I loans outstanding on the balance sheet at the end of a quarter. The sample period is 1984:Q1–1993:Q4. The model is run separately in each bank-size subsample. Within each bank-size subsample, quarter-bank observations are assigned to SALES deciles. SELLER is a dummy that is equal to 1 for positive values of SALES, and SALES *X* indicates that SALES is greater than the *X*th SALES percentile within the respective bank-size sample. The model also includes as control variables the natural logarithm of bank size (book assets) and the equity-to-assets ratio.

(Pennacchi, 1988; Carlstrom and Samolyk, 1995), and justifies the exclusion of nonsellers from the loan-pricing analysis. However, the portfolio quality falls once we move to the top decile of loan sellers,[28] thus suggesting that active sellers follow a riskier lending strategy than do moderate sellers. This observation somewhat alleviates the concern about a bias that can explain the loan-pricing effect; yet, it does not prove that loans originated by active sellers are riskier than those originated by moderate sellers. It could be that, for instance, active sellers *originate* a higher frequency of safe loans than do moderate sellers, but *retain* a riskier balance sheet by purging of safe loans through sales (James, 1988). For more direct evidence, I analyze post-issue borrower performance using the sample of Dealscan loans.

4.2.2 Post-issue financial performance as a proxy for unobserved borrower quality. Because banks possess a credit-screening technology, they are likely to produce soft information about firm prospects beyond what the

[28] The active sellers of the loan sample fall invariably in the top SALES deciles of the large sample, allowing a meaningful comparison of the results between the two samples.

publicly observed information on the borrower can indicate. Intuition suggests that this information should help banks predict the future performance of their borrowers, giving us a proxy for unobserved borrower quality. I thus examine several measures of post-issue borrower performance.

First, I compute the buy-and-hold stock returns during the 12 months after the lending. The after-event stock returns are likely to indicate whether the borrower's prospects on average improve or worsen after the lending. Second, I measure the cumulative ROAs over the 4 to 8 quarters that follow the lending. Return on assets is a measure of firm fundamentals, which, in turn, proxy for firm payback ability. Finally, I experiment with a more direct measure of firm financial health, distance to default (DTD), which I construct using the methodology of the Moody's KMV. The DTD measures the distance (i.e., the number of annual standard deviations) between the borrower's market value of assets and nonequity liabilities:

$$\text{DTD} = \frac{\text{Assets} - \text{Nonequity liabilities}}{\text{Assets} \times \sigma_{\text{Assets}}}$$

The market value and the annual standard deviation of total assets (σ_{Assets}) are jointly estimated using the Black-Scholes formula, where the inputs to the formula are the market value of equity, total nonequity liabilities, risk-free rate, and stock volatility. The first three variables are as of the quarter end, whereas stock volatility is estimated using the monthly returns during the 12 months before the quarter end. I then transform DTD into a scaled first-difference: ($\text{DTD}_{\text{future}} - \text{DTD}_{\text{past}}$) divided by DTD_{past}, where DTD_{past} is the average DTD over the 4 quarters prior to the lending and $\text{DTD}_{\text{future}}$ is the average DTD over quarters 5, 6, and 7 after the lending. Note that $\text{DTD}_{\text{future}}$ is measured with a 1-year gap after the lending, so that changes in firm fundamentals are reflected in the financial health of the company. Finally, because DTD is a noisy variable inevitably containing outliers, I define a new dummy variable, *distress*, which is equal to 1 if the change in DTD is in the bottom decile of the whole sample.[29]

Figure 1 displays the average post-issue-12-month buy-and-hold stock returns in each SALES decile among the sole-lender loans. Interestingly, the pattern is similar to the nonmonotonic relation between portfolio risk and loan sales observed in bank balance sheets. Average returns jump by about 20% between borrowers of nonsellers and sellers, stay in the same range for borrowers of all moderate-sale deciles, before falling by about 20% in the decile of borrowers of active sellers.

In Figure 2, a similar pattern emerges when we examine borrower future ROA across the loan-sale deciles (in the sole-lender sample). We

[29] Note that the loan-pricing effect documented in Section 4 is robust to controlling for both past and future DTD.

