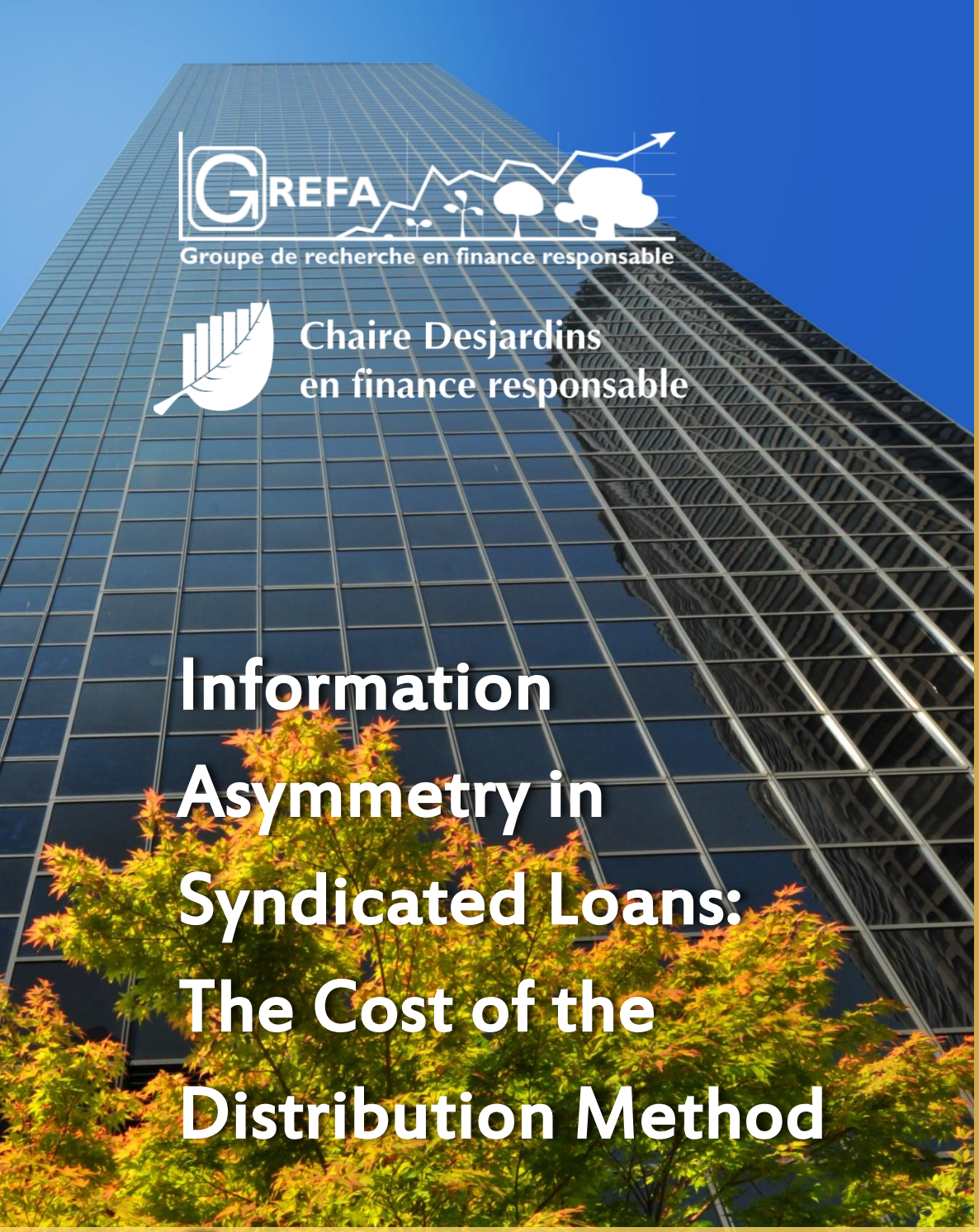

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Information Asymmetry in Syndicated Loans: The Cost of the Distribution Method

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INFORMATION ASYMMETRY IN SYNDICATED LOANS: THE COST OF THE DISTRIBUTION METHOD

by

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Comments are welcomed.

INFORMATION ASYMMETRY IN SYNDICATED LOANS: THE COST OF THE DISTRIBUTION METHOD

ABSTRACT

This paper examines the impact of the distribution method on the loan syndicate structure and spread. Although privately placed deals (club deals) are associated with riskier and less transparent borrowers than syndications, their average loan spread is lower. Multivariate regressions show that country effects and syndicate structure differences can explain, at least partly, this lower spread. Specifically, club deals are associated with syndicates that are smaller, are more homogeneous in terms of lender industries and countries, are more concentrated and denser. However, propensity score matching models show that even after removing the differences in characteristics between the two groups, club deals have a lower average spread than syndications.

Keywords: syndicated loan market; distribution method; club deal; syndicate structure; loan spread; information asymmetry; matching models, selection bias

JEL Classification: C31, C35, G21, F34, L14

INFORMATION ASYMMETRY IN SYNDICATED LOANS: THE COST OF THE DISTRIBUTION METHOD

1. INTRODUCTION

Although the volume of transactions in the syndicated loan market represents a third of all international financing, the percentage of research dedicated to it is still very small. Nevertheless, from the research that has been conducted in the past ten years, we know that one of the key differences between syndicated loans and bilateral loans (or sole lender loans) is the addition of lender-lender relationships between the syndicate members and their associated advantages and inconveniences often related to information asymmetry.

There are two common distribution methods for syndicated loans: traditional syndications and privately placed deals (club deals).[1] Although club deals represent a very small percentage of syndicated loans in the U.S. (less than 1%), they are more popular in Europe (11%) and Asia (8%). Since, by definition, club deals are structured differently than syndications, they represent a very interesting instrument through which examine asymmetric information effects on syndicate structure and loan spread.[2] Descriptive statistics show that, on average, loan spreads and fees are lower for club deals than for syndications (120.34 bps vs 224.01 bps), indicating lower financing costs for the borrower.[3] However, statistics also show that borrowers in club deals have, on average, higher leverage and lower profitability, are less transparent (i.e. not rated), have fewer

[1]Taylor & Sansone, 2007 define a club deal as "a smaller loan that is premarketed to a group of relationship banks. The arranger is generally a first among equals, and each lender gets a full cut, or nearly a full cut of the fees". Although the borrower normally has the right to know what institutions are participating in the syndicate, the selection of members is usually made by the lead arranger. In a club deal, the borrower requests the participation of specific institutions.

[2] The structure of a syndicate is what distinguishes it from another. It is therefore related to the identity of its members and their characteristics, both individually and as a group. Syndicate structure is often measured by the size of the syndicate (i.e. the number of lender, leads and/or participants), the loan share retained by the lead arranger and the concentration ratio. Other measures include the heterogeneity of the members, both in terms of industry or country, the density of the syndicate, the reciprocity of the alliances between its members, the reputation of the lead arrangers, the syndication region, etc.

[3] Fees are on average 20 bps lower for club deals than for syndications. Although the difference between the two distribution methods is significant, it is not sufficient to explain the spread difference.

repeat loans with the same lenders, are less loyal to their lead arrangers and are twice as likely to be from an emerging country. Multivariate analysis shows that part of the puzzle can be explained by country effects, since club deals are mainly non-U.S. However, the explanation also lies in club deals and syndications' differing syndicate structures.

The way the syndicate is structured serves as a mechanism to address agency problems between syndicate members. However, the syndicate is not necessarily structured to reduce the cost for the borrower. Further, not each and every structure variable is determined or positioned in a way that reduces asymmetric information problems and the associated premium. This brings forward an important interrogation regarding the benefits and costs of syndicates. On the one hand, it is well known that an important advantage of syndicated loans is the diversification benefit for lenders, which ultimately leads to lower costs for the borrower (e.g. Angbazo et al., 1998; Dennis et al., 2000). On the other hand, agency problems within the syndicate can lead to an asymmetric information premium that is ultimately charged to the borrower. For instance, Ivashina (2009) finds that information asymmetry within the lending syndicate accounts for approximately 4% of the total credit cost.

If we position the spectrum of concentration (or diversification) premium on a horizontal axis and the information asymmetry premium on a vertical axis, different loan distribution methods can be placed in the resulting quadrants, as in Figure 1. In the upper-left quadrant are bilateral loans, where the asymmetric information (within the syndicate) premium is at its lowest but where the concentration risk premium is at its highest, everything else held equal. In the lower-right quadrant are syndications, where concentration risk premium is lower but where asymmetric information premium is higher, everything else held equal. A priori, since privately placed dealsat least partly) determined by borrowers, and because lenders are typically equally exposed to risk within the syndicate, they should be less prone to agency problems between

lenders.[4] One would therefore anticipate club deals to be somewhere between bilateral loans and syndications in Figure 1, perhaps in the lower-left quadrant.

The purpose of this paper is therefore to examine the syndicate structure and loan spread of two different distribution methods that differ in terms of information asymmetries between syndicate members. The paper contributes to the syndicated loans literature by providing evidence that the syndicated loan's distribution method is a significant determinant of syndicate structure and loan spread and that club deals appear to be arranged in a way to reduce (at least partly) the information asymmetry premium included in the loan spread. Specifically, we find that club deals are associated with lower spreads. In multivariate regressions controlling for borrower and loan characteristics, club deals are related to lower spreads by as much 21.8 bps. Using matching models, average loan spreads are lower by as much as 33 bps for club deals. Club deals are also associated with more lead arrangers but fewer participants, lender industries or lender countries. Concentration and lead arranger share are also higher in club deals. These results provide evidence that the structure of the syndicate is multi-dimensional and that loans are not necessarily optimally structured in terms of total costs for the borrower.

The remainder of the paper is organized as follows. Section two discusses the determinants of syndicate structure and loan spreads based on the literature. The sample is discussed in section three. The hypotheses to be tested, the methodology and the results obtained are presented and assessed in section four. Section five concludes the paper.

2. THE DETERMINANTS OF SYNDICATE STRUCTURE AND LOAN SPREAD

To our knowledge, no previous study has addressed the issue of the impact of the syndicated loan's distribution method on the syndicate structure and/or the loan spread. However,

[4] Casolaro et al. (2003) find that club deals are associated with lower interest rates. Although the distinction between club deals and syndications is not the focus of their study, they mention that this is "possibly because they are underwritten within groups of borrowers with stronger relationships, where agency problems are lower."

there is a large literature on the relationship between syndicate structure and agency problems and on the relationship between the structure and loan terms.

2.1 Syndicate structure and information asymmetries

The structure of a loan syndicate has been extensively studied in the past fifteen years and this research has generally come to the conclusion that it is related to the information asymmetries between the lead arranger and the participants in the syndicate or between the lenders and the borrowers. There are two types of agency problems observed in this context: moral hazard and adverse selection problems. The first problem, moral hazard, occurs when the lead arranger reduces its incentive to monitor the loan optimally once it is not responsible for the totality of it (Jensen and Meckling, 1976). The second problem, adverse selection, arises when the lead arranger has private information about the borrower acquired through due diligence or prior relationships with the borrower. If the other members of the syndicate don't have access to this information, a lemons problem can occur if the lead retains a larger portion of the best-quality loans and lower portion of the lower-quality loans.

