

Syndicated Loans*

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This paper analyzes the market for syndicated loans, a hybrid of private and public debt, which has grown at well over a 20% rate annually over the past decade and which totaled over \$1 trillion in 1997. We identify empirically the factors that influence a bank or nonbank's decision to syndicate a loan and the determinants of the proportion of the loan sold in the event of syndication. The evidence reveals a loan is more likely to be syndicated as information about the borrower becomes more transparent, as the syndicate's managing agent becomes more "reputable," and as the loan's maturity increases. The lead manager holds larger proportions of information-problematic loans in its own portfolio. Loan syndications, like loan sales, appear to be motivated, in part, by capital regulations, and the liquidity position of the agent bank influences the likelihood of syndication, but not the extent. Our results confirm that information and agency problems affect the salability of debt claims and the extent to which a loan is "transaction oriented" rather than "relationship oriented" in the sense of A. Boot and A. Thakor (2000, *J. Finance* 54, 679–713). *Journal of Economic Literature* Classification Numbers: D82, G20, G21, G24. © 2000 Academic Press

The focus of this paper is on the market for syndicated loans, which is quite large and growing rapidly. The volume of syndications topped \$1 trillion in 1997, and this category of debt has increased at well over a 20% rate annually over the past decade. Finance research has paid little attention to this financial product, however, perhaps because of a lack of usable data. Syndicated loans are worthy of analysis, since they represent a hybrid of private and public debt. The syndication market involves elements of both commercial banking and investment banking, and syndicated loans can be viewed, in the language of Boot and Thakor (2000), as a

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mix of “relationship loans” and “transaction loans.” As they note, relationship loans embody information specific to the borrower and the bank, while transaction loans are analogous to debt sold in the capital markets. Syndicated loans typically involve elements of both kinds of financing in the sense that the lead bank screens and monitors the borrower in a relationship-like context, but then sells or underwrites some or all of the loan in a capital-market-like setting.

As Boot and Thakor (2000) emphasize, the finance literature tends to identify relationship lending with private finance (bank loans and private placements) and transactions lending with public finance (capital market debt).¹ A large literature has developed which addresses the issue of borrower choice between the two sources. Diamond (1991) develops a formal model which involves borrowers shifting from financial intermediaries such as banks and insurance companies to the public markets as the quality of the information about the firm improves and the borrower develops a “reputation” in the form of a history of successful debt repayments. Carey *et al.* (CPRU, 1993) propose an extended continuum, with firms gravitating from insider finance through venture capital, bank loan finance, private placements, and the public debt markets as information and collateral become increasingly available and the borrower’s repayment record improves. As borrowers become less “information problematic,” the characteristics of the lenders and the underlying debt contracts vary systematically. Bank loans tend to be relatively short-term, involve extensive covenants, and are frequently renegotiated. The majority of public-debt contracts are longer term, involve relatively loose covenants, and are almost never restructured. These contractual characteristics have been extensively examined and rationalized in the literature in papers such as Berlin and Loeys (1988), Berlin and Mester (1992), and Rajan and Winton (1995). A key result of this literature is that firms perceived as highly risky are rejected by capital markets and are forced to accept the tighter controls of private lenders.

Private and public debt differ fundamentally with respect to information disclosure, which in turn can influence borrower choice. Yosha (1995) demonstrates theoretically that high-quality entrepreneurial firms may prefer bilateral (relationship oriented) financing to multilateral (transaction oriented) borrowing in order to avoid disclosing private information which might leak to competitors. In his model, some information remains concealed as long as there is a cost differential between the two modes of financing. Bhattacharya and Chiesa (1995) show that multilateral financing involves sharing of information among firms when it is in the lenders’ interests, with potentially adverse incentives to invest in R&D. Consequently, when incentive problems are very important, bilateral financing may be preferred to multilateral financing. Each of these papers rationalizes situations

¹ Large commercial banking organizations now engage in both relationship and transactions oriented lending, although the essence of commercial banking has been oriented more toward relationship loans (see Bhattacharya and Thakor, 1993, for an excellent survey of banking theory). Investment banks and insurance companies are recent entrants into commercial loan financing, but primarily with a transactions oriented focus.

where markets are rejected in favor of private or bilateral financing, primarily to protect proprietary information.

Still another strand of literature focuses on the role of relationships in attenuating agency and information problems in debt finance. When borrowers seek multiple loans from the same bank over time, a repayment history accumulates and the lender forms an extensive and dynamic information set based on multiple assessments of financial statements, discussions with managements, and possible renegotiations. When lending is complemented by the provision of deposit, cash-management, and operations-based (e.g., payroll) services, the information set becomes still broader and deeper. Berger and Udell (1995) find that interest rates and collateral requirements on lines of credit decline with the length of a bank–borrower relationship, while Petersen and Rajan (1994) provide evidence that dependence on trade credit decreases with the length of a relationship. Cole (1998) finds that the probability a small business will receive credit increases in the presence of a relationship, especially if the borrower obtained multiple services in that context.

The upshot of this literature is that borrowers will prefer relationship loans from banks to public debt when private information and agency problems are severe. Syndicated loans lie somewhere on the continuum between relationship loans and public debt (or transaction loans). This suggests that when lenders provide funds to borrowers as syndicated loans, relationship elements—information and agency frictions—are less likely to be present. While the lead bank may have some form of relationship with the borrower, this is less likely to be the case for participating members. Since the buyer of the syndicated loan cannot rely on relationships with the borrower as a substitute for other mechanisms that resolve agency problems, evidence that certain loan contract characteristics play a different role in a syndication context relative to a relationship setting would confirm the relevance of relationships as a factor for resolving information problems.

While the existing literature identifies the factors that will influence borrower preferences for private versus public debt, it does not address empirically the issue of the lender's choice to hold a loan in its portfolio or to sell all or parts of the loan to other lenders in a syndication context.² We address the following questions in our paper: What are the factors that influence a bank's decision to sell a loan in a syndication context? Given a decision to syndicate, what proportion of the loan in question will be sold? We examine how the characteristics of both the borrower and the lender affect a loan's salability. We also analyze whether a loan's contractual characteristics or bank regulation influence syndication activity. A loan fully syndicated to a large number of participants is a functionally similar transaction to capital market finance.³ Thus, our paper can be interpreted as addressing the

² There is a significant literature on loan sales. As we note below, however, there are notable differences between loan sales and loan syndications.

³ Preece and Mullineaux (1996) report evidence that announcements of syndicated loan agreements fail to produce the positive returns to borrower equity associated with nonsyndicated loan announcements. This result is similar to James's (1987) findings for public debt financings and suggests that syndicated loans can have a transactions orientation.

factors that influence the extent to which a particular borrowing transaction is relationship driven (not syndicated), transaction driven (fully syndicated), or some mix of both (partially syndicated).

Our main results are as follows. A loan is more likely to be syndicated as information about the borrower becomes more transparent, as the reputation of the syndicate's managing agent improves, and as the loan's maturity increases. Moreover, the lead manager in the syndicate holds larger proportions of information-problematic loans in its own portfolio. Thus, our empirical results are consonant with the implications of existing theoretical models.

