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Abstract

Syndicated lending allows participant banks to offer larger loans for longer tenors. A diversified syndicate structure, which includes both domestic and foreign banks, can aid in reducing their risk and alleviate information asymmetry in loan contracting. Using cross-country data on syndicated loans obtained by non-U.S. firms, we find that a diversified syndicate structure is associated with lower loan spreads for riskier borrowers compared to loans made by non-diversified syndicates. We also find that the positive effect of a diversified syndicate on loan terms is more pronounced during periods of greater economic policy uncertainty, when information asymmetry tends to be higher. The baseline findings hold across subsamples of the data and are robust to alternative specifications and controls for selection effects. Our findings provide evidence on the benefits of a diversified syndicate structure in mitigating screening and monitoring costs in bank lending.

Keywords: Syndicated loans; Syndicate structure; Information asymmetry; Diversification; Monitoring

JEL Codes: D82; F34; G20; G21

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1 Introduction

Syndicated lending involves participation of multiple banks that can facilitate longer-term lending for larger investment projects. Such loans often include a diversified syndicate structure consisting of domestic and foreign banks. The participation of domestic banks, which typically possess more "soft information" about local borrowers, can aid in both monitoring of borrowers as well as bilateral negotiations at the recovery stage.[1] The discipline imposed by better bank monitoring can help to reduce moral hazard by detecting any private benefits enjoyed by the borrower and taking punitive actions such as liquidation or renegotiations (Park, 2000). This can potentially lower the spreads charged to riskier borrowers, who would otherwise require a higher degree of monitoring to avoid moral hazard issues (Berndt & Gupta, 2009; Diamond, 1991).[2] When lending to such high-risk borrowers, foreign banks may benefit from participating in a diversified syndicate that also includes domestic banks. In contrast, when lending to lower risk borrowers who require less monitoring, foreign banks in a non-diversified syndicate may be able to price their loans more competitively as they bring higher technological efficiency and better service quality (Bonin, Hasan, & Wachtel, 2005; Claessens, Demirgüç-Kunt, & Huizinga, 2001). In this study, we empirically examine the importance of syndicate structure in mitigating lender-borrower agency frictions and explore whether this effect varies by the level of firm risk.

The findings of our study suggest that a diversified syndicate structure plays a significant role in improving the loan terms for borrowers, especially riskier firms.[3] In line with the monitoring benefits argument, we find that a diversified syndicate structure is associated with lower lending spreads to firms with higher risk as compared to loans provided by non-diversified syndicates. A one standard deviation increase in firm risk (equivalent to a 3.3 notches deterioration in credit ratings) is associated with a lower spread of 16.7

[1] Syndicated loans are typically larger in size than other loans and with longer maturities, hence incur more monitoring costs over the loan life cycle.

[2] Compared to foreign banks, domestic banks usually possess better information on borrowers in their country due to their ongoing relationship-based lending (Haselmann & Wachtel, 2011; Mian, 2006).

[3] In our sample, 64.2 percent of the loans are extended by syndicates consisting of both domestic and foreign banks and 35.8 percent are from non-diversified syndicates.

bps for borrowers with a diversified syndicate, compared to syndicates with exclusively foreign or domestic bank participation. This decrease is about 9.4 percent of the average loan spread for our sample of syndicated loans.

While we expect the benefits of "soft information" or private information based on relationship lending (Petersen & Rajan, 1994) to be passed on to all borrowers, this information is more important for firms that are under the speculative grade category. Such loans provided by a diversified syndicate have roughly 35.4 bps lower spreads compared to non-diversified syndicates. Our findings suggest that the benefit of having a domestic lender in the syndicate increases as the risk profile of the firm increases. However, for investment grade borrowers and those in the lower end of the risk spectrum, we find that a diversified syndicate structure can be more costly than borrowing exclusively from foreign banks.[4] One possible explanation is that foreign banks in a non-diversified syndicate tend to cherry-pick borrowers and are comfortable in lending primarily to low-risk firms (Gormley, 2010). Hence, foreign banks may be able to price their loans competitively when lending to such borrowers. Whereas, when it comes to riskier borrowers such as those in the speculative grade category, foreign banks may prefer a diversified syndicate that also includes domestic banks, which possess more soft information about such firms.

The finding on the benefits offered by a diversified syndicate structure for high-risk borrowers is consistent with the theoretical argument that higher monitoring is required for less creditworthy customers (Diamond, 1991). The credit rating of the firm issued by various credit rating agencies is an observable measure of firm risk that signals the borrower's type (good or bad borrower). Credit rating agencies act as passive monitors that help lenders reduce the information asymmetry in lending decisions (Tirole, 2010). The key role of credit ratings is to reduce the "fog of asymmetric information" by way of opinions on the credit risk of firms (White, 2010). Information asymmetries and monitoring costs tend to be higher when lending to speculative grade borrowers, due to a higher degree of adverse selection and moral hazard problems (Berndt & Gupta, 2009).

Further, we examine whether a diversified syndicate is more important during periods

[4]Among the non-diversified syndicates in our sample, the proportion of syndicates with exclusively foreign banks is 90 percent.

of heightened economic policy uncertainty. Baker, Bloom, and Davis (2016) find that the investments, employment, and outputs are adversely affected during these periods. Information asymmetries are likely to be higher during periods of greater policy uncertainty (Nagar, Schoenfeld, & Wellman, 2019; Pastor & Veronesi, 2012). Consistent with the argument on information asymmetry, we find that the moderating effect of a diversified syndicate on loan spreads is more pronounced during such uncertain times. The findings suggest that a diversified syndicate, with participation of domestic banks, acts as an important source of soft information during times of higher information asymmetries.

We conduct several robustness tests to validate our main findings. Our results are robust when we compare opaque (non-rated) and transparent (rated) firms, instead of a continuous measure of risk. We find that opaque firms benefit more in terms of loan spreads from a diversified syndicate structure compared to transparent firms. Further, our main results are consistent for restricted samples that include only domestic currency loans, only U.S. dollar loans, and exclusion of financial crisis years, and are also robust to the inclusion of lead bank controls. We find that the moderating effect of a diversified syndicate is higher for domestic currency loans compared to foreign currency loans, possibly due to a better ex-ante risk profile of firms that take foreign currency loans.

In addition to these robustness tests, we account for potential endogeneity concerns that could arise out of selection bias. In our baseline panel data estimates, we include a range of firm, bank, and country-specific controls, along with firm fixed effects to account for heterogeneity among firms and year fixed effects for time-varying common factors. However, it is still possible that our observed sample of rated syndicated loans may be subject to self-selection. We identify two possible forms of selection bias: the choice of firms to get rated, and the choice to access syndicated loan markets for raising capital. In order to control for such possible biases, we employ a two-step estimator proposed by Heckman (1979). When we control for the potential selection bias in the choice of firms to get rated, the findings are consistent with the baseline results. We do not find selection bias to be a major concern when we control for the choice to obtain a syndicated loan. Nevertheless, the effects of a diversified syndicate structure on the loan spreads after

controlling for such selection are similar in sign and significance to our baseline findings.

Our choice of non-U.S. countries is motivated by two reasons. First, it has been found that information asymmetry in the U.S. credit markets is significantly lower than other countries (Bailey, Karolyi, & Salva, 2006; Leuz, Verrecchia, et al., 2000). Hence, the choice of non-U.S. firms provides an opportunity to analyze the effects of diversification of loan syndicates in markets where information asymmetries may be higher. Second, empirical literature has extensively researched syndicated lending for U.S. firms (Ivashina, 2009; Ivashina & Scharfstein, 2010; Sufi, 2007), although there are some cross-country studies that also include the United States (Giannetti & Yafeh, 2012). Complementing earlier studies on syndicated lending in other regions, such as transition countries in Europe (Haselmann & Wachtel, 2011) and emerging markets in Latin America and Eastern Europe (Nini, 2004), we contribute to this literature by focusing on a broader sample of non-U.S. firms across 31 countries. We re-estimate our baseline regression with the inclusion of U.S. firms and find that the results are similar to that documented for the non-U.S. sample. However, the moderating effect of a diversified syndicate structure is smaller for the sample that includes U.S. firms, which is consistent with the lower information asymmetries documented for the U.S loan markets.

The benefits of a diversified syndicate are related to the literature on information asymmetries faced by foreign banks in lending to borrowers in other countries. Mian (2006) finds that greater physical and cultural distance between a foreign bank's headquarters and local branches leads to the bank avoiding making loans to firms that require relational contracting, and also to lower recoveries, given a reduced ability to renegotiate contracts bilaterally.[5] Detragiache, Tressel, and Gupta (2008) show that cherry-picking by foreign banks leads to a reduction in welfare and efficiency of the overall banking system, as borrowers with better information no longer pool with riskier borrowers, leading to higher cost of borrowing for the latter set of firms. Giannetti and Ongena (2012) find that while foreign banks are likely to maintain a relationship with large firms and

[5]Sufi (2007) finds that participant lenders in a syndicate choose to be more proximate to borrowers when information asymmetry is more severe. Giannetti and Yafeh (2012) show that higher cultural distance between the lead bank and borrower can adversely affect loan contracting terms.

firms with foreign ownership, overall credit access for firms improves with the presence of foreign banks. Using loan-level information in the UK, Bosch and Steffen (2011) show that foreign banks stay away from lending to unrated firms.