While the structure of the syndicate can theoretically be seen both as a consequence of or a solution to agency problems, studies generally conclude that the syndicate is structured to reduce agency problems between the agents involved. Different measures of syndicate structure have been used in the literature, such as the proportion of the loan retained by the lead arranger, the concentration of the loan and the number of lenders. The characteristics of the lead arrangers have been shown to be significant determinants of syndicate structure. For example, the proportion of the loan that is retained by the lead arranger has been shown to be negatively related to the reputation of the lead (Panyagometh and Roberts, 2002). The quantity and quality of information about the borrower have also been shown to have an impact on the syndicate structure. They are negatively related to the share retained by the lead lender (Simons, 1993) and positively related to the number of lenders in the syndicate (Dennis and Mullineaux, 2000). Panyagometh and Roberts (2002) find that lead lenders syndicate a larger portion of loans that are subsequently

upgraded, a sign that lead banks don't have exploitative behaviour, while Jones et al. (2000) observe a negative relation between loan rating and lead share. However, they also highlight that arrangers may still exploit their informational advantage and syndicate more of the low quality loans than the syndicate members would have accepted under a symmetric-information environment.

Loan syndicates can also imply a free riding problem which reduces each lender's incentive to monitor and renegotiate if necessary. For instance, Preece and Mullineaux (1996) find that the syndicate size (i.e. the number of lenders) is negatively related to abnormal returns following loan announcements because of the higher renegotiation costs. Further, Esty and Megginson (2003) conclude that fewer lenders represent best practices to promote monitoring efficiency and flexibility in restructuring and that, in countries with strong creditor rights and reliable legal enforcement, lenders create smaller and more concentrated syndicates to facilitate monitoring and low cost contracting. Lee and Mullineaux (2004) observe that smaller and more concentrated syndicates are more likely to be formed for riskier borrowers. Sufi (2007) observes that lead arrangers retain a larger share and form more concentrated syndicates when borrowers require more intense due diligence and monitoring. Missonier-Piera and François (2007) analyze another aspect of the syndicate structure, namely the number and concentration of co-agents (vs lead arrangers). They find evidence to support both the specialization hypothesis which states that multiple co-agents arise because of the different competitive advantages and the monitoring hypothesis which states that multiple co-agents arise to mitigate informational asymmetry problems. On the other hand, since low cost restructuring can encourage borrowers to default strategically, creditors may have an incentive to increase the size of the syndicate to make default more costly or to impose a future penalty on defaulting firms (Bolton and Scharfstein, 1996; Chowdhry, 1991).

2.2 Syndicate structure and loan terms

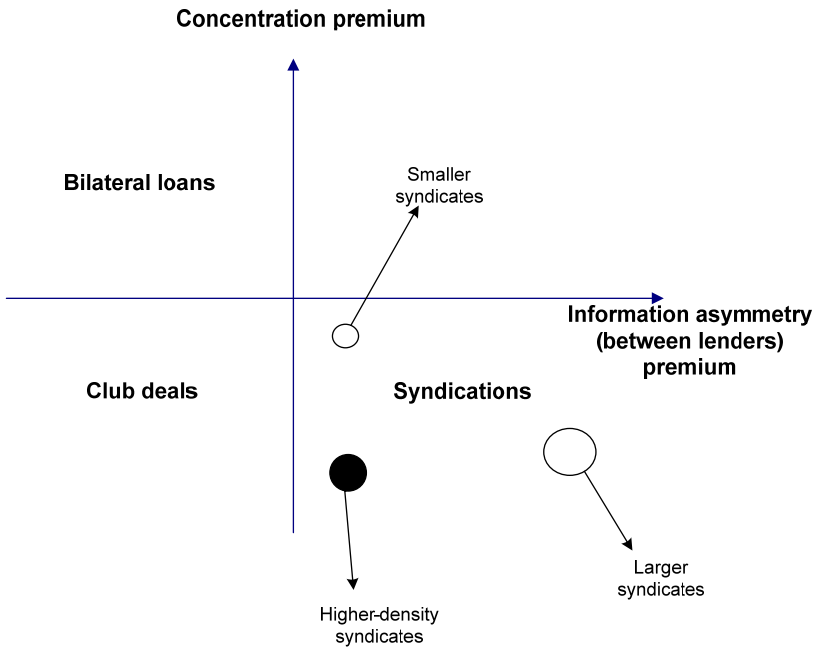
The impact of syndicate structure on loan terms has also been studied, mostly using the syndicate size as the only measure of structure. For instance, Coleman et al. (2006) find that larger banking syndicates lend for longer maturities, but due to a decline in contractual flexibility and monitoring, lend at lower yield spreads.

Some papers use other, non-size-related, characteristics of syndicate structure. In addition to syndicate size, Vu (2008) uses syndicate concentration and lead retention as measures of structure and concludes that loan yields are higher for a syndicated loan with fewer lenders, higher concentration and larger retention. Finally, Ivashina (2009) argues that in equilibrium the information asymmetry premium required by the participants is offset by the diversification premium required by the lead arranger, which increases with the lead share. An increase in the lead share therefore increases the loan spread.

Overall, although the literature on syndicated loans has evolved dramatically over the past ten years, there are still many unanswered questions regarding these financing instruments, notably on the way they are structured. As shown in Figure 1 below, which illustrates a very simplistic decomposition of the loan premium, different distribution methods differ according to the resulting concentration and information asymmetry premiums that are ultimately charged to the borrowers.[5] On average, syndications involve many lenders, which reduces considerably the concentration premium, everything else held equal. However, because of adverse selection and moral hazard problems, syndications are more exposed to an information asymmetry premium that is required by the lenders. Club deals are theoretically somewhere between bilateral loans and syndications. Total lead share is usually larger, which reduces the information asymmetry premium. On the other hand, fewer lenders and higher lead share increases the concentration premium.

Figure 1 – Distribution methods according to their theoretical concentration and information asymmetry premiums

[5] In Figure 1, the loan and borrower characteristics are considered equal.



However, simply placing the three loan distribution methods in one of the quadrant is overly simplistic. Specifically, because of the multi-dimensional aspect of the syndicate structure, there can be a lot of variation within a quadrant, especially for club deals and syndications, since syndicated loans are not all created equal. For example, varying number of lenders, everything else held equal, is also a determinant of the premium, as illustrated by the two empty circles in the lower-right quadrant in Figure 1. Stronger relationships among lenders, measured by the density of the syndicate, is another determinant of information asymmetries that can affect the position of the syndicate in the quadrant, as illustrated by the black-filled circle in the lower-right quadrant. We can therefore observe a syndication that is smaller or more concentrated than a club deal, further complicating the distinction between distribution methods. Finally, considering only one factor at a time does not give a perfectly accurate portrait of the syndicate structure. For instance, where would larger but denser, or smaller but more heterogeneous syndicates positioned in the quadrant? The same applies for club deals which,

although smaller in size on average, can also vary in terms of number of lenders, concentration, heterogeneity, etc.

3. SAMPLE SELECTION AND DESCRIPTION

3.1 Sample of Syndicates

An international sample that consists of (non-)public lending institutions participating in loan syndicates between 1987 and 2009 is generated from Dealscan, a database of loans to large firms maintained by the Loan Pricing Corporation (LPC). The database includes information on various deal-related variables, such as the market of syndication, distribution method and lender role. The initial sample consists of 152,116 syndicate deals. Corporate information about the borrowers is taken from the Compustat Global database.

4. METHODOLOGY AND RESULTS

The main purpose of the paper is to study the impact of information asymmetries on the structure and spread of the syndicated loan, conditional on the distribution method of the loan. There are two common distribution methods for syndicated loans: traditional syndications and club deals. In the former, the borrower usually approaches a lead arranger who will be the official underwriter of the loan and will be responsible for gathering information about the borrower, analyze the credit risk and subsequently monitor the borrower. The lead arranger will then invite a number of other banks to participate if loan diversification is needed. In a club deal, the borrower specifically requests the presence of each and every member of the syndicate. This fundamental difference in the choice of syndicate members evidently affects the structure of the syndicate, which is related to information asymmetries between members. Therefore, studying the structure and spread of a syndicated loan conditional on its distribution method can help better understand agency problems within a loan syndicate.

In a typical syndication, the arranger is the only bank to negotiate with the borrower and is thus the best informed regarding the company's financial status. This situation is theoretically different in club deals since lenders are equally responsible and information about the borrower is more similar across syndicate members, which reduces information asymmetries, everything else held equal. Consequently, because agency problems are different and since the syndicate structure is, at least partly, set to address agency problems, we anticipate a different structure for club deals. This effect is summarized in the first hypothesis tested, H_0^1:

H_0^1: Because lenders are not exposed to the same level of information asymmetry, the structure of the syndicate is significantly different between club deals and syndications.

Further, since loan spread is related to the structure of the syndicate, we also anticipate the spread to be different for club deals. And since the information asymmetry premium in club deals is assumed lower than or equal to that in syndications, the spread is expected to be lower. This effect is summarized in the second hypothesis tested, H_0^2

H_0^2: Because the information asymmetry premium is lower, loan spread is significantly lower for club deals than for syndications.

Two different analyses are used to test the two hypotheses: univariate and multivariate.

4.1 Univariate analysis

Syndicate structure is commonly characterized in the literature by two measures: the syndicate size (number of lenders) and the proportion of the loan retained by the lead arranger. In this paper, a total of twelve structure variables are used to capture the impact of the distribution method. They are defined in Appendix A.[6]

A univariate comparison of the syndicate structure measures, the all-in loan spread and a number of borrower characteristics is performed on two sub-samples according to the distribution method of the loan (club deal or syndication). Results are available in table 1. Starting with loan-

[6] Some of the structure variables are borrowed from Esty & Megginson (2003) and Ivashina (2009).

specific variables, the average spread for syndications is almost twice as large as the spread for club deals (224.01 vs 120.34 bp). Both loan maturity and amount are significantly larger for club deals than for syndications.

[Please insert table 1 about here.]

In terms of syndicate structure, the total number of lenders is significantly lower for club deals (4.86 vs 5.26). However, club deals involve an average of 3.95 lead arrangers, which is significantly greater than the number of arrangers in syndications at 1.33. For club deals, there is on average less than one (0.90) non-lead participant, while there are almost 4 for syndications (3.87). Interestingly, club deals are, on average, more homogeneous in terms of institution types but more heterogeneous in terms of countries involved. Club deals are more often lead by banks (90.41%) than syndications (83.53%).

Club deals are less popular in North America than in Asia or Europe. Whereas for syndications, 52.49% of loans are from a U.S. lead, only 10.96% of club deals are arranged by an American lead. Further, while for syndications a majority (53.91%) of loans are syndicated in the US/Canada region, they are mainly split between Asia (47.72%) and Western Europe (38.67%) for club deals.

Surprisingly, the concentration index is larger for syndications than for club deals (46.00% vs 32.96%) but the average percentage of the loan retained by the lead arranger is much larger for club deals (90.94% vs 55.85%). The lead arranger also has a lower reputation in club deals.

Regarding borrowers, although they are larger on average for club deals, the relative loan amount is not statistically different between the two distribution methods. Borrowers also have higher leverage and lower profitability in club deals. A greater percentage of borrowers are considered opaque in club deals (95.14% vs 85.97%). On average, club deal borrowers were involved in 2.51 past syndicated loans (syndications or club deals) and 3.22 transactions recorded by Dealscan (including private placement or bilateral loans), while these numbers are 1.87 and 8.25, respectively, for syndications. More borrowers are first-timers on the syndicated loan

market for syndications (50.80%) than for club deals (46.76%). On average 31.34% of club deals borrowers have at least one past loan with the lead arranger and the average number of past loans is 0.76. For syndications, 43% of borrowers were involved in at least one past loan with the lead arranger, with an average of 3.06 loans. These numbers are similar if we consider average past loans with all the syndicate lenders. In terms of loyalty, syndications borrowers are more than three times more loyal to their lead arranger than club deal borrowers. Regarding their geographic locations, whereas 54.13% of syndication borrowers are North Americans, club deal borrowers are mainly Asian (47.03%) and European (35.17%). Finally, almost half of the borrowers in club deals are from the same country as the lead bank while the percentage is only 32.66% for syndications.

