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Economic value in tranching of syndicated loans

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ABSTRACT

This paper presents a theory to explain the economic value of tranching and provides empirical evidence to support the theoretical implications. I show that riskier firms are more likely to take loans with multiple tranches. Therefore, the average credit spread on a syndicated loan with multiple tranches is higher than that on a non-tranched loan. However, after accounting for the risk characteristics of a tranched loan, I show that borrowings that are a part of tranched loans have lower credit spreads than otherwise identical non-tranched loans. I also show that the benefits of tranching accrue primarily to riskier borrowers.

1. Introduction

The credit risk diversification effect of participating in syndicated loans has been well documented. The division of a large loan into smaller, homogenous parts leads to higher granularity when spread across multiple banks.[1] Borrower-specific risks get diversified in the process. Yet another feature of syndicated loans has received little attention in the academic literature. Syndicated loans can be "tranched" into heterogeneous rather than homogenous components that can then be distributed across lenders differentiated by their risk aversion. I illustrate this distinction using an example below.

Assume company A is borrowing $500 million to repay $400 million in debt and to meet its working capital need of $100 million. A banking syndicate comprising 10 banks can either loan $50 million each under a common contract to minimize their credit risk exposure to company A or the loan can be structured as a multi-tranche deal.[2] The multi-tranche loan deal has two components—a $100 million revolving line of credit and a $400 million term loan. The participating banks in the syndicate with high risk aversion participate in the relatively low-risk revolving loan tranche, and lenders with relatively higher tolerance for risk participate in the riskier term-loan tranche. In this case, a $500 million loan is tranched into two heterogeneous components—a revolving loan and a fixed term loan. Each component is then broken into homogenous slices and syndicated among the participating banks in each tranche.

The silence of the academic literature on this topic is intriguing. Based on LPC's *Dealscan* database, more than 35% of all syndicated loan deals originated in the 1990s had multiple tranches. This research is the first to highlight this feature of syndicated loans. Most of the empirical papers in the literature treat different tranches as different loans. However, when the borrowing firm seeks interest from lending institutions and negotiates for lower pricing, it does so at the deal level. The identity of participating lenders, the syndicate's structure, and general contract terms of the loans are typically determined at the deal level (Ivashina, 2009). Because all the tranches of a multi-tranche loan are made to the same borrower at the same time, the borrower-specific credit risk is the same for all the tranches of the deal.

In this study, I document differences in syndicated loans that use tranching and those that do not. I present a theoretical model that highlights the economic rationale behind tranching and provide empirical evidence to support my model. My model assumes that lenders in a syndicated deal differ in their degree of risk aversion and their costs of funding. It predicts that a loan that is a part of a tranched deal has a lower credit spread than a single-tranche loan with similar borrower and loan characteristics. It also predicts that loans to riskier borrowers are more likely to be tranched and, therefore, the average credit spread on tranched loans is higher than that on non-tranched loans. My empirical results show that

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[1] Granularity is inversely proportional to credit concentration risk, the risk associated with the probability of a large decline in portfolio value because of default/downgrade of one/few obligors that form a large percentage of the portfolio. Higher concentration of risk may result in additional capital requirements for the bank (Johnston, 2009).

[2] The word *deal* refers to a package of loans made to a borrower at the same time. In my study, for single-tranche loans (the regular loan of $500 million in my example), "deal" simply refers to the single tranche. Multi-tranche loans and single-tranche loans are referred to as *tranched loans* and *non-tranched loans*, respectively.

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credit spread on a loan that is part of a multi-part loan deal is about 18 basis points lower than that on a comparable non-tranched loan. I find that the probability of a loan being tranched increases in the riskiness of borrower characteristics and loan terms and, therefore, the average credit spread on tranched loans is 68 basis points higher than that on non-tranched loans. I also show that the benefits of tranching are more pronounced in loans made to borrowers with speculative debt ratings.

This paper is organized as follows. In the next section, I review the literature on syndicated loans. Because this literature has been silent on tranching I also review the securitization literature on tranching of other types of debt. In Section 3 I present my theory on tranching and my hypotheses. Then, I present empirical evidence that supports my theory and test the robustness of my results. In Section 5, I conclude.

2. Literature review

Syndicated loans are a hybrid of public and private debt. They have some characteristics of traditional, relationship-based bank financing and some characteristics of transaction-based, bond financing. The literature on syndicated loans has primarily focused on the structure and pricing of syndicated loans. Simons (1993) argues that diversification is the primary motive for syndication. Recent studies show that the composition and structure of a syndicated loan is usually designed to address prospective agency problems. Dennis and Mullineaux (2000) find that syndication is more likely and the arranger's share is smaller when borrowers are more transparent and less risky. The share retained by the arranger is also smaller if the lender has a better reputation or is closely linked to the borrower (Lee and Mullineaux, 2004). The arranger retains a larger share of the loan if the borrowing firm requires intense due diligence and monitoring (Sufi, 2007). Ivashina (2009) and Focarelli et al. (2008) study the relationship between retained share and loan pricing and find that interest rates decrease in the share of the facility retained by the arranger.