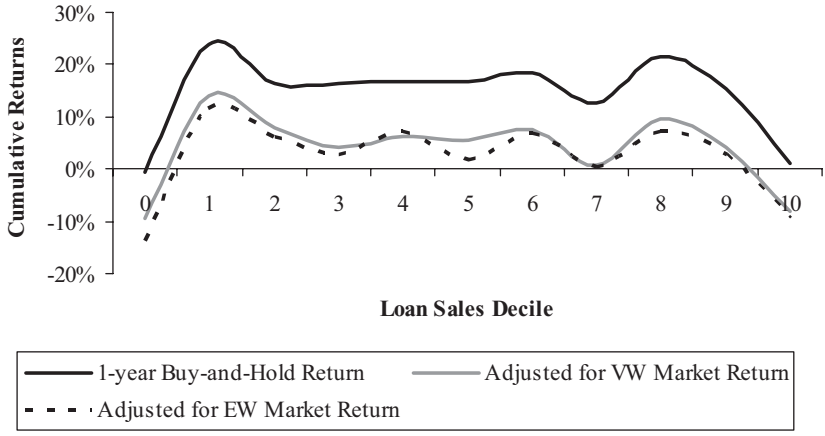

Figure 1
Post-issue borrower stock return as a proxy for unobserved borrower quality
The top curve is the average 1-year post-issue buy-and-hold stock returns by each loan-sales decile. Decile 0 indicates the nonseller subsample. The bottom two curves show the mean returns after adjusting for the value- and the equal-weighted market returns. (Sample: Sole-lender loans).

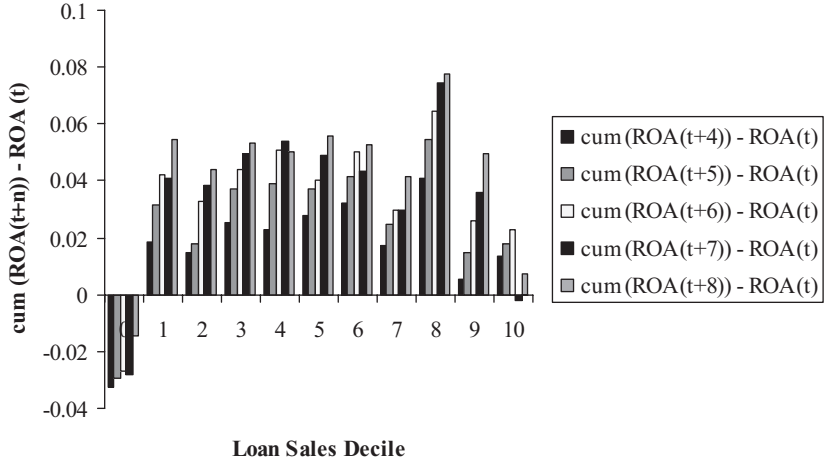

Figure 2
Post-issue borrower return on assets as a proxy for unobserved borrower quality
This figure illustrates the average post-issue profitability change for each loan-sales decile. Profitability change is cum(ROA_{t+x})–ROA_t, where cum(ROA_{t+x}) is the cumulative return on assets for x quarters after the loan issue. (Sample: Sole-lender loans).

see that profitability measured over 4 to 8 quarters after lending (controlling for past profitability) is higher for borrowers of loan-sellers than it is for those borrowing from nonsellers. Borrowers of active sellers, however, seem to *underperform* those of moderate sellers in terms of profitability.

Figure 3
Post-issue financial distress likelihood as a proxy for unobserved borrower quality
This figure illustrates the fraction of borrowers with future financial distress in each SALES decile. A firm is considered *financially distressed* if its future change in DTD (as a percentage of the initial value) falls within the bottom sample decile. Distance-to-default, in turn, is computed with the methodology recommended by Moody's KMV. The future change is the difference between the current DTD (average value for the past four quarters) and the future DTD (average value for the three quarters starting a year after the loan origination). (Sample: Sole-lender loans).

