

Recent Trends in Bank Loan Syndications:
Evidence for 1995 to 1999

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Abstract

Bank loan syndications have become an increasingly popular and important way for commercial borrowers to satisfy their financing needs. The ability to overcome problems of adverse selection and moral hazard are critical to the development of this market. Using a panel data set constructed from the Shared National Credit Program over the period 1995 to 1999, this paper extends the work of Simons (1993) and Dennis and Mullineaux (2000) by estimating a multivariate cross-section/time-series regression model explaining an agent bank's retained share of a syndicated loan. The panel regression model focuses on the effect of information asymmetries, loan quality, and capital constraints on an agent bank's retained loan share. We also test for opportunistic behavior by agent banks. We find that bank capital, loan seasoning, and maturity have significant effects on the average loan share retained by an agent bank. More importantly, we find that, although agent banks retain larger portions of their lower-quality loans, certain agent banks specialize in the lower end of the credit spectrum, and these banks syndicate a larger share of their low-quality loans.

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1. Introduction

Syndicated loans increasingly have become the financing choice of large firms. As a result, syndicated lending has become a major component of today's financial landscape. Syndicated loan commitments totaled \$1.05 trillion in 1999, and syndicated lending now represents approximately 51 percent of new corporate financing, generating more underwriting revenue than either the equity or bond market.² Perhaps more importantly, the leveraged lending component of the syndicated loan market has been growing rapidly, as commercial borrowers have increasingly displayed a preference for leveraged borrowing over junk bond financing.³

A loan syndicate is a group of banks that jointly makes or underwrites a loan to a single borrower. Loan syndicates are led typically by an agent bank that initially underwrites the credit, and finds participants willing to purchase shares of the credit and to share the associated pro rata losses. The shift towards syndicated lending over other forms of financing can be attributed to the fact that the syndicated loan market combines some of the best features of both commercial and investment banking. First, syndicated loans, like other types of bank loans, can be of any maturity, possess numerous covenants, and most importantly, provide the flexibility of changing and renegotiating contract features during the life of the loan.⁴ Similar to public debt contracts, however, syndicated loans are typically longer term, possess loose covenants, and are rarely restructured.⁵ Like public debt markets, syndicated lenders have found it advantageous not only to participate, but also to sell or securitize highly leveraged syndicated loans, in order to satisfy a growing institutional demand for the risk/return profile of these investments. More than 140 institutional investors bought leveraged syndicated loans by year-end 1999, as compared to only 20

² See "The Biggest Secret of Wall Street," PaineWebber Equity Research, May 1999.

³ The Loan Pricing Corporation defines leveraged loans as those with all-in-drawn pricing of the London interbank offered rate (Libor) plus 125 basis points or more, and highly leveraged loans as those with all-in-drawn spreads in excess of (Libor) plus 250 basis points. These loans are the high-risk portion of the market and are typically senior-secured, Libor-based floating rate, quarterly coupon instruments that typically have strong covenant and collateral protection.

⁴ See "Leveraged Loans: The Plot Thickens," Bank of America Securities Syndicated Finance Research, November 1999.

institutional investors in 1993.⁶ These nonbank investors typically purchase a different tranche of the credit than their bank counterparts. The primary distinction between the tranches involves differences in spread, fees, and maturity.⁷ The institutional tranche is typically back-end loaded, which permits bank lenders to continue to specialize in loan monitoring early in the life cycle of the credits when it is most vital. Most importantly, however, the tranches are pari-passu in the case of restructuring and default, which greatly reduces any strategic motivations on the part of participants that may occur during the default or restructuring process.

The impressive depth of the syndicated loan market relies critically on the credibility of the agent banks and their risk monitoring systems, as well as the ability of loan participants (banks and institutional investors) to manage portfolio risk. As noted by Caouette, Altman, and Narayanan (1998), portfolio credit risk management represents the next great financial challenge for both financial and nonfinancial institutions. Improvements in portfolio credit risk management are deepening the market in commercial and industrial (C&I) loans and securities backed by C&I portfolios. This is happening in much the same way that previous innovations in asset pricing and risk management led to well-developed markets in securities backed by mortgages, credit card receivables, auto loans, and other assets. As with these other financial markets, an increasing share of the commercial loan market is taking on many of the characteristics of a public capital market. With this change in the financial landscape, differences in the attributes of private finance (bank loans) and public finance (corporate debt) and the associated migration out of bank loan markets, as discussed by Diamond (1991) and Boot and Thakor (2000), will continue to dissipate.

The syndicated loan market has gradually been developing qualities typically exhibited by public capital markets. This progression is most readily apparent in the individual loan ratings assigned by both Moody's and Standard and Poor's (S&P). These ratings were initiated in 1995, and

⁵ The characteristics of the lending and public debt markets have been examined in Berlin and Mester (1992) and Rajan and Winton (1995).

⁶ See David Weidner, "Syndicated Loans Gaining Leverage on Junk Bonds," *American Banker*, February 11, 2000.

⁷ See Altman (1999) for an in-depth discussion of the differences between bank and institutional tranches.

during the past five years, corporations have actively solicited and paid for loan ratings, which has greatly enhanced their liquidity. The loan rating market, however, is still in its early development, with only a fraction of banks' total syndicated credits actually receiving a rating.⁸

Banks are benefiting from this broadening of the syndicated loan market and the increased ability to sell and securitize syndications in a number of ways. Loan syndications are a cost-effective method for participating banks to achieve diversification in their banking books and to exploit any funding advantages relative to agent banks.⁹ Syndicated lending also allows banks to compete more effectively with public debt markets for corporate borrowers. To a considerable extent, the development of the loan syndication market has stemmed, if not reversed, the trend toward "disintermediation" of corporate debt.¹⁰ Finally, the syndicated loan market enables agent banks to leverage their expertise in loan origination and fee collection for structuring, distributing, and servicing the larger credits that are part of Shared National Credit (SNC) program. At the same time, agent banks shed much of the credit risk, thus providing a mechanism to manage interest rate risk and avoid current capital requirements on loans held in portfolio.

