The effect of borrowers with large customer and supplier links on syndicate loan structure

Abstract

Relationships between large customers and suppliers expose lenders to additional risks. These risks may force lead agents to retain a larger share of syndicated loans, reducing loan-level diversification, and, in turn, increasing the required interest rate spread. Consistent with this view, we find that borrowers' dependence on a few larger customers or suppliers positively affects the cost of the loans indirectly through the loan structure. Instead, we do not observe a direct cost associated with large customer-supplier links, suggesting that lead agents do not increase the interest rate spread as compensation for the additional risks of dealing with borrowers with large customer-supplier links *per se*. Finally, we document an inverted U-shaped relationship between the length of the large customer-supplier link and the loan share held by the lead agent.

1. Introduction

Among the firms that access the lending market, a significant fraction has a concentrated customer base, i.e. a few large customers are responsible for a relevant portion of the firm's sales, and/or a concentrated supplier base, i.e. a small number of suppliers provide the majority of the inputs the firm needs. The effects of these large customer-supplier links for a borrower are still debated. While such links may be a positive factor for borrowers in the lending market, they can also lead to additional costs and risks that may ultimately affect their lending conditions. In this paper, we address this issue by exploring whether borrowers with large customer-supplier links require more monitoring by the lending banks, possibly altering the structure of the loan. Using a sample of large customer-supplier relationships and syndicated bank loans, we argue that a large customer-supplier relationship has an indirect effect on loans pricing through the syndicate structure, which depends on the monitoring efforts of the banks. In fact, participant lenders may demand that the lead agent, who is responsible for due diligence and monitoring activities, retains a larger share of the loan for incentive purposes as these borrowers may be riskier (Sufi, 2007; Ivashina, 2009; Lin et al., 2012).

The growing literature on syndicate loans offers two main contrasting views on how the credit market values concentrated supplier or customer bases. On the one hand, a large strand of the literature suggests that large customer-supplier links expose lenders to additional risks related to more firm-specific investments, liquidity problems, and increased cash flow risks (Banerjee et al., 2008; Campello and Gao, 2017; Cohen and Frazzini, 2008; Dhaliwal et al., 2016; Hertzel et al., 2008; Kale and Shahrur, 2007). These links limit firms' power to switch to alternative partners, thereby effectively locking firms into such relationships (Rahaman et al., 2020). Because of this, borrowers are more exposed to supply disruptions and firm-specific investments,

which increases their default risk (Banerjee et al., 2008; Campello and Gao, 2017; Hertzel et al., 2008; Kale and Shahrur, 2007; Rahaman et al., 2020). Therefore, large customer-supplier links may increase the cost of borrowing. Consistent with this view, Campello and Gao (2017) show that a more concentrated customer base leads to higher interest rate spreads and more restrictive covenants.

On the other hand, a tight integration with large customers and/or suppliers may enhance control quality and signal favorable information, mitigating lenders' asymmetric information problems (Biais and Gollier, 1997). This can reduce costs and increase profitability (Deming, 1986; Patatoukas, 2012). A few recent studies (Cen et al., 2016; Hasan et al., 2020) also show that a long and continuing relationship with a principal customer may convey positive signals about the borrower's quality, resulting in lower loan pricing and fewer restrictive covenants for firms with large long-term customers.

Although a few papers have studied the effect of large customer-supplier relationships on pricing conditions in the syndicate loan market (e.g., Cen et al., 2016; Campello and Gao, 2017; Hasan et al., 2020), not much attention has been paid to the effect of such relationships on the loan structure. To the best of our knowledge, this is the first paper that focuses on whether borrowers with large customer-supplier links require the lead agents to retain a larger fraction of the loan, which in turn affects lending conditions. In fact, by bearing more risk, borrowers with large customer-supplier links require stricter control and due diligence from the lead agent of the syndicate, who is responsible for delivering monitoring activities. In line with previous studies (Delis et al., 2020a; Esty, 2001; Gustafson et al., 2020; Ivashina, 2009; Lin et al., 2012; Sufi, 2007), our expectation is that the lead agent is required to retain a greater loan share to signal its willingness to screen and monitor activities to participant lenders that fund part of the risky loan.

In turn, the lead agent may demand higher loan pricing and stricter covenants to offset the higher credit-risk exposure – and therefore lack of diversification – to such borrowers. Thus, we hypothesize that lenders might demand a higher yield because of the lack of diversification that stems from retaining a larger share of the syndicate and not necessarily as compensation for the additional risks of dealing with borrowers with large customer-supplier links *per se*.

Along these lines, we expect that the lead agent's share of the loan increases along with the borrower's dependence on large customer-supplier links. Indeed, a strong reliance of the firm on its large customers/suppliers, which we measure by the length of the relationship, can exacerbate the risk associated with the loan. However, a continuing long-term relationship with a principal customer and/or supplier, which often entails firm-specific investments, is also likely to reflect favorable private information held by suppliers about their customers and thereby alleviate the bank's lending problem arising from asymmetric information (Biais and Gollier, 1997; Cen et al., 2016; Hasan et al., 2020). Since it takes time to build this positive externality, we expect a curvilinear inverted U-shaped relationship between the length of large customer-supplier link and the share of the loan held by the lead agent.

To test these hypotheses, we collect information on large customer-supplier relationships for US listed companies from Compustat Segment Database, data on syndicated loans from LPC-Dealscan, and firm-level fundamentals from Compustat. Our data encompass 9,307 loan facilities, nested into 7,204 loans, with 2,765 unique borrowers over the period 1987-2018.

Our findings show that the lead agent retains a large fraction of the loan when lending to borrowers with large customer-supplier relationships. Furthermore, we find that long-term relationships between large customers and suppliers raise the fraction of the loans held by the lead agent. This result supports the view that a greater dependence on larger customers or

suppliers requires more monitoring from the lead agent. However, we also document an inverted U-shaped relationship between the lead agent share and the length of large customer-supplier relationship. That is, as the length of the large customer-supplier relationship increases above five years, the loan share held by the lead agent becomes smaller.

Our findings also show that the lead agent demands higher mark-ups (i.e. higher pricing and more restrictive covenants) for the lack of loan-level diversification caused by large customer–supplier links (i.e. indirect effect). We employ an instrumental variable approach to account for the endogenous nature of the loan share held by the lead agent, which can be affected by credit risk and to explore the indirect effect of large customer-supplier links of pricing terms. We use the syndicate-specific reputation variables as instrument variables for the lead agent's participation in the loan pricing function (Ivashina, 2009). Once we consider the indirect effect of the customer-supplier link through the structure of the loan, we do not observe evidence of a direct effect of the customer-supplier variable (i.e. direct effect).

Finally, we run a battery of robustness tests to verify our findings. We start alleviating concerns about the endogenous nature of the supplier-customer links. First, we exploit suppliers of services and differentiated products, which are hard to replace because they provide unique or highly customized inputs (Cunat, 2007; Giannetti et al., 2011).[1] Second, we perform our baseline test with a restricted sample of borrowers with principal customers that account for more than 15% of their total sales.[2] When the customer's share of the firm's sales is close to 10%, some firms may act strategically to either hide or disclose their links depending on whether the

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[1] We could have also computed a variable relative to suppliers of services and differentiated products as an alternative test for relationship's tightness. However, given its nature, it would not have been possible to explore the curvilinear relationship between this variable and the lead agent's loan share.

[2] Information on customer–supplier relationships are based on the Compustat segment customer file. This information is publicly available as SFAS No. 14 (before 1997) and SFAS No. 131 (after 1997). This requires firms to disclose the existence of and sales to principal customers representing more than 10% of total firm revenues.

disclosure is deemed to be beneficial. Then, we run additional test to account for the possibilities that our results might be driven by omitted variables associated with the reputation-signaling effect of the borrower, previous access to the credit market, relationship lending, and governance links between the lead agent and borrower (Bharath et al., 2007, 2011; Hasan et al., 2017). Finally, we exclude the years 2007-2009 of the financial crisis. Overall, our findings are robust to all these tests.

We contribute to the existing literature in the following ways. First, we add to the stream of literature that considers the effect of borrowers' characteristics on the syndicate structure (e.g., Esty and Megginson, 2003; Lin et al., 2012; Sufi, 2007). We empirically show that large customer-supplier links affect the syndicate structure by increasing the lead agent's loan share. Second, our study is related to existing works on the role of large customer-supplier relations in the syndicate loan market (Banerjee et al., 2008; Campello and Gao, 2017; Cen et al., 2016; Dhaliwal et al., 2016; Hasan et al., 2017; Kale and Sharhur, 2007). This literature has examined the effect of the large customer-supplier relationship in the syndicated loan market by accounting for the lending relationship with the borrower's large customer partners (Bharath et al., 2007; Hasan et al., 2017), large customer concentration (Campello and Gao, 2017), long-term customer-supplier relationship (Cen et al., 2016) and supply chain power (Rahaman et al., 2020) on loan contract terms. Different from these studies, we explore whether a large customer-supplier relationship can affect the loan pricing indirectly through the syndicate loan structure. We further account for the possibility that the effect of a large customer-supplier relationships on the lead agent share, and hence monitoring effort, varies with the length of such a relationship. A long relationship is associated with a greater degree of dependence between the borrower and

large customer-supplier firms, thus increasing cash flow correlations and the borrower's default risk.

Finally, our article contributes to the literature on loan contract terms and large customer-supplier relationship (Banerjee et al., 2008; Campello and Gao, 2017; Cen et al., 2016; Cohen and Frazzini, 2008; Hasan et al., 2020: Kale and Shahrur, 2007; Kolay et al., 2016; Rahaman et al., 2020; Titman and Wessels, 1988). Our paper examines whether lead agents demand higher mark-ups and more restrictive covenants for holding a larger share of the loan. Furthermore, we find that the lead agent only applies costlier and stricter contractual terms to offset its increasing monitoring effort and lack of diversification, not because of the large customer-supplier link *per se*. We also show similar results when we account for the length of large customer-supplier link which could enhance banks' ability to lend to existing borrowers' large customer-supplier firms according to a stream of research (Cen et al., 2016; Hasan et al., 2020).