In fact, the multivariate analysis in Güner (2005), controlling for an array of past borrower characteristics, shows that the difference in levels is statistically and economically significant.

Finally, in Figure 3, we examine the fraction of firms in each loan-sales decile that fall in the financially distressed category, according to the DTD measure. There is a (roughly) U-shaped relation between the frequency of borrower financial distress and bank loan-sales rank. (This pattern, too, is robust to a multivariate analysis.)

A similar analysis for syndicated loans (omitted here for space considerations) finds no post-issue performance difference between borrowers of moderate and active sellers. Overall, the results suggest that a possible bias in unobserved borrower heterogeneity appears to be either economically insignificant (syndicated loans sample) or in the direction against finding the relatively low yields for loans of active sellers (the FDIC call reports and the sole-lender loans sample).[30]

[30] The estimations reported earlier in Tables 3 and 4 also support that the potential bias here tends to push the coefficient on ACTIVE toward zero, as the coefficient gets more negative when firm-fixed effects are included in the model. (Although not shown in the tables, this is true also when the fixed-effects models are reestimated using the same subsamples as the ones used in the tables.) To the extent that firm quality changes little over time, the firm dummies control for the lower average quality of borrower quality among active sellers and thus punctuate the hypothesized effect.

4.3 Nonprice loan terms

Loan yield is likely to be determined simultaneously with nonprice terms such as maturity and deal size (Strahan, 1999; Gottesman and Roberts, 2002). It is, therefore, possible that borrowers receive compensation not only through lower yields, but also through nonprice contract terms, say, in the form of a longer maturity or a larger deal size. To check this conjecture, I analyze the data using the maturity length and the deal size (and their logarithmic transformations) as the dependent variables in OLS regressions that include the same set of controls on the right-hand side as do the earlier estimations. In summary, I find no evidence for more favorable nonprice contract terms associated with loan sales.

5. Conclusion

Although the development of the loan-sales market has led to considerable research on the implications for the banking system, the effects on corporate borrowers have gone largely unnoticed. In this article, I offer an empirical analysis of the economics of loan sales through the borrower's perspective. The lower costs of funding a loan by selling it as compared with keeping it on the balance sheet, coupled with firms' aversion to the sale of their loans, lead to the hypothesis that corporate borrowers receive price concessions for allowing banks to sell participations in their loans. Consistently, I find lower yield spreads on loans that are more likely to be originated for sale.

The favorable loan pricing could imply a net benefit to borrowers; yet, it seems more likely that the lower yield is fair compensation to firms for the potential costs of seeing their loans sold. This interpretation might also explain why we do not observe firms flocking to banks that are active in the secondary market.

Appendix: Variable definitions

Variable name	Definition
Bank variables (Source: FDIC Call Reports and the Loan Pricing Corporation's Dealscan Database)	
SALES	Total amount of commercial and industrial (C&I) loans sold by the bank divided by the average C&I loans on the balance sheet during the year of lending (Source: Call Reports).
SELLER	Dummy variable that is equal to 1 for banks with SALES > 0.
ACTIVE	Dummy variable that is equal to 1 for banks with SALES greater than the 90th percentile in the sole-lender sample or with SALES greater than the 60th percentile in the syndicated-loans sample.
# of Lenders	The total number of lenders (lead manager and participants) in a syndicate (Source: Dealscan).
RELATION	Natural logarithm of (1+relationship length), where relationship length is the number of months between the current loan and the first time that the firm is observed to have borrowed from the same bank in the Dealscan sample.
HERFINDAHL	Statewide competitiveness of the banking industry, in terms of banks' C&I loans portfolio sizes (Source: Call Reports).
CAPITAL	Dummy variable that is equal to 1 for banks with equity-to-assets ratio below 6% (Source: Call Reports).

