



# Liquidity risk and syndicate structure

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## Abstract

We decompose syndicated loan risk into credit, market, and liquidity risk and test how these shape syndicate structure. Commercial banks dominate relative to non-banks in loan syndicates that expose lenders to liquidity risk. This dominance is most pronounced when borrowers have high levels of credit or market risk. We then tie commercial banks' advantage in liquidity risk to access to transactions deposits by comparing investments across banks. The results suggest that risk-management considerations matter most for participants relative to lead arrangers. Links from transactions deposits to liquidity exposure, for instance, are more than 50% larger at participants than at lead arrangers.

## Introduction

Over the past 20 years the syndicated lending market has grown rapidly, with originations in 2006 surpassing \$1.6 trillion (Loan Pricing Corporation). This market offers large firms access to long-term debt finance as well as liquidity support in the form of lines of credit and loan commitments. Many large firms use these lines both to reduce their need for cash and to support their commercial paper programs (Sufi, 2007; Gatev and Strahan, 2006). While financial institutions such as investment banks, insurance companies, and hedge funds play an important role in funding syndicated loans, commercial banks maintain an advantage over competitors in products that expose lenders to systematic liquidity risk.<sup>1</sup> We show that this advantage shapes the structure of loan syndicates. Commercial banks dominate in lending on lines of credit to all types of firms, but their dominance is especially pronounced in issuing large lines to risky borrowers. In contrast, bank dominance is much less pronounced in term lending that is fully funded at origination and thus brings no liquidity risk at all. We produce a comprehensive decomposition of syndicated loan risk into credit, market, and liquidity risk, and test how these factors shape loan syndicate structure. Existing studies have shown that structure varies with borrower attributes related to credit risk and transparency, but ours is the first to demonstrate how liquidity-risk management shapes syndicate structure.<sup>2</sup>

Why do commercial banks dominate in the market for credit lines?<sup>3</sup> Kashyap, Rajan, and Stein (2002) explain the combination of transactions deposits and credit lines with a risk-management motive. In their model, as long as liquidity demands from depositors and borrowers are not too correlated, the bank reduces its costly buffer stock of cash by serving both customers.<sup>4</sup> Thus, their model yields a synergy because combining transactions deposits with unused loan commitments allows commercial banks to diversify away liquidity shocks. Gatev and Strahan (2006) extend this idea, showing that commercial banks are endowed with a unique hedge for the *systematic* risk that occurs when many large borrowers simultaneously increase their demand for bank credit during episodes of reduced market liquidity: offsetting inflows into government-protected transactions deposits. Pennacchi (2006) shows that this mechanism failed to operate prior to the creation of the Federal Deposit Insurance Corporation (FDIC), suggesting that government protection helps explain why liquidity flows to the banking system when markets dry up. Commercial banks' structure allows them to sell excess liquidity to firms at precisely those times when they need cash because markets are tight. Thus, deposits afford banks a comparative advantage in offering liquidity insurance relative to other financial intermediaries.

Based on these models, we argue that commercial banks' advantage in syndicated lending ought to show up most strongly in their role as passive participants investing in lines of credit. Risk-management considerations—such as the advantage of transactions deposits—matter more for passive participants compared to lead arrangers. In general, participants provide funds but otherwise rely on the lead lenders for negotiation and pricing of loans and, to a certain degree, in cases of covenant violations or default. Lead lenders therefore must account not only for risk-management concerns associated with loan funding, but also with their ability to understand the borrower and to monitor over the life of the loan. Thus, for a lead lender liquidity risk management is likely to be of second-order importance.

Table 1 illustrates our main finding in a simple way. Using the Dealscan data on syndicated loans, we present the average share of lenders that are commercial banks for term loans and lines of credit, and then break out these differences based on borrower type (investment grade v. speculative grade rated v. unrated) and based on the role of the lender (lead v. participant). Across all cells, commercial banks dominate in lines of credit relative to term loans. Their relative dominance is most pronounced, however, for high-risk borrowers; and, their dominance is also most pronounced as participants. For example, among speculative-grade rated firms, the bank share for lines of credit is 18% greater than for term loans. This difference becomes even more pronounced—22%—when we focus only on passive participants, where the liquidity-risk management considerations are paramount. Non-bank lenders, lacking the systematic liquidity risk-hedging externality of transactions deposits, avoid credit lines.