Section I of this paper provides an overview of the loan syndication market. Section II specifies a model that identifies the various factors which affect the syndication potential of individual commercial loans. Section III provides estimates of the models and interprets the results. Section IV presents some conclusions.

I. OVERVIEW OF THE LOAN SYNDICATION MARKET

Syndicating loans is a centuries-old process that has shown significant growth in the 1990s. *Gold Sheets Annual*, a publication of Loan Pricing Corporation, reports that loan syndication volume exceeded \$1 trillion in 1997 compared to \$137 billion in 1987, a compound annual growth rate of well over 20%. Syndicated financings in 1997 were employed largely for general corporate purposes (49.5%) and for debt repayment (33.5%), which represents a considerable shift from the late 1980s when syndicated loans were used primarily to finance mergers and acquisitions and leveraged buyout activities. Buyers of syndicated credits include commercial and investment banks, insurance companies, mutual funds, and other institutional funds managers. While commercial banks are the primary originators of syndicated loans, investment banks, finance companies, and insurance companies have become active originators in the 1990s.

In a syndicated loan, two or more institutions agree jointly to make a loan to a borrower. As emphasized by Gorton and Pennachi (1995), loan syndications differ from loan sales. A loan sale typically involves a "participation contract" which grants the buyer a claim on all or part of a loan's cash flows. The buyer of a participation is an "indirect lender" with no relationship to the borrower. In a syndication setting, each bank is a direct lender to the borrower, with every member's claim evidenced by a separate note, although there is only a single loan agreement contract. One lender will typically act as managing agent for the group, negotiating the loan agreement, then coordinating the documentation process, the loan closing, the funding of loan advances, and the administration of repayments. The agent collects a fee for these services, which typically ranges from 10 to 40 basis points as a percent of the facility.

Agent banks have several potential motivations for syndicating loans. Regulators limit the maximum size of any single loan to a portion of the bank's equity

capital, so syndication can be a method to avoid "overlining." Syndication also may reflect a voluntary diversification motive, a mechanism for managing interest rate risk, or a strategy for enhancing fee income. Participating banks may be motivated by a lack of origination capabilities in certain geographic regions or in certain types of transactions or a desire to economize on origination costs. Pennachi (1988) suggests that loan purchasing banks may have funding advantages relative to originators.

The agent bank's commitment letter to a borrower may commit to fund an entire loan facility, or alternatively some portion thereof, with a promise to use "good faith efforts" to arrange commitments from other lenders for the remainder. If the agent commits for the entire amount, the loan can be syndicated after it is closed, to the advantage of the borrower in the sense that the funds are received more promptly. Otherwise, the loan must be syndicated prior to closing. The agent bank prepares an "information memorandum" that contains descriptive and financial information concerning the borrower (including projections of cash flows). Recipients of the memorandum sign a confidentiality agreement. The agent typically will meet with prospective members to explain the terms of the credit, describe the borrower's business and prospects (often with presentations by the borrower's management), and answer questions.

The agent bank negotiates and drafts all the loan documents, but syndicate participants can provide comments and suggestions when the syndication occurs prior to closing. The participants are not generally involved in the negotiations with the borrower, however. Acting as an intermediary, the agent bank attempts to satisfy the potentially competing objectives of the borrower and syndicate members.

The agent bank also facilitates the administration of the loan, typically acting as a middleman for draws upon and repayment of the loan. The agent calculates required interest payments, obtains waivers and amendments to the loan documents, and in the case of a secured loan, holds all pledged collateral (or is the grantee of relevant security interests) on behalf of the syndicate members. In some transactions, the roles of the agent (origination, loan administration, collateral administration) are divided among several institutions. Fees are split in the case of multiple agents.

The "agency section" of the syndicated loan agreement formally designates the agent bank and will provide for its removal under specified conditions. The language typically exculpates the agent from any potential liability to the syndicate members except where it results from "gross negligence or willful misconduct." Standard provisions permit the agent to declare an event of default, but typically the agent will seek the prior advice of the member banks. Indeed, the loan agreement will identify which decisions require the consent of a designated proportion of the member banks. Unanimity is normally required for any reduction in principal, interest or fees or for extensions of any terms of the credit. In brief, the syndicate participants delegate some monitoring responsibilities to the managing agent both

at the loan origination or due diligence stage and at the post-closing loan review stage.⁴ If all the participating banks in a syndicate were identically engaged in monitoring, the agent would be acting purely as a broker. In this instance, it would presumably seek to sell the entire amount of a loan, much as an investment bank does in the underwriting process.

The loan syndication market invites potential agency problems involving both adverse selection and moral hazard. The agent bank may possess information unavailable to the syndicate participants. If the borrower is a long-time customer, the originating agent bank may have obtained idiosyncratic information not reflected in financial-statement data. Examples of such might involve judgments concerning management expertise, the nature of customer-supplier relationships, or the borrower's capacity to adapt successfully to changing market conditions. The originating bank has an incentive to syndicate those loans on which its "inside information" is less favorable, to the potential economic detriment of the participant banks.

As Gorton and Pennachi (1995) and others have noted, sales of loans also generate potential moral hazard problems, since the seller has less incentive to monitor once the loan is removed from the balance sheet. Monitoring is a costly activity, but after the sale of a loan the benefits accrue to the buyer rather than the loan originator. The moral hazard problem is potentially less severe in the case of a loan syndication than a loan sale, since the purchasing bank in a syndication holds a note against the borrower and has the right to setoff against deposits. Nonetheless, the participating members have delegated some monitoring responsibilities to the agent bank, since the members rely on the agent's loan documentation, its enforcement of covenants, and its administration of collateral. As the agent syndicates a larger proportion of an individual loan, its incentive to monitor *ex post* declines monotonically. In some instances, the agent bank will syndicate the entire amount of a loan facility.

Research on loan syndications is relatively limited. In the only paper we could uncover in a literature search, Simons (1993) examines empirically the motives for syndications and examines whether managing agents are likely to "exploit" the syndicate member banks. She reports that the capital position of the agent bank is a major factor affecting syndication activity and suggests that diversification is the primary motive for syndication. Using bank examiner ratings for a sample of syndicated loans, Simons finds that managing agents syndicate larger percentages

⁴ CPRU (1993) note that private placements facilitated by agents, rather than placed directly by the borrower, involve a similar form of delegated monitoring. They claim that potential agency problems are more severe in the postclosing stage, since lenders will likely replicate fully the due diligence efforts of the agent. Simons (1993) claims that, although syndicate members are expected to perform their own credit analyses rather than rely on representations made by an agent, buyers typically will rely strictly on the loan documentation provided by the lead bank in conducting such evaluations. This suggests the agency problems may be equally severe in both stages of the monitoring process in the case of loan syndications.

of individual loans as examiner ratings improve.⁵ These ratings represent ex post evaluations of loan quality, but Simons suggests “these loans may look less attractive to participants even before they are criticized by examiners” and that “the lead banks’ concern with maintaining their reputations in the marketplace may lead them not only to avoid abuses, but to promote risky loans even less aggressively than safe loans” (p. 49). We investigate these and other issues more broadly and systematically in our study, with a sample that includes nonsyndicated as well as syndicated loans. Simons’ sample consists only of syndicated loans.