The potential role of a diversified syndicate structure in reducing monitoring and information costs in loan syndicates is also closely related to the literature on delegated monitoring and cross-monitoring. Earlier studies in finance have found that delegating monitoring lowers debt contracting costs (Diamond, 1984; Fama, 1990). Cross-monitoring may be observed in the presence of multiple types of lenders when one type benefits in the form of lower monitoring costs from the observable monitoring of the other type (Booth, 1992; Datta, Iskandar-Datta, & Patel, 1999). The authors find that cross-monitoring helps in reducing the spreads of the bond issues because the bondholders benefit from the cross-monitoring of the banks. Similarly, Rauh and Sufi (2010) find that bondholders prefer to have a cross-default provision for speculative grade firms as they prefer to preserve value by depending on the higher monitoring undertaken by banks. The literature on foreign bank lending has largely ignored the role of a diversified syndicate structure involving domestic banks in syndicated loan markets.

This paper contributes to the literature on monitoring and information costs in bank lending in four ways. First, we provide evidence on diversified syndicate structure in helping banks address the insufficient availability of 'soft information' when lending in other countries. Our findings contribute to the literature on soft information and monitoring costs in relationship lending by banks (Berndt & Gupta, 2009; Detragiache et al., 2008; Diamond, 1991; Petersen & Rajan, 1994). Second, we are able to disentangle the benefits of a diversified syndicate structure across the distribution of firms' credit risk. Our choice of firm credit rating provides a much closer identification of firm risk compared to earlier studies by Haselmann and Wachtel (2011) on foreign bank participation in loan syndicates, wherein the authors classify large (small) markets as less (more) risky; and Nini (2004), who uses more aggregate measures of risk when considering borrowing costs with local lender participation. Our study reconciles earlier findings on foreign bank lending by considering the benefits of a diversified syndicate structure that vary with firm ratings.

At the lower end of the firm risk distribution, our findings support the argument in favor of foreign bank efficiency over monitoring benefits, whereas, in the higher end of the risk spectrum, the role of monitoring assumes a larger role.

Third, our findings on the structure of syndicates involving foreign and domestic banks complement the literature on the distance of the lender to the borrower (Giannetti & Yafeh, 2012; Mian, 2006; Sufi, 2007) by understanding the effect of a diversified syndicate structure through which the higher proximity of participant lenders affects the loan contract terms. Finally, our findings on the increased benefits of a diversified syndicate structure during higher economic policy uncertainty contribute to the literature on policy uncertainty and information asymmetries (Nagar et al., 2019; Pastor & Veronesi, 2012).

In the next section, we explain the data, sample selection, and empirical methodology used in the study. In the subsequent section, we present the results and discuss the key findings. Further, we perform several robustness tests to validate our key findings. Finally, we conclude the paper with a discussion on the relevance of the main findings and the contribution of this study to the literature on syndicated loan markets.

2 Data and methodology

2.1 Data

We obtain data on syndicated loans from the Loan Pricing Corporation (LPC) Dealscan database of Thomson Reuters. This is a widely used database that has a comprehensive coverage of syndicated deals across a large number of countries. For instance, Qian and Strahan (2007) use the Dealscan database to show that stronger creditor rights lead to longer maturities and lower interest rates of syndicated loans. Our sample covers information on all syndicated bank loans across 31 countries. We include non-financial corporations and exclude those syndicated loans by firms categorized under *Banks*, *Non-Bank Financials*, and *Government*. As we are interested in the role of monitoring for varying degree of credit risk, we focus on syndicated loans where credit rating information is available. We include deals that have information on issuer credit ratings from Standard

& Poor's, Moody's or Fitch. The letter ratings are converted to an ordinal variable which takes a value between 1 and 22, where 1 refers to an AAA-rated firm and 22 refers to a D-rated firm. The average numeric value of this ordinal variable across all the three rating agencies (*Borr_risk*), with higher values indicating higher firm risk, is used in the analysis.

The key dependent variable that we use to capture the effects of better screening and monitoring by banks is the weighted average spread of the loans. The spread information is taken from the *all in drawn spread*, which includes all the fees, commitments and the interest rate over the benchmark rate. In order to ensure consistency in the spread information, we include only deals with the LIBOR as a benchmark rate. Loan spreads are likely to be sensitive to the additional monitoring costs incurred by banks to mitigate asymmetric information (Coleman, Esho, & Sharpe, 2006), which can vary by firm risk. Annual borrower-level information on loans, such as the spread, credit rating and maturity of the loan is obtained as a weighted average, with respective tranche amounts used as weights. We aggregate the loans taken by each firm by cumulating the tranche level loan amounts (in millions of U.S. dollar) at an annual frequency.

The classification of syndicated loans into loans borrowed from diversified syndicates (with both domestic and foreign bank lenders) and those from non-diversified syndicates (with either exclusively foreign banks or domestic banks) is based on the variable *Lender operating country* in the LPC database. The *Div_syn* dummy variable takes the value 1 for loans with syndicates that have a mix of domestic and foreign banks among the participant lenders and 0 for non-diversified syndicates. The construction of this variable is based on studies that explore the role of foreign bank lending (Giannetti & Laeven, 2012; Haselmann & Wachtel, 2011). The kernel density plot of loan spreads for both diversified and non-diversified syndicates is shown in Figure 1. The figure suggests that the distribution of the spreads for loans by non-diversified syndicates is skewed to the right compared to diversified syndicates. In the econometric analysis, we explore whether this difference in spreads holds after controlling for a range of other factors.

The baseline estimations include a variety of loan-level and country-level controls.

Loan-level variables include the logarithm of loan amount and loan maturity, number of participant lenders, and loan-level dummies for the presence of collateral and loan covenants. The loan-level controls are incorporated in earlier studies on loan syndications (Giannetti & Yafeh, 2012; Sufi, 2007). A larger number of lenders in the syndicate can help in reducing the risk of lending in countries with poor legal rights (Ongena & Smith, 2000; Qian & Strahan, 2007). Country-specific variables employed as controls in our study include the GDP growth and per capita GDP obtained from the World Development Indicators of the World Bank. The final sample consists of 1,972 observations for 796 firms in 31 non-U.S. countries and spans a 24 year period between 1994 and 2017. The list of countries in our study is shown in Table A1.

The descriptive statistics of the key variables used in the study are detailed in Table 2 based on the baseline sample observations. The average firm in our sample has a weighted spread of 176.96 bps over the benchmark LIBOR interest rate. The average loan amount in the sample is 765 million U.S. dollars and loan tenor is 45 months. On an average, 27% of the deals were secured by collateral and 14% had some form of covenants. The median loan has a firm risk rating ($Borr\_risk$) of 10.0 corresponding to the investment grade category (BBB- or better). On an average, 45% of the firms in the sample were in the speculative grade category. Among all the syndicated loan deals, 64% were financed by banks in a diversified syndicate. Syndicates with exclusively foreign banks ($Excl\_For\_bank$) account for 32% of the observations while exclusively domestic banks ($Excl\_Dom_bank$) account for the remaining 3%. The description of the variables and the source of data are provided in Table 1. The pairwise correlations of the variables employed in this study are shown in Table A2.

2.2 Methodology

In order to test our hypothesis that the effect of a diversified syndicate structure on borrowing costs depends on firms' risk, we employ the following empirical strategy. The dependent variable employed in the analysis is the weighted average loan spread above

the LIBOR benchmark interest rate. The regression equation is as follows:

$$Loan\_Spread_{ijt} = \alpha_0 + \alpha_1 Div\_syn_{ijt} + \alpha_2 Div\_syn_{ijt} \times Borr\_risk_{ijt} + \alpha_3 Borr\_risk_{ijt} + \sum_m X_{ijm,t} \times \alpha_{4m} + \sum_n Y_{jn,t-1} \times \alpha_{5n} + \mu_i + \tau_t + \epsilon_{ijt} \quad (1)$$

where, $Loan\_Spread_{ijt}$ is the weighted average spread for all the loans availed by the firm i in country j in the year t. Div_syn takes the value of 1 if the syndicate includes both foreign and domestic banks, and 0 for non-diversified syndicates. $Borr\_risk$ refers to the credit risk of a firm, where higher values of the ordinal variable refer to higher credit risk, as discussed in the previous section. The explanatory variable of interest is the interaction between $Borr\_risk \times Div\_syn$. A negative sign of this interaction term would reflect the extent to which a diversified syndicate structure reduces the foreign banks' monitoring cost for riskier firms and, in turn, lowers the loan spreads for such firms.

X is a vector of loan-level controls that includes the logarithm of the loan amount, logarithm of the weighted average maturity of the loans, and dummies that capture the presence of collateral and the presence of covenants. Y is a vector of country-specific variables that includes GDP growth, a proxy for the demand for credit and investment, and the GDP per capita, a proxy for country-specific borrowing capacity.