This paper is organized as follows. Section 2 reviews the relevant literature and develops the hypotheses based on the existing literature. Section 3 presents the methodology and the sample construction. Section 4 discusses the main results related to the syndicate structure, loan pricing and number of restricted covenants. Section 5 presents additional tests to address concerns related to the role of relationship strength, endogeneity, type of loans and access to syndicate loans. Finally, Section 6 concludes.

2. Literature Review and Hypothesis Development

Previous studies argue that having large customer-supplier links exposes borrowers to costs and risks (Campello and Gao, 2017; Hasan et al., 2017). Large customers could in fact compel the suppliers to invest in relationship-specific assets over time that have little or no value outside of

this relationship (Allen and Phillips, 2000; Banerjee et al., 2008; Kale and Shahrur, 2007). Moreover, large customers may exert a higher bargaining power with respect to prices and the timing of payments which could lead to liquidity shortage for suppliers (Fee and Thomas, 2004). More generally, firms are exposed to aggregate sales fluctuations, liquidity problems, and increased cash flow risks via large customer-supplier links (Cohen and Frazzini, 2008; Di Giovanni et al., 2014; Kolay et al., 2016). All these factors can increase a firm's default risk and financial costs. Consistent with this risk view, previous studies show that lenders demand higher interest rate spreads and more restrictive covenants and decrease the maturity of those loans to offset the higher risk exposure (Campello and Gao, 2017; Dhaliwal et al., 2016).

Following these arguments, we conjecture that borrowers with large customer-supplier links could also require more intense bank monitoring as lenders are exposed to higher large customer-supplier risks. As discussed above, firms with large customers and/or suppliers are in fact more vulnerable to costs and risks (for example payment delays, relationship-specific investment, and default contagious risk). Therefore, the lead agent, who is the lender responsible for managing the relationship with the borrower and for monitoring activities in a syndicated loan, could be requested to increase its monitoring activities for such borrowers. This will imply that the lead agent could be required to retain a larger loan fraction for borrowers with large customer-supplier links by other lenders in the syndicate (Delis et al., 2020a; Esty, 2001; Gustafson et al., 2020; Ivashina, 2009; Lin et al., 2012; Sufi, 2007). In the syndicate market, retaining a larger share of the loan is seen as a mechanism to incentivize the lead agent to exert the optimal level of monitoring (Diamond, 1984; Gustafson et al., 2020; Holmstrom and Tirole, 1997; Lin et al., 2012). The lead agent's potential loss is indeed increasing in the fraction of the loan it keeps, and so the amount of effort provided by the lead agent in due diligence and

monitoring is declining in the fraction of the loan it allocated to other lenders (Gustafson et al., 2020; Sufi, 2007). Following this line of arguments, our expectation is therefore that the lead agent retains higher participating shares for the borrower with large customer-supplier links.

We further hypothesize that such an effect is stronger as the relationship between large customer and supplier intensifies. Tighter links between large customers and suppliers might intensify the "hold-up" problem and increase switching costs, which could make it difficult to dismantle such relationships (Cunat, 2007; Nagarajan and Bassok, 2008). Furthermore, firms could be more exposed to financial distress spillovers due to cash flow correlations. Consistently, previous studies show that closer links between firms and their large customer-supplier firms increase the contagion effects and liquidity shocks' spillover when disruptions occur at one or more firms in the chain (Boissay and Gropp, 2013; Hertzel et al., 2008). Such occurrences may therefore require closer scrutiny from the lead agent. However, some studies argue that long-term and tightly integrated supply chain relationships may improve quality, lower total costs, and allow banks to acquire in-depth knowledge on possible changes to industry conditions and partners' factors of production (e.g., Hasan et al., 2020). Since it may take a long time to build a credible signal about the firm's quality through the customer-supplier relationship and signal the borrower's quality (Cen et al., 2016), we expect a curvilinear inverted U-shaped relationship between the length of the relationship and the share of the loan held by the lead agent. We therefore propose the following testable hypothesis:

H1: The lead agents should retain a larger loan fraction for firms with large customer-supplier links. Due to the costs and benefits associated with a long-term customer-supplier link, there should be a curvilinear inverted U-shaped relationship between the length of the relationship and the share of the loan held by the lead agent.

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Although the increase of the loan fraction held by the lead agent reduces adverse selection concerns in the syndicate, it also results in additional costs for the lead agent. In fact, the lead agent bears most of the costs for due diligence and monitoring activities, but it only retainsa fraction of the loan (Lin et al., 2012). In fact, a larger loan ownership's dispersion allows the lead agent to benefit from a greater diversification of risk exposure across lenders (Esty and Megginson, 2003). By retaining a greater loan fraction, the lead agent instead raises its credit risk's exposure to the borrower.[3] For this reason, as pointed out by several studies (e.g., Demsetz, 2000; Gorton and Pennacchi, 1995; Pavel and Phillis, 1987; Pennacchi, 1988), the lead agent has the incentive to engage in loan selling to achieve a greater credit risk diversification. The diversification effect presumes that the lead agent, when forced to retain larger participation shares, demands higher pricing for the larger exposure to credit risk (Ivashina, 2009). In line with these arguments, we hypothesize that the lead agent may impose high interest rate spreads as a compensation for the lack of loan diversification rather than for large customer-supplier participation *per se*. Thus, we posit the following:

H2: The lead agent imposes costlier, stricter loan contract terms because they retain larger participation shares (indirect effect) rather than dealing with borrowers with customer-supplier links (direct effect).

3. Sample and Methodology Construction

3.1 Sample and Data

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[3] In fact, the lead bank typically retains a very large share of the loan and is therefore widely subject to idiosyncratic credit risk (in our sample, the lead bank's share is on average equal to 26% of the entire facility, or $127.2 million in economic terms).

The data on large customers and suppliers are retrieved from Compustat Segment Customer database, consistent with the literature (Campello and Gao, 2017; Cen et al., 2016). According to Regulation S-K and the Statement of Financial Accounting Standard (SFAS) No.14, firms are required to disclose all customers that represent 10% or more of a firm's total sales. The Segment database collects information including the names and sales figures for these large customers, but not their unique Compustat identifier (GVKEY). We associate the names of the customers with their CRSP and Compustat identifiers using the links provided by WRDS following Cohen and Frazzini (2008) and Cen et al. (2017). The reporting firms of these large customers in the Segment database are instead identified as the suppliers. Once we identify the list of large customers and suppliers, we consider a borrower having a large customer-supplier link if the borrower is either a large customer or a supplier.

We extract bank loan contract information from LPC-Dealscan and link the loan-level data to Compustat to obtain the borrower level identifiers following the procedure from Chava and Jarrow (2004), and then use the Dealscan-Compustat Link provided by Michael Roberts.[4] Following Campello and Gao (2017), we consider each loan facility as an independent contract. As explained by Cumming et al. (2020), the loan tranches or facilities provide a more accurate picture of the syndicate loan market as the lead agent could offer different contractual terms to participant lenders. In addition, participant lenders could decide to only take part in specific tranches. Thus, the lead agent may search for syndicate members not only for specific loans but also for certain tranches (Cumming et al., 2020). Our dataset encompasses data on loan facilities from the Dealscan database and publicly listed borrowers from Compustat between 1987 and 2018. To be included in our sample, we require the availability of all financial variables from

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[4] Links are accessed through the following link: http://finance.wharton.upenn.edu/~mrrobert/styled-9/styled-12/index.html

Compustat employed in the study. In addition, we require that the loan has at least one of the three pricing variables – i.e. the all-in spread drawn (AISD), the total borrowing cost (TBC), and the covenant index.[5]

Firm-level fundamentals are collected from Compustat. Market information, including equity volatility, market volatility and risk-free rate are retrieved from CRSP and linked using the CRSP/Compustat Merged database. Appendix A offers the definitions of each variable. Loan-related and bank-related information is retrieved from DealScan. Overall, our sample consists of 9,307 facilities (nested into 7,204 loans) with 2,765 unique borrowers.

3.2 Empirical methodology

The first step in our empirical analysis is to determine whether borrowers with large customer-supplier links require the lead agent to retain a larger share of the syndicate. To identify the main lead agent of a loan with multiple lenders, we closely follow the procedure suggested by Chakraborty et al. (2018). For each facility, the lead agent is identified by the lender with the highest rank following the ten-part ranking hierarchy developed by Chakraborty et al. (2018).[6] The main variable of interest is *Large CS links*, which is equal to 1 if the borrower has at least one large customer-supplier link in the last five years, which is a standard timeframe in the literature (Bharath et al., 2011), prior receiving the loan, and 0 otherwise.[7] We also construct a

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[5] We discuss these variables in Section 3.2.

[6] The ranking hierarchy consists of the following roles: 1) lender is denoted as "Admin Agent", 2) lender is denoted as "Lead bank", 3) lender is denoted as "Lead arranger", 4) lender is denoted as "Mandated lead arranger", 5) lender is denoted as "Mandated arranger", 6) lender is denoted as either "Arranger" or "Agent" and has a "yes" for the lead arranger credit, 7) lender is denoted as either "Arranger" or "Agent" and has a "no" for the lead arranger credit, 8) lender has a "yes" for the lead arranger credit but has a role other than those previously listed ("Participant" and "Secondary investor" are also excluded), 9) lender has a "no" for the lead arranger credit but has a role other than those previously listed ("Participant" and "Secondary investor" are also excluded), and 10) lender is denoted as a "Participant" or "Secondary investor".

[7] In unreported tests, we also consider an alternative horizon of three years prior to the loan, and the results are consistent.

continuous-variable *Length large CS links,* which is the average length of the borrower's large

customer-supplier links starting from the year before the loan origination.[8] The *Large CS links*

dummy allows us to explore whether large customer-supplier links can affect the syndicate loan

structure and loan pricing. Conversely, *Length large CS links* allows us also to account for the

dependence of the borrower on large customers and suppliers. In fact, long-term relationships

could expose firms to additional risks, such as cash flow correlations, as they grow closer to each

other.

Similar to previous studies (Campello and Gao, 2017; Cen et al., 2016; Delis et al., 2020a;

Hasan et al., 2020; Lin et al., 2012; Rahaman et al., 2020), we consider loan facility as the unit of

analysis for the reason that loan facilities or tranches are individual portions of a deal or package,

which may exhibit different starting dates, maturity, pricing, amount, and loan type which in

turns can affect the lead agent monitoring effort.