II. FACTORS AFFECTING LOAN SYNDICATIONS

We are interested in two questions regarding syndications. First, what are the factors that influence a decision to sell a loan in a syndication context? Second, given a decision to syndicate, what proportion of the loan in question will be sold? The models we specify for each decision take account of the agent’s underlying motives for selling and of the scope of agency problems associated with syndication. An estimation procedure developed by Cragg (1971) is used to estimate the two-stage model. The models are estimated for a sample of bank and non-bank loan originators and for a set of bank-only originators. Constraining the sample to commercial banks allows us to test for potential regulatory and bank specific influences on syndication that have been used in studies of loan sales, such as Pavel and Phillis (1987).

The models we estimate take the following general forms:

$$\left. \begin{array}{l} \text{SYNDD} \\ \text{SYND\%} \end{array} \right\} = f(\text{Information Variables, Agency Variables, Loan Characteristics, Agent Characteristics}).$$

The SYNDD dependent variable is a (0, 1) dummy which reflects the originator’s decision to syndicate (1) or not (0), and SYND% is the percentage of the loan sold to participants, given the decision to syndicate. We next discuss the explanatory variables in the model.

Information variables. Finance theory suggests that as borrowers become less information problematic, the characteristics of the lenders and the underlying debt contracts vary systematically. Diamond (1991) develops a formal model which involves borrowers shifting from private sources (financial intermediaries) to public debt markets as the quality of information about the firm improves and the borrower develops a reputation in the form of a successful history of debt repayments. When firms require less monitoring, debt becomes more saleable to parties lacking idiosyncratic information.

Pennachi (1988) demonstrates how the sale of loans is limited by the buyer’s perception of the seller’s incentive to monitor. Pennachi shows that a loan can

⁵ Simons (1993) reports that banks syndicated roughly 82% of loans rated “pass” or “special mention” by examiners, but only 70% of loans rated “substandard” or “doubtful,” and 53% of loans rated “loss.”

be sold in its entirety when the benefits to monitoring are negligible. Greenbaum and Thakor (1987) demonstrate formally that, under certain conditions, banks will sell or securitize higher-quality assets and retain lower-quality loans on their balance sheets. Mester (1992) presents evidence suggesting that it is less costly for a bank to monitor a loan that it has originated than a loan that it has purchased. The implication of this research is that loans involving information that is "transparent" (easy to access, process, and interpret) are more likely to be syndicated than loans involving "opaque" (fuzzy, incomplete, difficult to observe and interpret) information. We employ several different measures of the quality of the information available in a specific loan transaction, including the existence of a public bond rating (BONDRATE) and whether the borrower is a publicly listed firm (TICKER).⁶ We argue that loans to rated companies and/or listed firms are more likely to be syndicated since these borrowers involve more transparent information. Increased transparency also raises the likelihood that a larger proportion of a particular loan can be syndicated. In a specification estimated from a sample of only rated borrowers, we also include a dummy variable (INVGRADE) equal to one when the rated borrower is an investment-grade credit and zero when the rating is non-investment-grade. If information on investment-grade borrowers is more transparent than that associated with non-investment-grade borrowers, the sign of the coefficient of this dummy should be positive, reflecting an increased propensity to syndicate such loans.

Agency variables. A syndicated loan involves potential agency problems between the borrower and the set of participating lenders and between the agent bank(s) and the other members of the syndicate. As agency problems become more relevant in either context, a commercial loan should be less likely to be syndicated.

Certain characteristics of the loan itself may affect the agent bank's capacity to syndicate either because the characteristic serves to attenuate agency costs or because it influences the perceived value to the buyer for non-agency-related reasons. The maturity and the status of the loan with respect to collateral are two such characteristics. A number of potential channels exist that might affect a loan's syndication potential and the likely impacts are not unidirectional.

If there is significant potential for the lead/agent bank to exploit the syndicate members, then keeping loan maturity short could serve to minimize such a prospect. Short-term loans involve less opportunity for the agent bank to shirk, for example, and short maturities are likely to involve frequent requests for renewals, which triggers more frequent monitoring of the borrower and the agent by the syndicate members. Gorton and Pennachi (1989) argue that "banks are less likely to shirk in information production or covenant monitoring" when selling loan "strips," which are short-term segments of longer term loans (p. 130). The reason is that the selling bank intends to resell the strip on the date it matures to avoid having to fund it. These arguments suggest that lengthening a loan's maturity would reduce its potential

⁶ In an earlier version of this paper, we included the borrower's annual sales as an additional proxy measure for information transparency. The variable was nonsignificant in almost all cases, however, perhaps because the database we employed does not carefully match the timing of the sales measure to that of the loan transaction.

for successful syndication. On the other hand, frequent renewals also increase the overall (and duplicative) monitoring costs for the set of syndicate banks. Diamond (1984) demonstrates how the avoidance of duplicative monitoring costs helps provide a rationale for the existence of financial intermediaries. Syndication results in duplicative monitoring by its very nature. Since the majority of syndicated loans involve variable-rate pricing which minimizes interest rate risk, syndicate members might prefer longer-term claims on the borrower's cash flows to avoid "excessive" monitoring costs. In addition, Rajan (1992) has emphasized that short-maturity loans create an opportunity for the originating bank to extract rents from borrowers on the renewal date whenever ex post information reveals a favorable state. If this is the case, managing agents would prefer to hold larger proportions of such loans in their own portfolios to avoid sharing such rents with syndicate members. If avoiding duplicative monitoring costs or potential rent extractions is a relevant consideration, then lengthening a loan's maturity would enhance its syndication potential. We include the variable *MATURITY* in our models, but the likely sign of this variable is ambiguous in each case.

Similarly, the presence of collateral could, in principle, increase or reduce a loan's syndication potential. Bester (1985) and Besanko and Thakor (1987) demonstrate that borrowers can signal better creditworthiness through their willingness to offer collateral. In addition, when a loan is fully secured, the quality of the lenders' monitoring effort assumes less importance. Collateral accordingly reduces the sensitivity of the loan's cash flows to any information differences between the agent and syndicate member banks, suggesting that the presence of collateral would raise the likelihood that a loan could be syndicated. On the other hand, Berger and Udell (1990) document that collateral typically is associated with riskier loans. Rajan and Winton (1995) demonstrate formally that collateral is more likely to be observed in loans to firms that require monitoring and that "collateralization of private debt will be correlated with financial distress at the firm level and poor business conditions at the aggregate level, both of which have empirical support" (p. 115–116). If collateral's main role is to solve moral hazard problems, then riskier borrowers or those who need more monitoring will post more collateral. In this case, it may be inefficient to dilute each bank's incentive to monitor by syndicating the loan. These arguments suggest that the presence of collateral should reduce the prospects of syndicating a loan. We include the dummy variable *SECURED* reflecting the presence or absence of collateral in our models, but again we are agnostic about its sign.