We employ a panel data fixed effects model to control for time-invariant firm-specific effects. The firm fixed effects, which are at a lower level of aggregation, would subsume all other fixed effects, such as industry and country fixed effects. Additionally, we include year dummies in the regressions to capture any time-specific systemic shocks to loan spreads, such as the global financial crisis and the sovereign debt crisis in Europe. Further, standard errors are corrected for heteroskedasticity and clustered at the firm-level. In alternative estimations, we also control for lead bank and firm characteristics. In order to test our main effect during heightened economic policy uncertainty, we re-estimate the baseline specification of Equation 1 for periods with high and low economic policy uncertainty.

3 Results

3.1 Monitoring benefits of diversified syndicate structure

We estimate Equation 1 to examine the role of a diversified syndicate structure in reducing monitoring costs. Columns (1)-(4) of Table 3 show the estimation results of Equation 1 with the inclusion of an interaction term for $Borr\_risk \times Div\_syn$. The results in column (1) include the interaction term, along with level terms for the firm rating ($Borr\_risk$), syndicate structure (Div_syn) and firm fixed effects. In column (2), we add year effects to take into account time-varying common shocks. In column (3), we add loan-level controls, for loan-specific features, such as size, maturity, collateral, the presence of covenants, and the number of lenders in the syndicate. Column (4) also includes controls for country-specific factors that include GDP_growth and Log_GDPPC.

The negative coefficient of the interaction for $Borr\_risk \times Div\_syn$ in all four columns of Table 3 suggests that higher the riskiness of the firm, the lower the spreads on the loans obtained from a diversified syndicate consisting of both domestic and foreign banks compared to non-diversified syndicates. In column (1), which excludes loan-level or country-level controls, a one notch increase in $Borr\_risk$ (with higher values representing worse ratings) is associated with a lower spread of about 6.36 bps for a one notch increase in credit risk for firms borrowing from a diversified syndicate. With the inclusion of loan-specific controls and country-specific controls in columns (3) and (4), the reduction in the loan spread for a one notch increase in firm risk is about 5.18 bps and 5.05 bps, respectively. The results for column (4) imply that a one standard deviation increase in the credit risk of the firm (equivalent to a 3.3 notches deterioration in the credit rating) is associated with a reduced spread of about 16.7 bps for a diversified syndicate, as compared to a non-diversified syndicate. This reduction is about 9.4 percent of the average loan spread for our sample of syndicated loans.

The level term of Div_syn is positive in all the columns. Given the interaction term, the level term can be interpreted as the spread incurred by diversified syndicates when

Borr_risk is zero. In order to better understand this result, we plot the predicted spreads based on the regression results in column (4) by *Borr_risk* (see Figure 2). The predicted spreads suggest that at the lower end of the *Borr_risk* category, the spreads are lower for non-diversified syndicates, which are dominated by foreign bank syndicates. As the *Borr_risk* increases, the relationship reverses (at around value 8 for *Borr_risk*, corresponding to a credit rating of BBB+), and the spreads of loans from diversified syndicates become lower as compared to the non-diversified syndicates. The reversal in the relationship provides evidence in favor of the argument that the efficiency and service quality benefits of foreign bank lending (in a non-diversified syndicate) are more relevant for lower-risk borrowers (Bonin et al., 2005; Claessens et al., 2001), whereas, the benefits of "soft information" and monitoring provided by domestic banks (in a diversified syndicate) are relevant for higher risk borrowers (Park, 2000; Petersen & Rajan, 1994).

Among the significant control variables, we find that the coefficient of *GDP_growth* is negative, implying that higher GDP growth is associated with lower loan spreads. This result may be due to the increased willingness of banks to extend loans to borrowers in faster-growing economies. The sign of *Collateral_dum* is positive, which is suggestive of higher premiums on loans charged to borrowers that require collateral, even after accounting for the observable measure of credit risk, consistent with Giannetti and Yafeh (2012). The other control variables are not statistically significant, although the negative signs for amount and the number of lenders and a positive sign for loan maturity are in the expected direction and consistent with prior studies on syndicated loan spreads (Giannetti & Yafeh, 2012; Ivashina, 2009).

The results that are shown in Table 3 suggest that a diversified syndicate structure has a negative impact on the loan spreads of riskier firms, on average. The inclusion of domestic banks in the syndicate is likely to mitigate some of the risks for foreign banks when lending to worse-rated firms that require greater monitoring efforts. Domestic banks are more likely to have better information on firms in the home country, given their physical proximity to the firms. Besides, they are more likely to provide efficiency in future loan renegotiation or recoveries (Mian, 2006; Park, 2000).

3.2 Extensions of the baseline estimations

The results reported so far are based on a continuous measure of firms' credit ratings. To account for the possibility that there may be systematic differences in the risk profile between firms rated investment grade (BBB- or better rating) and those rated speculative grade (BB+ or worse rating), we test the baseline results for Equation 1 and all the above extensions to the baseline with a binary indicator for speculative grade rating instead of the continuous rating measure. Riskier firms that require higher monitoring are proxied by Sub_Inv which takes the value of 1 if the firm belongs to the speculative grade rating category and 0 otherwise.

The coefficient of the $Sub\_Inv \times Div\_syn$ indicator in column (1) of Table 4 suggests that after controlling for the higher level of spreads charged to speculative grade firms based on their risk profile, diversified syndicates with a mix of domestic and foreign banks reduce the spreads on such loans by about 38 bps compared to non-diversified syndicates. Diversified syndicates are able to most reduce the wedge in borrowing costs between speculative grade and investment grade firms. The results for the interaction of the high-risk indicators Sub_Inv and Div_syn are consistent with the baseline results reported in Table 3.

Earlier studies on syndicated loan markets have considered unrated or opaque firms as associated with greater information asymmetry and require more monitoring (Giannetti & Yafeh, 2012; Ivashina, 2009; Sufi, 2007). In the estimation shown in column (2) of Table 4, we compare the impact of a diversified syndicate structure on the loan spreads for opaque firms and the rated firms. A firm could choose to not get rated and yet obtain syndicated loan facilities based on the private information of the lenders, for e.g. past relationship in other facilities. These studies also argue that such firms tend to be riskier compared to the rated firms. While we do not find any evidence of a difference in the spreads between these two cohorts (see the coefficient of the level term $Opaque$), we find that the interaction term (see $Opaque \times Div\_syn$) is negative and significant. Consistent with our hypothesis of a diversified syndicate structure in reducing information asymmetries, the

impact is larger for opaque firms.

Next, we re-estimate the baseline model with additional controls for lead bank and firm characteristics. We obtain the names of the lead banks of each syndicated loan deal from the LPC database. We obtain the data on the lead arranger banks from Moody's Analytics Bank Focus database. Since the LPC database provides only the names of the lenders, we employ two matching strategies to obtain the lead bank information. First, we obtain the unique id (*ISIN*) of those lead banks that also have borrowing information in the LPC database, i.e. if these banks have obtained wholesale funding from other banks. Second, we do a string match with the names of banks in LPC and OBF. We are able to match roughly 65% of all lead bank names with the OBF database. In about half of the syndicated loans that involve only a single lead bank, the bank control variables obtained from the OBF database are matched with the LPC data. For the remaining half of the loans with more than one lead bank, we compute the simple average of the lead-arranger control variables obtained from the OBF database.[6] The lead bank variables in the robustness regressions include equity to assets ratio (a measure of capital adequacy), net interest margin (an indicator of profitability), and logarithm of total assets (a proxy for bank size).

The results of the estimation shown in column (3) of Table 4 for the *Div_syn* are largely consistent with the findings of the baseline estimations. In column (4) of Table 4, we re-estimate Equation 1 with firm-level controls, such as market to book ratio, tangibility, asset size, and profitability. The data on syndicated loans in the LPC database is matched to the firm-level information in the Worldscope database using the unique borrower International Securities Identification Number (*ISIN*). The Worldscope database has been used in earlier cross-country studies involving firm-level financial information. We are able to match about 50% of the observations in the DealScan database with the Worldscope database. The results suggest that the sensitivity of loan spreads to a diversified syndicate structure is moderated to a larger extent with a reduction of 11.5 bps as

[6]The simple average of lead bank controls is taken since information on the proportional exposure of each of the lead banks is generally unavailable for loans that involve more than one lead arranger in the non-U.S. sample.

compared to 5.1 bps for the full sample. Further, in column (5), we control for both lead bank as well as firm-level controls. With the full set of controls including firm-specific and lead-bank specific controls, the impact of a diversified syndicate structure on loan spreads is a decline of 13.14 bps for a one notch increase in *Borr_risk*. The results suggest a significantly higher moderating effect as compared to the baseline results.

3.3 Effect of economic policy uncertainty

In this section, we ask whether the benefits obtained from having a diversified syndicate structure is more pronounced during period of heightened economic policy uncertainty. We estimate Equation 1 for various subsamples of firms under high and low economic policy uncertainty at the country level. There is an increasing interest in the economic policy uncertainty (EPU) index of Baker et al. (2016). The index, developed based on the text analysis of leading newspaper articles, provides a measure of uncertainty at the country level. We classify the observations into two groups, high-EPU and low-EPU based on whether EPU is above or below the sample median.