For this analysis, we employ the following model:

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\begin{aligned}
\text{Lead agent share}_{i,j,k,t} = {} & \beta_0 + \beta_1 \text{Large CS links}_{i,(t-1,t-5)} + \beta_2 \text{Borrower characteristics}_{i,t-1} \\
& + \beta_3 \text{Facility characteristics}_{k,t} + \beta_4 \text{Synd Reputation}_k \\
& + \sum \text{Bank}_j + \sum \text{Industry}_i + \sum \text{Year}_t + u_{i,j,k,t}
\end{aligned}
\tag{1}
$$

where *k* indicates newly initiated loans and *t* indicates the year of the loan initiation. *Lead agent*

share indicates the percentage retained by the lead agent *j* in each loan *k*. We control for

borrower fundamentals including the logarithm of total asset, return on asset (ROA), cash

holding, leverage, Tobin's Q and CAPEX. We also account for the existence of prior lending

relationship between the same lead agent and the borrower in the past five years. Specifically,

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[8] For example, if a borrower has two large customer-supplier partners with which it has a continuous relationship of respectively 4 and 6 years until the year before receiving a loan, the variable *Length large CS links* will take the value equal to 5= (4+6)/2. In a robustness check, we also consider a weighted average of year length of each large customer-supplier links, using sales as weight. The results remain consistent.

following Bharath et al. (2007, 2011), we construct a variable called *Past lending* that is calculated as the number of loans to borrower i by the lead agent j from facility k divided by total number of facilities to borrower i in the five years prior to the loan origination. This variable measures the relationship lending between the lead agent and the borrower in the syndicate lending market. Banks could value large customer-supplier links simply because all the firms in such relationships repeatedly access the credit market, and therefore are already known to potential leaders in the syndicate loan market. In this case, a lower monitoring and due diligence effort by the lead agent would be required as asymmetric information is less severe. We account for both customer and supplier concentration, respectively measured as *Customer HHI* and *Supplier HHI*.[9] Indeed, the bank may be concerned about lending to borrowers with a high *Customer HHI* and *Supplier HHI* as this can increase borrowers' exposure to the associated large customer-supplier risks. Borrowers exposed to customer and supplier concentration could be subject to higher risk. In this case, the lead agent could be compelled to retain a large fraction of the loan to exert more monitoring activities. We also include facility-level characteristics, i.e. *Log facility amount*, *Log facility duration* and *Log number of banks*. In addition, we incorporate a dummy for the presence of institutional investors as participants in the syndicate, *Institutional investor*. The reason is that non-bank institutional lenders typically have higher required rates of return than banks have (Lim et al., 2014). The presence of institutional investors in the syndicate could therefore have consequences for the syndicate's composition as pricing and syndicate structure are jointly determined (Focarelli et al., 2008). We also add a dummy for foreign currency loans, *Non-US dollar facility*. Furthermore, we control for the lead agent's exposure to

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[9] They are respectively the sum of the percentage sales coming from the set of customers the firm reports as "large customers", and Herfindahl index of sales to large customers.

the borrowing firm, *Loan portfolio exposure*.[10] Additionally, following Ivashina (2009), we consider two syndicate-specific reputation variables, *Syndicate reputation: lead to participant* and *Syndicate reputation: reciprocal*, which refer to previous connections between syndicate members. We discuss these variables in more detail after Eq (2). Finally, we incorporate borrower's industry, facility start year and bank fixed effects in the estimation. The definitions of the variables are reported in Appendix A.

The next step of the analysis consists of estimating the impact of *Large CS links and Length large CS links* on pricing, and the number of covenants. The loan pricing variables are the *all-in spread drawn* (AISD) and the *Total cost of borrowing (TCB)*, which are calculated following Berg et al. (2016).The *AISD* is the sum of the annual spread paid over LIBOR for each dollar drawn down from the loan and annual fee. The *TCB* accounts for fees, spreads, and the likelihood that they will have to be paid. Furthermore, following Bradley and Roberts (2015), we build a covenant index that considers equity sweeps, debt sweeps, asset sweeps, dividend restrictions, and secured debt. All five different covenants are coded as 1, and 0 otherwise, and then summated. Therefore, the index ranges from 0 to 5. The test specification is the following:

$$
\begin{aligned}
\text{Pricing}_{i,j,k,t} = {} & \beta_0 + \beta_1 \text{Large CS links}_{i,(t-1,t-5)} + \beta_2 \text{Borrower characteristics}_{i,t-1} \\
& + \beta_3 \text{Facility characteristics}_{k,t} + \beta_4 \text{Lead agent share}_{k,t} + \sum \text{Bank}_j \\
& + \sum \text{Industry}_i + \sum \text{Year}_t + u_{i,j,k,t}
\end{aligned}
\tag{2}
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As discussed in Section 2, higher pricing and more restrictive covenants could reflect a higher premium demanded by the lead agent for holding a larger loan share and being less diversified. As noted by Ivashina (2009), under the diversification effect, as the lead bank's share

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[10] *Loan portfolio exposure* accounts for the merger and acquisition (M&A) activity of the lead agents. This variable measures the outstanding amount lent to a certain borrower against the total outstanding loan issued by the lead agent. In this case, we have assigned to the acquiring bank all the loans originated by target banks in the five years before of the issuance of the loan. To adjust the variable for M&As, we link SNL Financial to Dealscan by using DealScan-Compustat Link for lender identifiers provided by Schwert (2018).

increases, the bank becomes more exposed to credit risk and will demand a higher spread. The problem is that this diversification effect is not observable. To identify this effect, we follow the procedure suggested by Ivashina (2009) that consists of introducing instruments that would affect the degree of adverse selection/moral hazard without affecting the lead agent's credit-risk exposure. Specifically, we use syndicate-specific reputation variables as instruments which refer to previous connections between syndicate members. The lead bank's reputation, in fact, impacts the level of asymmetric information between the lead and the participants, but it is not part of a credit-risk model.

Following Ivashina (2009), as instrumental variables we use i) the maximum per cent number of deals arranged by the same lead agent with the same participant against the total number of deals organized by the lead agent over a five-year horizon *(Syndicate reputation: lead to participant)*, and ii) a dummy variable that is equal to one if the same lead agent and the same participant switch roles over a five-year horizon prior to the current syndication *(Syndicate reputation: reciprocal)*. We control for borrower-level fundamentals and facility-level characteristics as in Eq (1). Moreover, we include borrowers' industry sector, facility start year and lending-bank fixed effects in the estimation.

We estimate the model using a two-stage least squares (2SLS) approach. In the first stage the syndicate-specific reputation variables are expected to be negatively related to the lead bank's loan share. A higher reputation indicates a lower information asymmetry within the syndicate and therefore lower pressure on the lead agent to retain a larger loan share. Instead, in the second stage, the instrumented lead bank's loan share should be positively related to the demanded loan spread. A positive coefficient is consistent with the diversification effect. If the loan spread demanded by participant lenders is also driven by the risk associated with the large

customer-supplier link, then the *Large CS links* dummy should exhibit a positive and significant coefficient in the second stage.

Table 1 presents summary statistics about the sample of syndicated loans used in the analysis, as well as borrower characteristics. It shows that the mean of lead agent share is around 26% with a standard deviation equal to 19%. The number of participant lenders per syndicate is on average equal to 11 with a standard deviation of 9, suggesting a high variability in terms of syndicate size. Consistent with Berg et al. (2016), *TCB* is slightly higher than *AISD*. Different from *AISD*, *TCB* considers the probability that various fees will be charged by lenders. Table A2 in the Appendix shows the correlation matrix for the variables employed in this analysis.

[Insert Table 1 about here]

4. Empirical Analysis

In this section, we first analyze whether the syndicate structure differs for borrowers with large customer-supplier chain participation. Then, we test whether large customer-supplier links lead to higher mark-ups and a stricter covenant index. Finally, we present additional analysis.

4.1 Large customer-supplier links and Syndicated Loan Structure

In this subsection, we examine whether the lead agents retain larger fractions of the loans for borrowers with large customer-supplier links compared to other borrowers. According to Sufi (2007), if the borrower requires more intense monitoring and diligence activities, the lead bank should retain a larger share of the loan and forms a concentrated syndicate. Therefore, if the

borrower with large customer-supplier relationships bears additional risks, the other participant banks should require the lead agent to retain a greater fraction of the loan.

Table 2 reports the findings for the impact of the large customer-supplier relationship on the lead agent's loan share, *Lead agent share*.[11] Consistent with H1, Table 2 shows that having a large customer-supplier link has a significant and positive effect on *Lead agent share*. As reported in Column 1, the coefficient of *Large CS links* dummy is positive and statistically significant at the 5% level. Moreover, consistent with H1, we find that the lead agent retains a greater loan fraction when the borrower has a long-term relationship with large customers and/or supplier as indicated by the positive coefficient of *Length large CS links* in Column 2. However, Column 3 also shows that squared *Length large CS links* term has a negative and significant coefficient (coefficient significant at the 1% level), suggesting that *Length large CS links* has a curvilinear effect on *Lead agent share* (inverted U-shaped). As expected from H1, a tighter relationship between customer and supplier increases the share of the loan held by the lead agent, but at a decreasing rate. Indeed, the variable *Length large CS links* reaches its peak at 5.25 years, which corresponds to the 85th percentile of the empirical distribution of the variable.[12] This result is consistent with the view that, after a certain amount of time, the effect of large customer-supplier relationships on the syndicate structure is partially mitigated by the signal sent by the length of such a relationship. Thus, the lead agent tends to retain a smaller loan fraction if the borrower has a continuous relationship with a large customer-supplier partner of at least five years, suggesting a trade-off between the bank monitoring and the positive signal provided by large customer-supplier links. This result is consistent with Chen et al. (2016), who suggest that

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[11] In an unreported table, we also consider an alternative definition of the dependent variable, i.e. a dummy variable taking the value of 1 when the lead agent's loan share is larger than 50%. The results are like those shown in Table 2. The table is available from the authors upon request.

[12] This value is calculated as 10^x, where x is= $- [0.041/(0.028*2)]$.

large customer-supplier links may have a reputational-building role if non-financial institutions are able to engage in a continuative relation for a relative long period.