If the agency problems between the agent and syndicate members are potentially significant, another factor that could attenuate these problems is the formation of a "reputation" for nonexploitative behavior by the lead bank. Reputation has been proposed as a general solution to agency problems in contracting in numerous settings, including audit quality (DeAngelo, 1981), bond ratings (Wakeman, 1981), dividends (Easterbrook, 1984), underwriting (Booth and Smith, 1986), and the abnormal stock price response to loan agreement announcements (Billett *et al.*, 1995). James (1992) emphasizes the role of relationship-specific assets in the pricing of underwriting services. He notes that underwriters obtain information

while evaluating a potential issue that can be useful in underwriting subsequent offerings of the same firm. In addition, the “investment banker may also identify an informed client base for the firm’s stock which is also a durable transaction-specific asset” (p. 1687). These arguments carry over directly to loan underwriting in a syndicate context. A bank that has established transaction-specific assets (reputation) should have lower costs in syndicating loans than banks that have eschewed such investments. Gorton and Haubrich (1990) argue that the reputation of the selling bank may replace the selling bank’s equity as the mechanism to ensure performance in a loan sale with no recourse.

In our models, we include REPEAT as a proxy for “reputational capital” on the assumption that a large volume of repeat business between an agent originator and a syndicate member reflects a relationship containing significant transaction-specific investments. Using the approximately 200 deals in our database dated 12/31/86 or earlier (deals that pre-date our regression sample), we determine the amount of repeat business generated by each syndicate manager by creating “client lists.” We begin with the earliest syndicated loan in the database and record all the banks participating with that manager on the deal. We proceed through the pre-1987 data chronologically by manager, summing the participating lenders that subsequently enter into additional syndicates with this lead bank.⁷ We use this variable as one measure of the reputation of the managing agent.

This technique for measuring reputation could reflect serial correlation in syndications, in that these originators may have an established strategy to syndicate a large proportion of their loans. As an alternative measure of reputation, we employ AGT-RATE, the senior, unsecured debt rating of the agent bank. We hypothesize that a loan can be more readily syndicated when the lead bank has a higher credit rating. In addition, we include a dummy variable BANK equal to one if the loan originator is a bank and zero for nonbanks, as another reputational factor. Nonbanks are relatively recent entrants into the syndication market as originators, and we hypothesize that banks have more “reputational capital” in the market than nonbanks. This hypothesis would be confirmed by a positive coefficient on this dummy. Preece and Mullineaux (1994) and Billett *et al.* (1995) provide evidence that nonbanks recently have “mimicked” some of the unique characteristics of

⁷ To construct the REPEAT variable, we create a client list for each lead bank and then count the number of times that a given client appears in the lead bank’s deals (but only pre-1987 deals are counted). Conceptually, there are four steps:

(1) Identify all banks that were the lead in a pre-1987 syndicate at least twice (those that were the lead only once would have no repeat business);

(2) For each such lead bank, make a list of all participants in any of its deals (its client list);

(3) For each participant bank on the client list, count the number of deals lead by the given agent bank in which the bank participated;

(4) Sum the numbers from step 3 across participant banks on the client list, and then subtract the number of banks on the client list to get the value of REPEAT for the given lead bank. In the regressions, this value will be used in all observations of loans for which the given bank is the lead. We subtract the number of banks on the client list because the first instance of participation by any given bank does not represent repeat business, but rather establishes the client relationship.

banks in commercial lending, but banks may well maintain a comparative advantage in syndications on reputational grounds.

We also include two different measures of the scale of the loan facility in our models. The variable *FACSIZE* is the size of the loan in dollars and *RELSIZE* is the loan-facility size divided by the equity capital of the agent bank. As either of these variables increases, a larger proportion of a loan is likely to be syndicated, reflecting either discretionary or regulatory-driven motives for diversification.

In an expanded version of these “base-case” models, we employ several other variables associated with the agent bank that have been utilized in empirical studies of loan sales, such as Pavel and Phillis (1987). *LNGROWTH* is the rate of growth in the loan portfolio over the most recent 12 months, *CHARGE-OFFS* is the charge-off ratio for total loans, and *NONCURRENT* is the ratio of noncurrent loans to total loans.⁸ The loan-growth variable is a rough measure of the extent to which the agent bank is liquidity constrained. A higher value for this variable should be associated with an increased prospect for syndication, other things equal. The other two variables are measures of overall loan quality in the agent bank portfolio. Increases in these ratios could reduce the likelihood that the originator can engage in syndication or sell substantial portions of loans to originators.

Many studies, including Berger and Udell (1993) and Pennachi (1988), have suggested that regulatory requirements for bank capital may induce banks to sell loans. Selling loans without recourse or syndicating loans results in their removal from the originating bank’s balance sheet. Commercial loans are required to be “backed” by capital equal to 8% of the loan amount. We include two separate measures of “capital adequacy” in our expanded models: *GEARING* is the ratio of equity capital to total assets and *TIER 1* is the ratio of equity capital to risk-adjusted assets in the year the loan is syndicated. If loan syndications are motivated by capital requirements, increases in these capital ratios should reduce the prospect that a given loan will be syndicated.

III. ESTIMATES OF THE MODEL

Since our study requires detailed information on the characteristics of individual loans, we employ data from a private database compiled by the Loan Pricing Corporation (LPC). The data set contains information on approximately 30,000 loan facilities involving some 2,500 lenders over the period 1987–1995. Much of the data gathered by LPC comes from commitment letters or credit agreements contained in public filings with the Securities and Exchange Commission, but LPC also reports deals obtained from direct research at the lending banks. LPC attempts to confirm the data from SEC filings with senior management at the lender and reports when a transaction is “fully confirmed,” “partially confirmed,” or “unconfirmed.” We selected all nonprivate-placement, fully confirmed loan transactions

⁸ Ideally, we would also examine the role of charged-off commercial loans and noncurrent commercial loans as determinants of syndication behavior. Unfortunately, our data source, the FDIC’s Institutional Directory Web Page, does not contain charge-offs or noncurrent loans by loan type.

where we could identify either the managing agent's share or the percentage of the loan syndicated. This resulted in a sample of 3,410 loan transactions of which 1,526 were syndicated. The absence of information of the managing agent's share is the primary factor accounting for lost observations. Nonsyndicated loans are those with a percent syndicated equal to zero. Table I provides some descriptive statistics on the sample.