The results of the estimations are shown in Table 5 columns (4) to (6). We replicate the results observed for the baseline sample with the sample with EPU information in column (4). The results are consistent with the baseline results. The coefficient of the interaction term $Borr\_risk \times Div\_syn$ is negative and significant in the case of the sub-group with high EPU (see column (5)). The coefficient is lower in magnitude and statistically insignificant for the low EPU subsample. The findings suggest that the impact of a diversified syndicate structure is more pronounced during periods of higher policy uncertainty, which are likely to be associated with higher information asymmetry in financial markets (Nagar et al., 2019; Pastor & Veronesi, 2012). Our results support the view that the monitoring benefits of a diversified syndicate are likely to be pertinent during such episodes of greater policy uncertainty.

4 Robustness of the results

We do several additional estimations to ensure the robustness of our results. First, we exclude the global financial crisis years 2008 and 2009 from the estimations. Second, we re-estimate the baseline regression for only domestic currency loans, and third, for only U.S. dollar loans. Fourth, we exclude syndicated loans obtained exclusively from domestic banks. Fifth, we re-estimate the model with the inclusion of firms incorporated in the United States. Finally, we control for potential endogeneity arising out of selection bias. We control for two separate selection issues, first, for the choice of the firm to get rated, and second for the choice of the firm to access the syndicated loan market in any given year.

4.1 Excluding crisis years

Several studies document that the global financial crisis of 2008-09 coincided with a significant disruption in the syndicated loan markets (Giannetti & Laeven, 2012) and increased information asymmetry in bank lending (Ivashina & Scharfstein, 2010; Kleimeier & Chaudhry, 2015). Hence, in this estimation, we restrict our sample of firm-year observations to only the non-financial crisis years. The estimation shown in column (1) of Table 6 suggests that the impact of a diversified syndicate structure after excluding the crisis years is consistent with the baseline findings for the full sample. The moderating effect of a diversified syndicate structure is 4.4 bps for a one unit increase in firm risk for the non-crisis sample, slightly lower than the 5.1 bps observed for the baseline. The lower magnitude of the effect may be explained by the exclusion of the crisis years that are associated with greater information asymmetry in the financial markets.

4.2 Domestic currency loans

In this section, we limit our analysis to loans obtained in domestic currency. It is possible that the information asymmetry faced by the foreign banks would be higher in case of domestic currency loans, given the exposure to currency risk. Hence, we estimate

Equation 1 in column (2) with only domestic currency loans. As expected, the results suggest that the impact of a diversified syndicate structure is more pronounced for such loans. A one unit increase in firm risk is associated with an 8.7 bps reduction in spread for those loans with a diversified syndicate structure compared to non-diversified syndicates. As expected, the higher moderating effect compared to the baseline results substantiates the argument that domestic currency loans tend to be associated with higher levels of information asymmetry for participant foreign banks in syndicated loans.

4.3 U.S. dollar loans

We have considered loans in the major currencies in the baseline sample. However, the currency denomination of the syndicated loan might influence the loan spreads due to risk of cross-currency movements. Hence, to test the robustness of our findings, in this section, we limit our sample to only U.S. dollar loans. About 74% of our sample of hard-currency loans consists of U.S. dollar loans. The results of the estimations are shown in Table 6 column (3). The sensitivity of loan spreads to borrower risk is marginally lower for loans in U.S. dollars as compared to the full sample that includes loans in other hard currencies as well. This suggests that our baseline findings are robust to the choice of currencies.

4.4 Excluding syndicates with only domestic banks

In this estimation, we exclude the loans with only domestic banks in the syndicate, which constitute about 3.4% of our baseline sample. The exclusion would permit us to compare the diversified and non-diversified syndicates with at least one foreign bank. The results presented in column (4) of Table 6 test the validity of our baseline results after excluding the loans with exclusively domestic bank participation. The result for $Borr\_risk \times Div\_syn$ is of similar sign and significance as observed for the baseline results. The magnitude of the sensitivity is marginally higher for the restricted sample compared to the full sample.

4.5 Inclusion of firms in the United States

Next, we re-estimate Equation 1 for an extended sample that contains firms that are incorporated in the United States and the 31 non-U.S. countries in the baseline sample. The findings are shown in Table 6. The result in column (5) indicates that the baseline finding that domestic bank presence reduces lending spreads to high-risk borrowers is consistent with the extended sample of firms. However, the magnitude of the benefits drawn by riskier firms is lower in this sample. One potential explanation for the reduction in the effect of a diversified syndicate structure is that the robust institutional framework has significantly reduced the information asymmetry in the United States. As a consequence, the role of domestic banks in a diversified syndicate structure would be limited. This result also suggests that the findings are not driven by our choice of sample of countries. The results, including firms in the United States, are consistent with our overall findings.

4.6 Controlling for selection bias in ratings

One of the limitations in our analysis is the availability of credit ratings for firms in the DealScan database. Some firms choose to remain opaque by obtaining loans from the syndicated loan markets without getting rated by an independent credit rating agency. While we can only speculate regarding the creditworthiness of such firms at this stage, we can control for the choice of firms to get rated and become more transparent. In this section, we address this concern.

We employ a Heckman two-stage selection model to address the concerns of endogeneity arising out of selection bias. The first stage estimation shown in Table 7 column (1) is a Probit selection equation where the dependent variable takes the value 1 if the firm is rated and 0 if the firm is opaque. The results of the first stage estimation suggest that larger firms with higher profitability, larger size, and higher growth opportunities have a higher propensity to get rated. Firms with lower leverage are also more likely to get rated. The results of the second stage estimations in column (2) without firm-level

controls, and column (3) with firm-level controls suggest that after controlling for the potential selection bias, the impact of domestic bank presence in the syndicate, along with foreign banks reduce the loan spreads of the borrowers.

4.7 Controlling for selection bias in accessing syndicated loans

In this section, we address the possibility that syndicated loan issuance may depend on firm characteristics, which could potentially bias the baseline results reported in Table 8. Relatively smaller firms are known to depend more on bank financing relative to other sources of formal debt financing (Denis & Mihov, 2003). Larger firms may have easier access to syndicated loans than other firms if such lending involves high transaction costs. More profitable firms have better access to internal cash flows and may have lower demand for external financing. Firms with higher growth opportunities, proxied by the market to book ratio, may have greater investment needs and higher demand for loans financing. Leverage is a measure of the debt overhang of the firm. These firm-level controls have been employed in earlier studies on the determinants of the capital structure decision of firms (Berger, Ofek, & Yermack, 1997; Myers, 1977).

We use a Heckman selection model to address the potential selectivity in the decision to obtain syndicated loans by firms. The first stage estimation involves a Probit regression of the loan issuance decision on firm-level characteristics. The firm-level data on logarithm of assets, tangibility, market-to-book ratio, EBITDA to assets, and book value of debt to equity (leverage) are obtained from the Thomson Reuters Worldscope database. The selection (first-stage) sample includes information on firms that accessed and those that did not access syndicated loan markets between 1996 and 2017.

The first stage selection results presented in column (1) of Table 8 suggest that profitability and higher tangibility of assets are positively related to the decision to obtain a syndicated loan, while firm size is negatively related to the decision. The second-stage results are shown in column (2) of Table 8, without firm controls, and column (3), with firm controls. The insignificant coefficient of the $Inverse\_Mills$ ratio suggests that potential selection bias arising out of the choice to obtain a syndicated loan is not a major

concern when we consider the effect of syndicate structure on loan spreads. However, the coefficients of $Borr\_risk \times Div\_syn$ are consistent in terms of the sign and significance with the baseline results on the role of a diversified syndicate structure, shown in Table 3.

5 Conclusion

In this study, we examine whether the effect of syndicate structure on borrowing costs varies with firm risk. A diversified syndicate structure that includes both domestic and foreign banks can help in mitigating potential ex-post moral hazard costs by improving monitoring, facilitating re-negotiations during recovery, and providing private information about riskier borrowers. We assess the relative benefits of a diversified syndicate structure on loan spreads across 31 countries other than the United States.

We find that syndicated loan deals that involve a diversified syndicate structure are associated with lower spreads than those with non-diversified syndicates, particularly for high-risk borrowers who require greater monitoring. However, for low-risk borrowers, we find that non-diversified syndicates consisting of foreign banks are able to offer better loan terms. This finding suggests that the efficiency of exclusive foreign bank lending may be more important than the monitoring benefits of a diversified syndicate for such borrowers. We also find that the benefits of a diversified syndicate structure are accentuated during periods of higher economic policy uncertainty, which tends to coincide with higher asymmetric information in the financial markets. Our baseline findings hold after controlling for loan-specific factors and country-specific variables, and are robust to alternative specifications, subsamples, and controls for potential selection bias.

Syndicated bank lending provides access to alternative sources of financing and can offer important benefits for non-financial corporations in the form of larger amounts and longer tenor. Participating in diversified loan syndicates with domestic banks allows foreign banks to benefit from the relationship that domestic banks enjoy with local borrowers. In such cases, the lower monitoring and screening costs are passed on to the borrower in the form of better loan terms.