Appendix
(continued)

Variable name	Definition
Log(bank size)	Natural logarithm of total book value of bank assets during the year of lending (Source: Call Reports).
Borrower variables (Source: CRSP monthly and COMPUSTAT quarterly)	
Log(firm size)	Natural logarithm of total book value of assets (44) averaged over the four quarters before the loan origination.
ICOV	Interest coverage ((22+23)/22) averaged over the four quarters before the loan origination. To deal with outliers in this variable, I use it as a dummy that is equal to 1 for ICOV > 2.
ROA	Profitability ((8+22)/44) averaged over the four quarters before the loan origination.
Current ratio	Current assets over current liabilities (40/49) averaged over the four quarters before the loan origination. To deal with outliers in this variable, I use it as a dummy that is equal to 1 for Current Ratio > 2.
Leverage	Total liabilities over total assets (54/44) averaged over the four quarters before the loan origination
Volatility (prior)	Monthly standard deviation of borrower stock returns as of the 12 months before the loan origination
Volatility (ex post)	Monthly standard deviation of borrower stock returns as of the 12 months after the loan origination
Returns (ex post)	Average monthly stock returns during the 12 months after the loan origination
ROA (ex post)	Average profitability during the four consecutive quarters after the loan origination
ICOV (ex post)	Dummy variable equal to 1 if average interest coverage during the four consecutive quarters after the loan origination is greater than 2
Credit rating	Dummy variables for the S&P issuer credit rating (i.e., AAA, AA+, AA, AA-, etc., through D)
Industry	Dummy variables for the one-digit SIC industry code
Loan-contract variables (Source: The Loan Pricing Corporation's Dealscan Database)	
All-in spread (drawn)	The amount that the borrower pays the lender each year for each dollar borrowed in the case of a term loan, and for each dollar drawn off a credit line in the case of a loan commitment. The drawn all-in spread equals the coupon spread plus the annual fee. Most spreads are measured as a markup over LIBOR. In cases where they are based on another benchmark, Loan Pricing Corporation makes adjustments to the drawn all-in spreads, by assuming the following rates: Prime $= +255$ bps, Cost of funds $= 0$ bps, Commercial paper $= 3$ bps, T-bills $= -34$bps, Fed funds $= 0$ bps, Money market rate $= 0$ bps, Banker's acceptance $= -18$ bps, CDS $= -6$ bps (Strahan, 1999)
Log(maturity)	Natural logarithm of the number of days between the loan origination and the maturity
Log(deal size)	Natural logarithm of the total deal size in US dollars. A deal may include several loan facilities at the same time. The most typical arrangement is a loan agreement that comprises a term loan and a revolver credit line
Senior	Dummy variable that is equal to 1 if the loan is senior
Secured	Dummy variable that is equal to 1 if the loan is secured. Since this variable is often missing (for about one-third of the sample), a dummy for missing cases is also included in all regressions (unshown)
Year	Dummy variables for the calendar years in which a loan agreement is signed
Loan style	Dummy variables for "Revolver," "Limited Line," "Bridge Loan," "Demand Loan," "364-day facility," and "Other." The omitted case is "Term Loan."
Loan purpose	Dummy variables for "Acquisition line," "CP backup," "Debt repay," "Debtor-in-possession financing," "ESOP," "LBO/MBO," "Project finance," "Real estate," "Recapitalization," "Securities purchase," "Spinoff," "Stock buyback," "Takeover," and "Working capital." The omitted case is "Corp. purposes."
COMPUSTAT (quarterly) item numbers are in parentheses.	

References

Berger, A. N., and G. F. Udell, 1993, "Securitization, Loan Sales, and the Liquidity Problem in Banking," in M. Klausner, and L. J. White (eds), *Structural Changes in Banking*, pp. 227–291, Irwin, Homewood, IL.

Best, R., and H. Zhang, 1993, "Alternative Information Sources and the Information Content of Bank Loans," *Journal of Finance*, 48, 1507–1522.

Billett, M., M. Flannery, and J. Garfinkel, 1995, "The Effect of Lender Identity on a Borrowing Firm's Equity Return," *Journal of Finance*, 50, 699–718.

Boot, A. W. A., and A. V. Thakor, 1994, "Moral Hazard and Secured Lending in an Infinitely Repeated Credit Market Game," *International Economic Review*, 35, 899–920.