Of the 3,410 transactions, 2,762 (81%) were originated with borrowers who lacked a senior, unsecured S&P credit rating. Focusing first on the discrete variables in our model (Panel A), about 93% of the nonsyndicated loans went to nonrated borrowers, while 67% of the syndicated loans went to unrated companies. Roughly half of the loan transactions are with publicly listed firms. A larger proportion of the nonsyndicated loans are secured, although the majority of loans involve collateral in both classes. Less than half the loans are originated by lenders with a public credit rating, but syndicated loans are more likely to involve rated lenders. Banks originated a larger proportion of the syndicated loans (97%) than the nonsyndicated facilities (88%). All of the differences in proportions between syndicated and nonsyndicated loans in Panel A are significant at the .01 level. The mean and median numbers of repeat transactions among participant banks (Panel B) are substantially higher in the case of syndicated loans.⁹ The mean maturity of the syndicated loans is almost 50% larger than the average for nonsyndicated loans and the median is twice as large. Not surprisingly, syndicated loans are much larger than nonsyndicated credits both in dollar volume and as a percent of the agent's equity capital. The magnitudes of the differences are roughly the same for means and medians. The means and medians of the commercial-bank-specific variables reflecting loan growth and loan quality are fairly similar across the syndicated and nonsyndicated samples, while both capital ratios are lower, on average, in the syndicated sample. The mean percentage of loan syndicated is 68% with a range from 9 to 100%. All the differences in means between syndicated and nonsyndicated loans are significant at the .01 level, save for loan growth.

We estimate the models with a two-step procedure developed by Cragg (1971). The first stage involves logit estimation using a binary dependent variable equal to one for syndicated loans and zero for nonsyndicated loans for all lenders (banks and nonbanks). The second stage uses a truncated regression model with the percentage of the loan syndicated as the dependent variable for the sample of all lenders.¹⁰ The results of these estimations are reported in Tables II and III. We report the results

⁹ The REPEAT variable is calculated for syndicated and nonsyndicated loans. In the latter case, it represents the number of loans sold to the same participants when the lead bank did engage in syndication.

¹⁰ An alternative estimation technique is to apply a doubly censored Tobit model, since the propensity to syndicate is bounded on the interval [0%; 100%]. This procedure implicitly assumes that the decision to syndicate a loan is equivalent to the decision concerning the proportion to be sold. If the Tobit model is correctly specified, the sum of the log likelihoods of the logit model and the truncated regression model will not be significantly different from the log-likelihood of the Tobit model. The test of this hypothesis is χ^2 distributed with degrees of freedom equal to the number of regressors plus one. The test statistic rejects the Tobit specification at the .01 level.

TABLE I
Descriptive Statistics for the Sample

Variable	Sample size	Full sample	Syndicated loans	Nonsyndicated loans
Panel A: Descriptive statistics for discrete variables				
BONDRATE*				
Rated		648	508	140
Not rated		2762	1018	1744
INVGRADE*				
Investment grade		278	193	25
Noninvestment grade		3192	1333	1859
TICKER*				
Publicly listed		1737	856	881
Not publicly listed		1673	670	1003
SECURED*				
Secured		2745	1135	1610
Unsecured		665	391	274
AGT-RATE*				
Rated		1403	762	641
Not rated		2007	764	1243
BANK				
Bank		3137	1480	1657
Nonbank		273	46	227
Panel B: Descriptive statistics for continuous variables				
		mean/median (min/max)	mean/median (min/max)	mean/median (min/max)
REPEAT*	3410	18/0 (0/98)	31/18 (0/98)	7/0 (0/98)
MATURITY*	3410	1229/1095 (6/9667)	1437/1216 (6/8401)	1058/731 (12/9667)
FACSIZE	3410	\$119m/\$15m (\$43k/\$8.6b)	\$242m/\$69m (\$0.60m/\$8.6b)	\$18.7m/\$5m (\$43k/\$1.4b)
LNGROWTH	1633	9.2%/6.8% (−0.8%/256%)	9.0%/6.8% (−0.8%/256%)	9.4%/7.6% (−0.8%/236%)
CHARGE-OFFS	1633	0.8%/1.4% (−4.0%/4.0%)	0.8%/0.5% (−4.0%/2.8%)	0.7%/0.4% (−4.0%/4.0%)
NONCURRENT	1633	1.9%/1.7% (0%/12.3%)	2.1%/1.7% (0%/6.7%)	1.9%/1.3% (0%/12.3%)
GEARING	1633	7.0%/6.9% (0.7%/25.9%)	6.9%/6.7% (4.7%/25.9%)	7.2%/6.9% (0.7%/25.9%)

of several specifications. The model estimated initially includes all the explanatory variables. Since there is collinearity among the variables reflecting the information set associated with the borrower and among the measures of the bank’s reputation, we also estimate some restricted specifications. In addition, we estimate a model with a sample restricted only to rated borrowers. This specification allows us to determine whether a loan is more “syndicable” when the borrower has an investment grade rating.

TABLE I—*Continued*

Variable	Sample Size	Full Sample mean/median (min/max)	Syndicated Loans mean/median (min/max)	Non-syndicated Loans mean/median (min/max)
TIER1	1633	9.9%/8.3% (0.8%/149.8%)	9.1%/8.1% (6.0%/149.8%)	10.6%/9.1% (0.8%/149.8%)
RELSIZE	1633	65.4%/16.0% (0.03%/8215%)	103.5%/28.7% (0.11%/8215%)	30.2%/7.1% (0.03%/1216%)

Note. BONDRATE is a dummy equal to one if the borrower has a senior, unsecured debt rating and zero otherwise; INVGRADE is a dummy equal to one if the senior, unsecured debt rating is BBB or higher and zero otherwise; TICKER is a dummy equal to one if the borrower is listed on the NYSE, AMEX or NASDAQ and zero otherwise; MATURITY is the maturity of the loan (in days); SECURED is a dummy equal to one if the loan is collateralized and zero otherwise; REPEAT is the number of repeat transactions in the presample period conducted with the managing agent bank syndicating the loan; AGT-RATE is a dummy equal to one if the managing agent has a senior, unsecured debt rating and zero otherwise; AGT-INVGRADE is a dummy equal to one if the managing agent's senior unsecured debt rating is BBB or above and zero otherwise; BANK is a dummy equal to one if the managing agent has a bank charter and zero otherwise; FACSIZ is the dollar value size of the loan facility; LNGROWTH is the rate of growth in loans of the managing agent bank; CHARGE-OFFS is the ratio of loans charged off to total loans; NONCURRENT is the ratio of noncurrent loans to total loans; GEARING is the ratio of equity capital to total assets; TIER1 is the ratio of core capital to risk-adjusted assets; and RELSIZE is the facility size divided by the equity of the managing agent (bank). Of the 3410 observations in the full sample of bank and non-bank lenders, 1526 (45%) are syndicated. Of the 1633 bank-only observations, 768 (47%) are syndicated. All statistics computed on non-missing values.

* There are no significant differences between the full sample (3410) and the bank-only sample (1633) with respect to these variables.

The results in Table II reveal that a loan is more likely to be syndicated if the borrower is a rated firm or has a ticker symbol. The presence of a credit rating has more economic significance than does the fact that the borrower's stock trades on an exchange, however. These findings are highly significant and consistent with the hypothesis that increased transparency of information facilitates the sale of debt contracts. When the sample is restricted only to rated borrowers, the presence of an investment-grade rating does not significantly influence the likelihood of syndication.