References

Bailey, W., Karolyi, G. A., & Salva, C. (2006). The economic consequences of increased disclosure: Evidence from international cross-listings. *Journal of Financial Economics*, *81*(1), 175–213.

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *Quarterly Journal of Economics*, *131*(4), 1593–1636.

Berger, P. G., Ofek, E., & Yermack, D. L. (1997). Managerial entrenchment and capital structure decisions. *The Journal of Finance*, *52*(4), 1411–1438.

Berndt, A., & Gupta, A. (2009). Moral hazard and adverse selection in the originate-to-distribute model of bank credit. *Journal of Monetary Economics*, *56*(5), 725–743.

Bonin, J. P., Hasan, I., & Wachtel, P. (2005). Bank performance, efficiency and ownership in transition countries. *Journal of Banking & Finance*, *29*(1), 31–53.

Booth, J. R. (1992). Contract costs, bank loans, and the cross-monitoring hypothesis. *Journal of Financial Economics*, *31*(1), 25–41.

Bosch, O., & Steffen, S. (2011). On syndicate composition, corporate structure and the certification effect of credit ratings. *Journal of Banking & Finance*, *35*(2), 290–299.

Claessens, S., Demirgüç-Kunt, A., & Huizinga, H. (2001). How does foreign entry affect domestic banking markets? *Journal of Banking & Finance*, *25*(5), 891–911.

Coleman, A. D., Esho, N., & Sharpe, I. G. (2006). Does bank monitoring influence loan contract terms? *Journal of Financial Services Research*, *30*(2), 177–198.

Datta, S., Iskandar-Datta, M., & Patel, A. (1999). Bank monitoring and the pricing of corporate public debt. *Journal of Financial Economics*, *51*(3), 435–449.

Denis, D. J., & Mihov, V. T. (2003). The choice among bank debt, non-bank private debt, and public debt: evidence from new corporate borrowings. *Journal of financial Economics*, *70*(1), 3–28.

Detragiache, E., Tressel, T., & Gupta, P. (2008). Foreign banks in poor countries: theory and evidence. *The Journal of Finance*, *63*(5), 2123–2160.

Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The review*

of economic studies, *51*(3), 393–414.

Diamond, D. W. (1991). Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy*, *99*(4), 689–721.

Fama, E. F. (1990). Contract costs and financing decisions. *Journal of Business*, S71–S91.

Giannetti, M., & Laeven, L. (2012). The flight home effect: Evidence from the syndicated loan market during financial crises. *Journal of Financial Economics*, *104*(1), 23–43.

Giannetti, M., & Ongena, S. (2012). "lending by example": Direct and indirect effects of foreign banks in emerging markets. *Journal of International Economics*, *86*(1), 167–180.

Giannetti, M., & Yafeh, Y. (2012). Do cultural differences between contracting parties matter? evidence from syndicated bank loans. *Management Science*, *58*(2), 365–383.

Gormley, T. A. (2010). The impact of foreign bank entry in emerging markets: Evidence from India. *Journal of Financial Intermediation*, *19*(1), 26–51.

Haselmann, R., & Wachtel, P. (2011). Foreign banks in syndicated loan markets. *Journal of Banking & Finance*, *35*(10), 2679–2689.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society*, 153–161.

Ivashina, V. (2009). Asymmetric information effects on loan spreads. *Journal of Financial Economics*, *92*(2), 300–319.

Ivashina, V., & Scharfstein, D. (2010). Loan syndication and credit cycles. *American Economic Review*, *100*(2), 57–61.

Kleimeier, S., & Chaudhry, S. M. (2015). Cultural differences and the structure of loan syndicates. *Finance Research Letters*, *15*, 115–124.

Leuz, C., Verrecchia, R., et al. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research*, *38*, 91–124.

Mian, A. (2006). Distance constraints: The limits of foreign lending in poor economies. *The Journal of Finance*, *61*(3), 1465–1505.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, *5*(2), 147–175.

Nagar, V., Schoenfeld, J., & Wellman, L. (2019). The effect of economic policy uncertainty on investor information asymmetry and management disclosures. *Journal of Accounting and Economics*, *67*(1), 36–57.

Nini, G. (2004). The value of financial intermediaries: Empirical evidence from syndicated loans to emerging market borrowers. *FRB International Finance Discussion Paper*(820).

Ongena, S., & Smith, D. C. (2000). What determines the number of bank relationships? cross-country evidence. *Journal of Financial Intermediation*, *9*(1), 26–56.

Park, C. (2000). Monitoring and structure of debt contracts. *The Journal of Finance*, *55*(5), 2157–2195.

Pastor, L., & Veronesi, P. (2012). Uncertainty about government policy and stock prices. *Journal of Finance*, *67*(4), 1219–1264.

Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. *The journal of finance*, *49*(1), 3–37.

Qian, J., & Strahan, P. E. (2007). How laws and institutions shape financial contracts: The case of bank loans. *The Journal of Finance*, *62*(6), 2803–2834.

Rauh, J. D., & Sufi, A. (2010). Capital structure and debt structure. *The Review of Financial Studies*, *23*(12), 4242–4280.

Sufi, A. (2007). Information asymmetry and financing arrangements: Evidence from syndicated loans. *The Journal of Finance*, *62*(2), 629–668.

Tirole, J. (2010). *The Theory of Corporate Finance*. Princeton University Press.

White, L. J. (2010). Markets: The credit rating agencies. *The Journal of Economic Perspectives*, *24*(2), 211–226.

Figure 1: **Spread distribution by syndicate structure**

The figure depicts the difference in the kernel density distribution of the loan spreads with both domestic and foreign banks in the syndicate and non-diversified syndicates.

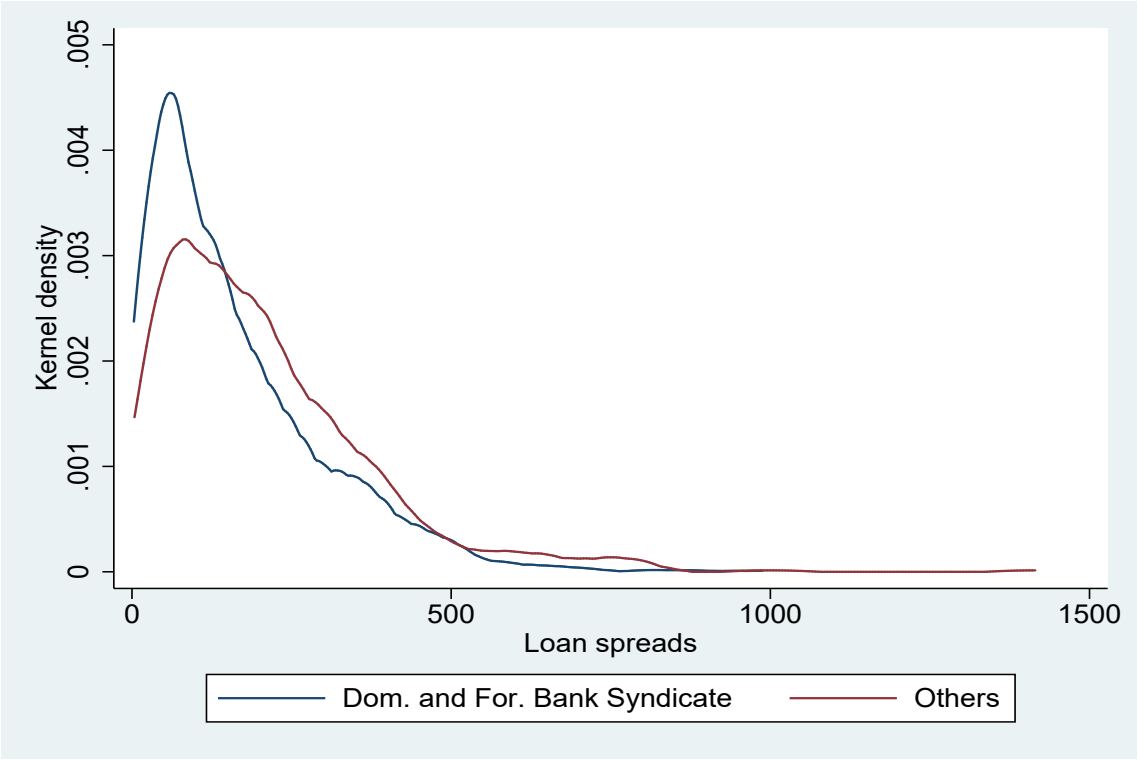

Figure 2: **Predicted spreads - multivariate specification**
The figure depicts the difference in the predicted spreads of the syndicated loans obtained from diversified syndicate and non-diversified syndicates.