These results give evidence that significant differences in the structure of the syndicate and loan spread exist between club deals and syndications. Overall, club deal borrowers are non-U.S., they seem riskier; they have weaker relations with the syndicate members, are less loyal to the lead arranger and they are more prone to information asymmetries. The lower average spread is therefore surprising in light of these results. Are they structured in such a way as to compensate these agency problems or is the unobservable information asymmetry premium lower by definition? The following section uses multivariate regressions to control for loan and borrower characteristics.

4.2 Multivariate analysis

The difficulty of a multivariate test of the first hypothesis lies in the determination of the appropriate model to consider both the syndicate structure and the loan spread. Although these two variables have been studied extensively in the literature, they have been modelised in numerous ways. Firstly, the relationship between the spread and the syndicate structure is not clear. While the majority of studies examine unilateral relations (see, for example, Angbazo et al., 1998), some studies provide evidence that bilateral relationships more appropriately capture the simultaneous determination of the spread and the structure (Ivashina, 2009). Secondly, the

determination of non-price terms is ambiguous. Ivashina (2009) argues that the structure and spread are determined after the non-price terms have been negotiated. On the other hand, Coleman et al. (2006) find that syndicate size affects loan maturity and Vu (2008) accounts for the endogeneity of non-price terms and structure and finds a link between the presence of collateral and the syndicate structure. Finally, all these studies were done without distinguishing syndications and club deals. In a club deal, the syndicate structure and loan spread (and terms) are not determined simultaneously but subsequently. Specifically, the syndicate is formed and the terms are negotiated after.[7]

Thus, the research strategy adopted herein is to study loan spread and syndicate structure separately. The general forms of the two models examined are the following:

$$SPREAD = \beta_1 * DIST + \beta_2 * STRUCTURE + \beta_3 * X_1 + \varepsilon \quad (1)$$

$$STRUCTURE = \beta_1 * DIST + \beta_2 * X_2 + \varepsilon \quad (2)$$

In model (1), *SPREAD* is the all-in loan spread over *LIBOR* and, in models (1) and (2), *STRUCTURE* is one of twelve syndicate structure measures defined in Appendix A. The right-hand side variable *DIST* is a dummy variable that equals one if the distribution method is a club deal and zero otherwise. Based on existing theories and the variables that are available, the following set of exogenous variables, X, is used, where the variable definitions are provided in Appendix A:

X = [LEADS, PARTICIPANTS, INDUSTRIES, LEAD-INDUSTRY, COUNTRIES, LEAD-COUNTRY, HH-INDEX, LEAD-SHARE, REPUTATION, SIZE, RELAMT,

[7] A test using simultaneous equations on a subsample of club deals finds that syndicate structure (measured using 12 different structure variables) is a significant factor explaining loan spread, but not the other way around.

LEVERAGE, PROFIT, OPAQUE, INFO, BORROWER-REGION, ECON-DEV, EMERGING, LEGAL, INTERNATIONAL, INDUSTRY, MTY, AMT, MULT-TRANCHE, TYPE, PURPOSE, YEAR]

In order to control for the most potential risk factors, including loan type, observations are taken at the facility level.[8] Pearson correlation coefficients between the different variables used in all the models are reported in Table 2. Unsurprisingly, correlation is higher between structure variables such as between the number of participants and the number of countries (0.721) or between the number of participants and the total lead share (-0.614). The highest correlation coefficient is between *BORROWER-EUROPE* and *SYND-EUROPE* at 0.955. However, these two variables are never included in the same model.[9]

[Please insert table 2 about here.]

Results for six different specifications of model (1) are available in Table 3. They show that the distribution method is a significant determinant in all regressions of the loan spread, even after controlling for syndicate structure, loan and borrower characteristics. Specifically, we see that the coefficient for *DIST* is always negative, indicating a lower spread for club deals as opposed to syndications, and varies between -18.07 and -21.81. The number of lead arrangers and participants are significantly negatively related to the spread. The more heterogeneous the syndicate, measured by *INDUSTRIES*, the higher the spread, everything else held equal. However, the more countries involved between the lead arrangers, the lower the spread. Bank-led syndicates are associated with lower spreads, which is consistent with Harjoto et al. (2006) who

[8] Untabulated robustness tests show that results are similar when done on deal level observations.
[9] To formally detect multicollinearity in all the models used in the study, Variable Inflation Factors (VIF) are calculated. A VIF is defined as the coefficient of multiple determination of the regression produced by regressing each variable X_i against the other X variables. Belsey *et al.* (1980) suggest that weak dependencies may be starting to affect the regression estimates when the VIF is around 10 or higher. None of the VIFs exceed 5.

find that spreads are lower for commercial bank loans or co-led loans than for investment bank-led loans. Japanese lead arrangers are associated with lower spread, which can explain part of the difference between club deal and syndication spreads. Further, consistent with Ivashina (2009), the higher the concentration index, the higher the loan spread.[10] As expected, the opaqueness of the borrower is positively related with the spread, while repeat business by the borrower on the syndicated loan market reduces the spread. The remaining coefficients are consistent with the literature.

[Please insert table 3 about here.]

The results for model (2) using six structure variables are available in Table 4.[11] Interestingly, even after controlling for borrower risk and information asymmetries, the distribution method still affects the syndicate structure. Club deals are positively related to the number of lead, the concentration index of the syndicate and the loan share retained by the lead arranger. They are negatively related to the number of participants and the syndicate heterogeneity both in terms of industries and countries. Remaining coefficients are consistent with those of Lee and Mullineaux (2004) and Sufi (2007) discussed in section 2.

[Please insert table 4 about here.]

4.3 Selection bias of the distribution method

Comparing the spread and structure of club deals and syndications can be problematic in the presence of a selection bias. Because we can't observe the spread for the same borrower under two mutually exclusive treatments (i.e. distribution methods), we have a missing data

[10] When the concentration index is included in the regression, lead share is not significant. However, in an untabulated test, *LEAD-SHARE* is significantly positively related to the spread when *HH-INDEX* is removed from the equation.

[11] Results for the remaining structure variables are not tabulated. *DIST* is significant and positive for all of them.

problem. We can assess the effect of a treatment only if we know what would have happened without the treatment. To make causal inferences, random selection of subjects and random allocation of the treatment to subjects is required but not possible in observational study where historical data is used. Without randomization, causal inferences cannot be made because it's not possible to determine whether the difference in outcome (e.g. loan spread) between the treated and control (untreated) subjects is due to the treatment or differences between subjects on other characteristics (e.g. borrower or loan characteristics). Subjects or companies with certain characteristics may be more likely to be associated with a club deal than others, thus introducing a selection bias.

We use two approaches based on the propensity score to control for the selection bias induced by the distribution method: a) propensity score matching and b) propensity score adjustment of the outcome model.[12]

a) Propensity score matching

Propensity score matching (PSM), introduced by Rosenbaum and Rubin (1983) and developed by Heckman et al. (1997, 1998), among others, has become a popular approach to estimate treatment effects of economic programs (e.g. labour policies) or medical procedures. According to Rosenbaum and Rubin (1983), the estimated propensity score, $e(x_i)$, for subject i,(i = 1,…, N) is the conditional probability of being assigned to a particular treatment given a vector of observed covariates x_i :

$$e(x_i) = \Pr(z_i = 1 \mid x_i) \tag{3}$$

and

$$\Pr(z_1,...,z_n \mid x_1,...,x_n) = \prod_{i=1}^{N} e(x_i)^{z_i} \{1 - e(x_i)\}^{1 - z_i} \tag{4}$$

[12] The authors would like to thank an anonymous reviewer from the Northern Finance Association meeting for suggesting matching models to address the selection bias.

where $z_i = 1$ for treatment observations (i.e. club deal distribution method), $z_i = 0$ for control observations and x_i is the vector of observed covariates for the i^{th} subject. The idea behind propensity score matching stems from the automatic control for the observed covariates when a treated and control subjects have the same propensity score. In that case, any difference between the two groups will be accounted for and not be as a result of the observed variables. A logistic regression is used to estimate the probability that an event occurs:

$$\ln\left[\frac{e(x_i)}{1-e(x_i)}\right] = \ln\left[\frac{\Pr(z_i = 1 \mid x_i)}{1-\Pr(z_i = 1 \mid x_i)}\right] = a + b^T x_i \qquad (5)$$

where

$$e(X_i) = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots + b_i X \qquad (6)$$

and b_0 is the intercept, b_i is the regression coefficient, X_i, the treatment variables and covariates and x_i, observed value of variables.

In our case, the difficulty resides in the determination of equation (6) where X_i can be thought of as a vector of borrower, loan and lender characteristics that affects the decision to form a club deal. To our knowledge, no study has yet examined the determinants of the distribution method. It seems logical to assume that borrowers will be involved in a syndication when, after deciding to use private financing (as opposed to public financing such as bonds), they mandate a lender who then makes the decision regarding the need to syndicate (in order to diversify) or not. However, the decision for the loan to be syndicated does not belong to the borrower. Club deals, on the other hand, can be requested (at least partly) by borrowers for a number of reasons. The

distinction between club deals and syndications is further complicated by the fact that syndications can also involve more than one lead arranger required by the lender.[13]

Based on our intuition and the literature on the characteristics of syndicated loan borrowers, we identify a number of explanatory variables that can explain the decision to form a club deal. The following logistic model for the likelihood that a club deal is selected as the distribution method (*DIST*) is used as a representation of equation (6) to estimate propensity scores:[14]

$$\begin{aligned} DIST = {} & \beta_0 + \beta_1 \times SIZE + \beta_2 \times LEVERAGE + \beta_3 \times OPAQUE + \beta_4 \times INFO + \\ & \beta_5 \times FIRST + \beta_6 \times RELATIONS + \beta_7 \times POOL + \beta_8 \times COUNTRY + \\ & \beta_9 \times ECONDEV + \beta_{10} \times EMERGING + \beta_{11} \times CIVIL + \beta_{12} \times CAPACITY + \\ & \beta_{13} \times AMT + \beta_{14} \times REPUTATION + \beta_{15} \times LEAD - COUNTRY + \\ & \beta_{16} \times LEAD - BANK + \beta_{17} \times SYND - REGION + \beta_{18} \times INTERACTIVE + \varepsilon \end{aligned} \tag{7}$$

where the exogenous variables are defined in section iv) of Appendix A. Interactive variables are added to capture the multi-dimensionality of syndicate structure, as discussed in section 2 and represented in figure 1. Coefficients and odds ratios for the different covariates are available in Table 5. Results show that larger borrowers have a higher probability of being in a club deal. However, when these large borrowers are opaque, the chances of having a club deals are lower, as evidenced by the coefficient of the interactive term between *OPAQUE* and *SIZE*. The number of past club deals is positively related to the probability of forming a club deal. Past relationships with syndicate lenders increase the chances of a club deal while past relationships with leads decrease these odds. North American borrowers are less likely to be involved in a club deal. Borrowers from emerging economies are almost twice as likely to form a club deal and those from civil law countries have 1.3 more chances to be associated with club deals. Dennis and Mullineaux (2000) argue that the syndication capacity of the loan can be proxied by its maturity.

[13] The database does not distinguish those multiple lead arrangers specifically requested by the borrower as opposed to those requested by the chosen lead arranger.

[14] It's important to note that the logit model does not characterize the choice between club deals and syndications, since the latter are not decided by the borrower. Further, unlike the model by Dennis & Mullineaux (2000), it is not a modelisation of syndicated vs non-syndicated loans since all the loans in the sample are syndicated.