Besides the benefits of syndications, however, there are also costs. One of these costs is the increased portfolio credit risk that participant banks might mistakenly assume if an agent bank does not disclose all relevant credit information about particular borrowers to syndicate members. The information asymmetry between agent banks and syndicate members could allow agent banks to engage in opportunistic behavior, such that they would retain a larger share of high-quality loans and a smaller share of low-quality loans than would be retained if there were no information asymmetries. Banks that engage in this type of behavior, however, may suffer from some form of reputation risk that would impede their ability to do this on a long-term basis.¹¹ Gorton and Pennachi (1995) note that loan sales can generate moral hazard problems, given that the incentives

⁸ For example, S&P currently rates over 1,100 bank facilities.

⁹ Pennachi (1988) argues that loan purchasers may have funding advantages relative to some originators.

¹⁰ Of course, this is accomplished by reducing the differences between intermediated and public debt markets.

to monitor may be mitigated once a loan, or portion thereof, is sold. Also, Bhattacharya and Chiesea (1995) show that multilateral financing, such as loan syndication, can provide adverse incentives to invest in research and development.

Using unique data from the Shared National Credit Program, the purpose of this paper is twofold. First, the paper examines trends in the volume and credit quality of loans syndicated through the banking system. The coverage of the SNC database is much greater than that of data available elsewhere, since it covers both public and private companies and some smaller credits that are not reported by other sources. Second, the paper examines several factors affecting the extent of participation in syndicated credits. Given the rapid changes occurring in capital markets today, this paper attempts to explain the reasons behind the reduced share of syndicated credits held by agent banks, and the possible roles of opportunistic behavior and reputation risk in determining these loan shares.

The remainder of the paper is organized as follows. In section 2, we provide background information on the SNC program and data. Section 3 documents the characteristics of, and growth trends in, SNC agent banks, participants, loans, and credit quality over the period from 1995 to 1999. In section 4, we estimate a multivariate regression model using the panel data set of SNC loans. We control for several factors that influence the share of syndicated loans held by agent banks including the effects of leverage, information asymmetries, SNC loan size, and industrial classification of SNC loans, as well as loan seasoning, maturity, and age on the loan share. With these control variables, we can focus on the roles of reputation and opportunistic behavior in the bank loan syndication process. Section 5 summarizes the paper's empirical findings and suggests possible areas for future research.

2. Overview of the SNC Program and Data

¹¹ Reputation risk has been proposed as a possible solution to agency problems in several areas, including audit quality

The SNC Program is administered jointly by the Federal Deposit Insurance Corporation (FDIC), Federal Reserve Board (FRB), and Office of the Comptroller of the Currency (OCC) for the purpose of ensuring consistency and reducing duplication among the three federal banking regulators in the classification of large syndicated credits. Prior to 1999, an SNC loan was defined as a loan or formal loan commitment extended to a borrower by an institution supervised by the federal banking agencies with an original amount of \$20 million or more and which two or more unaffiliated institutions had shared.¹² Beginning in 1999, this definition was changed to include only those loans shared by three or more unaffiliated institutions.

Loan syndications are typically led by an agent bank, whose functions include recruiting a sufficient number of loan participants, negotiating the contractual details of a loan, and preparing adequate loan documentation. An agent bank is responsible for disseminating financial documents to potential participants and for loan servicing once the loan is made. The agent bank receives a fee for these services.¹³

Bank regulations require participants to be responsible for performing their own credit analysis and evaluation and not to rely solely on loan documentation provided by the agent bank.¹⁴ As Gorton and Pennachi (1995) point out, although there is a single loan agreement, each first-line participant is a direct lender to a borrower, as evidenced by a separate note.¹⁵ In practice, however, syndicate members typically rely on information provided by the agent bank and may also rely to some extent on the agent bank's credit assessment. This leaves syndicate members vulnerable to a certain degree of opportunistic behavior by the agent bank, which could withhold information or possibly cherry-pick the high-quality syndicated loans for its own portfolio. Participants could

(DeAngelo (1981)) and underwriting (Booth and Smith (1986)).

¹² Previous published studies of the syndicated loan market have generally focused on larger credits (greater than \$100 million) that have some type of rating from either Moody's or S&P. For example, see Altman and Suggitt (2000).

¹³ Most of the SNC volume (over 90 percent) is generated by only a dozen or so banks that have adequate resources and abilities to act as agents. There are, however, over 10,000 unique loan participants, not including those in the secondary market.

¹⁴ Once a syndicate is complete, participants can also sell their shares in the secondary market.

demand recourse to alleviate these concerns, but this rarely occurs, since regulatory rules require a bank selling loans with recourse to retain the whole loan on its balance sheet and hold capital against it, thus negating a primary function of the sale.¹⁶

SNC loans are reviewed annually at a designated bank, usually the agent bank, and the quality rating assigned by examiners is reported to all participating banks. Bank examiners rate all syndicated loans at least once annually in May, with troubled loans reviewed again in November. During examinations, syndicated loans are grouped into five categories, depending on their credit quality. Loans that present no perceived credit problems are rated “pass,” while the remaining loans are rated as having potential credit problems and are termed “classified” loans. These “classified” loans are placed into one of four categories, depending on the severity of credit risk. In order of increasing credit risk, these categories are “specially mentioned,” “substandard,” “doubtful,” and “loss.” “Specially mentioned” loans typically have a minor weakness, such as poor documentation, while the categories “substandard” and “doubtful” represent an increasing possibility for the bank to sustain a loss, while “loss” loans are considered uncollectible.