The coefficient of the loan's maturity is positive and significant at the .01 level in all the specifications. Longer maturity enhances the prospect a loan will be syndicated, presumably because longer term loans economize on duplicative monitoring costs for the syndicate banks. Another interpretation is that managing agents prefer to hold larger proportions of short-term loans in their portfolios because they offer opportunities to extract rents from borrowers in the renewal stage when favorable information is revealed. Our findings are not consistent with the notion that short maturities, and consequent frequent recontracting, are a solution to potential agency problems within the syndicate.

TABLE II

Estimates of Models for the Decision to Syndicate a Commercial and Industrial Loan: Both Bank and Nonbank Loans

Variable	All variables	Specification B	Specification C	Specification D	Rated borrowers only
INTERCEPT	-2.763*** (0.2131)	-2.622*** (0.2035)	-2.946*** (0.2070)	-2.650*** (0.2088)	-3.121*** (0.6244)
BONDRATE	0.542*** (0.1386)	0.563*** (0.1382)	0.716*** (0.1338)		
INVGRADE					-0.431 (0.3827)
TICKER	0.144* (0.0841)			0.177*** (0.0835)	
MATURITY	4.59E-4*** (4.9E-5)	4.60E-4*** (4.90E-5)	4.80E-4*** (4.80E-5)	4.56E-4*** (4.90E-5)	5.86E-4*** (1.67E-4)
SECURED	-0.066 (0.1128)	-0.089 (0.1122)	-0.032 (0.1108)	-0.080 (0.1124)	0.191 (0.3456)
REPEAT	0.018*** (0.0018)	0.018*** (0.0018)		0.019*** (0.0017)	0.020*** (0.0049)
AGT-RATE	0.139 (0.0867)		0.338*** (0.0825)		
BANK	0.972*** (0.1561)	0.964*** (0.1556)	1.281*** (0.1555)	0.925*** (0.1548)	1.924*** (0.4702)
FACSIZE	1.55E-8*** (1.09E-9)	1.56E-8*** (1.09E-9)	1.74E-8*** (1.10E-9)	1.63E-8*** (1.08E-9)	1.40E-8*** (2.37E-9)
Model significance	$\chi^2 = 1372^{***}$	$\chi^2 = 1366^{***}$	$\chi^2 = 1270^{***}$	$\chi^2 = 1354^{***}$	$\chi^2 = 236^{***}$
# of observations	3410	3410	3410	3410	648

Note. Logit estimates of the binary dependent variable SYNDD (1 for syndicated loan, 0 for not syndicated). The sample of 3410 C&I loans includes both bank and nonbank loans. BONDRATE is a dummy equal to one if the borrower has a senior, unsecured debt rating and zero otherwise; INVGRADE is a dummy equal to one if the senior, unsecured debt rating is BBB or higher and zero otherwise; TICKER is a dummy equal to one if the borrower is listed on the NYSE, AMEX, or NASDAQ and zero otherwise; MATURITY is the maturity of the loan (in days); SECURED is a dummy equal to one if the loan is collateralized and zero otherwise; REPEAT is the number of repeat transactions in the presample period conducted with the managing agent bank syndicating the loan; AGT-RATE is a dummy equal to one if the managing agent has a senior, unsecured debt rating and zero otherwise; BANK is a dummy equal to one if the managing agent has a bank charter and zero otherwise; and FACSIZE is the dollar value size of the loan facility. The numbers in parentheses are standard errors.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

TABLE III
Estimates of the Percentage Syndicated of a Commercial and Industrial Loan
for Both Bank and Nonbank Loans

Variable	All variables	Specification B	Specification C	Specification D	Rated borrowers only
INTERCEPT	4.147*** (0.0341)	4.156*** (0.0330)	4.140*** (0.0339)	4.164*** (0.0345)	4.522*** (0.0615)
BONDRATE	0.117*** (0.0140)	0.121*** (0.0139)	0.148*** (0.0140)		
BONDINVGRADE					0.058*** (0.0168)
TICKER	0.031** (0.0121)			0.050*** (0.0122)	
MATURITY	5.51E-5*** (7.23E-6)	5.43E-5*** (7.29E-6)	5.96E-5*** (7.49E-6)	5.53E-5*** (7.47E-6)	3.99E-5*** (9.06E-6)
SECURED	-0.058*** (0.0140)	-0.060*** (0.0140)	-0.058*** (0.0144)	-0.073*** (0.0142)	-0.025 (0.0167)
REPEAT	0.002*** (0.0002)	0.002*** (0.0002)		0.002*** (0.0002)	0.001*** (0.0002)
AGT-RATE	-0.042*** (0.0123)		-0.018 (0.0122)		
BANK	0.014 (0.0280)	0.009 (0.0281)	0.069** (0.0283)	0.002 (0.0285)	-0.198*** (0.0577)
FACSIZE	8.28E-11*** (1.51E-11)	8.52E-11*** (1.53E-11)	1.18E-10*** (1.60E-11)	9.74E-11*** (1.64E-11)	3.71E-11*** (1.31E-11)
Model significance	$\chi^2 = 25.58^{***}$	$\chi^2 = 24.66^{***}$	$\chi^2 = 21.75^{***}$	$\chi^2 = 22.18^{***}$	$\chi^2 = 82.70^{***}$
# of observations	1526	1526	1526	1526	648

Note. Truncated regression estimates of the percentage of the loan syndicated (truncated from above at 100%). The sample of 1526 C&I loans includes both bank and nonbank loans. BONDRATE is a dummy equal to one if the borrower has a senior, unsecured debt rating and zero otherwise; BONDINVGRADE is a dummy equal to one if the senior, unsecured debt rating is BBB or higher and zero otherwise; TICKER is a dummy equal to one if the borrower is listed on the NYSE, AMEX, or NASDAQ and zero otherwise; MATURITY is the maturity of the loan (in days); SECURED is a dummy equal to one if the loan is collateralized and zero otherwise; REPEAT is the number of repeat transactions in the presample period conducted with the managing agent bank syndicating the loan; AGT-RATE is a dummy equal to one if the managing agent has a senior, unsecured debt rating and zero otherwise; BANK is a dummy equal to one if the managing agent has a bank charter and zero otherwise; and FACSIZE is the dollar value size of the loan facility. The numbers in parentheses are standard errors.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

The coefficient of the dummy variable for collateral is not significant in any of the models, suggesting that unsecured loans are as likely to be syndicated as secured loans.¹¹ These results do not suggest that moral hazard is a dominant factor affecting the decision to syndicate a loan.

The variables which serve as proxies for the reputation of the managing agent are almost all positive and significant at either the .01 or .05 levels, suggesting that reputation can serve as a method for attenuating potential agency problems, as many researchers have claimed. The exception is the agent's credit rating, which is insignificant in the "all variables included" specification. A loan is more likely to be syndicated as the managing agent is more heavily involved in repeat business, as the agent's credit rating improves, and as the agent is a bank rather than a nonbanking institution. These results suggest that certain managing agents have successfully developed transactions-specific assets that facilitate their capacities to syndicate loans. Our results are also similar to those of Billett *et al.* (1995), who found that the identity of the lender affects the size of the equity market's response to a loan-agreement announcement. The identity of the managing agent bank also influences whether a particular loan that will be syndicated. Not surprisingly, the size of a loan facility also is a significant factor in determining whether a loan will be syndicated.