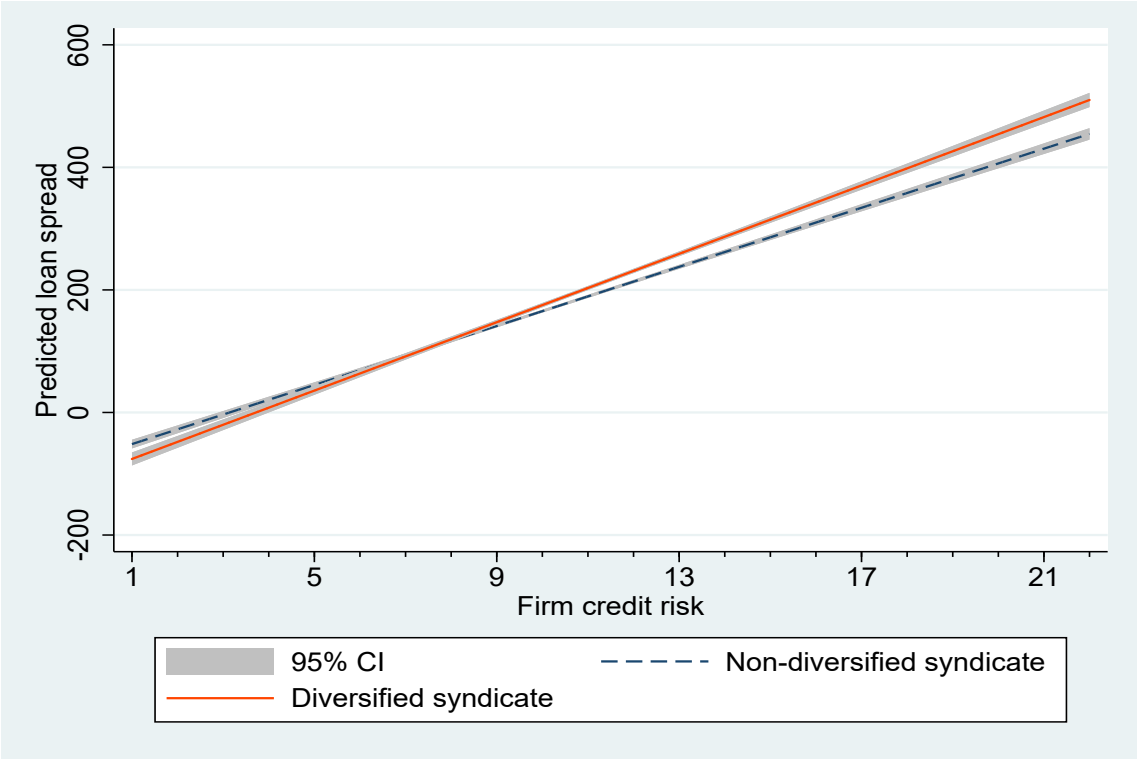

Table 1: **Variables description and source**

Variables	Definition and construction	Source
Loan_Spread (bps)	The weighted average spread (with loan amount as weights) of all loans taken by a firm in a year (*Allindrawnspread*)	Loan Pricing Corporation Dealscan
Div_syn	Dummy variable take the value 1 if the loan syndicate consists of a mix of domestic and foreign banks and 0 for non-diversified syndicates. A bank is classified as a foreign bank if the lender operating country is different from the country of domicile of the firm. A bank is classified as a domestic bank if the country of domicile and lender operating country is same.	Loan Pricing Corporation Dealscan
Log_amount	The logarithm of the aggregate loans (sum of all loans in millions of U.S. dollar) obtained by a firm in a year	Loan Pricing Corporation Dealscan
Log_maturity	The logarithm of the weighted average maturity (with loan amount as weights) of all loans taken during a year by a firm	Loan Pricing Corporation Dealscan
Borr_risk	The weighted average ratings (with loan amount as weights) for all loans taken by a firm in a year. The rating for each loan is the average of the *Long-term Issuer ratings* provided by S&P, Moody's and Fitch. We use an ordinal rating scale, where 1 refers to AAA-rating and 22 refers to D-rating.	Loan Pricing Corporation Dealscan
Collateral_dum	Dummy variable that takes the value 1 if the deal is secured by any collateral and 0 otherwise	Loan Pricing Corporation Dealscan
Covenant_dum	Dummy variable that takes the value 1 if the deal has any covenants and 0 otherwise	Loan Pricing Corporation Dealscan
Excl_Dom_bank	Dummy variable that takes the value 1 if its is a non-diversified syndicates with only domestic banks and 0 otherwise. A bank is classified as a domestic bank if the country of domicile and lender operating country is same.	Loan Pricing Corporation Dealscan
GDP_growth	The annual GDP growth rate of the country of domicile of the firm	World Development Indicators (World Bank)
Log_GDPPC	Natural logarithm of the per capita GDP of a country in a year	Bloomberg

Continued on next page

Table 1 – *Continued from previous page*

Variables	Definition and Construction	Source
Leadbank_EqtoAsset	The ratio of book value of equity to the assets of the lead banks, averaged over all the lead banks. We take only a simple average of the ratios of each lead bank since the participation rates of each lead bank is not available for most of the deals.	Moody's Analytics Bank Focus
Leadbank_NIM	The net interest margin of the lead banks, averaged over all the lead banks.	Moody's Analytics Bank Focus
Leadbank_Lnasset	Natural logarithm of the total assets of the lead banks in million U.S. dollar, averaged over all the lead banks.	Moody's Analytics Bank Focus
No.Lenders	The total number of lenders in the loan syndicate.	Loan Pricing Corporation Dealscan
Log_asset	Natural logarithm of the total assets of the firm denominated in 1000 U.S. dollars.	Worldscope
Tangibility	The proportion of net fixed assets scaled by the total assets of a firm.	
EBIDTA_asset	Ratio of the total operating income of the firm in a year scaled by the total assets.	Worldscope
M/B	Ratio of the market value of equity to the book value of equity of the firm.	Worldscope
Leverage	Ratio of the total debt to equity of the firm.	Worldscope

Table 2: **Descriptive statistics**

Variable	Obs.	Mean	Std.Dev	Median	Min	Max	P10	P90
Loan variables								
Spread	1,972	176.96	149.56	140.00	3.00	1415.00	33.00	375.00
Collateral_dum	1,972	0.27	0.45	0.00	0.00	1.00	0.00	1.00
Covenant_dum	1,972	0.14	0.35	0.00	0.00	1.00	0.00	1.00
Log_amount	1,972	6.64	1.30	6.62	1.58	10.92	5.01	8.29
Log_maturity	1,972	3.81	0.56	3.99	1.10	6.58	2.88	4.37
Syndicate structure								
Lenders	1,972	11.38	9.57	9.00	1.00	94.00	2.00	23.00
Div_syn	1,972	0.64	0.48	1.00	0.00	1.00	0.00	1.00
Excl_Dom_bank	1,972	0.03	0.18	0.00	0.00	1.00	0.00	0.00
Excl_For_bank	1,972	0.32	0.47	0.00	0.00	1.00	0.00	1.00
Lead bank variables								
Leadbank_Eqtoasst	1,306	7.34	2.01	7.28	2.53	20.80	4.71	10.53
Leadbank_NIM	1,307	2.17	0.99	1.94	0.06	6.60	0.89	3.92
Leadbank_Lnasset	1,306	13.95	0.70	14.12	9.54	15.06	12.81	14.60
Firm variables								
Borr_risk	1,972	10.28	3.29	10.00	1.00	22.00	6.00	15.00
Sub_inv	1,972	0.45	0.50	0.00	0.00	1.00	0.00	1.00
Leverage	1,026	1.00	1.76	0.84	0.08	54.29	0.46	1.53
M/B	1,004	2.69	7.77	1.69	0.03	222.09	0.74	4.49
Tangibility	1,024	0.47	0.26	0.48	0.00	1.00	0.09	0.80
EBITDA_asset	1,026	0.08	0.07	0.07	-0.29	0.45	0.01	0.16
Log_asset	1,026	16.02	1.32	16.08	11.38	19.69	14.33	17.68
Country variables								
Log_GDPPC	1,972	10.08	1.00	10.50	5.84	11.69	8.59	10.87
GDP_growth	1,972	2.96	2.98	2.62	-10.89	25.56	0.50	6.64

Table 3: **Monitoring costs in syndicated lending by foreign banks**

The dependent variable in the estimations is the weighted average all in drawn spread for the borrower in year t. *Borr_risk* is the average rating across the three rating agencies. Issue rating provided by each agency is treated as an ordinal variable which takes a value between 1 and 22, where 1 refers to AAA rated firm and 22 refers to D rated firm. *Div_syn* takes the value of 1 if the banks in the syndicate are a mix of domestic and foreign banks and 0 for non-diversified syndicates. Robust standard errors clustered at firm-level are presented in the brackets. ***, ** and * indicates p-values at 1%, 5% and 10% levels. We control for firm fixed effects and year effects in all the estimations. Detailed definition of the variables are given in Table 1.