Simons (1993) analyzed the bank SNC lending program. She examined both the characteristics of SNC loans and the determinants of agent loan share using SNC data for the year 1991. Several interesting results were reported. First, capital constraints were found to play a major role in the loan amount held by an agent bank. Agent banks that were more capital-constrained were also more likely to retain smaller loan shares. Second, agent banks typically held greater shares of real estate loans, which were typically more risky than other loan types in 1991. Finally, Simons found no indication of opportunistic behavior in 1991 since agent banks were found to keep a smaller share of higher-quality loans.

¹⁵ Gorton and Pennachi (1995) note that this is the primary distinction from a loan sale, which typically involves a participation contract that grants the buyer a claim on a certain percentage of the cash flow. Loan participants, can in turn, conduct loan sales of their portions.

¹⁶ This still does not address the possibility of "implicit" recourse, whereby banks may implicitly agree to buy back poorly performing loans.

Recently, Dennis and Mullineaux (2000) examined the syndicated loan market using data from the *Gold Sheets*, a publication of Loan Pricing Corporation (LPC). Their database of syndicated credits differs from our sample of SNC loans in several important ways. First, the LPC database has different loan coverage because it includes credits that are not brokered by banks, an area of lending that has grown in recent years. However, since these loan data are taken primarily from Securities and Exchange Commission (SEC) filings, it is not necessarily representative of the bank SNC population. Strahan (1999) argues that LPC credits tend to be loans made to the largest and most profitable of firms listed on Compustat. As a result, the SNC database is more representative of the syndicated loan market since it includes not only large loans to large firms, but also larger loans to smaller, private companies. The LPC data set used by Dennis and Mullineaux includes 30,000 loan facilities over the period from 1987 to 1995, of which less than half are syndicated loans. Moreover, after addressing other data issues, these authors end up with a sample of 3,410 facilities and only 1,800 syndicated loans. In contrast, our sample of loans has much greater coverage, with over 23,000 syndicated loans for the period from 1995 to 1999.

The results reported by Dennis and Mullineaux are a useful point of departure for our empirical work. They found that agent banks held larger portions of problematic loans in their portfolios, and that both capital and liquidity constraints played a role in the amount of loans that were sold.

Our paper extends the work by Simons and Dennis and Mullineaux. Our sample of SNC loans has greater coverage of bank credits than the data used by Dennis and Mullineaux and allows us to examine better the bank syndication market. Unlike Simons, who performed a cross-sectional analysis using 1991 data, we use several years of data that allow us to use panel techniques to capture trends over time and to control for time effects over the period from 1995 to 1999. The time series nature of the data also allows for alternative tests of opportunistic behavior. Moreover, the market for syndicated loans has changed dramatically since 1991, the sample period for Simons' study.

3. Recent Trends and Characteristics of Syndicated Loans

3.1 Trends in the Number and Type of Agents and Participants

Table 1 provides descriptive statistics on trends in the number of agent banks and loan participants. Panel A of Table 1 shows that the number of agent banks is rather small and has declined over time, most likely due to industry consolidation. For example, in 1995, there were 345 commercial banks acting as SNC agents, while the number of agents declined to just over 223 by 1999. Panel A also shows that the number of SNC credits led by these banks is highly concentrated among the largest banks. For example, the number of credits led by the top ten banks has been fairly stable at around 50 percent, and most of the other agent banks are very small, with approximately 30 percent of all agent banks leading two or fewer credits.

Panel B of Table 1 provides descriptive information on trends in loan participant activity.¹⁷ Panel B shows that the growth in the number of SNC participants is commensurate with the overall growth of the SNC market, increasing from about 58,541 participants in 1995 to 94,090 participants in 1999. The average number of participants for each credit, however, remained relatively stable at around 7.5 participants until the SNC program increased the minimum number of participants from 2 to 3 in 1999. The SNC definitional change resulted in a slight spike in the average number of participants from 7.6 in 1998 to 9 in 1999. Finally, panel B also shows that the level of participation, at least as measured by the number of participants, varies widely, ranging from one to over 100 participants.

Panel C shows trends in the types of SNC participants over the period from 1995 to 1999. The most important result in this panel is the increasing importance of nonbank participants in these

¹⁷ Agent banks are only required to report the shares to the participants they have brought into the deal. There is a fairly active secondary market among the participants, who can sell their shares, so the actual number of participants is much greater.

credits. For example, the number of security brokers and dealers listed as participants rose dramatically in 1997, which coincides with the growth in the collateralized loan obligation market, and the initiation of loan ratings by Moody's and S&P.

3.2 Trends in the Number and Amounts of SNCs in the Banking System

Table 2 presents descriptive information on the syndicated loans in our sample. Given the definitional change in an SNC loan, panel A reports statistics for the years from 1995 to 1998 using the old SNC definition, and panel B reports statistics for the years from 1995 to 1999 using only loans with at least three regulated participants.¹⁸

Syndicated credits include both loans and unused portions of lines of credit. Panel A shows that the average syndicated loan size rose steadily, from \$144.8 million in 1995 to \$166.8 million in 1998, an increase of 15.2 percent over the four-year period. As expected, panel B shows that the average loan size, when we exclude loans with less than three regulated participants, is higher. The average size of these loans increased by 13.6 percent over the same four-year period, and there was a large increase of 6.9 percent in average loan size from 1998 to 1999.