The lower the syndicate potential of the borrower, measured with *CAPACITY*, the higher the likelihood of being distributed as a club deal, which is evidenced by the negative coefficient. However, for opaque borrowers, the relationship is the opposite sign, as shown by the interactive term between *OPAQUE* and *CAPACITY*. Opaque borrowers with higher syndication capacity have 2.4 more chances of being associated with a club deal. More reputable leads are negatively related to club deals. Leads from the U.S. are less likely to be associated with a club deal while U.K. leads have 1.8 times more chances of being associated with club deals.

[Please insert table 5 about here.]

Once the propensity scores have been estimated, we can match the treated subjects with subjects that have the same/similar propensity score but did not receive treatment. The unmatched subjects are discarded from the analysis. There is no one matching method that has been deemed to be effective in every circumstance. For comparison and robustness, we use four different matching methods: kernel matching, local linear regression (LLR) matching and nearest k-neighbour matching with 2 and 3 neighbours, respectively.

With the nearest k-neighbour matching algorithm, the absolute difference between the estimated propensity scores for the control and treatment groups is minimized. The control and treatment subjects are randomly ordered and the first treated subject is selected along with N control subjects with propensity scores closest in value to it: $C(P_i) = \min_j |P_i - P_j|$ where $C(P_i)$ represents the group of control subjects *j* matched to treated subjects *i* (on the estimated propensity score), P_i is the estimated propensity score for the treated subjects *i* and P_j is the estimated propensity score for the control subjects *j*. With kernel matching, every treated subject is matched with the weighted average of the control subjects. The weights are inversely proportional to the distance between the treated and the control group's propensity scores. Local linear regression matching is a version of kernel matching where the weights are found with a

linear regression. The four matching methods can incorporate the caliper matching method in which a pre-determined range of values is defined usually within one-quarter of the standard error ($0.25s$) of the estimated propensity. Any values that fall outside that range are removed (Cochran and Rubin, 1973). The range is $|P_i - P_j| < e$ where P_i is the estimated propensity score for the treated subjects *i*, P_j is the estimated propensity score for the control subjects *j* and ε is the pre-determined range of values.

For all four matching methods, we impose common support by dropping treatment observations whose propensity score is higher than the maximum or less than the minimum propensity score of the controls. Since our control data set is quite large, we match without replacement when applicable.[15] Sensitivity analyses are also performed by changing the bandwidth or trimming the treatment observations at which the propensity score density of the control observations is the lowest.

Table 6 summarizes the average values for different outcome variables related to the loan cost and the syndicate structure for the four matching methods. For each outcome variable, the average for the unmatched sample and the average treatment effect on the treated (ATT) are measured. Panels A to D give the results using the kernel, the LLR matching method and k-neighbour matching with 2 and 3 neighbours, respectively. Because the standard errors are systematically smaller with the kernel matching method (except for the outcome measured by the number of industries), we will analyze the results in Panel A in more details and use these results in further analysis. Without matching, the average spread difference is 61.4 bps smaller for club deals. Using kernel matching, we find that spreads are still lower for club deals (than syndications) by an average of 33.7 bps. Part of the impact of the distribution method can therefore be attributable to borrower and syndicate characteristics that differ between the two types of deals. However, even after controlling for these attributes, club deals are still associated

[15] Results are similar with replacement.

with lower spreads. Club deals also have a little over 2 more leads than syndications, on average, while they have more than 5 fewer participants. Although the number of countries involved in the lender syndicate appears not statistically different between the two groups when studying the unmatched sample, there is a statistically significant difference when comparing the matched samples (3.49 countries for club deals vs 4.29 countries for syndications). The concentration index of club deals is 6% higher than for syndications, while the total lead share is almost twice as large. Results for loan spreads are robust to sensitivity analyses.[16]

Results in terms of the significance of the treatment (i.e. club deal) on different outcomes are similar for the four matching methods. The magnitude of the differences can differ according to the matching technique. For the spread, the difference between club deals and syndications ranges from -16.30 bps to -33.66 bps.

[Please insert table 6 about here.]

b) Regression adjustment

In the previous section, propensity score matching is used to adjust for the covariate *before* calculating the treatment effect. In contrast, regression adjustment is used *while* determining the treatment effect. To use this method, we include the propensity score and the treatment variables as explanatory variables in the outcome model. The previously defined outcome models (1) and (2) are used to assess the impact of the distribution method while correcting for the selection bias. Results for the multivariate regression are available in Table 7. When the outcome is the spread, the variable *DIST* has a statistically significant coefficient of -24.93, which means lower spreads for club deals, everything else held equal. Club deal syndicates are also related to significantly more leads and less participants.

[Please insert table 7 about here.]

[16] Sensitivity analyses are also conducted on the remaining outcome variables with similar results.

4.4 Robustness test: Switching regressions

Another way to address the issue of selection bias is to endogenize the distribution method variable using switching regressions with endogeneous switching. The method is used, among others, by Nandy and Shao (2007) to compare institutional and non-institutional loans and is followed herein. Although the methodology bears many similarities with the propensity score matching models and adjustments used above, it imposes a functional form of the error terms which may lead to biases if not realistic. Further, if the unobservable private information for the choice of the distribution method is irrelevant to the outcome, then matching may be a better way to go. Nevertheless, we use the switching regression as a robustness test.

The model consists of a binary response model to reflect the selection and two regression equations for the loan spread:

$$C_i^* = Z_i\gamma + u_i \tag{8}$$

$$y_{1i}^* = X_{1i}\beta_1 + \varepsilon_{1i} \tag{9}$$

$$y_{0i}^* = X_{0i}\beta_0 + \varepsilon_{0i} \tag{10}$$

where γ, β_1 and β_0 are vectors of parameters subject to estimation and u_i, ε_{1i} and ε_{0i} are three random error terms that follow a trivariate normal distribution with mean vector zero and the following covariance matrix:

$$\sum = \begin{bmatrix} \sigma_u^2 & \sigma_{1u} & \sigma_{0u} \\ \sigma_{1u} & \sigma_1^2 & . \\ \sigma_{0u} & . & \sigma_0^2 \end{bmatrix} \tag{11}$$

C* is discretized to equal 1 if the loan is a club deal and 0 if it's a syndication:

$$C_i = \begin{cases} 0 \ if \ C_i^* \le 0 \\ 1 \ if \ C_i^* > 0 \end{cases} \tag{12}$$

Spread y_{1i} is observed only if $C_i = 1$ and y_{0i} is observed only if $C_i = 0$.

Again, the difficulty resides in the determination of equation (8) where Z_i is a vector of borrower, loan and lender characteristics that affects the decision to form a club deal. The same functional form as defined by model (7) is used herein in the first stage of the two-step process. Equations (8), (9) and (10) are estimated simultaneously with full information maximum likelihood (Lokshin and Sajaia (2004)). Table 8 shows the results of the endogenous switching regressions model with selection correction. The correlation coefficient rho0 is negative while rho1 is positive, and both coefficients are significantly different from zero, suggesting that the selection of distribution method affects both spread equations. The model therefore suggests that borrowers who request a club deal are charged lower spreads than a random borrower from the sample would have been charged, while borrowers in syndications are charged higher spreads than a random borrower, consistent with an information asymmetry premium charged in syndications that is not necessarily charged (or is at least lower) in club deals.

[Please insert table 8 about here.]

4.4.1 Hypothetical spreads from switching distribution method

After the parameters are estimated, we can calculate the unconditional expectation of borrowers' spread for club deals and for syndications, respectively:

$$xb_{1i} = E\left(y_{1i} \mid x_{1i}\right) = x_{1i}\beta_1$$
$$xb_{0i} = E\left(y_{0i} \mid x_{1i}\right) = x_{0i}\beta_0$$

We can then compute the following conditional expectations:

$$E\left(y_{1i} \mid I_i = 1, x_{1i}\right) = x_{1i}\beta_1 + \sigma_1\rho_1 f\left(\gamma Z_i\right) / F\left(\gamma Z_i\right) \quad (13)$$

$$E\left(y_{1i} \mid I_i = 0, x_{1i}\right) = x_{1i}\beta_1 - \sigma_1\rho_1 f\left(\gamma Z_i\right) / \left\{1 - F\left(\gamma Z_i\right)\right\} \quad (14)$$

$$E\left(y_{0i} \mid I_i = 1, x_{0i}\right) = x_{0i}\beta_0 + \sigma_0\rho_0 f\left(\gamma Z_i\right) / F\left(\gamma Z_i\right) \quad (15)$$

$$E\left(y_{0i} \mid I_i = 0, x_{0i}\right) = x_{0i}\beta_0 - \sigma_0\rho_0 f\left(\gamma Z_i\right) / \left\{1 - F\left(\gamma Z_i\right)\right\} \quad (16)$$

Using a methodology similar to Nandy and Shao (2007), we compute the difference between the actual spread for the syndication and the hypothetical spread, which is measured as the loan spread that would have been charged had the syndicated loan been distributed through a club deal. The untabulated results show that, on average, borrowers in syndications would have been charge 111.14 bps less had their loan been distributed through a club deal.

5. Conclusion

This paper analysed the impact of the distribution method on structure and the cost of a syndicated loan for a borrower. Two distribution methods were compared: syndications and club deals. Syndications are often structured in a way to address information asymmetries among lenders. However, the resulting structure is not necessarily the least costly for the borrower, as evidenced by the lower average spread and fees for club deals than for traditional syndications. In a multivariate regression setting, the paper showed that club deals are related to lower spreads, even after controlling for borrower and loan characteristics. Further, using propensity score matching models, club deals are associated with spreads that are up to 33 bps lower than syndications.

This paper also showed that club deals lead to syndicates that are smaller in terms of leads and participants, more homogeneous in terms of industries and countries and more concentrated, after controlling for borrower and loan characteristics. Using propensity score matching models, we find that club deals have 2 more leads than syndications, have 5.59 fewer

participants, involve fewer lender industries and countries, have an HH index that is 6% lower and have an average lead share almost twice as large as syndications. This multi-dimensional structure is theoretically more advantageous for the borrower since it reduces the agency problems between lenders, which may explain, at least partly, the lower spread charged to borrowers.

Overall, results may be an indication that unobservable information asymmetries between lenders are lower in club deals. They also highlight the question of optimizing the structure of the syndicate to benefit the borrowers. If syndicates can shift costs to borrowers, the structure of syndicates must be irrelevant to lenders. However, it's not irrelevant in the market and for borrowers. Although the diversification benefit and other advantages of syndicates are undoubted, results suggest that there might be an optimal structure to reduce agency problems. However, the determination of such a structure is left to future studies.

References

Angbazo, L. A., Mei, J., & Saunders, A. (1998). Credit spreads in the market for highly leveraged transaction loans. *Journal of Banking & Finance, 22*, 1249-1282.

Bolton, P., & Scharfstein, D. S. (1996). Optimal debt structure and the number of creditors. *The Journal of Political Economy, 104*(1), 1-25.

Chowdhry, B. (1991). What is different about international lending? *Review of Financial Studies, 4*(1), 121-148.

Cochran, W. & Rubin, D.B. (1973). Controlling Bias in Observational Studies, *Sankyha*, *35*, 417-446.

Coleman, A. D. F., Esho, N., & Sharpe, I. G. (2002). *Do bank characteristics influence loan contract terms.* Unpublished manuscript.

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

Dennis, S. A., & Mullineaux, D. (2000). Syndicated loans. *Journal of Financial Intermediation, 9*, 404-426.