The results of the truncated regression model which addresses the proportion of a loan that is syndicated are reported in Table III. A larger percentage of a loan can be sold (i.e., a loan is more transaction oriented than relationship oriented) as the information about the borrower becomes more transparent, as reflected by the presence of a debt rating or a ticker symbol. When the estimation is limited only to rated borrowers, an investment grade rating increases the proportion of a loan that is syndicated, consistent with Greenbaum and Thakor (1987). Longer maturity makes a larger portion of a loan saleable, just as it increases the probability of syndication. The presence of collateral significantly lowers the percentage of a loan that will be syndicated. While the presence of collateral reduces the loan's value sensitivity to the character of the information that supports it, collateral also can serve to mitigate moral hazard problems. Our results suggest a lead bank retains larger portions of secured loans, presumably to avoid the dilution of incentives to monitor. The reputation variables are less systematically significant in this estimation. While the volume of repeat transactions is always significant at the .01 level, the agent's credit rating is either not significant or incorrectly signed (the "all variables included" specification). The dummy for bank/nonbank originators is significant only when REPEAT is excluded from the model. Whereas all the measures of reputation were relevant to a decision to syndicate, only a history of repeat business seems

¹¹ In the LPC database, the indicator for secured/unsecured loans is often blank. In the results we report, we coded a missing indicator as unsecured. To determine whether this influenced our results, we also estimated the models for the smaller sample using only those loans with a Y/N indicator regarding collateral. In every case, the results were robust regarding the relevance of collateral, as were the overall results.

to facilitate the sale of larger portions of a loan. The loan size variable is again highly significant in this model, but loan size is more economically significant to the issue of whether to syndicate than to the proportion sold.

We performed several types of sensitivity analyses on the models. We included two additional sets of dummy variables. The first was an annual dummy variable which might reflect any secular trend in the data. The year dummy was not significant and the overall results were unchanged in the estimation with this variable. We also included dummy variables for the purpose of the loan (working capital, debt repayment, project finance, and general corporate purposes) and for the type of loan (line of credit vs term loan) and the overall results were again unaffected.¹² We also estimated the models at the deal level rather than focusing on individual facilities.¹³ Again there were no significant changes in the results.

We next estimated similar models for samples involving only commercial bank agents, which allows us to examine the role of several supply factor influences that have been examined in studies of loan sales. Table IV presents the results of the logit model estimation. The proxies for the degree of information transparency remain highly significant, but the coefficient of the investment-grade dummy in the restricted sample estimation is again insignificant. Maturity remains a positive and significant influence, and the presence of collateral becomes a significant negative determinant of the proportion of a loan that can be syndicated. In the case of commercial bank originators, the presence of collateral inhibits syndication, which supports the hypothesis that collateral resolves moral hazard problems. The proxies for reputation remain highly significant. In general, information transparency and reputation seem somewhat more relevant in the commercial-bank-only sample compared to the full sample results.

Among the agent-bank-specific variables, we find some evidence that syndication is less likely as overall loan quality deteriorates, reflected primarily in the noncurrent loans ratio. Loan growth is a significant factor in only one specification, providing a bit of evidence that the originator's liquidity may be a factor influencing syndication activity.¹⁴ Both measures of the agent bank's capital position are significant influences on syndication decisions (except when included together) and indicate that loans are more likely to be sold as capital ratios decline. These findings are similar to those of Simons (1993) for syndications and Pavel

¹² Some of the individual dummies were occasionally significant, but we do not report the results here since none of the other coefficients were noticeably different. The results are available from the authors.

¹³ A "deal" consists of a set of facilities (individual loans) to the same borrower.

¹⁴ Liquidity considerations have been shown to be a factor influencing loan sales by Pavel and Phillis (1987) and Berger and Udell (1993), among others. Simons reports that banks syndicate smaller percentages of individual loans as the credit quality of the loan in question deteriorates as measured by subsequent examiner ratings.

TABLE IV
Estimates of Models for the Decision to Syndicate a Commercial and Industrial
Loan: Bank Loans Only

Variable	All variables	Specification B	Specification C	Specification D	Rated borrowers only
INTERCEPT	-1.021*** (0.3775)	-1.265*** (0.1696)	-0.591* (0.3454)	-0.867*** (0.2135)	2.757** (1.3152)
BONDRATE	1.461*** (0.2262)	2.125*** (0.2091)		1.524*** (0.2249)	
INVGRADE					0.240 (0.7816)
TICKER	0.207* (0.1216)		0.310*** (0.1177)		
MATURITY	6.18E-4*** (7.80E-5)	7.10E-4*** (7.70E-5)	5.89E-4 (7.70E-5)	6.36E-4*** (7.80E-5)	8.34E-4** (3.90E-4)
SECURED	-0.363** (0.1517)	-0.584*** (0.1436)	-0.487*** (0.1455)	-0.398*** (0.1497)	-1.316* (0.7892)
REPEAT	0.028*** (0.0027)		0.035*** (0.0025)	0.028*** (0.0025)	0.032*** (0.0093)
AGT-RATE	0.289** (0.1253)	0.631*** (0.1143)			
LNGROWTH	0.068 (0.2622)		0.514** (0.2256)	0.286 (0.2471)	1.649 (1.1743)
CHARGE-OFFS	-0.028 (0.1133)			-0.215** (0.0873)	0.255 (0.3649)
NONCURRENT	-0.162*** (0.0606)		-0.158*** (0.0472)		
GEARING	0.002 (0.0509)		-0.107** (0.0420)		
TIER1	-0.058*** (0.0158)			-0.062*** (0.0143)	-0.381*** (0.1348)
RELSIZE	0.008*** (0.0010)	0.005*** (0.0008)	0.008*** (0.0010)	0.008*** (0.0010)	0.021*** (0.0068)
Model significance	$\chi^2 = 625^{***}$	$\chi^2 = 443^{***}$	$\chi^2 = 549^{***}$	$\chi^2 = 607^{***}$	$\chi^2 = 73.5^{***}$
# of observations	1633	1633	1633	1633	261

Note. Logit estimates of the binary dependent variable SYNDD (1 for syndicated loan, 0 for not syndicated). The sample of 1633 C&I loans includes only bank loans. BONDRATE is a dummy equal to one if the borrower has a senior, unsecured debt rating and zero otherwise; INVGRADE is a dummy equal to one if the senior, unsecured debt rating is BBB or higher and zero otherwise; TICKER is a dummy equal to one if the borrower is listed on the NYSE, AMEX, or NASDAQ and zero otherwise; MATURITY is the maturity of the loan (in days); SECURED is a dummy equal to one if the loan is collateralized and zero otherwise; REPEAT is the number of repeat transactions in the pre-sample period conducted with the managing agent bank syndicating the loan; AGT-RATE is a dummy equal to one if the managing agent has a senior, unsecured debt rating and zero otherwise; LNGROWTH is the rate of growth in loans of the managing agent bank; CHARGE-OFFS is the ratio of loans charged off to total loans; NONCURRENT is the ratio of noncurrent loans to total loans, GEARING is the ratio of equity capital to total assets; TIER1 is the ratio of core capital to risk-adjusted assets; and RELSIZE is the facility size divided by the equity of the managing agent bank. The numbers in parentheses are standard errors.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