Both the number of SNC loans and the number of unique SNC borrowers rose dramatically between 1995 and 1998. This is consistent with the tremendous overall growth in the syndicated loan market over the time period. This growth slowed considerably between 1998 and 1999, with the number of unique borrowers actually declining over that period. This slowdown was likely due in large part to the market turmoil in Asia, Russia, and, to a lesser extent, Latin America that caused a general "flight to quality." Since the growth in leveraged lending was the most significant growth component in the syndicated loan market, this flight to quality was reflected in lower activity in the syndicated loan market.¹⁹ This hypothesis is supported by the January 1999 Senior Loan Officer

¹⁸ The SNC Program allows for exceptions to the rule that a SNC loan must have three or more regulated participants. To create a consistent data series, we do not include 1999 loans with less than three regulated participants.

¹⁹ See "C&I Loan Volume Drops Sharply Due to Global Financial Turmoil, According to Loan Pricing Corporation," at http://about.reuters.com/aboutreuters/newsreleases/1998/lpc-c_and_i.html, October 12, 1998.

Survey conducted by the Federal Reserve Board that included several questions on the syndicated loan market and found that the syndicated loan market tightened greatly during this period due to concern about capital market turmoil.

Table 2 also shows that both the average and median share of the loans held by agent banks steadily declined over the sample period. Using the pre-1999 SNC definition, the average share of SNCs held by agent banks show a modest decline, falling from 33.6 percent in 1995 to 31.0 percent in 1998. The decline in the median share held by agent banks, however, was more substantial, falling from 31.5 percent in 1995 to 27.5 percent in 1998. Agent banks typically hold a smaller share of loans when there are three or more participants. For these loans, both the average share and the median share held by agent banks declined by approximately 25 percent between 1995 and 1999.

The overall growth in the SNC Program and the decline in agent share over our sample period is consistent with the increase in syndicated loan sales and the securitization of these loans as collateralized loan or debt obligations (CLOs and CDOs) during the latter 1990s. Banks have been securitizing portions of their C&I loan portfolios through collateralized loan obligations since around 1996, and the CLO market has experienced dramatic growth in the past two years. For example, the aggregate dollar amount of all rated CLO and collateralized bond obligations was 80 percent larger in 1998 than in 1997. The recent growth in individual loan ratings generated by rating agencies has helped spur this market by enhancing the attractiveness of syndicated loans. Currently, Standard and Poor's has rated over 1,100 credit facilities, totaling over \$623 billion.²⁰

3.3 Credit Quality of Syndicated Loans

Table 3 reports the number and percentage of pass and classified examiner-based credit ratings for our sample of syndicated loans. There is a clear increase in the number of loans rated

²⁰ See <http://www.standardandpoors.com/ratings/highyield/index.htm> for an overview of the S&P loan ratings market and process.

“pass” between 1995 and 1998, followed by a decline in the percentage of pass loans from 1998 to 1999. While the increase in classified loans in 1999 might provide support for the concerns expressed by regulators over deterioration in credit underwriting standards, one should interpret the point-in-time statistics in Table 3 with care. In particular, it is important to account for the age of loans, since new loans are typically “pass” credits, and it usually takes a period of time before a loan rating deteriorates.²¹

The data shown in Table 4 provide a more useful perspective on changes in credit quality over time. Table 4 displays the percentage of classified loans for loans by cohort year and by age of the loan. The cohort year is the earliest agreement year for a loan. Since only a handful of loans are ever classified in the agreement year, Year 1 in Table 3 represents the examiner’s rating in the year following the agreement year. Thus, for example, the Year 2 percentage classified column for the 1993 cohort represents the percentage of loan agreements made in 1993 that were classified in 1995.

Inspection of the individual rows of the transition matrix in Table 4 reveals that the percentage of loans rated “classified” tends to increase over the first three years of a loan’s life and then flattens out or declines thereafter. This conforms to the usual life-cycle pattern in which loans take time to deteriorate after agreement. Inspection of the columns reveals that the percentage of loan agreements in 1998 that were rated “classified” in 1999 was far higher than other Year 1 loan experiences. Moreover, there is a very high share of loans made in 1997 that become “classified” in 1999. This trend in performance seems consistent with the very large growth in leveraged loans over the sample period. In 1993, leveraged lending represented less than 10 percent of syndicated loan volume. By 1998, leveraged lending accounted for slightly over 30 percent of the syndicated loan market.

²¹ Another possible reason behind this trend is a “get tough” attitude by regulators. Since loan classifications by examiners entail some subjectivity, the trend in classifications could also reflect a regulatory shift by supervisors to

3.4 Agent Share and Syndicated Loan Quality

Table 5 reports the average and median agent bank's share of syndicated loans by examiner-based loan quality. Agent banks generally know more about the quality of the loans they originate than do participants. It is possible that agent banks will behave opportunistically and hold less of their low-quality loans. However, there are factors that will tend to offset a positive relationship between agent share and loan quality. First, agent banks are interested in their market reputation and therefore might refrain from exploiting any informational advantage for short-term gain. Even if agent banks on net choose to exploit their informational advantage, this would be offset to some extent if participants have some signal about relative loan quality. For example, if participants recognize the potential for opportunistic behavior on the part of agent banks, they will tend to hold a smaller share of loans that are opaque or where the agent is more likely to have an information advantage. Since lower-quality credits are typically more opaque than higher quality credits, this will tend to reduce participant demand for these loans and could lead to a net negative relationship between agent share and loan quality. Thus, while a positive relationship between loan quality and agent share would indicate opportunistic behavior, a negative relationship doesn't necessarily indicate an absence of opportunistic behavior by agent banks.

The sample statistics reported in table 5 indicate a negative relationship between loan quality and agent share from 1995 through 1998, both for the full sample and for SNC loans with three or more participants. However, it is quite striking that the difference in agent loan share between "pass" and "classified" loans disappears in 1999.