Cantor, R., and R. Demsetz, 1993, "Securitization, Risk, and the Credit Slowdown," *Federal Reserve Bank of New York Quarterly Review*, 18(2), 27–38.

Carlstrom, C., and K. Samolyk, 1995, "Loan Sales as a Response to Market-Based Capital Constraints," *Journal of Banking and Finance*, 19, 627–646.

Dahiya, S., M. Puri, and A. Saunders, 2003, "Bank Borrowers and Loan Sales: New Evidence on the Uniqueness of Bank Loans," forthcoming in *Journal of Business,* 76(4), 563–582.

Demsetz, R., 1993, "Recent Trends in Commercial Bank Loan Sales," *Federal Reserve Bank of New York Quarterly Review*, 18(4), 75–78.

Demsetz, R., 2000, "Bank Loan Sales: A New Look at the Motivations for Secondary Market Activity," *Journal of Financial Research*, 23, 192–222.

Dennis, S., and D. Mullineaux, 2000, "Syndicated Loans," *Journal of Financial Intermediation*, 9, 404–426.

Drucker, S., and M. Puri, 2005, "On the Benefits of Concurrent Lending and Underwriting," forthcoming in *Journal of Finance*, 60, 2763–2799.

Fama, E., 1985, "What's Different about Banks?" *Journal of Monetary Economics*, 15, 29–39.

Gorton, G. B., and J. G. Haubrich, 1990, "The Loan Sales Market," in G. G. Kaufman (ed.), *Research in Financial Services*, Vol. 2, 85–135.

Gottesman, A. A., and G. S. Roberts, 2002, "Maturity and Corporate Loan Pricing," Working Paper, York University.

Güner, A. B., 2005, "Lending Opportunities, Credit Standards, and Loan Sales," Working Paper, Barclays Global Investors, San Francisco.

Haubrich, J., and B. Thomson, 1996, "Loan Sales, Implicit Contracts, and Bank Structure," *Review of Quantitative and Financial Accounting*, 7, 137–162.

Heckman, J. J., H. Ichimura, and P. Todd, 1997, "Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme," *Review of Economic Studies*, 64, 605–654.

Ho, T. S. Y., and A. Saunders, 1981, "The Determinants of Bank Interest Margins: Theory and Empirical Evidence," *Journal of Financial and Quantitative Analysis*, 16, 581–600.

Hubbard, R. G., K. N. Kuttner, and D. N. Palia, 2002, "Are There Bank Effects in Borrowers' Cost of Funds? Evidence from a Matched Sample of Borrowers and Banks," *Journal of Business*, 75, 559–581.

James, C., 1987, "Some Evidence on the Uniqueness of Bank Loans," *Journal of Financial Economics*, 19, 217–235.

James, C., 1988, "The Use of Loan Sales and Standby Letters of Credit by Commercial Banks," *Journal of Monetary Economics*, 22, 395–422.

Jones, J., W. W. Lang, and P. Nigro, 2000, "Recent Trends in Bank Loan Syndications: Evidence for 1995 to 1999," Economic and Policy Analysis Working Paper, The Office of the Comptroller of the Currency.

Lummer, S. L., and J. J. McConnell, 1989, "Further Evidence on the Bank Lending Process and the Capital-Market Response to Bank Loan Agreements," *Journal of Financial Economics*, 25, 99–122.

Pennacchi, G., 1988, "Loan Sales and the Cost of Bank Capital," *Journal of Finance*, 43, 375–396.

Preece, D. C., and D. J. Mullineaux, 1994, "Monitoring by Financial Intermediaries: Banks vs. Nonbanks," *Journal of Financial Services Research*, 8, 193–202.

Slovin, M. B., S. A. Johnson, and J. L. Glascock, 1992, "Firm Size and the Information Content of Bank Loan Announcements," *Journal of Banking and Finance*, 16, 1057–1071.

Stein, J., 1988, "Takeover Threats and Managerial Myopia," *Journal of Political Economy*, 96, 61–80.

Strahan, P., 1999, "Borrower Risk and the Price and Nonprice Terms of Bank Loans," Staff Report No. 90, Federal Reserve Bank of New York.