TABLE V

Estimates of the Percentage Syndicated of a Commercial and Industrial Loan for Bank-Only Loans

Variable	All variables	Specification B	Specification C	Specification D	Rated borrowers only
INTERCEPT	4.247*** (0.0481)	4.258*** (0.0233)	4.278*** (0.0409)	4.209*** (0.0242)	4.452*** (0.0366)
BONDRATE	0.110*** (0.0181)	0.175*** (0.0183)		0.116*** (0.0177)	
BONDINVGRADE					0.052*** (0.0202)
TICKER	0.006 (0.0155)		0.022 (0.0157)		
MATURITY	3.76E-5*** (9.38E-6)	4.78E-5*** (1.00E-5)	3.39E-5*** (9.57E-6)	3.62E-5*** (9.35E-6)	8.20E-6 (9.01E-6)
SECURED	-0.088*** (0.0171)	-0.096*** (0.0179)	-0.104*** (0.0175)	-0.084*** (0.0168)	-0.004 (0.0189)
REPEAT	0.002*** (0.0003)		0.002*** (0.0002)	0.003*** (0.0003)	0.001*** (0.0003)
AGT-RATE	0.011 (0.0158)	0.013 (0.0166)			
LNGROWTH	-0.038 (0.0365)		-0.038 (0.0363)	-0.045 (0.0354)	-0.063 (0.0467)
CHARGE-OFFS	-0.023* (0.0141)			-0.015 (0.0110)	-0.009 (0.0102)
NONCURRENT	0.015** (0.0074)		0.006 (0.0062)		
GEARING	-0.011 (0.0073)		-0.010** (0.0047)		
TIER1	0.001 (0.0014)			-0.001 (0.0010)	-0.006** (0.0025)
RELSIZE	1.10E-4*** (3.50E-5)	4.46E-5** (2.40E-5)	1.36E-4*** (3.80E-5)	1.04E-4*** (3.50E-5)	4.80E-5** (2.40E-5)
Model significance	$\chi^2 = 80.3^{***}$	$\chi^2 = 35.3^{***}$	$\chi^2 = 66.5^{***}$	$\chi^2 = 74.3^{***}$	$\chi^2 = 25.8^{***}$
# of observations	1480	1480	1480	1480	508

Note. Truncated regression estimates of the percentage of the loan syndicated (truncated from above at 100%). The sample of 1480 C&I loans includes only bank loans. BONDRATE is a dummy equal to one if the borrower has a senior, unsecured debt rating and zero otherwise; BONDINVGRADE is a dummy equal to one if the senior, unsecured debt rating is BBB or higher and zero otherwise; TICKER is a dummy equal to one if the borrower is listed on the NYSE, AMEX, or NASDAQ and zero otherwise; MATURITY is the maturity of the loan (in days); SECURED is a dummy equal to one if the loan is collateralized and zero otherwise; REPEAT is the number of repeat transactions in the presample period conducted with the managing agent bank syndicating the loan; AGT-RATE is a dummy equal to one if the managing agent has a senior, unsecured debt rating and zero otherwise; LNGROWTH is the rate of growth in loans of the managing agent bank; CHARGE-OFFS is the ratio of loans charged off to total loans; NONCURRENT is the ratio of noncurrent loans to total loans; GEARING is the ratio of equity capital to total assets; TIER1 is the ratio of core capital to risk-adjusted assets; and RELSIZE is the facility size divided by the equity of the managing agent bank. The numbers in parentheses are standard errors.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

and Phillis (1987) for loan sales and support the “regulatory tax hypothesis” of Berger and Udell (1993) in the loan sales literature. Loan size remains a highly significant factor when expressed as a ratio to the agent’s equity capital position.

We again estimated an equation examining the proportion of the loan sold, but including the set of bank specific variables. The results are reported in Table V. The results for the set of variables contained in the base-case model are fairly similar to those in Table III, although only the bond rating dummy is significant among the measures of information transparency. The relevance of an investment grade rating is identical to the results reported earlier. Most of the bank specific variables are insignificant, although the capital ratios are occasionally significant and correctly signed in certain specifications. Liquidity considerations and the quality of the originator’s loan portfolio do not affect the proportion of a loan sold, given the decision to syndicate.

IV. CONCLUDING DISCUSSION

We have analyzed one of the most rapidly growing sectors of the financial system, the market for syndicated loans. Our main objective was to identify the factors that affect a bank’s decision to sell a loan in a syndication context and, given a decision to syndicate, the determinants of the proportion of a loan that will be sold. We found evidence that the characteristics of the borrower, the managing agent, and the loan contract itself all are of some relevance to both decisions. In particular, the better the quality of the information about the borrower as reflected in either credit ratings or listing on a stock exchange, the more likely the loan will be sold and in larger proportions. This confirms the now standard view that the scale and scope of information asymmetries is relevant to the “saleability” of a debt contract. We also found evidence that the reputation of the managing agent, as reflected in the volume of repeat business or in the agent’s own credit rating, can attenuate some of the agency problems that adhere in loan syndications. Many authors, such as Gorton and Haubrich (1990) and Gorton and Pennachi (1989), have suggested that reputation might resolve moral-hazard problems in the loan sales market; our evidence confirms a reputational effect.

On the supply side, some of the agent bank’s balance sheet characteristics also facilitate syndication. In particular, capital-constrained banks are more likely to engage in syndication, but somewhat less likely to sell larger proportions of their syndicated loans. Liquidity considerations appear more relevant to the issue of whether to syndicate than to the relative amounts sold, as does the overall credit quality of the managing agent’s portfolio. A fundamental contribution of our paper is additional empirical support for the hypothesis that the character and quality of information concerning borrowers affects the salability of debt claims. Where information is less than fully transparent, debt contracts tend to be marketed to investors with specialized monitoring skills who rely on contractual characteristics

and seller reputation to resolve information asymmetry and agency problems. Lenders tend to hold larger proportions of information-problematic loans that are open to agency problems, which is a characteristic of relationship-oriented finance in the sense of Boot and Thakor (2000).

Research on the syndicated loan market could be extended in a number of useful ways. Virtually nothing is known, for instance, about the factors that influence a borrower's choice of a syndicated loan. The make-up of a loan syndicate in terms of size and composition is also a potential topic for future research, as is the apparent convergence of the syndicated loan and junk bond markets in the late 1990s. The impact of commercial bank entry into the securities underwriting business on the syndication market is still another fruitful area of investigation.

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