4. Panel Regression Model

In this section, we specify a panel regression model to test for the effect of capital constraints, loan quality, and information variables on an agent bank's share of syndicated loans

what has been perceived as lax underwriting standards. Given our data, it is difficult to examine this hypothesis.

held in portfolio. All regressions are estimated at the loan level. That is, the dependent variable is the share of a SNC credit held by the agent bank, where the individual credit is an observation. The remainder of this section discusses several important control variables and the importance of opportunistic behavior and reputation of agent banks in determining the loan share they retain.

4.1 Control Variables

The level of agent bank capital could have an impact on the share held by an agent bank, since banks with low capital ratios have a greater incentive to keep loans off the balance sheet. Even though most banks over our sample period are “well capitalized” according to regulatory definitions, banks may desire to keep an adequate buffer capital stock to protect them against falling below the “well capitalized” standard. If capital considerations constrain bank decisions, then the level of capital should be positively related to the share of SNC loans held by the agent bank. Similar to Simons (1993), we include the leverage ratio (EQV)—equity capital to assets—to assess the effect of capital constraints. If capital constraints are important, then we would expect a significant positive coefficient on EQV.

The regression analysis also controls for the relative size of the SNC, since we expect loan size and agent bank share to be negatively related for a number of reasons. If capital constraints matter, then holding a larger share of a large loan has a bigger impact on an agent bank’s capital ratios. In addition, information asymmetries tend to be less severe for large loans, since any fixed costs associated with obtaining information about a borrower are a less significant obstacle for large loans. Finally, agent banks might want to hold a smaller share of a large loan to avoid risks associated with a concentrated exposure to a single borrower. Thus, the variable SNC_AVG is the size of an SNC credit relative to the average size of all SNC credits made by the same agent bank in that year.

Another important control factor is the degree of asymmetric information that exists between agent banks and non-agent participants. We expect that a larger informational advantage on the part of the agent bank will be associated with a larger agent bank share. Participants in a loan syndication will tend to be wary about participations where the agent bank is likely to have a significant informational advantage. Thus, for example, we would expect agent banks to hold a smaller share of loans in a publicly rated firm. We use an indicator variable PUBLIC that equals one if the firm has a CUSIP number and zero otherwise. We use another indicator variable ST_OPER to control for whether the agent bank has branches in the same state as the borrowing firm's headquarters (ST_OPER=1) or not (ST_OPER=0). Since it is more likely that the agent bank has special knowledge of local firms, we would expect the coefficient on ST_OPER to be significantly positive. Finally, the indicator variable SERV indicates that the borrowing firm is in the service sector (SERV=1, 0 otherwise). Since service sector firms generally have fewer tangible assets than non-service-sector firms do, information asymmetries tend to be more important for lending decisions to service sector firms. Thus, we would expect a positive coefficient on SERV.

As the tables above have shown, loan seasoning (AGE) and loan maturity (YEAR_M) may also significantly influence the agent share held. Both of these factors relate to the life cycle of credits and need to be controlled for in the analysis. In addition, we follow Simons (1993) and include a dummy variable REAL_ES indicating that the purpose of the loan was for commercial real estate (REAL_ES=1, 0 otherwise). Because of the loss experience in commercial real estate lending, Simons argues that REAL_ES is a proxy for loan risk, and thus should have a positive sign in the regressions.

4.2 Opportunistic Behavior vs. Reputation Preservation

The impact of loan quality on agent share is ambiguous. Agent banks have an incentive to engage in opportunistic behavior by retaining a smaller share of riskier loans. However, as we

discussed above, there are opposing influences that may cause agent banks to hold a larger share of low-quality loans. In particular, loan participants will take into account the incentives of agent banks, and will be less willing to hold shares of loans where agent banks are likely to have a significant informational advantage. The degree of informational advantage may be closely related to any previous lending agreements between the agent bank and the borrower, or possibly through the agent bank's providing services to the borrower such as cash-management and payroll services. Thus, a negative relationship between loan quality and agent share does not rule out the possibility of opportunistic behavior. Agent banks might still use superior information and syndicate more of their low-quality loans than participants would have accepted under a symmetric-information equilibrium.

Following Simons (1993), we measure loan quality by converting the qualitative loan ratings of examiners that capture the degree of credit problems in a numeric format usable in regression. Specifically, we use the variable WQUALL that is constructed employing the classified asset weights used by examiners to estimate a bank's asset quality ratio. These loss estimates are 20 percent for "substandard" credits, 50 percent for "doubtful" credits, and 100 percent for "loss" credits. Although, examiners do not use a loss ratio for "specially mentioned" loans, we follow Simons and give them a 10 percent loss ratio to permit a distinction from "pass" loans. Thus, loans that examiners graded 100 percent "pass" were assigned a weighted quality of 1, "special mention" loans were assigned a weighted quality of .9, and "substandard" loans were assigned a weighted quality of .8. Doubtful loans were assigned a weighted quality equal to .5, and loans rated "loss" were assigned a weighted quality of 0. Loans in which the classification fell between these ratings were given the average value of the ratings.²² While a positive coefficient on the WQUALL would be an indicator of opportunistic behavior, a negative coefficient could be the result of participants' responses to the degree of asymmetric information.

²² For example, loans that were 50 percent "pass" ($50\% * 1$) and 50 percent "substandard" ($50\% * .80$) were assigned a weighted loan quality of .90.

To explore further the issue of agent banks' incentives to engage in opportunistic behavior, we also include in the regression model the weighted quality of the agent bank's portfolio of syndicated loans lagged one year. This variable (BQUALL) is constructed by taking the average weighted quality of the agent bank's portfolio of SNC credits from the prior year. Agent banks have a greater incentive to originate low-quality loans if they can pass on larger shares of those loans to the market. A negative relationship between an agent's share of a loan and the quality of the agent bank's portfolio of syndicated loans is an indication these banks are successfully engaging in that strategy. A positive coefficient on BQUALL indicates that those banks originating more low-quality credits hold a smaller share of a loan for any given quality.