If we limit the analysis to observations with a large customer-supplier link as reported in Column 4,[13] we obtain similar results: the lead agent's loan share increases with *Length large CS links*, but the rate of increase becomes smaller as the length of the relationship increases.[14]

Table 2 also shows that the variables associated with the lead bank's reputation are both significantly and negatively related to the lead bank's loan share. A higher lead bank's reputation within the syndicate will reduce information asymmetry concerns. Therefore, a respected lead agent is required by the other participants to hold a lower loan share. Regarding loan characteristics, our findings are in line with the previous studies (e.g., Ivashina, 2009; Lim et al., 2014). Table 2 also shows that the lead agent retains a lower fraction of loans and, therefore, monitors fewer facilities with a longer maturity. This is consistent with Gustafson et al. (2020), who find that the lead agent monitors short maturity loans more frequently as any information gathered via monitoring could be used in subsequent negotiations. In addition, we find that the lead agent retains a lower loan fraction in the case that a higher number of lenders participate in the facility. Finally, the lead agent retains a larger loan' share if it is overly exposed to the borrower, as indicated by the positive and significant coefficient of *Loan portfolio exposure*, and for larger loans.

Overall, our findings suggest that the lead agent assures the other participants of the quality of their screening, monitoring and due diligence activities by retaining a larger loan share in the case of borrowers with large customer-supplier links.

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[13] The model in Column 4 does not include observations without customer-supplier links. In fact, the length of the relationship is always 0 in these observations.

[14] The maximum is reached at 3 years and 3 months. If we limit the analysis to observations with a large customer-supplier link, the mean of *Length large CS links* is 2.2 (2 years and 2 months).

4.2 Pricing and conditions of bank loans

Following the analysis on the structure of the syndicated loans, we turn our attention to their pricing and contractual provisions. In this subsection, we attempt to disentangle the indirect effect of the syndicate structure on loan pricing from the direct effect of large customer-supplier links (see H2). The higher mark-ups associated with customer-supplier links might be explained by a specific structure of the syndicate as well as by the customer-supplier links *per se*. To this end, we follow Ivashina (2009) and instrument the lead agent's loan share to examine whether the large customer-supplier links affect the conditions of the loan directly or only via its effects on the syndicate structure. We estimate the impact of the large customer-supplier relationship on loan pricing using Eq. (2). To account for the impact of syndicate structure on the loan pricing, we run a two-stage least squares (2SLS) model to estimate the effect of diversification effect on the lead agent's required spread.

Table 3 reports the estimates of the 2SLS model. We employ the *AISD* as the dependent variable in Panel A. The results of the first-stage model where the dependent variable is the lead agent's loan share closely mirror those in Table 2 as expected (see Columns 1, 3, and 5).[15] The second-stage models of Table 3 (i.e. Columns 2, 4, and 6) show that the share retained by the lead bank exerts a positive and significant effect on the spread required by the lead bank. This result provide support to H2 which states that the lead agent imposes costlier, stricter loan contract terms because they retain larger participation shares (indirect effect) rather than dealing with borrowers with customer-supplier links (direct effect). In contrast, we notice that the

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[15] The minor differences between Table 2 and the first-stage models of Table 3 are due to the different number of observations used in these models.

variables capturing the direct effect of the large customer-supplier relationship on pricing – i.e.

Large CS links, *Length large CS links* and the squared *Length large CS links* term – are not

significant in the second-stage regression. Therefore, we do not observe a direct effect on *AISD*

once we account for the endogenous relationship between loan pricing and loan structure, which

is also affected by *Large CS links*. Our results suggest that banks require higher pricing because

the lead agent retains a higher share for borrowers with large customer-supplier participation. To

recover the monitoring costs, the lead agent applies a higher mark-up that is, however, not

associated with the large customer-supplier links *per se*. We further extend this analysis by

considering *TCB* as dependent variable instead of *AISD*. Results are shown in Panel B. Again, we

find evidence that the lead agent's loan share drives the loan pricing, while *Large CS links* and

Length large CS links do not produce any significant effect on loan pricing.

[Insert Table 3 about here]

In Table 4, we consider whether *Large CS links* and *Length large CS links* affect the

number of restrictive covenants imposed by the lender in the loan contract. Consistent with the

diversification effect, we should observe that the lead agent might demand a higher number of

restrictive covenants for holding a higher loan share, while the coefficients of *Large CS links* and

Length large CS links should not be significant.

For this analysis, we use Eq. (2) but with *Covenant index* as the dependent variable.

Column 2, 4 and 6 of Table 4 shows that, in line with H2, we find that the share retained by the

lead bank exerts a positive and significant effect on the number of required restricted loans. On

the other hand, *Large CS links* and *Length large CS links* and the squared *Length large CS links*

term are not significant. This confirms that the effect of the customer-supplier relationship

operates indirectly through the loan structure, and not directly.

Finally, in line with previous studies (e.g., Campello and Gao, 2015; Cen et al., 2016; Ivashina, 2009), Tables 3 and 4 show that borrower's performance measures and size are negatively and significantly related to pricing, while previous lending relationship and leverage are positively and significantly related to pricing. In addition, the presence of institutional investors is associated with higher pricing. In line with Lim et al.'s (2014) arguments, institutional lenders may have higher required rates of return than banks. The same effect on pricing can also be observed for high number of participant lenders.

Overall, our analysis suggests that *Large CS links* and *Length large CS links* both affect the pricing and the contractual provisions of a syndicated loan, but not directly. Their effect is indirect via the structure of the loan, with lead agents that keep a larger share of the loan to monitor borrowers in a large customer-supplier relationship. We also document a trade-off between risks and positive effects provided by *Length large CS links*.

5. Additional Analyses

This section presents the additional analyses we undertake to assess the robustness of our findings. We begin by addressing endogeneity concerns related to omitted variables. Then, we analyze whether an existing lending relationship between the lender and any large customer or supplier of the borrower drives our results. We conclude the section by presenting some additional tests.

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5.1 Large customer-supplier links and participation to the syndicated loan market:

Endogeneity concerns

This section addresses a few concerns associated with the potentially endogenous nature of the relationship between large customer-supplier relationship and loan pricing. The first concern we examine is related to the borrower's willingness to create or hide a large customer and/or supplier link to get access to more favorable conditions from the lender. To control for this issue and mitigate endogeneity concerns, we run a battery of tests. We start by only considering the large customer-supplier cases in which the suppliers provide services and differentiated products that are unique or highly customized inputs, and where the customers need differentiated and service inputs (Cunat, 2007; Giannetti et al., 2011; Rauch, 1999). Both these suppliers and customers are more difficult to replace. Since these relationships are characterized by high switching costs, it is unlikely that firms create ad hoc large customer-supplier links to get access to the lending market. Column 1 of Panels A, B and C of Table 5 shows the estimates for this test using AISD as the dependent variable.[16] The results are consistent with our initial findings.

[Insert Table 5 about here]

As a further test, we strengthen the definition of *Large CS links*. SFAS No. 14 (before 1997) and SFAS No. 131 (after 1997) require firms to disclose large customers representing

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[16] We obtain similar results to those reported in Table 6 if we consider *TCB* as the dependent variable. Tables are available upon request.

more than 10% of the total firm revenue. This is driven by the fact that the borrower could be willing to create or hide a large customer and/or supplier link to get access to more favorable conditions from lenders. We expect this issue to be more serious around the 10% threshold, where it is easier for firms to strategically create such links. To overcome this problem, we only consider borrowers with principal customers that account for more than 15% of their total sales (*Cus 15%*). In Column 2 of Table 5, the *Large CS links* dummy takes the value of 1 only if the sales percentage from supplier i to customer j over i 's total sales is at least equal to 15%. Results for Column 2 of Panels A and B are remarkably similar to those shown in Column 2 of Table 3. The only difference is in Panel C of Column 2, where *Length large CS links* and the squared *Length large CS links* are significantly and positively related to *AISD*.

Another concern is related to the fact that the large customer-supplier exerts a quality-signaling effect only in the long term as suggested by Cen et al. (2016). We therefore further analyze the role of the length of the relationship for our results. To this end, we consider only the large customer-supplier relationships that last less than three years, *Large CS link <3y,* and the results hold as shown in Column 3 of Panels A, B and C. We still find that *Lead agent share* is positively and significantly related to *AISD*, while the coefficients of *Large CS links* and *Length large CS links* are not significant.

Finally, some large customer-supplier firms may exert a stronger reputation-signaling effect that could reduce the loan spread. To control for this issue, we consider a firm exerting a reputation-signaling effect if it belongs to the S&P 500 index. For this test, we exclude from the sample borrowers with at least one large customer-supplier firm listed in the S&P500 index. The

estimates of Column 4 (Panels A, B and C) of Table 5 are consistent with those of Table 3 where the dependent variable is *AISD*.[17]

5.2. Relationship lending in the syndicate loan market via large customer-supplier links

This section examines whether the results of Tables 2, 3 and 4 are associated with an existing relationship between the borrowers' large customer-supplier firms and lenders in the syndicated loan markets. Specifically, we consider the possibility that borrowers and their large customer-supplier partners share the same bank. In this case, in line with the arguments of Hasan et al. (2020), leaders and/or other participants of the syndicate loans could acquire private information on the borrowers by lending to their large customer-supplier firms.

On the one hand, lenders may be lenient with a connected firm because, by doing so, they are helping their existing clients. On the other hand, lenders could be overly exposed to large customer-supplier risks by lending along the large customer-supplier links. Consequently, lenders could exert more monitoring efforts on these connected firms and increase loan spreads as the compensation for their additional costs and risks. In this analysis we explore whether these effects impact the results discussed in Section 4.