Ivashina (2009) observes that loan prices on syndicated loans are lower than sole-lender loans, other things equal. Angbazo et al. (1998) investigate highly leveraged loans and find that syndicated loans have lower spreads than other HLT (highly leveraged transaction) loan types. Dennis et al. (2000) find similar results for revolving loans. Coleman et al. (2002) find that lender monitoring ability, bargaining power, risk, and syndicate structure are significant influences in determining loan maturity and pricing. Harjoto et al. (2006) find that loan pricing processes of investment and commercial banks in syndicated deals are not identical. Hale and Santos (2008) suggest that firms with higher need for external financing may borrow in the syndicated loan market to develop relationships with investment banks. Such relationships then allow firms to issue their first public bond earlier. Maskara and Mullineaux (2009) show that syndicated loans provide a source of external financing for highly leveraged small firms that presumably do not have access to relationship loans at the margin or to the bond market.

Although none of the research on the syndicated loans has addressed tranching, several papers in the securitization literature have. Tranching in a securitization issue involves breaking a pool of homogenous assets (e.g., mortgages, auto loans, and credit card receivables) into groups with varying risk characteristics (e.g., different seniority, collateral, or liquidity characteristics) so that each tranche can be sold at different prices in the capital markets. DeMarzo (2005) surveys the literature on this strategy and notes three broad explanations for tranching: asymmetric information, market incompleteness, and transactions costs. According to Boot and Thakor (1993) tranching adds value when heterogeneous investors have different private information and different capabilities to screen investments. Tranching creates new assets with different risk and return profiles. This makes the market more complete by satisfying the unmet needs of some investors in certain states of the world. Duffie and Rahi (1995) and Riddiough (1997) note that explanations based on information asymmetry and market incompleteness could coexist with respect to different tranches within a single issue. For example, the senior tranche could be driven by asymmetric information, and multiple junior tranches might be designed to exploit specific appetites of various investor clienteles. Other theories focus on the transaction costs of tranching.

In sum, the results of empirical studies suggest that pricing of syndicated loans is determined not only by borrower characteristics but also by syndicate structure and lender characteristics. Syndicated loans made by investment banks and those where a higher portion of loan is retained by the arranger have lower credit spreads, all else equal. Empirical results from the securitization literature suggest that tranching adds value when it creates new assets with different risk and return profiles, thereby completing the market, and when heterogeneous investors have asymmetric information.

3. The model

For simplicity, I assume that there are two types of participants, i, in the syndicated loan market—banks (B) and nonbanks (NB). Banks are more heavily regulated than nonbanks. They have access to deposits that are explicitly or implicitly insured by the government and consequently have a low cost (Harjoto et al., 2006). Nonbanks have no access to deposit markets and must therefore, fund their lending activity in the money and capital markets, which typically involve higher interest expense (Harjoto et al., 2006). Let the minimum return at which a participant i lends money be the reservation return, $\overline{R}$, and let the maximum credit risk a participant takes for $\overline{R}$ be M. Credit risk, K, is measured as expected loss as a percent of the loan amount and is based on probability of default and loss-given-default. The higher cost of funds for nonbanks implies that the reservation return of nonbanks exceeds the reservation return of banks ($\overline{R}_{NB} > \overline{R}_B$) and ($M_{NB} > M_B$).

As its cost of funds increases, participant i must make increasingly riskier loans to cover its costs. Harjoto et al. (2006) show that investment banks charge higher fees and higher rates and lend to riskier firms. Maskara (2006) shows that investment banks are more likely to lead syndicated loans to riskier borrowers. He also shows that investment banks and other nonbank financial institutions tend to participate in the riskier facilities of multi-facility loans. Reflecting differences in the cost of funds and the regulatory environment faced by banks and nonbanks, I assume that banks have a higher level of risk aversion, A, the additional return required to compensate them for a marginal unit of risk, than nonbanks. A is measured as the extra return required by the lender when expected loss on the loan increases marginally. For $K \leqslant M$, the lender accepts $\overline{R}$, while for $K > M$ the lender requires a risk premium that is a function of A. Harjoto et al. (2006) show that investment banks charge lower credit risk premia for leverage than commercial banks. For $K < M$, A is zero because the marginal increase in K still results in $K \leqslant M$ and each participant requires their respective $\overline{R}$ for the loan, thereby resulting in no additional required return for the increase in K. As $\overline{R}_{NB} > \overline{R}_B$, for $M_{NB} > K > M_B$, A_{NB} is zero, whereas A_B is positive. For $K > M_{NB,}$ I assume $A_B > A_{NB}$. This implies that at any given risk level $K > M_B$, $A_{NB} < A_B$ (risk aversion of each type of participant is zero for $K < M_B$).

Both types of participants face a similar choice of borrower/loan combinations. The borrower/loan combinations (BLC) are