4.3 Regression Model Specification and Results

The dependent variable in the regression model, ASHARE, is the share of a syndicated loan retained by the agent bank. The model controls for all the factors discussed above and also takes into account the SNC definitional change in 1999 in two ways. First, we estimate a regression including a dummy variable for 1999 (DUM99=1 for 1999, 0 otherwise). As an alternative approach, we estimate our regressions using only data on SNC loans that are shared among at least three regulated entities.

Panel A of Table 6 reports the results of our regression model using the panel data set of all syndicated loans from 1996 to 1999. The data for 1995 are dropped because we are unable to construct the PUBLIC variable for 1995.²³ In addition, single-year syndicated loans are dropped from the sample. A Lagrange Multiplier test showed that a random effect model represented a significantly better fit to the data than a pooled cross-section, time series OLS model.

The coefficients in the regression model are significant and conform to our theoretical priors. For example, SNC age and maturity have the expected signs. The results for the regression

²³ The OCC did not start to collect this information until 1996.

model using DUM99 are consistent with the regression model using the SNC 1999 definition in all years. The coefficient on EQV (leverage ratio) is significantly positive, indicating that capital constraints play a role in determining the share of loans held by agent banks. A positive coefficient for SNC_AVG is also consistent with the role of capital constraints, though there are other factors associated with loan size (such as information asymmetry and diversification) that may explain this result.

Our proxies for information asymmetry all indicate that greater information asymmetry is associated with a higher share held by the agent bank. Agent share tends to be lower, if the borrower is a public company and the loan is large. On the other hand, agent share tends to be higher, if the agent bank operates in the same state as the borrower or if the borrower is a service sector firm.

The coefficient on individual weighted loan quality (WQUAL) is negative. Thus, agent banks tend to retain a higher proportion of their low-quality loans. However, the coefficient on the lagged quality of the agent bank's portfolio of SNC loans is positively associated with agent share. Thus, for a given loan quality, agent banks that originate generally low-quality loans hold a smaller share of those loans. Thus, our findings are consistent with the view that those banks specializing in originating low-quality syndicated loans are syndicating more of their overall loan portfolio.

5. Summary and Conclusions

Syndicated loans have rapidly become a major component of corporate credit markets. Developments in this market are having a substantial impact on reversing the trend toward “disintermediation” of corporate credit, in part, by creating bank loan markets that increasingly operate like securities market. The speed of development of the syndicated loan market depends crucially on the ability of agent banks to credibly signal loan quality, and improvements in the ability of investors to price and manage credit risk associated with commercial loans. Continuing

market and technical developments in these areas possibly represent steps toward developing deep markets in securities backed by commercial loans.

Our panel regression estimates indicate the significant determinants of an agent bank's retained share of a syndicated loan. A higher level of agent bank capital is associated with a higher agent bank share. This suggests that capital constraints provide a significant incentive for banks to participate in the syndicated loan market. While information asymmetries might become less of a factor over time, our regression results indicate that proxies for an agent bank's informational advantage still have a significant impact on the share of a loan retained by the agent bank. Finally, while agent banks generally hold a larger share of their low-quality loans, agent banks that have a greater portfolio concentration of lower quality credits hold a smaller share of their loans. That is, some agent banks specialize in originating low-quality loans and these banks are relatively successful in finding participants for these loans.

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Table 1. Descriptive Statistics on Agents, Participants and Participant Type

| Panel A. Agent Banks | | | | | | |
|--|------------------------------|---|--------------------------------|--|-------------------------------|-----------|
| Year | Number of Unique Agent Banks | Top10 Agent Banks % of Credits Originated | | % of Agent Banks with Two or Fewer Credits | | |
| 1995 | 345 | 47.7 | | 31.9 | | |
| 1996 | 361 | 47.0 | | 35.2 | | |
| 1997 | 330 | 52.1 | | 32.4 | | |
| 1998 | 287 | 47.7 | | 29.6 | | |
| 1999 | 223 | 53.5 | | 27.8 | | |
| 1995-1999 | 498 | 41.5 | | 22.9 | | |
| Panel B. Number of SNC Participants | | | | | | |
| Year | Total # of Participants | # of Unique Participants | Mean # of Participants Per SNC | Min. # of Participants Per SNC | Max # of Participants Per SNC | |
| 1995 | 58,541 | 1,716 | 7.2 | 1 | 114 | |
| 1996 | 65,471 | 1,808 | 7.3 | 1 | 106 | |
| 1997 | 73,746 | 1,882 | 7.5 | 1 | 108 | |
| 1998 | 87,123 | 2,101 | 7.6 | 1 | 104 | |
| 1999 | 94,090 | 2,353 | 9.0 | 2 | 99 | |
| 1995-1999 | 378,971 | 3,654 | 7.7 | 1 | 114 | |
| Panel C. Participant Types by Year | | | | | | |
| Participant Type | 1995 | 1996 | 1997 | 1998 | 1999 | 1995-1999 |
| Commercial Bank | 28,820 | 31,711 | 35,362 | 42,407 | 45,367 | 18,3667 |
| Commercial Finance Company | 1,321 | 1,779 | 2,059 | 2,400 | 2,763 | 10,322 |
| Holding Co. Only (not itself any other charter type) | 111 | 166 | 290 | 393 | 676 | 1,636 |
| Savings Bank | 218 | 234 | 285 | 410 | 604 | 1,751 |
| Savings and Loan Association | 7 | 166 | 290 | 393 | 676 | 1,636 |
| Securities Broker and Dealer | 198 | 209 | 462 | 979 | 1,212 | 3,060 |
| Other non-depository Institution | 2,128 | 3,205 | 4,094 | 6,558 | 10,660 | 2,6645 |
| Missing type | 24,669 | 26,942 | 29,860 | 32,521 | 31,212 | 14,5202 |
| Other ²⁴ | 1,069 | 841 | 1,024 | 1,053 | 1,181 | 5,168 |

²⁴ "Other" includes other government agencies, central banks, development banks, industrial banks, edge corporations, mortgage banking corporations, discount houses, and other types of finance companies.