Another way of making our main point is as follows: non-bank investors have successfully competed with banks in term lending to high-risk borrowers, where they have gained nearly half of the market. In contrast, they have much less impact on lending to those same borrowers in the market for lines of credit because of the liquidity risk. To see the evolution of the market, Fig. 1 plots the share of commercial banks in syndicated lending over time. During the early 1990s, commercial banks dominated lending across both borrower types (investment grade v. speculative grade) and loan types (term loans v. lines of credit). Over the subsequent 15 years, however, non-bank investors' share grew sharply, but that growth was concentrated among high-risk borrowers, consistent with the idea that these investors look to take on credit risk. Despite this dramatic market entry, we see much less penetration in lending on lines of credit, where bank dominance remains throughout the sample. In fact, the difference in market share between lines and term loans grew over time, reflecting the success of non-bank investors in funding term loans to high-risk borrowers. The non-bank share in term lending to risky borrowers increased by 28% comparing the 1990–

1995 period with 2000–2005, but only by 18% for lines of credit. In the context of a comprehensive decomposition of syndicated loan risk exposure, these simple findings illustrate our main proposition about risk-sharing where non-bank investors bear (and sometimes sell or securitize) credit risk, while banks bear the liquidity risk exposure.

The main results validate these simple comparisons with regressions of commercial banks' share of syndicates in a large sample of loans. Our explanatory variables include facility type (lines v. term loans), borrower type (investment grade, speculative grade, or unrated), size (log of the tranche size), industry beta and the interaction of these characteristics with a line of credit indicator. Consistent with Table 1, commercial banks dominate in lines of credit to all borrowers. Moreover, this dominance strengthens with measures of borrower credit and market risk. In contrast, non-bank investors gravitate toward high-risk term lending, both along the credit and market dimensions. These effects can *not be explained* by borrower, lender, loan, or deal characteristics, which we remove with fixed effects. We also find much stronger effects of all of the risk variables on commercial banks' share as participants compared to their share as leads.

We then develop the commercial bank specialization hypothesis by comparing investment decisions *across banks*. We test how transactions deposits affect commercial bank originations in lines of credit relative to their total originations. Our approach has three advantages over existing studies. First, we measure commercial banks' ex ante liquidity exposure in new lending. The existing evidence relies on the stock of off-balance sheet commitments relative to on-balance sheet loans from all past lending. These data (from Reports of Income and Condition) do not allow researchers to separate ex ante exposure (i.e., supply) from ex post realizations of liquidity demands because when borrowers draw funds, those funds move onto the lender's balance sheet. In contrast, our dependent variable measures the maximum potential future exposure from lines of credit relative to a bank's total exposure from all new lending (i.e., lines of credit plus term loans). This new ex ante measure reveals qualitatively different results. For example, the dollar-weighted share of new loans with liquidity exposure equals 68% for the average bank in a given year, as opposed to 26% as reported in prior studies. Second, we observe borrower characteristics, which we can control for in our main tests, and which we can also use to test how bank allocation across other dimensions (e.g., borrower size and risk) varies with access to transactions deposits. Third, we separate our measure into exposures faced by lead banks v. participants. This helps us distinguish between relationship management and liquidity risk-management motives.

We find that commercial bank investments in credit lines, as a fraction of total lending, increase with transactions deposits.<sup>5</sup> We then model the share of lines that are used to back commercial paper issuance. These lines represent almost 'pure' systematic liquidity exposure because commercial paper issuers use markets during normal circumstances to finance their short-term borrowing needs, and only draw from backup lines when market liquidity dries up (Gatev and Strahan, 2006). We find that the share of lines backing commercial paper issuance also increases with transactions deposits. Thus, not only do banks dominate non-banks in bearing liquidity risk, but also within the banking industry those with more transactions deposits have a comparative advantage in bearing this risk relative to commercial banks funded with other sources of debt. Like the bank v. non-bank comparison, we also find that commercial banks funded more with transactions deposits specialize in liquidity risk-bearing relative to other risks. For example, commercial banks with high levels of transactions deposits lend to firms with lower credit risk (based on the credit rating and the loan yield) and to firms in industries with lower betas (weakly). So, the comparisons across banks mirror those between banks and non-banks. Transactions deposits give commercial banks a comparative advantage relative to non-banks, and the same advantage helps explain loan specialization across banks.