Dennis, S. A., Nandy, D., & Sharpe, I. G. (2000). The determinants of contract terms in bank revolving credit agreements. *Journal of Financial and Quantitative Analysis, 35*(1), 87-109.

Esty, B. C., & Megginson, W. L. (2003). Creditor rights, enforcement, and debt ownership structure: Evidence from the global syndicated loan market. *Journal of Financial and Quantitative Analysis, 38*(1), 37-58.

Heckman, J.J., Ichimula, H. & Todd, P.E. (1997). Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme, *Review of Economic Studies*, *64,* 605-654.

Heckman, J.J., Ichimula, H. & Todd, P.E. (1998). Matching as an Econometric Evaluation Estimator, *Review of Economic Studies*, *65*, 261-294.

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

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4)

Jones, J., Lang, W., & Nigro, P. (2000). *Recent trends in bank loan syndications: Evidence for 1995 to 1999.* Unpublished manuscript.

Lee, S. W., & Mullineaux, D. J. (2004). Monitoring, financial distress, and the structure of commercial lending syndicates. *Financial Management, 33*(3), 107-130.

Lokshin, M., & Sajaia, Z. (2004). Maximum likelihood estimation of endogeneous switching regression models. *Stata Journal, 4*(3), 282-289.

Missonier-Piera, F., & François, P. (2007). The agency structure of loan syndicates. *Financial Review, 42*(2)

Nandy, D., & Shao, P. (2007). *Institutional investment in syndicated loans.* Unpublished manuscript.

Panyagometh, K., & Roberts, G. (2002). *Private information, incentive conflicts, and determinants of loan syndications.* Unpublished manuscript.

Preece, D., & Mullineaux, D. J. (1996). Monitoring, loan renegotiability, and firm value: The role of lending syndicates. *Journal of Banking & Finance, 20*, 557-593.

Rosenbaum, P.R. & Rubin, D.B. (1983). The Central Role of the Propensity Score in Observational Studies for Causal Effects, *Biometrika*, *70(1)*, 41-55.

Simons, K. (1993). Why do banks syndicated loans? *New England Economic Review, Federal Reserve Bank Boston,* 45-52.

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

Taylor, A., & Sansone, A. (2007). In Taylor A., Sansone A. (Eds.), *The handbook of loan syndications & trading* The Loan Syndications and Trading Association.

Vu, T. (2008). *Loan syndications: Structure, loan pricing, covenants, and bank risk.* Unpublished manuscript.

Appendix A – Definitions of variables

This appendix describes the different variables used in the models throughout the paper. The variables are divided into four different categories: i) syndicate structure variables, ii) borrower-specific variables, iii) loan-specific variables and iv) selection model variables.

i) Syndicate structure variables:

Variable	**Units**	**Definition**	**Source**
LENDERS	Number	Total number of distinct lenders in the syndicate.	Dealscan
LEAD	Number	Total number of lead arrangers in the syndicate.[17]	Dealscan
PARTICIPANTS	Number	Total number of participants (non lead) in the syndicate	Dealscan
INDUSTRIES	Number	Total number of distinct industries (within the financial sector) represented by members of the syndicate (e.g. if the syndicate involves only commercial banks, then the variable is equal to 1; if the syndicate involves commercial banks and insurance companies, then the variable is equal to 2). Industries are grouped into five categories: banks, insurance companies, investment banks, funds and other. The variable proxies for syndicate heterogeneity.	Dealscan
LEAD-BANK	Dummy	One if the main lead arranger is a bank, 0 otherwise.[18]	Dealscan
LEAD-INVEST	Dummy	One if the main lead arranger is an investment bank, 0 otherwise.	Dealscan
COUNTRIES	Number	Total number of distinct countries represented by the members of the syndicate (e.g. if the syndicate involves only U.S. lenders, then the variable is equal to 1; if the syndicate involves lenders from the U.S. and U.K., then the variable is equal to 2). The variable proxies for syndicate heterogeneity.	Dealscan
LEAD- COUNTRY	Dummies	One if the main lead arranger is from a specific country, 0 otherwise. Three countries are considered: U.S. *(LEAD-US)*, Japan (*LEAD-JAPAN*) and U.K. (*LEAD-UK*).	Dealscan
LEAD-REGION	Dummies	Set of five dummy variables used to capture where the main lead arranger is domiciled. The regional dummies are for US & CANADA (*LEAD-US-CA*), Latin America (*LEAD-LAT-AMERICA*), Europe (LEAD-*EUROPE*), Africa and Middle East (*AFRICA-EAST*) and Asia/Pacific (*ASIA*).	Dealscan
HH-INDEX		Herfindahl-Hirschman index as measured by the sum of the squares of the loan share of each individual lender in the syndicate at loan origination.	Dealscan
LEAD-SHARE	%	Share of the loan retained by the lead arranger at loan origination. If there is more than one lead arranger, it is the total sum of shares they detain.	Dealscan

[17] Lenders are considered in the lead arranger category if they get lead arranger credit from Dealscan.
[18] If there is more than one lead arranger for the deal, the main lead arranger is identified as the one with the largest share. When lender share is not available, the main lead bank is identified with the lender role within the syndicate.

TOP3-SHARE	%	Sum of share held by the lenders with the 3 largest shares at loan origination.	Dealscan
REPUTATION -LEAD		Inverse of the lead arranger's ranking in terms of number of deals.[19] If there is more than 1 lead arranger for the deal, the lead arranger with the best ranking is taken.	Dealscan
REPUTATION-SYND			
INTENSITY-SYND		Average number of past common deals in the 5-year period prior to the deal active date between each lender in the syndicate.	Dealscan
DURATION-SYND		Average length of relationship between all the pairs of lenders in the syndicate, measured in number of months between the first common deal and current deal active date,	Dealscan
ASYMMETRY-DIFF		Range for the duration of relationship with the borrower across all the lenders in the syndicate.	Dealscan

ii) Borrower-specific variables:

Variable	**Units**	**Definition**	**Source**
SIZE		Log of the inflation-adjusted U.S. dollar book value of the assets of the borrower observed at the nearest date before the loan active date and is adjusted using the Consumer Price Index (CPI).	Compustat
RELAMT		Ratio of the loan amount to borrower size.	Dealscan/Compustat
LEVERAGE		Borrower's debt-to-equity ratio observed at the nearest date before the loan active date.	Compustat
PROFIT		Borrower's return on equity (ROE) observed at the nearest date before the loan active date.	Compustat
OPAQUE	Dummy	One if the borrower is unrated, 0 otherwise.	Dealscan
INFO -SYNDICATION	Number	Number of times that the borrower has borrowed on the syndicated loan market through syndications during the five-year period prior to the active date of the deal based only on the entries in the LPC database.	Dealscan
INFO-CD		Number of times that the borrower has borrowed through club deals during the five-year period prior to the deal active date.	Dealscan
INFO-SYND-LOAN		Number of times that the borrower has borrowed though a syndicated loan (either syndication or club deal) in the five-year period prior to the deal active date.	Dealscan
INFO-ALL		Number of times that the borrower has borrowed through any distribution method, in the five-year period prior to the deal active date.	Dealscan
REGION		Set of four dummy variables used to capture where the borrower is domiciled. With the US & CANADA region serving as the control group, the regional dummies are for Latin America (*LAT-AMERICA*), Europe (*EUROPE*), Africa and Middle East (*AFRICA-EAST*) and Asia/Pacific (*ASIA*).	Dealscan
ECONDEV		Borrower's home country's level of economic development as measure by the per capita GNP	IMF

[19] Results are similar with the ranking based on volume.

		obtained from the International Monetary Fund.	
EMERGING	Dummy	One if the borrower's home country is considered to be emerging, 0 otherwise.	IMF
LEGAL	Dummy	One if the borrower's home country's legal system is civil law, 0 if common law. To facilitate the interpretation of the coefficients and to limit the number of dummy variables, countries that are categorized as socialist countries are removed from these tests.	La Porta et. al. (1998)
INDUSTRY	Dummies	Set of eight dummy variables based on the four-digit SIC code classification of the borrower's industry: agriculture, forestry and fishing (*INDUSTRY-AG*), construction (*INDUSTRY-CON*), finance, insurance and real estate (*INDUSTRY-FIN*), manufacturing (*INDUSTRY-MAN*), mining (*INDUSTRY-MIN*), retail trade (*INDUSTRY-RE*), services (*INDUSTRY-SER*), and transportation, communications, etc. (*INDUSTRY-TRAN*).[20]	Dealscan

iii) Loan-specific variables:

Variable	**Units**	**Definition**	**Source**
DIST	Dummy	One if the loan is distributed with a club deal, 0 if it's syndicated	Dealscan
SPREAD	Basis points	Total (fees and interest) annual spread paid over LIBOR for each dollar drawn down from the loan net of upfront fees.	Dealscan
AMT		Natural logarithm of the deal amount in U.S. dollars adjusted for inflation using the CPI between 1994 and 2009.[21]	Dealscan
MTY		Natural logarithm of the maturity of the loan as measured by the number of months until loan expiration.	Dealscan
TRANCHES			
MULT-TRANCHE	Dummy	One if the deal includes more than one tranche (or facility), 0 otherwise.	Dealscan
SYND-COUNTRY		Set of six dummy variables for the six main countries of syndications (by number of deals)	
SYND-REGION		Set of five dummy variables used to capture where the syndicate was arranged. With loans syndicated in US & Canada region serving as control, the four regional dummies are for Latin America (*SYND-LAT-AMERICA*), Europe (*SYND-EUROPE*), Africa and Middle East (*SYND-AFRICA-EAST*) and Asia/Pacific (*SYND-ASIA*).	Dealscan
SAME			
INTERNATIONAL	Dummy	One if the borrower is from a different country than the main lead arranger, 0 otherwise.	Dealscan
TYPE	Dummies	Set of five distinct binary variables to account for the following loan types: 364-day facility (*TYPE-*	Dealscan

[20] A robustness test using a sub-sample of non-financial borrowers yields similar results.
[21] In the case of multiple-facilities deals, *AMT, MTY, TYPE* and *PURPOSE* take the values corresponding to the facility with the largest amount.

		364), floating rate note (*TYPE-FRN*), letter of credit (*TYPE-LC*), term loan (*TYPE-TERM*) and revolver/line of credit (*TYPE-REV*). The remaining facilities are put into the *OTHER* class and serve as the control variable.	
PURPOSE	Dummies	Set of five dummy variables designed to capture the following loan purposes: recapitalization (*PURPOSE-RECAP*), acquisitions (*PURPOSE-ACQ*), working capital (*PURPOSE-WC*), debt restructuring (*PURPOSE-REST*) and other purposes (*PURPOSE-OTHER*). The general corporate purpose category serves as the control group.	Dealscan
YEAR	Dummies	Set of indicator variables to control for general trends in the market over the 1994-2009 period.	Dealscan

iv) Selection model variables

The following table describes the variables that are used in the selection model in section 4 of the paper and that were not previously described.