Table 2. Descriptive Statistics for Syndicated Loans

| Panel A. All SNCs | | | | | | | | Panel B. SNCs with more than Two Regulated Participants | | | | | | |
|--------------------------|------------------|-------------------|-------------------------|--------------------------|---------------|----------------|------------------|--|-------------------|-------------------------|--------------------------|---------------|----------------|------------------|
| SNC Year | # of SNC credits | # of unique borr. | Avg. Size of Loan (000) | Avg. Share Held by Agent | Min Share (%) | Max. Share (%) | Median Share (%) | # of SNC credits | # of unique borr. | Avg. Size of Loan (000) | Avg. Share Held by Agent | Min Share (%) | Max. Share (%) | Median Share (%) |
| 1995 | 7,683 | 5,225 | 144,823 | 33.6 | 0 | 100 | 31.5 | 6,092 | 4,233 | 17,2343 | 27.4 | 0 | 96.0 | 25.0 |
| 1996 | 8,419 | 5,660 | 151,822 | 32.3 | 0 | 100 | 30.0 | 6,724 | 4,611 | 17,9917 | 26.3 | 0 | 99.8 | 24.2 |
| 1997 | 9,200 | 6,126 | 163,328 | 31.8 | 0 | 100 | 28.9 | 7,337 | 4,978 | 19,3625 | 25.8 | 0 | 92.0 | 23.3 |
| 1998 | 10,434 | 6,750 | 166,845 | 31.0 | 0 | 100 | 27.5 | 8,434 | 5,556 | 19,5816 | 25.6 | 0 | 99.2 | 22.1 |
| 1999 | 8,975 | 5,587 | 203,882 | 22.6 | 0 | 94 | 20.0 | 8,657 | 5,469 | 20,9424 | 22.3 | 0 | 94.0 | 20.0 |
| 1995-1999 | 44,711 | 10,980 | 166,941 | 30.2 | 0 | 100 | 26.7 | 37,244 | 9,323 | 191,837 | 25.3 | 0 | 99.8 | 22.5 |

Table 3. Credit Quality of Syndicated Loans by Year

| Panel A1. 1995 SNCs | | | | | Panel B1. 1995 SNCs >2 Regulated Participants | | | | |
|----------------------------|----------|------------|---------------|------------|---|---------|------------|---------------|------------|
| Loan Class. | Number | % of Total | Value (\$000) | % of total | Loan Class | Number | % of Total | Value(\$000) | % of total |
| Pass | 6,855.1 | 89.2 | 1,065,211,255 | 95.7 | Pass | 5,490.1 | 90.1 | 1,010,332,135 | 96.2 |
| Classified | 827.9 | 10.8 | 47,378,787 | 4.3 | Classified | 601.9 | 9.9 | 39,580,037 | 3.8 |
| Total | 7683.0 | 100.0 | 1,112,590,042 | 100.0 | Total | 6092.0 | 100.0 | 1,049,912,172 | 100.0 |
| Panel A2. 1996 SNCs | | | | | Panel B2. 1996 SNCs >2 Regulated Participants | | | | |
| Pass | 7,656.3 | 89.8 | 123,294,8678 | 96.4 | Pass | 6,158.6 | 91.6 | 1,171,224,069 | 96.8 |
| Classified | 762.7 | 10.2 | 45,238,309 | 3.6 | Classified | 565.4 | 8.4 | 38,537,130 | 3.2 |
| Total | 8419.0 | 100 | 1,278,186,988 | 100.0 | Total | 6724 | 100.0 | 1,209,761,199 | 100.0 |
| Panel A3. 1997 SNCs | | | | | Panel B3. 1997 SNCs >2 Regulated Participants | | | | |
| Pass | 8,526.7 | 92.7 | 1,461,811,507 | 97.3 | Pass | 6,831.9 | 93.1 | 1,384,991,633 | 97.5 |
| Classified | 673.3 | 7.3 | 40,806,102 | 3.7 | Classified | 505.1 | 6.9 | 35,636,605 | 2.5 |
| Total | 9,200 | 100.0 | 1,502,617,609 | 100.0 | Total | 7337.0 | 100.0 | 1,420,628,238 | 100.0 |
| Panel A4. 1998 SNCs | | | | | Panel B4. 1998 SNCs >2 Regulated Participants | | | | |
| Pass | 9,695.3 | 92.9 | 1,690,355,441 | 97.1 | Pass | 7905 | 93.7 | 1,608,655,282 | 97.4 |
| Classified | 738.7 | 7.1 | 50,508,186 | 2.9 | Classified | 529 | 6.3 | 42,854,658 | 2.6 |
| Total | 1,0434.0 | 100.0 | 1,740,863,628 | 100.0 | Total | 8,434 | 100.0 | 1,651,509,940 | 100.0 |
| Panel A5. 1999 SNCs | | | | | Panel B5. 1999 SNCs >2 Regulated Participants | | | | |
| Pass | 8,152.7 | 90.3 | 1,761,088,113 | 96.2 | Pass | 7,887.7 | 91.1 | 1,746,723,840 | 96.4 |
| Classified | 822.3 | 9.7 | 68,756,690 | 3.8 | Classified | 769.3 | 8.9 | 66,259,568 | 3.6 |
| Total | 8975.0 | 100.0 | 1,829,844,803 | 100.0 | Total | 8,657.0 | 100.0 | 1,812,983,409 | 100.0 |