For this analysis, we follow Bharath et al. (2007, 2011) by accounting for the indirect relationship lending between the lead agent and the borrower. We do this considering the number of loans provided by the lead agent to any borrower's large customer-supplier in the last five years. We create the binary variable *RL via large CS links* that takes the value of 1 if the borrower has a large customer and/or supplier that has received a syndicate loan from the same

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[17] As a further analysis, we investigate the effect of borrower reputation on pricing. For this additional test, we follow Leary and Roberts (2014) and we create a dummy, *Industry leader*, which is equal to 1 if the borrower is ranked at the top third position among its peer firms from the same industry according to each of three ranking criteria: profitability, market share and stock return. In this unreported test, we remove from the sample all the borrowers that are industry leaders.

lender(s) in the past five years. It is equal to 0 if the borrower does not have any large customer and/or supplier that has received a syndicate loan from the same lender(s) over the last five years. It is also equal to 0 if the borrower does not have any large customer and/or supplier that has received a loan.[18] This measure is consistent with the existing literature (for example, Bharath et al., 2007, 2011; Schenone, 2010; Schwert, 2018), but we are aware of its limitation. In fact, it establishes relationship lending using data only from the syndicated loan market, while ignoring other types of loans.

Table 6 presents the results. Columns 1, 3 and 5 of Table 6 report the results for the first stage of 2SLS (Eq (2)). Instead, Columns 2, 4 and 6 show the estimates for the second stage of the 2SLS where the dependent variables are respectively *AISD*, *TCB* and *Covenant Index*. In all specifications, the *Large CS links* dummy is not significant. Therefore, the relationship lending between the lead agent and at least one of the firms in the borrower's large customer-supplier does not affect our findings on loan pricing and covenant index. Table 6 still shows that the lead agent demands higher mark-ups and uses more covenants because of the lack of diversification regardless of the relationship lending with the borrower via the large customer-supplier link. Overall, the estimates of Table 6 are consistent with those reported in the main tables.

[Insert Table 6 about here]

5.3. Term loans and revolver loans

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[18] Due to M&A activities, the information relative to past lending activities between the borrower's large customer-supplier partners and the lead agent bank could be lost if the lead agent bank has been merged or acquired within the five years before the loan origination. To keep track of this information, we collected data on M&As from SNL Financial to identify the acquired/merged lead agents. Then, we assigned 1 to the Large CS links dummy if the lead agent that provided at least one loan to the borrower' major customer and/or supplier, has been merged or acquired within the five years prior to the issuance of the loan.

We also control for the loan facility type (term, revolver) that could potentially affect the loan pricing conditions (Delis et al., 2020b; Lim et al., 2014). Specifically, term loan facilities tend to have higher spreads than revolver facilities. To address this concerns, Table 7 controls for the loan facility's types. Specifically, the variable *Term loan* is a dummy that is equal to 1 if the type of the loan facility is 'Term Loan A', which is usually amortizing; otherwise it is 0. Instead, the variable *Revolver* is a dummy that is equal to 1 if the facility type is 'Revolver Loan' and 0 otherwise.[19]

The main results hold when we control for these loan facility-type measures. Regarding the type of loan variables, we find that *Term loan* is positively and significantly related to *Lead agent share* and *pricing (AISD, TCB* and *Covenant Index)*, while the *Revolver* dummy is mainly insignificant with respect to *AISD* and *Covenant Index*, and positively and significantly related to *Lead agent share.*

[Insert Table 7 about here]

5.4. Other tests: connected directors and 2007-2009 financial crisis

Both monitoring activities and lending contractual conditions could also reflect possible connections between the directors of the lead agents and borrowers. In this case, both the syndicate structure and loan pricing would be explained by existing connections between lenders and borrowers rather than reflecting the borrowers' risk profile and syndicates' characteristics. To control for this eventuality, we create a new variable entitled *Lender Link* following Guner et al.

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[19] Among the 9,307 facilities, 22% is term loan, and 66% is revolver.

(2008). Specifically, the binary variable takes a value of 1 if there is a board interlock between the borrower and the lead agent in the 5-year window before receiving the loan.

Table 8 Panel A shows the results which are in line with those of Tables 3 and 4. In addition, we find that the variable *Lender Link* is positively and significantly related to the lead agent's share. We interpret this result as follows. A connection via board interlock makes it harder for the lead agent to credibly commit to monitor the borrower. Therefore, the other participants in the syndicate request that the lead agent retains a larger fraction of the loan for incentive purposes.

Finally, we re-run our models excluding the years 2007-2009 of the financial crisis to make sure that our results are not driven by the financial crisis on the supplier-customer relationships. Table 8 Panel B shows that the exclusion of the crisis period does not alter our results.

[Insert Table 8 about here]

6. Conclusions

Large customer-supplier relationships are becoming increasingly relevant in the lending market (Campello and Gao, 2017). Using data from the syndicated loan market in the US, this paper provides novel evidence about the impact of large customer-supplier relationships on the structure of the syndicate loans and their pricing.

Our findings show that the lead agent holds a larger loan share for borrowers with large customer-supplier participation. In these syndicates, the lead agent experiences higher credit-risk exposure and as a result implements more monitoring activities. Therefore, following Ivashina (2009), we run a two-stage least squares (2SLS) method to estimate the impact of the lead

agent's share on loan pricing after controlling for possible adverse selection and moral hazard concerns in the syndicate. Our findings show that the lead banks demand higher pricing and more restricted covenants for retaining a higher share in the syndicate. However, once controlling for this diversification effect, we show that large customer-supplier links are not directly associated with any risk premium. We attain the same result once we consider the length of such relationships which is a measure of the borrower's dependence on large customer-supplier firms. These results are confirmed in a battery of robustness tests.

Our findings also have important policy implications by showing how bank monitoring responds to borrowers' exposure to large customer-supplier links. These changes shed light on the extent of the adjustment that banks make to loan pricing in response to the exposure to a risky borrower. The paper's results are consistent with the view that the lead agent demands a larger premium as compensation for lack of diversification. In addition, the lead agent's reputation in the syndicate represents an important mechanism for mitigating information asymmetry problems with the syndicate and, therefore, its monitoring effort. Moreover, our results could be useful in understanding that pricing contract terms do not only reflect the borrower's risk profile, but also the ownership syndicate structure and asymmetric problems within the syndicate. Future research could attempt to disentangle the monitoring activities (in this regard, see Gustafson et al., 2020) undertaken by the lead agent for firms with large customer-supplier links as they could result in different contractual conditions for borrowers.

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TABLE 1
Summary Statistics

This table presents the summary statistics of the variables related to syndicate loan and borrowers' characteristics. The sample spans the 1987-2018 window. All continuous variables are winsorized within the 1st and 99th percentiles. See Table A1 of the Appendix for variable definitions.

Variables	Mean	Std. Dev.	Median	#Obs.
Loan characteristics				
Facility amount (in million)	489.56	1224.37	170	9,153
Facility maturity (in month)	45.93	23.06	48	9,153
Syndicate size	11.14	9.67	8	9,153
Institutional investor	0.39	0.49	0	9,153
Non-US dollar facility	0.01	0.08	0	9,153
Loan portfolio exposure	0.02	0.08	0	9,153
Term loan	0.22	0.41	0	9,153
Revolver	0.66	0.47	1	9,153
Syndicate structure				
Lead agent share	0.26	0.19	0.19	9,153
Syndicate reputation: lead to participant	0.29	0.23	0.27	9,153
Syndicate reputation: reciprocal	0.75	0.43	1	9,153
Price terms				
AISD	156.47	113.83	137.5	8,708
TCB	123.81	93.37	102.12	6,140
Covenant index	1.13	1.50	1	9,153
Borrower characteristics				
Total asset (in million)	7113.27	22788.85	1013.58	9,153
ROA	0.09	0.08	0.08	9,153
Tobin's Q	1.45	0.64	1.28	9,153
Cash	0.08	0.10	0.04	9,153
Leverage	0.32	0.22	0.30	9,153
CAPX	286.78	753.39	43.62	9,153
Past lending	3.13	3.31	2	9,153
Large CS links	0.55	0.50	1	9,153
Length large CS links (in year)	1.20	2.40	0	9,153
Supplier HHI	0.17	0.34	0	9,153
Customer HHI	0.16	0.34	0	9,153

TABLE 2
Large customer-supplier links and lead agent's loan share

This table investigates the effect of large CS links on lead agent's loan share. The dependent variable in all columns is the share of the loan held by the lead agent. Estimations in columns (1) to (3) consider the full sample while column (4) uses the sample of borrowers with large customer-supplier relationships the year before receiving the loan. Facility year, bank and borrower industrial sector-fixed effects are included in the estimations of all columns. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Large CS links	0.006**			
	(0.00)			
Log(Length large CS links)		0.016***	0.039***	0.040***
		(0.00)	(0.01)	(0.01)
Log(Length large CS links)^2			-0.027**	-0.029**
			(0.01)	(0.01)
Syndicate reputation: lead to participant	-0.039***	-0.038***	-0.038***	-0.030***
	(0.01)	(0.01)	(0.01)	(0.01)
Syndicate reputation: reciprocal	-0.047***	-0.046***	-0.046***	-0.057***
	(0.00)	(0.00)	(0.00)	(0.00)
Supplier HHI	0.002	0.000	-0.001	-0.008**
	(0.00)	(0.00)	(0.00)	(0.00)
Customer HHI	-0.005	-0.008**	-0.008**	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)
Past lending	0.002	0.002	0.002	0.005
	(0.00)	(0.00)	(0.00)	(0.01)
Total asset	0.001	-0.000	-0.000	0.001
	(0.00)	(0.00)	(0.00)	(0.01)
ROA	-0.018	-0.018	-0.018	-0.003
	(0.02)	(0.02)	(0.02)	(0.02)
Tobin's Q	-0.005**	-0.005**	-0.005**	-0.005*
	(0.00)	(0.00)	(0.00)	(0.00)
Cash	0.003	0.004	0.003	0.001
	(0.01)	(0.01)	(0.01)	(0.02)
Leverage	0.025***	0.026***	0.026***	0.033***
	(0.01)	(0.01)	(0.01)	(0.01)
CAPX	-0.006**	-0.006**	-0.006**	-0.007*
	(0.00)	(0.00)	(0.00)	(0.00)
Log(Facility amount)	0.016***	0.016***	0.016***	0.014***