	(1)	(2)	(3)	(4)
Borr_risk	30.975***	28.045***	26.971***	26.130***
	(3.921)	(3.589)	(3.703)	(3.422)
Div_syn	61.221**	50.247**	54.540***	52.675***
	(23.787)	(20.683)	(20.783)	(20.205)
Borr_risk × *Div_syn*	-6.362***	-5.156**	-5.184**	-5.051**
	(2.407)	(2.145)	(2.124)	(2.102)
Collateral_dum			25.648***	24.476***
			(8.681)	(8.824)
Covenant_dum			1.995	2.626
			(7.570)	(7.519)
Log_amount			-1.686	-0.768
			(3.787)	(3.537)
Log_maturity			1.921	2.478
			(5.769)	(5.743)
Lenders			-0.197	-0.185
			(0.294)	(0.300)
GDP_growth_{t-1}				-2.356**
				(1.075)
Log_GDPPC_{t-1}				-21.194
				(24.739)
Constant	-140.723***	-90.783**	-94.465**	113.33
	(39.437)	(37.500)	(46.348)	(240.673)
Firm-year obs.	2,005	2,005	1,978	1,972
Firms	804	804	797	796
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
*Adj_*R^2	0.162	0.362	0.372	0.377

Table 4: **Alternative definitions and additional controls**

The dependent variable is the weighted average all in drawn spread for the borrower in year t. *Borr_risk* is the average rating across the three rating agencies. Issue rating provided by each agency is treated as an ordinal variable which takes a value between 1 and 22, where 1 refers to AAA rated firm and 22 refers to D rated firm. *Div_syn* takes the value of 1 if the banks in the syndicate are a mix of domestic and foreign banks and 0 if it is exclusively foreign banks. Robust standard errors clustered at firm-level are presented in the brackets. ***, ** and * indicates p-values at 1%, 5% and 10% levels. We control for firm fixed effects and year effects in the second stage estimations. Detailed definition of the variables are given in Table 1.

	Alt. risk category	Opaque firms	Bank controls	Firm controls	Bank & firm controls
	(1)	(2)	(3)	(4)	(5)
Sub_Inv	82.431***				
	(20.412)				
Div_syn	15.159**	3.928	59.915**	117.692***	132.018***
	(7.002)	(6.964)	(26.461)	(35.666)	(31.050)
Sub_Inv × *Div_syn*	-35.411***				
	(12.900)				
Opaque		8.467			
		(9.594)			
Opaque × *Div_syn*		-16.225**			
		(7.583)			
Borr_risk			25.579***	35.482***	30.120***
			(4.219)	(7.947)	(5.139)
Borr_risk × *Div_syn*			-5.865**	-11.540***	-13.139***
			(2.698)	(3.700)	(3.092)
Collateral_dum	39.632***	30.601***	15.378	15.896	4.728
	(9.886)	(4.426)	(11.794)	(16.474)	(18.239)
Covenant_dum	3.782	-5.089	-1.769	-15.626	-13.806
	(8.106)	(4.939)	(9.941)	(11.813)	(15.120)
Log_amount	-3.904	1.665	4.43	-4.797	3.329
	(3.903)	(2.095)	(3.808)	(6.129)	(4.468)
Log_maturity	0.098	-0.171	1.465	-1.566	11.128
	(6.242)	(3.285)	(7.898)	(7.279)	(7.678)
Lenders	-0.132	-0.492**	0.116	-0.219	-0.169
	(0.327)	(0.193)	(0.318)	(0.425)	(0.488)
GDP_growth_{t-1}	-3.468***	-3.053***	-1.929**	-2.97	0.686
	(1.123)	(0.479)	(0.972)	(1.955)	(1.283)
Log_GDPPC_{t-1}	-28.772	-34.699***	18.869	-32.903	35.619
	(25.568)	(9.658)	(18.365)	(36.110)	(21.840)
$Leadbank\_EqtoAsset_{t-1}$			-2.287		-4.151
			(2.787)		(3.145)
$Leadbank\_Lnasset_{t-1}$			-10.221		10.583
			(10.038)		(10.223)
$Leadbank\_NIM_{t-1}$			0.535		6.695
			(6.091)		(7.887)
M/B_{t-1}				0.234	0.194
				(0.225)	(0.180)
$Tangibility_{t-1}$				28.005	-21.909
				(72.853)	(30.418)
$EBITDA\_asset_{t-1}$				-36.421	-171.985***
				(98.847)	(59.273)
Log_asset_{t-1}				11.051	-2.684
				(9.872)	(10.527)
Constant	414.227	475.000***	-170.206	10.243	-437.122
	(257.396)	(89.299)	(255.369)	(305.091)	(308.000)
Firm-year obs.	1,972	12,040	1,306	1,002	701
Firms	796	7,000	588	410	323
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Adj_R^2	0.314	0.249	0.364	0.368	0.511

Table 5: **Economic uncertainty and loan spreads**

The dependent variable is the weighted average all in drawn spread for the borrower in year t. *Borr_risk* is the average rating across the three rating agencies. Issue rating provided by each agency is treated as an ordinal variable which takes a value between 1 and 22, where 1 refers to AAA rated firm and 22 refers to D rated firm. *Div_syn* takes the value of 1 if the banks in the syndicate are a mix of domestic and foreign banks and 0 if it is exclusively foreign banks. Robust standard errors clustered at firm-level are presented in the brackets. ***, ** and * indicates p-values at 1%, 5% and 10% levels. We control for firm fixed effects and year effects in the second stage estimations. Detailed definition of the variables are given in Table 1.

	With baseline specification			With firm-level controls		
	Overall	High	Low	Overall	High	Low
Borr_risk	27.340***	25.858***	23.143***	33.806***	43.063***	27.779**
	(3.865)	(5.482)	(5.672)	(9.057)	(6.836)	(13.104)
Div_syn	63.135***	52.194*	41.334	104.989***	156.053***	42.409
	(22.783)	(27.770)	(27.576)	(39.027)	(46.151)	(40.895)
Borr_risk × *Div_syn*	-5.709**	-4.886*	-3.908	-9.731**	-15.314***	-5.599
	(2.315)	(2.861)	(3.188)	(4.084)	(4.457)	(5.565)
Collateral_dum	26.672***	-5.938	55.677***	18.235	-12.783	41.504
	(9.293)	(11.637)	(14.898)	(18.421)	(18.874)	(40.267)
Covenant_dum	2.134	-16.656	4.561	-17.909	-34.830**	-19.222
	(8.273)	(13.096)	(12.747)	(12.897)	(17.158)	(30.479)
Log_amount	-1.355	7.924*	-5.607	-4.637	8.698*	-12.631
	(3.887)	(4.040)	(4.713)	(7.503)	(4.440)	(8.420)
Log_maturity	2.175	0.679	4.698	-0.392	7.147	-3.89
	(6.432)	(8.205)	(9.010)	(8.872)	(8.263)	(14.598)
Lenders	-0.248	-0.291	-0.317	-0.33	-0.077	-0.071
	(0.329)	(0.293)	(0.525)	(0.511)	(0.369)	(1.056)
GDP_growth_{t-1}	-2.383**	-1.196	-5.467**	-2.78	1.361	-10.023
	(1.093)	(1.067)	(2.286)	(2.233)	(1.365)	(6.621)
Log_GDPPC_{t-1}	-27.984	-32.637	-63.357*	-33.722	-91.741**	-59.598
	(25.833)	(35.616)	(34.179)	(39.044)	(43.437)	(66.042)
M/B_{t-1}				0.249	0.07	0.096
				(0.187)	(0.145)	(1.748)
$Tangibility_{t-1}$				27.102	-25.989	108.362
				(79.435)	(41.172)	(160.049)
$EBITDA\_asset_{t-1}$				-25.852	-220.419**	68.047
				(105.562)	(86.379)	(165.227)
Log_asset_{t-1}				9.732	-0.198	8.361
				(10.545)	(12.803)	(21.937)
Constant	172.498	195.346	532.4	-4.163	606.734	416.591
	(257.533)	(329.753)	(343.961)	(337.941)	(400.227)	(695.401)
Firm-year obs.	1,746	1,099	873	890	572	430
Firms	702	522	460	364	279	228
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year
*Adj_*R^2	0.354	0.385	0.383	0.327	0.52	0.394

Table 6: **Robustness: Alternative samples**

The dependent variable is the weighted average all in drawn spread for the borrower in year t. *Borr_risk* is the average rating across the three rating agencies. Issue rating provided by each agency is treated as an ordinal variable which takes a value between 1 and 22, where 1 refers to AAA rated firm and 22 refers to D rated firm. *Div_syn* takes the value of 1 if the banks in the syndicate are a mix of domestic and foreign banks and 0 if it is exclusively foreign banks. Robust standard errors clustered at firm-level are presented in the brackets. ***, ** and * indicates p-values at 1%, 5% and 10% levels. We control for firm fixed effects and year effects in the second stage estimations. Detailed definition of the variables are given in Table 1.