Table 4. Transition to Classified by Cohort and Age²⁵

| All SNCs | | | | | | | | | | | | |
|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|-----------------|
| SNC Cohort | # of Credits Year 1 | % Class. Year 1 | # of Credits Year 2 | % Class. Year 2 | # of Credits Year 3 | % Class. Year 3 | # of Credits Year 4 | % Class. Year 4 | # of Credits Year 5 | % Class. Year 5 | # of Credits Year 6 | % Class. Year 6 |
| 1993 | -- | -- | 1,370 | 7.7 | 937 | 11.2 | 600 | 8.2 | 402 | 10.4 | 189 | 3.7 |
| 1994 | 2,470 | 5.8 | 1,948 | 7.3 | 1,236 | 8.7 | 820 | 6.8 | 426 | 7.5 | | |
| 1995 | 2,602 | 5.1 | 2,044 | 7.8 | 1,381 | 9.1 | 743 | 9.3 | | | | |
| 1996 | 2,928 | 5.3 | 2,246 | 8.1 | 1,171 | 9.2 | | | | | | |
| 1997 | 3,645 | 5.2 | 2,443 | 13.1 | | | | | | | | |
| 1998 | 3,178 | 7.1 | | | | | | | | | | |
| Total | 14,824 | 5.7 | 10,076 | 9.0 | 4,858 | 9.4 | 2,165 | 8.0 | 828 | 8.9 | 189 | 3.7 |

²⁵ Cohort is formed by earliest agreement year of the credit.

Table 5. Agent Share by Loan Quality

| Panel A. Average Share Held All SNCs by Loan Classification | | | | Panel B. Average Share Held SNCs > 3 Participants by Loan Classification | |
|--|--------|------|------------|--|------------|
| SNC Year | | Pass | Classified | Pass | Classified |
| 1995 | Mean | 32.9 | 39.7 | 26.8 | 32.9 |
| | Median | 30.4 | 39.1 | 25.0 | 30.8 |
| 1996 | Mean | 31.7 | 37.9 | 25.8 | 31.4 |
| | Median | 29.0 | 37.7 | 23.5 | 30.0 |
| 1997 | Mean | 31.4 | 36.1 | 25.5 | 30.0 |
| | Median | 28.6 | 33.3 | 22.9 | 28.0 |
| 1998 | Mean | 30.6 | 35.9 | 25.3 | 29.3 |
| | Median | 27.0 | 35.2 | 22.0 | 26.8 |
| 1999 | Mean | 22.6 | 22.6 | 22.3 | 22.0 |
| | Median | 20.0 | 20.0 | 20.0 | 20.0 |
| 1995- 1999 | Mean | 29.7 | 34.4 | 25.0 | 28.6 |
| | Median | 26.1 | 32.0 | 22.2 | 26.6 |

Table 6. Random Effects Panel Regression Results

| Panel A. Panel Results with All SNCs (n=17,721 SNC years) | | | | | Panel B. Panel Results with New SNC Definition (n=15,302 SNC years) | | | | |
|--|-----------|----------|---------|----------|--|-----------|----------|---------|----------|
| Variable | Coeff. | S.E. | t-stat | Mean | Variable | Coeff. | S.E. | t-stat | Mean |
| EQV | 4.70E-03 | 6.63E-04 | 7.093 | 7.510427 | EQV | 3.84E-03 | 5.65E-04 | 6.8 | 7.474066 |
| SNC_AVG | -1.42E-02 | 5.71E-04 | -24.847 | 1.177421 | SNC_AVG | -1.01E-02 | 4.71E-04 | -21.386 | 1.323826 |
| DUM99 | -2.51E-02 | 1.66E-03 | -15.177 | 0.23712 | AGE | 4.82E-03 | 8.94E-04 | 5.396 | 2.454124 |
| AGE | 1.50E-02 | 1.10E-03 | 13.692 | 2.484905 | YEAR_M | 8.40E-04 | 6.92E-04 | 1.213 | 5.83708 |
| YEAR_M | -8.11E-03 | 8.05E-04 | -10.074 | 5.817335 | WQUAL | -1.87E-02 | 1.12E-02 | -1.66 | 0.986922 |
| WQUAL | -2.61E-02 | 1.33E-02 | -1.955 | 0.985931 | BQUALL | 0.259244 | 5.82E-02 | 4.452 | 0.985055 |
| BQUALL | 3.93E-01 | 6.83E-02 | 5.749 | 0.985019 | PUBLIC | -1.72E-02 | 2.24E-03 | -7.689 | 0.235655 |
| PUBLIC | -2.19E-02 | 2.77E-03 | -7.893 | 2.16E-01 | SERV | 1.87E-02 | 6.67E-03 | 2.808 | 7.84E-02 |
| SERV | 1.42E-02 | 7.31E-03 | 1.948 | 7.62E-02 | ST_OPER | 4.47E-02 | 2.62E-03 | 17.045 | 0.421187 |
| ST_OPER | 5.58E-02 | 3.04E-03 | 18.335 | 4.37E-01 | REAL_ES | 6.14E-02 | 1.15E-02 | 5.346 | 2.54E-02 |
| REAL_ES | 6.84E-02 | 1.14E-02 | 6.013 | 2.97E-02 | Constant | -8.13E-02 | 6.04E-02 | -1.347 | |
| Constant | -1.03E-01 | 6.86E-02 | -1.502 | | | | | | |
| Lagrange Multiplier Test = 9371.52 | | | | | Lagrange Multiplier Test =10245.44 | | | | |
| Adj. R-squared .23 | | | | | Adj. R-squared .19 | | | | |