	(1)	(2)	(3)	(4)
	(0.00)	(0.00)	(0.00)	(0.00)
Log(Facility maturity)	-0.007*	-0.007*	-0.007*	-0.005
	(0.00)	(0.00)	(0.00)	(0.00)
Log(Number of banks)	-0.392***	-0.392***	-0.392***	-0.357***
	(0.01)	(0.01)	(0.01)	(0.01)
Institutional investor	0.000	0.000	0.000	0.004
	(0.00)	(0.00)	(0.00)	(0.00)
Non-US dollar facility	0.014	0.015	0.014	-0.013
	(0.01)	(0.01)	(0.01)	(0.01)
Loan portfolio exposure	0.094***	0.094***	0.094***	0.066**
	(0.03)	(0.03)	(0.03)	(0.03)
Bank FE	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted R2	0.756	0.756	0.756	0.770
Obs.	9307.000	9307.000	9307.000	5136.000

TABLE 3
Large customer-Supplier links and loan pricing

This table reports the results of the model for the spread required by the lead agent, Eq (2). The dependent variables for Panel A and Panel B are respectively *AISD* and *TCB*. Columns (1), (3) and (5) report the first-stage results from a 2SLS estimation where we regress syndicate reputation variables against the lead agent participation. Columns (2), (4) and (6) report the second-stage results of the 2SLS estimation. All specifications include year, bank, and borrower sector-fixed effects. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: AISD	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD
Syndicate reputation: lead to participant	-0.039***		-0.038***		-0.038***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.050***		-0.049***		-0.049***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		3.196***		3.229***		3.224***
		(0.71)		(0.73)		(0.71)
Large CS links	0.005*	0.041				
	(0.00)	(0.04)				
Log(Length large CS links)			0.017***	-0.083	0.043***	0.062
			(0.00)	(0.06)	(0.01)	(0.13)

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Log(Length large CS links)^2					-0.031**	-0.170
					(0.01)	(0.12)
Supplier HHI	0.002	-0.057*	0.001	-0.024	-0.001	-0.033
	(0.00)	(0.03)	(0.00)	(0.03)	(0.00)	(0.03)
Customer HHI	-0.006	0.008	-0.009**	0.055	-0.010***	0.052
	(0.00)	(0.04)	(0.00)	(0.04)	(0.00)	(0.03)
Past lending	0.003	0.157***	0.003	0.165***	0.003	0.163***
	(0.00)	(0.04)	(0.00)	(0.05)	(0.00)	(0.04)
Total asset	0.001	-0.454***	0.001	-0.445***	0.000	-0.447***
	(0.00)	(0.04)	(0.00)	(0.05)	(0.00)	(0.05)
ROA	-0.013	-2.383***	-0.013	-2.388***	-0.013	-2.388***
	(0.02)	(0.19)	(0.02)	(0.35)	(0.02)	(0.19)
Tobin's Q	-0.005**	-0.102***	-0.005**	-0.099***	-0.005**	-0.099***
	(0.00)	(0.02)	(0.00)	(0.03)	(0.00)	(0.02)
Cash	0.007	0.453***	0.007	0.473***	0.006	0.469***
	(0.01)	(0.16)	(0.01)	(0.15)	(0.01)	(0.16)
Leverage	0.025***	0.921***	0.026***	0.916***	0.026***	0.918***
	(0.01)	(0.07)	(0.01)	(0.06)	(0.01)	(0.07)
CAPX	-0.006**	-0.060*	-0.006**	-0.056	-0.006**	-0.058*
	(0.00)	(0.04)	(0.00)	(0.04)	(0.00)	(0.03)
Log(Facility amount)	0.015***	-0.419***	0.015***	-0.419***	0.015***	-0.419***
	(0.00)	(0.05)	(0.00)	(0.05)	(0.00)	(0.05)
Log(Facility maturity)	-0.008*	-0.105	-0.008*	-0.110	-0.007*	-0.109
	(0.00)	(0.07)	(0.00)	(0.08)	(0.00)	(0.07)
Log(Number of banks)	-0.389***	1.311***	-0.389***	1.324***	-0.388***	1.323***
	(0.01)	(0.30)	(0.01)	(0.30)	(0.01)	(0.30)
Institutional investor	0.001	0.343***	0.001	0.343***	0.001	0.342***
	(0.00)	(0.05)	(0.00)	(0.03)	(0.00)	(0.05)
Non-US dollar facility	0.013	-0.091	0.014	-0.093	0.013	-0.096
	(0.01)	(0.11)	(0.01)	(0.09)	(0.01)	(0.11)
Loan portfolio exposure	0.093***	-0.448	0.094***	-0.452**	0.093***	-0.456
	(0.03)	(0.30)	(0.03)	(0.20)	(0.03)	(0.30)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.755	0.558	0.755	0.557	0.755	0.557
Obs.	8845.000	8845.000	8845.000	8845.000	8845.000	8845.000

TABLE 3 (continued)
Large customer-supplier links and loan pricing

Panel B: TCB	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	Lead agent share	TCB	Lead agent share	TCB	Lead agent share	TCB
Syndicate reputation: lead to participant	-0.041***		-0.040***		-0.040***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.054***		-0.054***		-0.054***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		3.473***		3.484***		3.483***
		(0.73)		(0.73)		(0.73)
Large CS links	0.008**	-0.004				
	(0.00)	(0.03)				
Log(Length large CS links)			0.019***	-0.078	0.068***	-0.032
			(0.00)	(0.07)	(0.01)	(0.15)
Log(Length large CS links)^2					-0.057***	-0.054
					(0.01)	(0.14)
Supplier HHI	0.004	-0.040	0.002	-0.025	-0.000	-0.027
	(0.00)	(0.03)	(0.00)	(0.04)	(0.00)	(0.03)
Customer HHI	-0.009**	0.017	-0.012***	0.040	-0.013***	0.038
	(0.00)	(0.04)	(0.00)	(0.04)	(0.00)	(0.04)
Past lending	0.001	0.113**	0.001	0.116***	0.001	0.115**
	(0.00)	(0.05)	(0.00)	(0.04)	(0.00)	(0.05)
Total asset	0.004	-0.295***	0.003	-0.289***	0.002	-0.289***
	(0.00)	(0.05)	(0.00)	(0.05)	(0.00)	(0.05)
ROA	-0.012	-1.324***	-0.013	-1.323***	-0.013	-1.323***
	(0.02)	(0.21)	(0.02)	(0.32)	(0.02)	(0.21)
Tobin's Q	-0.005**	-0.051**	-0.005**	-0.050*	-0.006**	-0.050**
	(0.00)	(0.02)	(0.00)	(0.03)	(0.00)	(0.02)
Cash	0.020	0.514***	0.021	0.521***	0.020	0.520***
	(0.01)	(0.16)	(0.01)	(0.15)	(0.01)	(0.16)
Leverage	0.015**	0.863***	0.016**	0.861***	0.017**	0.861***
	(0.01)	(0.07)	(0.01)	(0.07)	(0.01)	(0.07)
CAPX	-0.006*	-0.027	-0.005	-0.027	-0.006*	-0.027
	(0.00)	(0.04)	(0.00)	(0.04)	(0.00)	(0.04)
Log(Facility amount)	0.003	-0.534***	0.003	-0.534***	0.003	-0.534***

	(0.00)	(0.06)	(0.00)	(0.06)	(0.00)	(0.06)
Log(Facility maturity)	0.010*	-0.020	0.010*	-0.022	0.011*	-0.022
	(0.01)	(0.07)	(0.01)	(0.07)	(0.01)	(0.07)
Log(Number of banks)	-0.363***	1.631***	-0.363***	1.633***	-0.362***	1.634***
	(0.01)	(0.29)	(0.01)	(0.30)	(0.01)	(0.29)
Institutional investor	-0.002	0.261***	-0.001	0.261***	-0.002	0.261***
	(0.00)	(0.04)	(0.00)	(0.03)	(0.00)	(0.04)
Non-US dollar facility	0.023	-0.088	0.023	-0.089	0.023	-0.089
	(0.01)	(0.13)	(0.01)	(0.12)	(0.01)	(0.13)
Loan portfolio exposure	0.160***	-0.403	0.161***	-0.404	0.159***	-0.405
	(0.04)	(0.32)	(0.04)	(0.26)	(0.04)	(0.32)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.748	0.493	0.748	0.493	0.749	0.493
Obs.	6228.000	6228.000	6228.000	6228.000	6228.000	6228.000

TABLE 4
Large customer-supplier links and loan covenant

This table reports the results of the 2SLS model for the covenants required by the lead agent, Eq (2). The dependent variable is the *Covenant index*. Columns (1), (3) and (5) report the first-stage results from a 2SLS estimation where we regress syndicate reputation variables against the lead agent participation. Columns (2), (4) and (6) report the second-stage results of the 2SLS estimation. All specifications include year, bank, and borrower sector-fixed effects. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	Lead agent share	Covenant Index	Lead agent share	Covenant Index	Lead agent share	Covenant Index
Syndicate reputation: lead to participant	-0.039***		-0.038***		-0.038***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.047***		-0.046***		-0.046***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		3.613***		3.632***		3.622***
		(1.07)		(1.22)		(1.07)
Large CS links	0.006**	-0.027				
	(0.00)	(0.04)				
Log(Length large CS links)			0.016***	-0.116	0.039***	-0.003
			(0.00)	(0.08)	(0.01)	(0.17)