Variable	**Units**	**Definition**	**Source**
SIZE		Log of the inflation-adjusted U.S. dollar book value of the assets of the borrower observed at the nearest date before the loan active date and is adjusted using the Consumer Price Index (CPI).	Compustat
LEVERAGE		Borrower's debt-to-equity ratio observed at the nearest date before the loan active date.	Compustat
OPAQUE	Dummy	One if the borrower is unrated, 0 otherwise.	Dealscan
FIRST	Dummy	One if the borrower is tapping the syndicated loan market for the first time, 0 otherwise.	Dealscan
REL-LENDERS		Average number of past loans in the 5-year period prior to the deal active date with each lender in the syndicate	Dealscan
REL-LEAD		Average number of past loans in the 5-year period prior to the deal active date with the lead arranger(s).	Dealscan
DURATION-LENDERS		Average length of relationship between the borrower and each lender in the syndicate, measured in number of months between the first deal and current deal active date,	
DURATION-LEAD		Length of relationship between borrower and lead arranger, measured in number of months since first deal.	
POOL-LENDERS		Number of distinct lenders that were involved in previous loans with the borrower	Dealscan
POOL-LEADS		Number of distinct lead arrangers that were involved in previous loans with the borrower.	Dealscan
CAPACITY		Capacity of the lead arranger to syndicate the loan, proxies by the loan maturity (Dennis and Mullineaux, 2000).[22]	Dealscan

[22] Dennis and Mullineaux (2000) also use a collateral dummy to measure the syndication capacity. However, since the presence or not of collateral is not available for the majority of the deals, it is used as a robustness test on a sub-sample of observations. Results are similar.

INTERNATIONAL	Dummy	One if the lead arranger is not from the same country as the borrower, 0 otherwise. In the case of multiple lead arrangers, the variable takes the value of 1 if no lead arranger is from the same home country as the borrower.	Dealscan
LOYALTY		Ratio of the number of past loans between the borrower and the lead arranger to the total number of past loans for the borrower. In the case of loans with multiple arrangers, the measure is the average of the ratios for each lead arranger.	Dealscan
LEAD-BANK	Dummy	One if the main lead arranger is a bank, 0 otherwise.[23]	Dealscan

[23] If there is more than one lead arranger for the deal, the main lead arranger is identified as the one with the largest share. When lender share is not available, the main lead bank is identified with the lender role within the syndicate.

Table 1. Univariate comparison of syndicate structure, loan-specific and borrower-specific variables conditional on the distribution method of the loan

This table presents summary statistics for the different variables described in Appendix A and used throughout the paper. Borrower industry, loan purpose, loan type, and year dummy variables are not reported to save valuable journal space. N is the sample size.

Panel A – Entire sample

										Equality of	
	Total sample			Syndications			Club deals			Means	Variances
Variables	**N**	**Avg**	**Std Dev**	**N**	**Avg**	**Std Dev**	**N**	**Avg**	**Std Dev**	**t-value**	**F-value**
Syndicate structure variables:											
LENDERS	150007	5.2496	6.74	145594	5.2613	6.80	4413	4.8640	4.25	5.98***	2.56***
LEADS	150008	1.4118	1.66	145595	1.3348	1.48	4413	3.9533	3.78	-45.95***	6.48***
PARTICIPANTS	152116	3.7847	6.35	147655	3.8718	6.41	4461	0.9011	2.66	68.82***	5.81***
INDUSTRIES	145888	1.2988	0.57	141508	1.2997	0.58	4380	1.2703	0.49	3.86***	1.36***
LEAD-BANK	150007	0.8374	0.37	145594	0.8353	0.37	4413	0.9041	0.29	-15.17***	1.59***
LEAD-INVEST	150007	0.0440	0.21	145594	0.0443	0.21	4413	0.0356	0.19	3.07***	1.23***
COUNTRIES	149993	2.3675	2.46	145580	2.3543	2.46	4413	2.8040	2.24	-13.12***	1.22***
LEAD-US	152116	0.5128	0.50	147655	0.5249	0.50	4461	0.1096	0.31	85.54***	2.55***
LEAD-JAPAN	152116	0.0996	0.30	147655	0.0997	0.30	4461	0.0980	0.30	0.37	1.02
LEAD-UK	152116	0.0536	0.23	147655	0.0512	0.22	4461	0.1332	0.34	-16.01***	2.38***
SYND-US-CA	152116	0.5246	0.50	147655	0.5391	0.50	4461	0.0448	0.21	147.15***	5.80***
SYND-LAT-AMERICA	152116	0.0209	0.14	147655	0.0213	0.14	4461	0.0074	0.09	10.39***	2.84***
SYND-EUROPE	152116	0.1187	0.32	147655	0.1106	0.31	4461	0.3867	0.49	-37.62***	2.41***
SYND-AFRICA-EAST	152116	0.0092	0.10	147655	0.0084	0.09	4461	0.0377	0.19	-10.23***	4.36***
SYND-ASIA	152116	0.3040	0.46	147655	0.2987	0.46	4461	0.4772	0.50	-23.57***	1.19***
HH-INDEX	40256	0.4540	0.36	38406	0.4600	0.37	1850	0.3296	0.18	28.35***	4.22***
LEAD-SHARE	36673	57.5759	34.40	34879	55.8597	34.05	1794	90.9417	21.99	-63.75***	2.40***
TOP5-SHARE	40256	85.2632	22.34	38406	84.9721	22.49	1850	91.3060	17.87	-14.70***	1.58***
REPUTATION	143962	0.1527	0.27	139642	0.1556	0.28	4320	0.0594	0.13	44.56***	4.32***
Borrower-specific variables:											
SIZE	35568	8.1574	3.17	34475	8.1240	3.16	1093	9.2103	3.44	-10.31***	1.18***
RELAMT	35425	0.0000	0.00	34332	0.0000	0.00	1093	0.0000	0.00	1.19	11331.0***
LEVERAGE	35602	28.7226	768.64	34509	28.1556	780.09	1093	46.6268	174.77	-2.74***	19.92***
PROFIT	27277	30.6167	92.93	26322	30.7857	87.64	955	25.9586	187.06	0.79	4.56***
OPAQUE	152116	0.8624	0.34	147655	0.8597	0.35	4461	0.9514	0.22	-27.40***	2.61***
INFO_CD	152116	0.0509	0.35	147655	0.0412	0.31	4461	0.3701	0.94	-23.24***	9.22**
INFO-SYNDICATION	152116	1.8427	3.92	147655	1.8331	3.90	4461	2.1625	4.57	-4.76***	1.38***
INFO-SYND-LOAN	152116	1.8908	4.02	147655	1.8720	3.98	4461	2.5124	5.07	-8.37***	1.62***
INFO_All	152116	8.1033	31.95	147655	8.2507	32.39	4461	3.2257	7.65	35.34***	17.93***
FIRST-SYND-LOAN	152116	0.5068	0.50	147655	0.5080	0.50	4461	0.4676	0.50	5.31***	1.00
FIRST-ALL	152116	0.3886	0.49	147655	0.3868	0.49	4461	0.4465	0.50	-7.91***	1.04*
REL-LENDERS	150037	2.7988	17.41	145624	2.8604	17.66	4413	0.7657	1.34	41.49***	173.69***
REL-LEADS	152116	2.9919	17.42	147655	3.0591	17.67	4461	0.7697	1.37	45.45***	166.21***
REL-LEAD_DUMMY	152116	0.4266	0.49	147655	0.4300	0.50	4461	0.3134	0.46	16.51***	1.14***
REL-LENDERS_DUMMY	152116	0.3540	0.48	147655	0.3556	0.48	4461	0.3024	0.46	7.61***	1.09***
LOYALTY	75026	1.5864	9.09	72651	0.7989	9.23	2375	0.2398	0.45	31.07***	271.6***
POOL-LENDERS	150037	14.0211	27.76	145624	13.9492	27.53	4413	16.3947	34.48	-4.67***	1.57***
POOL-LEADS	150037	3.3967	8.08	145624	3.3451	7.96	4413	5.0986	11.24	-10.29***	1.99
BORROWER-US-CA	152116	0.5269	0.50	147655	0.5413	0.50	4461	0.0513	0.22	138.02***	5.10***
BORROWER-LATAMERICA	152116	0.0244	0.15	147655	0.0247	0.16	4461	0.0168	0.13	3.99***	1.46***
BORROWER-EUROPE	152116	0.1233	0.33	147655	0.1164	0.32	4461	0.3517	0.48	-32.70***	2.22***
BORROWER-AFRICA-EAST	152116	0.0117	0.11	147655	0.0109	0.10	4461	0.0408	0.20	-10.06***	3.64***
BORROWER-ASIA	152116	0.2862	0.45	147655	0.2807	0.45	4461	0.4703	0.50	-25.07***	1.23***
GDP	134909	29616.6000	13126.05	130505	29679	13020.11	4404	27777	15841	7.88***	1.48***
EMERGING	152116	0.1302	0.34	147655	0.1264	0.33	4461	0.2569	0.44	-19.77***	1.73***
CIVIL	152116	0.7128	0.45	147655	0.7205	0.45	4461	0.4557	0.50	35.08***	1.23***
INTERNATIONAL	152116	0.3315	0.47	147655	0.3266	0.47	4461	0.4943	0.50	-22.11***	1.14***
Loan-specific variables:											
SPREAD	105708	221.9808	240.96	103636	224.0130	242.24	2072	120.3356	128.97	35.37***	3.53***
MTY	132121	52.2293	194.88	127926	52.0593	197.81	4195	57.4145	54.31	-5.33***	13.27***
AMT	144499	17.3001	2.49	140063	17.2812	2.49	4436	17.8954	2.39	-16.85***	1.09***
MULT-TRANCHE	152116	0.2432	0.43	147655	0.2421	0.43	4461	0.2786	0.45	-5.36***	1.10***

*** Significant at the 0.01 level.
** Significant at the 0.05 level.
* Significant at the 0.10 level.

Panel B – Compustat sample

	Compustat sample					
Variables	**Syndications**			**Club deals**		
Syndicate structure variables:	**N**	**Avg**	**Std Dev**	**N**	**Avg**	**Std Dev**
LENDERS	31097	8.6927	9.27	557	6.6553	5.48
LEADS	31097	1.5116	1.69	557	4.4345	4.41
PARTICIPANTS	31199	7.1577	8.99	559	2.2129	4.44
INDUSTRIES	30813	1.5635	0.78	554	1.3357	0.55
LEAD-BANK	31097	0.8193	0.38	557	0.8743	0.33
LEAD-INVEST	31097	0.0609	0.24	557	0.0305	0.17
COUNTRIES	31097	3.2338	2.97	557	3.6984	2.74
LEAD-US	31199	0.6963	0.46	559	0.1789	0.38
LEAD-JAPAN	31199	0.0244	0.15	559	0.0304	0.17
LEAD-UK	31199	0.0369	0.19	559	0.1914	0.39
SYND-US-CA	31199	0.7265	0.45	559	0.0912	0.29
SYND-LAT-AMERICA	31199	0.0123	0.11	559	0.0107	0.10
SYND-EUROPE	31199	0.1042	0.31	559	0.4079	0.49
SYND-AFRICA-EAST	31199	0.0024	0.05	559	0.0143	0.12
SYND-ASIA	31199	0.1508	0.36	559	0.4651	0.50
HH-INDEX	10542	0.3219	0.32	247	0.2899	0.18
LEAD-SHARE	9710	43.3683	31.70	236	83.2777	28.06
TOP5-SHARE	10542	76.7584	25.30	247	85.4516	22.80
REPUTATION	30232	0.1749	0.31	548	0.0653	0.15
Borrower-specific variables:						
SIZE	31199	7.3020	3.02	559	9.9925	3.72
RELAMT	31192	0.0000	0.00	559	0.0000	0.00
LEVERAGE	31199	18.3281	563.10	559	58.2307	144.06
PROFIT	31199	31.5891	134.49	559	31.6949	35.46
OPAQUE	31199	0.6194	0.49	559	0.8819	0.32
INFO_CD	31199	0.0524	0.33	559	0.5349	1.35
INFO-SYNDICATION	31199	3.2448	4.07	559	4.4919	7.98
INFO-SYND-LOAN	31199	3.2928	4.16	559	4.9982	8.93
INFO_All	31199	4.4136	5.78	559	6.3667	11.77
FIRST-SYND-LOAN	31199	0.2579	0.44	559	0.2755	0.45
FIRST-ALL	31199	0.1834	0.39	559	0.2540	0.44
REL-LENDERS	31133	1.0289	1.75	557	1.0395	1.36
REL-LEADS	31199	1.4769	2.84	559	1.0908	1.45
REL-LEAD_DUMMY	31199	0.5829	0.49	559	0.4472	0.50
REL-LENDERS_DUMMY	31199	0.4314	0.50	559	0.4097	0.49
LOYALTY	31199	0.4346	1.64	559	0.2757	0.39
POOL-LENDERS	31133	20.7269	29.47	557	31.0341	44.94
POOL-LEADS	31133	3.4280	5.70	557	9.1454	15.79
BORROWER-US-CA	31199	0.7246	0.45	559	0.0948	0.29
BORROWER-LATAMERICA	31199	0.0139	0.12	559	0.0125	0.11
BORROWER-EUROPE	31199	0.1000	0.30	559	0.3882	0.49
BORROWER-AFRICA-EAST	31199	0.0027	0.05	559	0.0143	0.12
BORROWER-ASIA	31199	0.1509	0.36	559	0.4615	0.50
GDP	29806	31792	11348	552	25018	13160
EMERGING	31199	0.0876	0.28	559	0.2737	0.45
CIVIL	31199	0.8283	0.38	559	0.4973	0.50
INTERNATIONAL	31199	0.2289	0.42	559	0.4973	0.50
Loan-specific variables:						
SPREAD	31199	190.4983	200.71	559	111.4327	145.06
MTY	30277	54.0531	311.19	553	45.0362	29.91
AMT	31192	18.5136	1.97	559	18.3657	2.29
MULT-TRANCHE	31199	0.5266	0.50	559	0.4329	0.50