	Excluding GFC years	Domestic currency loans	U.S. dollar loans	Excl. only dom. bank syndicates	Including U.S. firms
	(1)	(2)	(3)	(4)	(5)
Div_syn	45.416**	57.814***	52.508**	57.162**	19.280***
	(21.523)	(19.289)	(22.721)	(22.477)	(7.148)
Borr_risk	24.973***	24.245***	24.534***	26.447***	25.655***
	(3.879)	(2.389)	(4.131)	(3.501)	(1.179)
Borr_risk × *Div_syn*	-4.375*	-8.711***	-4.565*	-5.611**	-2.219***
	(2.303)	(1.665)	(2.346)	(2.296)	(0.706)
Collateral_dum	29.125***	30.497**	22.024**	25.495***	23.578***
	(10.202)	(12.306)	(10.714)	(8.786)	(2.913)
Covenant_dum	2.907	14.904	-0.400	1.081	-2.888
	(7.794)	(14.494)	(8.986)	(7.718)	(1.986)
Log_amount	-3.211	0.375	-0.875	-1.339	7.149***
	(3.606)	(3.763)	(4.308)	(3.670)	(1.285)
Log_maturity	-0.114	-9.504	3.658	1.183	2.767
	(6.093)	(6.343)	(7.216)	(5.779)	(1.771)
Lenders	-0.134	-1.817***	-0.268	-0.198	-0.846***
	(0.298)	(0.631)	(0.325)	(0.305)	(0.115)
GDP_growth_{t-1}	-2.498**	-1.758	-2.524**	-2.330**	-3.285***
	(1.109)	(5.257)	(1.114)	(1.074)	(1.106)
Log_GDPPC_{t-1}	-26.364	130.848***	-32.49	-22.063	-13.594
	(27.198)	(38.418)	(26.011)	(25.014)	(22.103)
Constant	194.467	-1335.033***	232.538	128.173	-5.282
	(259.781)	(377.323)	(253.682)	(242.096)	(225.114)
Firm-year obs.	1,819	485	1,454	1,903	16,081
Firms	758	256	603	768	4255
Fixed effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year
Adj_R^2	0.324	0.644	0.343	0.377	0.413

Table 7: **Controlling for selection bias in rating**

The dependent variable is the weighted average all in drawn spread for the borrower in year t. *Borr_risk* is the average rating across the three rating agencies. Issue rating provided by each agency is treated as an ordinal variable which takes a value between 1 and 22, where 1 refers to AAA rated firm and 22 refers to D rated firm. *Div_syn* takes the value of 1 if the banks in the syndicate are a mix of domestic and foreign banks and 0 if it is exclusively foreign banks. Robust standard errors clustered at firm-level are presented in the brackets. ***, ** and * indicates p-values at 1%, 5% and 10% levels. We control for firm fixed effects and year effects in the second stage estimations. Detailed definition of the variables are given in Table 1.

	Stage 1	Stage 2	
		without firm controls	with firm controls
	(1)	(2)	(3)
Div_syn		125.757***	134.764***
		(23.913)	(36.339)
Borr_risk		36.048***	36.437***
		(2.566)	(3.752)
Borr_risk × *Div_syn*		-12.101***	-12.903***
		(2.233)	(3.257)
Collateral_dum		17.920**	17.329
		(8.550)	(12.637)
Covenant_dum		-16.724*	-17.008
		(8.712)	(11.817)
Log_amount		-2.889	-2.87
		(2.860)	(4.317)
Log_maturity		-2.667	-2.678
		(4.969)	(7.294)
Lenders		-0.226	-0.264
		(0.350)	(0.541)
GDP_growth_{t-1}		-2.906***	-2.856*
		(1.126)	(1.579)
Log_GDPPC_{t-1}		-0.001**	-0.001
		(0.000)	(0.001)
M/B_{t-1}	0.005*		0.453
	(0.003)		(0.522)
$Tangibility_{t-1}$	0.119		24.918
	(0.106)		(45.643)
Log_asset_{t-1}	0.572***		44.223**
	(0.020)		(17.603)
$Leverage_{t-1}$	-0.336***		
	(0.051)		
$EBITDA\_asset_{t-1}$	0.518**		
	(0.251)		
Inverse_mills		14.799	117.979**
		(17.840)	(46.506)
Firm-year obs.	3,390	1,051	1,051

Table 8: **Controlling for selection bias in accessing syndicated loans**
The dependent variable in the estimations is the weighted average all in drawn spread for the borrower in year t. *Borr_risk* is the average rating across the three rating agencies. Issue rating provided by each agency is treated as an ordinal variable which takes a value between 1 and 22, where 1 refers to AAA rated firm and 22 refers to D rated firm. *Div_syn* takes the value of 1 if the banks in the syndicate are a mix of domestic and foreign banks and 0 if it is exclusively foreign banks. Robust standard errors clustered at firm-level are presented in the brackets. ***, ** and * indicates p-values at 1%, 5% and 10% levels. We control for firm fixed effects and year effects in the second stage estimations. Detailed definition of the variables are given in Table 1.

	Stage 1	Stage 2	
		without firm controls	with firm controls
	(1)	(2)	(3)
Div_syn		44.053**	47.031**
		(19.936)	(19.890)
Borr_risk		27.690***	28.200***
		(2.471)	(2.489)
Borr_risk × *Div_syn*		-3.827**	-4.132**
		(1.847)	(1.844)
Collateral_dum		12.681*	12.408*
		(7.302)	(7.280)
Covenant_dum		-30.029***	-32.591***
		(8.062)	(8.093)
Log_amount		3.283	2.947
		(2.578)	(2.580)
Log_maturity		-2.077	-2.831
		(4.541)	(4.534)
Lenders		0.011	0.067
		(0.313)	(0.313)
GDP_growth_{t-1}		-1.529	-1.512
		(1.080)	(1.078)
Log_GDPPC_{t-1}		14.033	13.962
		(14.530)	(14.595)
M/B_{t-1}	0.000		0.022
	(0.000)		(0.055)
$Tangibility_{t-1}$	0.497***		-38.837
	(0.068)		(46.405)
Log_asset_{t-1}	0.127***		12.232
	(0.013)		(10.002)
$EBITDA\_asset_{t-1}$	0.488*		
	(0.264)		
$Leverage_{t-1}$	0.002		
	(0.004)		
Inverse_mills		-9.782	8.638
		(44.425)	(91.866)
Firm-year obs.	11,616	832	832

A Appendix

Table A1: **Country-wise statistics**

The table provides the list of 31 countries and the number of firm-year observations from the respective country in the estimation sample.

Country	No of Obs.	Country	No of Obs.
Argentina	38	Luxembourg	24
Australia	38	Mexico	72
Bermuda	18	Netherlands	63
Brazil	55	Norway	21
Canada	525	Philippines	19
Chile	68	Poland	10
China	45	Russia	93
Finland	15	Singapore	20
France	44	South Africa	21
Germany	50	South Korea	34
Hong Kong SAR	43	Spain	17
India	35	Sweden	27
Indonesia	26	Switzerland	72
Ireland	49	United Kingdom	362
Israel	10	United Arab Emirates	22
Japan	36	**Total**	**1,972**

Table A2: **Correlations of key variables**

The table provides pairwise correlation of the variables used in the study.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)	*Spread*	1.00																	
(2)	*Borr_risk*	0.69	1.00																
(3)	*Sub_inv*	0.61	0.82	1.00															
(4)	*Div_syn*	-0.15	-0.16	-0.14	1.00														
(5)	*Collateral_dum*	0.47	0.53	0.51	-0.15	1.00													
(6)	*Covenant_dum*	0.07	0.15	0.14	-0.02	0.17	1.00												
(7)	*Log_amount*	-0.19	-0.26	-0.24	0.16	-0.05	-0.01	1.00											
(8)	*Log_maturity*	0.08	0.12	0.14	-0.06	0.18	0.05	0.00	1.00										
(9)	*Lenders*	-0.30	-0.28	-0.26	0.30	-0.23	0.04	0.43	-0.06	1.00									
(10)	*GDP_growth*	-0.09	0.01	0.05	-0.13	-0.05	0.02	-0.12	0.03	0.00	1.00								
(11)	*Log_GDPPC*	0.03	-0.06	-0.08	0.21	0.16	0.09	0.33	0.00	-0.01	-0.37	1.00							
(12)	*Leadbank_Eqtoasst*	0.00	0.07	0.07	0.01	0.08	0.08	-0.04	0.03	-0.02	-0.06	0.07	1.00						
(13)	*Leadbank_Lnasset*	0.11	0.09	0.03	-0.18	0.07	0.04	0.14	0.10	-0.04	-0.03	0.06	-0.18	1.00					
(14)	*Leadbank_NIM*	-0.24	-0.12	-0.08	0.12	-0.09	0.08	-0.09	-0.13	0.12	0.02	-0.16	0.53	-0.28	1.00				
(15)	*M/B*	0.00	-0.02	-0.03	0.03	0.03	-0.08	-0.01	-0.02	-0.03	-0.05	-0.02	-0.02	-0.03	0.01	1.00			
(16)	*Tangibility*	-0.07	-0.06	-0.09	-0.05	-0.03	-0.12	-0.14	0.01	-0.08	-0.02	-0.09	-0.09	-0.15	0.02	0.04	1.00		
(17)	*EBITDA_asset*	-0.07	-0.08	-0.04	-0.16	0.05	0.00	0.10	0.07	0.01	0.10	-0.10	-0.03	0.09	0.00	-0.03	0.00	1.00	
(18)	*Log_asset*	-0.32	-0.52	-0.47	0.04	-0.27	-0.15	0.58	-0.06	0.37	-0.10	0.08	-0.16	0.20	-0.11	0.04	-0.01	-0.04	1.00