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	(1)	(2)	(3)	(4)	(5)	(6)
Log(Length large CS links)^2					-0.027**	-0.133
					(0.01)	(0.19)
Supplier HHI	0.002	-0.114*	0.000	-0.100*	-0.001	-0.106*
	(0.00)	(0.06)	(0.00)	(0.05)	(0.00)	(0.06)
Customer HHI	-0.005	0.049	-0.008**	0.073	-0.008**	0.070
	(0.00)	(0.06)	(0.00)	(0.07)	(0.00)	(0.05)
Past lending	0.002	0.313***	0.002	0.313***	0.002	0.312***
	(0.00)	(0.07)	(0.00)	(0.08)	(0.00)	(0.07)
Total asset	0.001	-0.648***	-0.000	-0.641***	-0.000	-0.642***
	(0.00)	(0.07)	(0.00)	(0.07)	(0.00)	(0.07)
ROA	-0.018	-0.638**	-0.018	-0.640*	-0.018	-0.640**
	(0.02)	(0.28)	(0.02)	(0.37)	(0.02)	(0.28)
Tobin's Q	-0.005**	-0.121***	-0.005**	-0.119***	-0.005**	-0.120***
	(0.00)	(0.04)	(0.00)	(0.04)	(0.00)	(0.04)
Cash	0.003	0.366	0.004	0.366	0.003	0.364
	(0.01)	(0.24)	(0.01)	(0.23)	(0.01)	(0.24)
Leverage	0.025***	0.410***	0.026***	0.407***	0.026***	0.409***
	(0.01)	(0.13)	(0.01)	(0.10)	(0.01)	(0.13)
CAPX	-0.006**	-0.052	-0.006**	-0.052	-0.006**	-0.054
	(0.00)	(0.05)	(0.00)	(0.07)	(0.00)	(0.05)
Log(Facility amount)	0.016***	-0.330***	0.016***	-0.331***	0.016***	-0.331***
	(0.00)	(0.08)	(0.00)	(0.09)	(0.00)	(0.08)
Log(Facility maturity)	-0.007*	0.352***	-0.007*	0.350***	-0.007*	0.351***
	(0.00)	(0.07)	(0.00)	(0.08)	(0.00)	(0.07)
Log(Number of banks)	-0.392***	2.105***	-0.392***	2.111***	-0.392***	2.108***
	(0.01)	(0.47)	(0.01)	(0.57)	(0.01)	(0.47)
Institutional investor	0.000	0.255***	0.000	0.255***	0.000	0.253***
	(0.00)	(0.05)	(0.00)	(0.05)	(0.00)	(0.05)
Non-US dollar facility	0.014	0.393	0.015	0.389	0.014	0.387
	(0.01)	(0.30)	(0.01)	(0.28)	(0.01)	(0.30)
Loan portfolio exposure	0.094***	0.347	0.094***	0.344	0.094***	0.344
	(0.03)	(0.37)	(0.03)	(0.26)	(0.03)	(0.37)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.756	0.390	0.756	0.390	0.756	0.390
Obs.	9307.000	9307.000	9307.000	9307.000	9307.000	9307.000

TABLE 5

Additional analyses – Loan pricing

The table reports the second-stage estimation results of the pricing function using the 2SLS approach. Column (1) only considers the large customer-supplier cases in which: the suppliers provide services and differentiated products that are unique or highly customized inputs, and where the customers need differentiated and service inputs. In column (2), borrowers with less than 15% of customer sales are defined as borrowers with no large customer-supplier link. Column (3) excludes borrowers with more than three years of supply-customer relationship. Column (4) excludes borrowers with at least one large customer-supplier included in the S&P 500 index. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: 2nd stage	SC Dep.	Cus 15%	Large CS link <3y	SC reputation
	(1)	(2)	(3)	(4)
Lead agent share	1.511***	3.218***	3.132***	3.169***
	(0.52)	(0.46)	(0.71)	(0.70)
Large CS links	0.095	0.042	0.047	0.024
	(0.07)	(0.03)	(0.03)	(0.04)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
R2	0.468	0.557	0.567	0.579
Obs.	1228.000	8845.000	7742.000	6417.000
Panel B: 2nd stage				
Lead agent share	1.514***	3.208***	3.145***	3.200***
	(0.52)	(0.46)	(0.52)	(0.70)
Log(Length large CS links)	-0.016	-0.071	-0.037	-0.104
	(0.10)	(0.05)	(0.04)	(0.07)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
R2	0.467	0.557	0.566	0.578
Obs.	1228.000	8845.000	7742.000	6417.000
Panel C: 2nd stage				
Lead agent share	1.487*	3.227***	3.145***	3.190***
	(0.80)	(0.55)	(0.69)	(0.69)
Log(Length large CS links)	0.452	0.402	-0.111	0.059
	(0.41)	(0.39)	(0.14)	(0.16)
Log(Length large CS links)^2	-0.542	-0.573	0.097	-0.208

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	(0.39)	(0.41)	(0.15)	(0.17)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
R2	0.469	0.557	0.566	0.578
Obs.	1228.000	8845.000	7742.000	6417.000

TABLE 6
Relationship lending and Loan Pricing

This table reports the results of the model for the spread and the covenants required by the lead agent, Eq (2). The dependent variables are *AISD* and *TCB* of the syndicate loans and the covenant index. Columns (1), (3) and (5) report the first-stage results from a 2SLS estimation where we regress syndicate reputation variables against the lead agent participation. Columns (2), (4) and (6) report the second-stage results of the 2SLS estimation. All specifications include year, bank, and borrower sector-fixed effects. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	Lead agent share	AISD	Lead agent share	TCB	Lead agent share	Covenant Index
Syndicate reputation: lead to participant	-0.038***		-0.040***		-0.039***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.050***		-0.054***		-0.047***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		3.210***		3.498***		3.631***
		(0.71)		(0.74)		(1.06)
Large CS links	0.005*	0.030	0.008**	-0.018	0.005*	-0.039
	(0.00)	(0.04)	(0.00)	(0.03)	(0.00)	(0.05)
RL via large CS	-0.001	0.031	-0.001	0.036	0.002	0.034
	(0.00)	(0.03)	(0.00)	(0.03)	(0.00)	(0.06)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.764	0.557	0.748	0.493	0.756	0.390
Obs.	8845.000	8845.000	6228.000	6228.000	9307.000	9307.000

TABLE 7

Large customer-supplier links and loan pricing: term loans and revolver loans

This table reports the results of the model for the spread, total costs of borrowing and the covenants required by the lead agent, Eq (3). The dependent variables are *AISD* in Panel A, *TCB* in Panel B and covenant index in Panel C. Columns (1), (3) and (5) report the first-stage results from a 2SLS estimation where we regress syndicate reputation variables against the lead agent participation. Columns (2), (4) and (6) report the second-stage results of the 2SLS estimation. All specifications include year, bank, and borrower sector-fixed effects. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: AISD	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
Syndicate reputation: lead to participant	-0.038***		-0.037***		-0.037***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.049***		-0.048***		-0.048***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		3.088***		3.121***		3.117***
		(0.72)		(0.75)		(0.72)
Large CS links	0.005*	0.044				
	(0.00)	(0.04)				
Log(Length large CS links)			0.017***	-0.078	0.042***	0.059
			(0.00)	(0.06)	(0.01)	(0.13)
Log(Length large CS links)^2					-0.029**	-0.160
					(0.01)	(0.12)
Term loan	0.015***	0.276***	0.015***	0.275***	0.015***	0.274***
	(0.00)	(0.05)	(0.00)	(0.05)	(0.00)	(0.05)
Revolver	-0.014***	0.077	-0.015***	0.078	-0.015***	0.078
	(0.00)	(0.05)	(0.00)	(0.05)	(0.00)	(0.05)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.758	0.566	0.758	0.565	0.758	0.565

Obs.	8845.000	8845.000	8845.000	8845.000	8845.000	8845.000

Panel B: TCB

Syndicate reputation: lead to participant	-0.038***		-0.038***		-0.038***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.054***		-0.053***		-0.054***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		2.979***		2.989***		2.989***
		(0.64)		(0.66)		(0.64)
Large CS links	0.008**	0.008				
	(0.00)	(0.03)				
Log(Length large CS links)			0.019***	-0.063	0.066***	-0.043
			(0.00)	(0.06)	(0.01)	(0.12)
Log(Length large CS links)^2					-0.055***	-0.023
					(0.01)	(0.11)
Term loan	0.028***	0.745***	0.028***	0.745***	0.028***	0.744***
	(0.01)	(0.07)	(0.01)	(0.05)	(0.01)	(0.07)
Revolver	-0.005	-0.105	-0.005	-0.105*	-0.005	-0.105
	(0.00)	(0.07)	(0.00)	(0.06)	(0.00)	(0.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.752	0.623	0.753	0.623	0.753	0.623
Obs.	6228.000	6228.000	6228.000	6228.000	6228.000	6228.000

Panel C: Covenant index

Syndicate reputation: lead to participant	-0.038***		-0.037***		-0.037***	
	(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.046***		-0.045***		-0.045***	
	(0.00)		(0.00)		(0.00)	
Lead agent share		3.354***		3.370***		3.361***
		(1.06)		(1.23)		(1.06)
Large CS links	0.006**	-0.022				
	(0.00)	(0.04)				
Log(Length large CS links)			0.017***	-0.104	0.039***	-0.003
			(0.00)	(0.08)	(0.01)	(0.16)

Log(Length large CS links)^2					-0.026**	-0.119
					(0.01)	(0.18)
Term loan	0.018***	0.304***	0.018***	0.304***	0.018***	0.303***
	(0.00)	(0.07)	(0.00)	(0.08)	(0.00)	(0.07)
Revolver	-0.012***	-0.051	-0.012***	-0.051	-0.012***	-0.051
	(0.00)	(0.05)	(0.00)	(0.05)	(0.00)	(0.05)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.759	0.402	0.759	0.402	0.759	0.402
Obs.	9307.000	9307.000	9307.000	9307.000	9307.000	9307.000

TABLE 8

Pricing: Governance links between the borrower and the lead agent and 2007-2009 financial crisis

This table reports the results of the model for the spread required by the lead agent, Eq (2). The dependent variables for Panel A and Panel B are respectively *AISD* and *TCB*. Columns (1), (3), (5), (7), (9) and (11) report the first-stage results from a 2SLS estimation where we regress syndicate reputation variables against the lead agent participation. Columns (2), (4), (6), (8), (10) and (12) report the second-stage results of the 2SLS estimation. Panel A refers to the test relative to governance links between the borrower and the lead agent, while Panel B excludes the facilities that originated during the 2007-2009 financial crisis. All specifications include year, bank, and borrower sector-fixed effects. All independent variables are defined in Table A1 of the Appendix. Standard errors are clustered at borrower level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Governance Links	AISD						TCB					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD
Syndicate reputation: lead to participant	-0.039***		-0.038***		-0.038***		-0.039***		-0.038***		-0.038***	
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.049***		-0.049***		-0.049***		-0.046***		-0.046***		-0.046***	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Lead agent share		3.198***		3.229***		3.225***		3.630***		3.648***		3.638***
		(0.71)		(0.73)		(0.71)		(1.07)		(1.22)		(1.07)
Large CS links	0.005*	0.041					0.005**	-0.026				
	(0.00)	(0.04)					(0.00)	(0.04)				
Log(Length large CS links)			0.016***	-0.082	0.042***	0.063			0.016***	-0.112	0.039***	0.004
			(0.00)	(0.06)	(0.01)	(0.13)			(0.00)	(0.08)	(0.01)	(0.17)
Log(Length large CS links)^2					-0.030**	-0.170					-0.027**	-0.136
					(0.01)	(0.12)					(0.01)	(0.19)
Lender Link	0.019***	-0.023	0.018***	-0.018	0.018***	-0.019	0.020***	-0.147*	0.019***	-0.141*	0.019***	-0.142*
	(0.01)	(0.06)	(0.01)	(0.06)	(0.01)	(0.06)	(0.01)	(0.08)	(0.01)	(0.08)	(0.01)	(0.08)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.771	0.558	0.772	0.557	0.772	0.557	0.772	0.390	0.773	0.390	0.773	0.390
Obs.	8845.000	8845.000	8845.000	8845.000	8845.000	8845.000	9307.000	9307.000	9307.000	9307.000	9307.000	9307.000