Table 2. Pearson correlation coefficients between the different variables

This table presents the Pearson correlation coefficients between the different variables used in the regressions for the period 1994-2009. Dummy variables are not considered in the correlation matrix. Number of observations is 9,946. Borrower industry, loan purpose, loan type, and year dummy variables are not reported to save valuable journal space.

	LEADS	*PARTICI-PANTS*	*INDUS-TRIES*	*COUN-TRIES*	*HH-INDEX*	*LEAD-SHARE*	*SIZE*	*RELAMT*	*LEVERA-GE*	*PROFIT*	*OPAQUE*	*INFO-SYNDICA-TION*	*INFO-CD*	*INFO-ALL*
LEADS	1.000													
PARTICIPANTS	0.006	1.000												
INDUSTRIES	0.144	0.424	1.000											
COUNTRIES	0.308	0.721	0.314	1.000										
HH-INDEX	-0.212	-0.575	-0.316	-0.509	1.000									
LEAD-SHARE	0.303	-0.614	-0.251	-0.377	0.772	1.000								
SIZE	0.282	0.306	0.176	0.465	-0.398	-0.190	1.000							
RELAMT	-0.020	-0.036	-0.029	-0.066	0.002	0.004	0.076	1.000						
LEVERAGE	0.129	0.018	0.014	0.176	-0.100	-0.004	0.655	0.123	1.000					
PROFIT	-0.011	0.012	-0.033	-0.004	-0.001	-0.007	-0.029	-0.008	-0.042	1.000				
OPAQUE	0.150	-0.327	-0.192	-0.190	0.193	0.290	0.035	0.076	0.183	-0.046	1.000			
INFO-SYNDICATION	0.169	0.184	0.175	0.240	-0.184	-0.058	0.157	-0.038	-0.016	0.010	-0.184	1.000		
INFO-CD	0.161	-0.059	-0.006	0.052	-0.006	0.115	0.117	0.031	0.112	-0.014	0.095	0.475	1.000	
INFO-ALL	0.143	0.128	0.128	0.197	-0.125	-0.022	0.134	-0.040	-0.005	0.006	-0.127	0.886	0.426	1.000
BORROWER-EUROPE	0.196	0.105	0.045	0.273	-0.114	0.003	0.219	-0.028	0.081	0.002	0.083	-0.072	0.040	-0.092
BORROWER-ASIA	0.355	-0.048	-0.050	0.103	-0.185	0.093	0.432	0.163	0.333	-0.037	0.439	0.062	0.193	0.084
ECONDEV	-0.262	0.055	0.175	-0.135	0.069	-0.107	-0.339	-0.080	-0.371	0.036	-0.383	0.056	-0.141	0.021
EMERGING	0.243	-0.065	-0.024	0.216	-0.072	0.109	0.347	0.055	0.404	-0.032	0.253	0.205	0.254	0.199
LEGAL	-0.332	0.009	0.041	-0.071	0.155	-0.085	-0.323	-0.170	-0.263	0.023	-0.332	-0.109	-0.183	-0.101
DIST	0.192	-0.149	-0.047	-0.028	0.021	0.242	0.121	0.010	0.084	-0.005	0.102	0.094	0.198	0.086
SPREAD	-0.123	-0.204	0.077	-0.247	0.246	0.168	-0.219	0.036	-0.045	-0.034	0.079	-0.105	-0.035	-0.085
AMT	0.066	0.486	0.330	0.504	-0.381	-0.363	0.171	-0.321	-0.089	0.016	-0.472	0.245	-0.004	0.189
MTY	0.112	0.044	0.071	-0.011	-0.170	-0.070	0.018	0.002	-0.026	-0.006	0.075	0.012	0.065	0.002
MULT-TRANCHE	0.098	0.076	0.082	0.045	-0.009	0.029	-0.043	-0.042	-0.033	-0.022	0.013	0.020	0.025	0.018
SYND-EUROPE	0.192	0.113	0.047	0.286	-0.121	-0.002	0.229	-0.028	0.100	0.002	0.091	-0.065	0.038	-0.087
INTERNATIONAL	0.266	0.039	0.014	0.364	-0.142	0.019	0.372	0.002	0.303	-0.019	0.196	0.063	0.125	0.079
REPUTATION	-0.089	0.183	0.090	0.088	-0.099	-0.166	-0.055	-0.047	-0.105	0.002	-0.217	0.052	-0.058	0.029

	BORRO-WER-EUROPE	BORRO-WER-ASIA	ECONDEV	EMER-GING	LEGAL	DIST	SPREAD	AMT	MTY	MULT-TRANCHE	SYND-EUROPE	INTERNA-TIONAL	REPUTA-TION
BORROWER-EUROPE	1.000												
BORROWER-ASIA	-0.164	1.000											
ECONDEV	0.026	-0.733	1.000										
EMERGING	-0.094	0.555	-0.693	1.000									
LEGAL	-0.226	-0.634	0.554	-0.439	1.000								
DIST	0.141	0.146	-0.103	0.112	-0.139								
SPREAD	-0.045	-0.136	0.101	-0.038	0.111	-0.036	1.000						
AMT	0.235	-0.477	0.361	-0.093	0.366	-0.052	-0.103	1.000					
MTY	0.054	0.106	-0.074	0.037	-0.089	0.003	0.043	0.026	1.000				
MULT-TRANCHE	0.064	0.007	-0.048	-0.043	-0.045	-0.014	0.129	0.116	0.093	1.000			
SYND-EUROPE	0.955	-0.164	0.001	-0.058	-0.239	0.140	-0.047	0.229	0.046	0.057	1.000		
INTERNATIONAL	0.186	0.349	-0.398	0.441	-0.252	0.081	-0.054	0.023	0.017	-0.036	0.201	1.000	
REPUTATION	-0.029	-0.261	0.249	-0.149	0.198	-0.067	-0.027	0.244	-0.008	-0.002	-0.033	-0.118	1.000

Table 3. Multivariate regressions for the loan spread

This table summarizes the results for regression model (1) when the loan spread is regressed against an indicator variable for the distribution method (*DIST*), controlling for syndicate structure, loan-specific and borrower-specific variables. Multivariate regressions are estimated using OLS and t-values are corrected for heteroskedasticity. "*", "**" and "***" indicate significance at the 10%, 5% and 1% levels, respectively. N is the number of observations used in each model specification. Borrower industry, loan purpose, loan type, and year dummy variables are not reported to save valuable journal space.

Variables	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
INTERCEPT	386.5015	25.91	***	368.2344	24.49	***	393.49	25.30	***	389.58	24.76	***	228.72	10.35	***	211.78	8.66	***
DIST	-21.8079	-3.26	***	-18.0715	-2.71	***	-21.11	-3.24	***	-21.55	-3.31	***	-20.64	-3.11	***	-21.43	-2.77	***
LEADS							-4.41	-7.73	***	-4.41	-7.73	***	-1.83	-2.51	**	-2.22	-2.55	**
PARTICIPANTS							-1.37	-7.03	***	-1.32	-6.80	***	-0.29	-1.17		-0.27	-0.92	
INDUSTRIES							25.60	16.55	***	25.76	16.65	***	22.83	12.28	***	22.72	10.45	***
LEAD-BANK							-93.20	-26.54	***	-90.98	-25.37	***	-56.08	-14.06	***	-49.29	-10.81	***
LEAD-INVEST							27.77	5.37	***	26.66	5.14	***	-10.34	-1.31		8.08	0.88	
COUNTRIES							-5.34	-9.03	***	-5.39	-9.11	***	-4.16	-6.01	***	-3.77	-4.71	***
LEAD-US										6.56	2.13	**	-1.76	-0.42		1.70	0.35	
LEAD-JAPAN										-16.52	-2.59	***	-22.82	-3.55	***	-18.01	-2.50	**
LEAD-UK										7.93	1.75	*	6.39	1.13		12.17	1.77	*
HH-INDEX													37.44	3.77	***	25.33	2.24	**
LEAD-SHARE													0.03	0.30		0.12	1.16	
REPUTATION										-9.47	-2.89	***	0.76	0.18		0.89	0.19	
SIZE				-6.3227	-15.16	***	-5.22	-12.90	***	-5.08	-12.52	***	-2.81	-5.76	***	-4.91	-7.07	***
RELAMT				10.8669	8.50	***	11.59	9.39	***	11.59	9.38	***	24.26	2.81	***	26.39	2.90	***
LEVERAGE																0.12	3.98	***
PROFIT																-0.02	-2.37	**
OPAQUE	5.9785	2.46	**	0.6926	0.28		1.10	0.46		0.78	0.33		9.12	3.13	***	8.25	2.45	**
INFO_synd_loan				-0.9501	-4.02	***	-0.50	-2.18	**	-0.48	-2.12	**	-1.16	-3.26	***	-0.98	-1.68	*
INFO_All				0.0569	2.03	**	0.14	5.01	***	0.13	4.69	***	0.28	1.37		-0.12	-0.31	
Borrower_Europe	-44.8670	-10.90	***	-35.5069	-8.39	***	-15.49	-3.70	***	-16.01	-3.66	***	-5.94	-0.88		-6.56	-0.81	
Borrower_Asia	-124.5300	-29.92	***	-110.3955	-25.37	***	-98.45	-23.09	***	-93.55	-20.29	***	-61.76	-9.62	***	-56.38	-7.48	***
GDP	0.0018	9.41	***	0.0018	9.37	***	0.00	4.98	***	0.00	5.35	***	0.00	2.42	**	0.00	1.52	
EMERGING	87.4225	15.85	***	89.9262	16.08	***	78.13	14.12	***	77.31	13.87	***	33.97	5.49	***	34.35	4.97	***
CIVIL	38.8549	11.73	***	28.8505	8.47	***	23.15	6.92	***	20.49	5.94	***	8.60	2.09	**	10.44	2.14	**
INTERNATIONAL	14.1335	5.51	***	17.9021	6.98	***	21.31	8.45	***	22.83	8.69	***	14.61	4.16	***	12.79	3.22	***
MTY	47.4336	30.38	***	46.8469	30.12	***	38.99	25.86	***	39.12	25.94	***	-1.26	-0.65		-3.02	-1.38	
AMT	-13.5543	-21.71	***	-9.2316	-13.70	***	-5.88	-8.16	***	-6.09	-8.37	***	-4.80	-4.39	***	-3.90	-3.17	***
MULT-TRANCHE	28.8421	13.46	***	24.3187	11.32	***	23.31	11.33	***	23.18	11.25	***	20.37	8.56	***	20.79	7.70	***
N	27914			27914			27621			27621			8529			6602		
Adj. R^2	0.3380			0.3452			0.4013			0.4016			0.2861			0.2812		
F-value	324.96***			307.53***			343.79***			320.64***			57.95***			42.66***		

Table 4. Multivariate regressions for syndicate structure measures

This table summarizes the results for regression model (2) when one syndicate structure measure is regressed against an indicator variable for the distribution method, controlling for loan-specific and borrower-specific variables. Multivariate regressions are estimated using OLS and t-values are corrected for heteroskedasticity. "*", "**" and "***" indicate significance at the 10%, 5% and 1% levels, respectively. N is the number of observations used in each model specification. Borrower industry, loan purpose, loan type, and year dummy variables are not reported to save valuable journal space.