## Section snippets

### Background

What is the nature of the deposit-lending synergy that allows commercial banks to provide liquidity to both borrowers and depositors? Kashyap, Rajan, and Stein (2002) explain the combination of transactions deposits and loan commitments with a risk-management motive. While holding cash raises costs for both agency and tax reasons (Myers and Rajan, 1998), Kashyap, Rajan, and Stein (2002) (KRS) present a model where as long as liquidity demands from depositors and borrowers are not highly...

### Research design

We report two sets of results. The first set uses loan-level data to test whether loan type determines commercial banks' share within loan syndicates relative to other investors. The second set uses bank-level data to test how banks' investments across loan types vary with transactions deposits.

To test whether liquidity risk exposure explains commercial bank involvement in the loan syndicates, we use Dealscan data from 1991 to 2005 to build a facility-level data-set. We estimate regressions...

### Syndicate structure: commercial banks dominate in lending with liquidity risk

As we describe in the introduction, Table 1 highlights the overwhelming importance of commercial banks in syndicated loans, particularly those with liquidity exposure. We now report rigorous tests of our main hypothesis with a series of fixed effects models, where the dependent variable is the overall fraction of lenders that are commercial banks. Table 2 reports summary statistics for the explanatory variables in the model. About 58% of the facilities are lines of credit, and about one-third...

### Conclusions

The structure of loan syndicates typically involves commercial banks, whose unique capacity to hedge systematic liquidity risk allows them to fund credit lines with little competition from outside the banking system. In contrast, non-bank lenders, who do not enjoy the liquidity risk-hedging externality of insured transactions deposits, avoid syndicated credit lines but shoulder much of the credit and market risk exposure that can be securitized and dispersed further among investors (e.g.,...

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...Nadauld and Weisbach (2012) and Shivdasani and Wang (2011) study the influence of securitization on corporate debt and leveraged buyouts, respectively. Loan sales have been studied by Gatev and Strahan (2009) who find that banks are a primary investor in illiquid loans and by Drucker and Puri (2008) who study the link between loans' characteristics and their propensity to be sold. By examining trade-level data of leveraged loan transactions, our paper sheds more light on the secondary market for leveraged loans....

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...By contrast, the information disadvantage of foreign lenders should be more evident when they play the participant role. Although both foreign and domestic participants receive information about the borrower from leads, as independent investors that bear their own risks, participants cannot completely rely on leads but should have their own risk assessment and control (Champagne and Coggins, 2012; Dennis and Mullineaux, 2000; Gatev and Strahan, 2009; Ivashina, 2009; Lee and Mullineaux, 2004; Preece and Mullineaux, 1996). In this case, domestic participants are expected to be more capable of making informed judgments, whereas foreign participants are more likely to seek extra protection from signaling devices such as rating-based PPPs....

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## Borrowing costs and the role of multilateral development banks: Evidence from cross-border syndicated bank lending

2020, Journal of International Money and Finance

*Citation Excerpt :*

...In all the three cases, the main findings on the role of MDBs on loan pricing both for the average borrower and for those located in low and high risk countries remain intact. Second, we run a separate analysis for credit lines and term loans, on the ground that their pricing structure is likely to differ for several reasons, related to the different options included in the contracts (e.g., to draw on a line of credit, or terminate a loan contract) (Berg et al., 2016) and to the role of liquidity risk for participating banks (Gatev and Strahan, 2009). We find differences in how some loan characteristics, such as the syndicate concentration and maturity, affect all-in spread across credit lines and term loans (Table 11)....

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