TABLE 8 (continued)

Panel B: Excluding the 2007-09 Financial Crisis	AISD						TCB					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD	Lead agent share	AISD
Syndicate reputation: lead to participant	-0.040***		-0.040***		-0.039***		-0.038***		-0.038***		-0.038***	
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Syndicate reputation: reciprocal	-0.045***		-0.045***		-0.045***		-0.054***		-0.054***		-0.054***	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Lead agent share		2.956***		2.988***		2.985***		3.247***		3.254***		3.254***
		(0.73)		(0.74)		(0.54)		(0.79)		(0.79)		(0.52)
Large CS links	0.005**	0.049					0.007*	0.003				
	(0.00)	(0.04)					(0.00)	(0.04)				
Log(Length large CS links)			0.015***	-0.064	0.038***	0.066			0.018***	-0.050	0.067***	0.001
			(0.00)	(0.06)	(0.01)	(0.09)			(0.01)	(0.07)	(0.01)	(0.13)
Log(Length large CS links)^2					-0.026**	-0.152					-0.058***	-0.060
					(0.01)	(0.10)					(0.01)	(0.14)

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Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.758	0.562	0.775	0.561	0.759	0.561	0.752	0.500	0.753	0.500	0.753	0.500
Obs.	8384.000	8384.000	8384.000	8384.000	8384.000	8384.000	5861.000	5861.000	5861.000	5861.000	5861.000	5861.000

Variable	Source	Description
Price terms		
All-in-spread-drawn (AISD)	Dealscan	All-in-spread-drawn is the sum of the annual spread paid over LIBOR for each dollar drawn down from the loan and annual fee.
Total cost of borrowing (TCB)	Dealscan	The total cost of borrowing accounts for fees, spreads, and the likelihood that they will have to be paid. The construction of the variable follows Berg, Saunders and Steffen (2016).
Covenant index	Dealscan	Following Bradley and Roberts (2015), we build a covenant index that considers equity sweeps, debt sweeps, asset sweeps, dividend restrictions, and secured debt. All five different covenants are coded as 1, and 0 otherwise, and then summed up.
Loan characteristics		
Facility Amount	Dealscan	Facility amount in USD million as indicated in the field *FacilityAmt* in the facility table in Dealscan, adjusted for inflation in 2005 dollars.
Facility Maturity (in month)	Dealscan	Facility maturity in months as indicated in the field *Maturity* in the facility table in Dealscan.
Syndicate Size	Dealscan	Following Berg et al. (2016), number of lenders (lead agent and participants) of a syndicated loan facility as indicated by the LenderShares table in Dealscan.
Term Loan	Dealscan	Following Lim et al. (2014), term loan is a dummy that takes a value of one if the facility type is term loan A facility, otherwise it is equal to 0.
Revolver Loan	Dealscan	Following Lim et al. (2014), revolver loan is a dummy that takes a value of 1 if the facility type is a revolving line of credit (revolver line, revolver, 364-day facility, demand loan, limited line), and 0 otherwise.
Institutional investor	Dealscan	Following Lim et al. (2014), institutional investor is a dummy that takes a value of 1 if at least one institutional investor that is neither a commercial nor an investment bank is involved in the lending syndicate, and 0 otherwise. Following Lim et al. (2014), the dummy is constructed based on Dealscan's classification ("Finance companies").
Non-US dollar facility	Dealscan	It is a dummy equal to 1 if the facility is in foreign currency, and 0 otherwise.
Loan portfolio exposure	Dealscan	It measures the outstanding amount lent to a certain borrower against the total outstanding loan issued by that bank.
Syndicate Reputation		

Syndicate reputation: lead to participant	Dealscan	Following Ivashina (2009), the maximum per cent number of deals arranged by the same lead agent with the same participants against the total number of deals organized by the lead agent over a five-year horizon.
Syndicate reputation: reciprocal	Dealscan	Following Ivashina (2009), dummy variable that is equal to 1 if the same lead agent and the same participants switch role over a five-year horizon prior to the current syndication.
Syndicate Structure		
Lead agent share	Dealscan	Following Sufi (2007), percentage retained by the leader lender of a syndicated loan facility as indicated by the LenderShares table in Dealscan.
Large customer-Supplier		
Large CS links	Compustat	It is an indicator variable that takes the value of 1 if the borrower has at least one large customer-supplier firm located in the US over the last five years; otherwise it is 0. The data on large customer-supplier is retrieved from Compustat Segment Customer database.
Length large CS links (in years)	Compustat	The average length of the large customer-supplier relationships of a borrower the year before receiving a loan
RL via large CS links	Dealscan/ Compustat	It is an indicator variable that takes the value of 1 under two criteria: 1) if the borrower has at least one large customer-supplier firm over the last previous five years; 2) at least one large customer-supplier firm has received a loan over the last five years from the same bank. The dummy is equal to 0 if at least one of the above two criteria is not satisfied. The data on large customer-supplier is retrieved from Compustat Segment Customer database.
Supplier/Customer HHI	Compustat	It is the Herfindahl Index measuring the supplier (customer) concentration level of a certain borrower.
Borrower characteristics		
Total assets (in million)	Compustat	It is the logarithm of total assets.
Leverage	Compustat	Ratio of book value of total debt to book value of assets.
Profitability (ROA)	Compustat	Ratio of net income to total assets.
Cash	Compustat	Cash is equal to the sum of cash and short-term investments to total assets.
CAPX	Compustat	CAPX is the logarithm of capital expenditures.
Tobin's Q	Compustat	It is the ratio of (book value of assets – book value of equity + market value of equity) to book value of assets.
Lender Link	Boardex	Similarly, to Guner et al. (2008), it is a dummy equal to 1 if within the 5-year window before receiving the loan if the borrower has at least one director sits in the board of the lead agent.
Relationship Lending		

| Past Lending | Dealscan | It is the logarithm of number of loans received in the last five years. |

Appendix B: Correlation matrix

This table reports the pairwise correlation between the variables used in the analysis.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
(1) Large CS links	1																					
(2) Supplier HHI	0.36	1																				
(3) Customer HHI	0.37	-0.01	1																			
(4) Log(Length large CS links)	0.6	0.33	0.36	1																		
(5) Syndicate reputation: lead to participant	0.13	0.14	-0.03	0.15	1																	
(6) Syndicate reputation: reciprocal	0.09	0.12	-0.01	0.11	0.42	1																
(7) Past lending	0.17	0.16	-0.05	0.13	0.26	0.25	1															
(8) Lead agent share	-0.16	-0.21	0.04	-0.16	-0.48	-0.5	-0.34	1														
(9) Total asset	0.28	0.3	-0.08	0.3	0.49	0.41	0.44	-0.59	1													
(10) ROA	0.03	0.04	0	0.04	0.08	0.11	0.01	-0.11	0.01	1												
(11) Tobin's Q	0.08	0.06	0.02	0.07	0.07	0.06	0.02	-0.05	-0.03	0.39	1											
(12) Cash	0.04	0.01	0.02	0.03	-0.02	-0.03	-0.15	0.07	-0.03	0.05	0.32	1										
(13) Leverage	-0.07	-0.04	-0.04	-0.07	-0.03	-0.03	0.14	-0.02	-0.04	-0.18	-0.13	-0.28	1									
(14) CAPX	0.34	0.31	0	0.31	0.42	0.35	0.39	-0.52	0.83	0.05	0.03	-0.1	-0.03	1								
(15) Log(Facility amount)	0.24	0.27	-0.05	0.26	0.51	0.46	0.36	-0.63	0.8	0.1	0.07	-0.04	-0.04	0.7	1							
(16) Log(Facility maturity)	-0.08	-0.05	0.01	-0.02	0	0.02	-0.08	-0.06	-0.12	0.05	0.02	0.01	0.04	-0.09	0.02	1						
(17) Log(Number of banks)	0.21	0.26	-0.06	0.22	0.51	0.5	0.41	-0.84	0.7	0.1	0.03	-0.09	0.06	0.61	0.76	0.07	1					
(18) Institutional investor	0.11	0.12	-0.03	0.11	0.21	0.12	0.27	-0.32	0.36	-0.05	0	0.01	0.07	0.29	0.35	0.05	0.4	1				
(19) Non-US dollar facility	0.01	0	0	0	0.01	0	0.02	0	0.03	0.01	0.01	-0.01	-0.01	0.02	0	-0.01	0.01	0	1			
(20) Loan portfolio exposure	-0.02	-0.01	0	-0.02	-0.16	-0.28	-0.1	0.17	-0.1	-0.07	0	0.04	-0.02	-0.08	-0.07	-0.05	-0.13	-0.02	0.02	1		
(21) Term loan	-0.07	-0.07	0.01	-0.06	-0.11	-0.13	-0.05	0.15	-0.18	-0.06	-0.02	0.02	0.12	-0.15	-0.23	0.24	-0.11	0	0.02	0.03	1	
(22) Revolver	-0.03	-0.03	0.02	-0.01	0	0.02	-0.11	-0.02	-0.09	0.03	-0.02	-0.02	-0.05	-0.05	0.06	0.35	-0.04	-0.07	-0.03	-0.01	-0.56	1