Independent variable	LEADS			PARTICIPANTS			INDUSTRIES			COUNTRIES			HH-INDEX			LEAD-SHARE		
Variables	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
INTERCEPT	-3.4172	-20.90	***	-27.3437	-39.41	***	-1.2264	-19.44	***	-11.1058	-50.61	***	2.1282	58.38	***	183.1956	39.32	***
DIST	2.0847	28.74	***	-6.3735	-20.71	***	-0.2121	-7.62	***	-1.0951	-11.25	***	0.0889	6.62	***	36.9695	22.28	***
SIZE	-0.0144	-3.18	***	0.3677	19.12	***	0.0111	6.32	***	0.1138	18.70	***	-0.0070	-7.16	***	-0.9815	-7.74	***
RELAMT	0.0581	4.17	***	0.3908	6.62	***	0.0284	5.27	***	0.1520	8.15	***	-0.2133	-11.73	***	-20.0309	-9.02	***
OPAQUE	0.1749	6.52	***	-1.6518	-14.51	***	-0.1405	-13.66	***	-0.2312	-6.42	***	0.0707	11.69	***	7.8373	10.38	***
INFO_synd_loan	0.0113	4.38	***	0.0828	7.59	***	0.0036	3.62	***	0.0398	11.52	***	-0.0029	-4.11	***	-0.2465	-2.66	***
INFO_All	-0.0023	-7.54	***	0.0027	2.08	**	-0.0007	-5.73	***	0.0009	2.21	**	0.0028	7.27	***	0.2728	5.12	***
Borrower_Europe	0.5126	11.14	***	-0.6848	-3.51	***	-0.2118	-11.93	***	1.5628	25.30	***	0.0519	4.34	***	18.6719	11.89	***
Borrower_Asia	1.2099	25.57	***	1.5948	7.94	***	0.1376	7.51	***	1.1397	17.95	***	-0.2511	-22.96	***	-8.1163	-5.72	***
GDP	0.0000	-8.34	***	-0.0001	-11.74	***	0.0000	6.96	***	0.0000	-10.61	***	0.0000	8.72	***	0.0002	3.34	***
EMERGING	0.0264	0.43		-4.2104	-16.32	***	-0.0109	-0.46		0.4462	5.47	***	0.1702	14.27	***	18.0647	11.96	***
CIVIL	-0.5665	-15.30	***	-2.7860	-17.73	***	-0.0723	-5.04	***	-0.2694	-5.42	***	0.0954	12.08	***	8.3933	8.25	***
INTERNATIONAL	0.1911	6.85	***	-0.2766	-2.34	**	-0.0138	-1.28		0.8912	23.82	***	0.0001	0.02		1.3576	1.69	*
MTY	-0.0645	-3.81	***	0.3892	5.42	***	0.0850	13.01	***	-0.0846	-3.73	***	-0.0713	-19.06	***	-6.9067	-14.02	***
AMT	0.2685	36.64	***	1.7382	55.90	***	0.1111	39.13	***	0.6840	69.56	***	-0.0889	-48.64	***	-6.7990	-29.19	***
MULT-TRANCHE	0.0425	1.82	*	0.2037	2.06	**	0.0564	6.28	***	-0.0080	-0.26		0.0555	11.34	***	4.7652	7.68	***
N	27914			27914			27621			27914			27914			8541		
Adj. R^2	0.2810			0.3079			0.2145			0.4371			0.4823			0.3409		
F-value	228.32***			259.76***			158.11***			452.56***			180.54***			93.01***		

Table 5. Logistic model to estimate propensity scores for the treated and control observations

This table summarizes the results for logistic model (7) where the dependent variable, the distribution method DIST, is regressed against a number of loan-specific, borrower-specific and lender-specific covariates. The regression is estimated using maximum likelihood and t-values are corrected for heteroskedasticity. "*", "**" and "***" indicate significance at the 10%, 5% and 1% levels, respectively. N is the number of observations. Total number of observations is 19,750.

	Coeff	Odds ratio	Std.Err.	
INTERCEPT	-2.392		2.112	
SIZE	0.129	1.138	0.049	***
LEVERAGE	0.000	1.000	0.001	
OPAQUE	-1.001	0.367	2.087	
INFO-CLUB	0.294	1.342	0.070	***
FIRST	0.069	1.072	0.128	
REL-LENDERS	0.261	1.298	0.074	***
REL-LEADS	-0.327	0.721	0.065	***
POOL-LENDERS	-0.003	0.997	0.003	
POOL-LEADS	0.027	1.027	0.011	**
BORROWER-US-CA	-2.536	0.079	0.265	***
BORROWER-EUROPE	-2.037	0.130	1.302	
GDP	0.000	1.000	0.000	***
EMERGING	0.654	1.924	0.229	***
CIVIL	0.281	1.324	0.128	**
INTERNATIONAL	0.862	2.367	1.001	
MTY	-1.182	0.307	0.159	***
AMT	0.052	1.054	0.118	
REPUTATION	-0.903	0.405	0.432	**
LEAD-US	-0.506	0.603	0.181	***
LEAD-UK	0.591	1.805	0.146	***
LEAD-BANK	0.075	1.078	0.167	
SYND-EUROPE	0.233	1.262	0.404	
INTERNATIONAL X MTY	0.083	1.087	0.126	
INTERNATIONAL X AMT	-0.085	0.919	0.045	*
INTERNATIONAL X OPAQUE	0.349	1.418	0.426	
OPAQUE X SIZE	-0.086	0.918	0.049	*
OPAQUE X MTY	0.889	2.432	0.173	***
OPAQUE X AMT	-0.062	0.940	0.118	
EUROPE X EUROPE	1.976	7.216	1.326	
Pseudo R^2	0.2308			
Log pseudolikelihood	-1627.93			
Wald chi^2	723.39***			

Table 6. Outcome variables using matching techniques

This table summarizes the average values of different outcome variables (spread, number of lenders, number of participants and number of industries) for the treated and the control data set. For each outcome variable, the average for the unmatched sample and the average treatment effect on the treated (ATT) are estimated. S.E. is the standard error of the difference between the averages of the two subsamples. Panel A presents the results for the kernel matching method using the Epanechnikov kernel, Panel B presents results for the LLR matching method using the tricube kernel, Panel C presents the results for the 1:2 neighbour-matching method without replacement and Panel D presents the results for the 1:3 matching method without replacement. Matching is done with common support. S.E. for ATT does not take into account that the propensity score is estimated. For LLR matching, standard errors are obtained with bootstrapping. Default bandwidth is 0.8 for LLR matching and 0.06 for kernel matching. . "*", "**" and "***" indicate significance at the 10%, 5% and 1% levels, respectively.

		Panel A - Kernel matching						Panel B - LLR matching					
Outcome variable	**Sample**	**Treated: Club deals**	**Control: Syndications**	**Difference**	**S.E.**	**t-stat**		**Treated: Club deals**	**Control: Syndications**	**Difference**	**S.E.**	**t-stat**	
SPREAD	Unmatched	105.519	166.957	-61.438	8.777	-7.00	***	105.519	166.957	-61.438	8.777	-7.00	***
	ATT	105.003	138.663	-33.660	6.017	-5.59	***	104.908	124.871	-19.963	8.816	-2.26	**
LEADS	Unmatched	4.344	1.604	2.740	0.093	29.46	***	4.344	1.604	2.740	0.093	29.46	***
	ATT	4.349	2.266	2.084	0.200	10.41	***	4.349	2.565	1.783	0.275	6.49	***
PARTICIPANTS	Unmatched	1.781	7.374	-5.593	0.406	-13.78	***	1.781	7.374	-5.593	0.406	-13.78	***
	ATT	1.797	7.375	-5.578	0.217	-25.74	***	1.793	7.348	-5.556	0.520	-10.68	***
INDUSTRIES	Unmatched	3.471	3.379	0.092	0.146	0.63		1.316	1.539	-0.223	0.035	-6.30	***
	ATT	3.486	4.289	-0.803	0.133	-6.06	***	1.318	1.434	-0.116	0.043	-2.68	***
COUNTRIES	Unmatched	3.471	3.379	0.092	0.146	0.63		3.471	3.379	0.092	0.146	0.63	
	ATT	3.486	4.289	-0.803	0.133	-6.06	***	3.483	4.582	-1.099	0.231	-4.76	***
HH-INDEX	Unmatched	0.307	0.286	0.021	0.021	1.00		0.307	0.286	0.021	0.021	1.00	
	ATT	0.304	0.241	0.063	0.015	4.35	***	0.304	0.214	0.090	0.023	3.98	***
LEAD-SHARE	Unmatched	84.967	40.599	44.368	2.196	20.20	***	84.967	40.599	44.368	2.196	20.20	***
	ATT	84.654	44.420	40.234	2.076	19.38	***	84.813	45.319	39.494	3.488	11.32	***
Sensitivity analyses for *SPREAD*:													
Changing Bandwidth:													
Small bandwidth = 0.01	ATT	105.049	127.782	-22.732	6.382	-3.56	***	104.908	125.360	-20.452	11.063	-1.85	**
Small bandwidth = 0.05	ATT	105.003	136.318	-31.314	6.073	-5.16	***	104.908	124.696	-19.788	9.682	-2.04	**
Large bandwidth = 0.8	ATT	104.908	166.737	-61.830	5.551	-11.14	***	104.908	130.587	-25.679	10.592	-2.42	***
Trimming:													
2% (11 cases excluded)	ATT	105.456	138.393	-32.937	6.002	-5.49	***	105.456	124.354	-18.898	8.208	-2.30	**
5% (22 cases excluded)	ATT	106.570	137.806	-31.236	6.079	-5.14	***	106.570	123.882	-17.312	9.065	-1.91	**
10% (44 cases excluded)	ATT	107.631	138.802	-31.172	6.200	-5.03	***	107.631	123.830	-16.199	9.001	-1.80	**
Kernel													
Uniform kernel	ATT	105.003	141.155	-36.151	5.937	-6.09	***	104.786	130.636	-25.850	6.232	-4.15	***
Tricube kernel	ATT	105.003	136.574	-31.571	6.066	-5.20	***						
Normal kernel	ATT	104.908	154.171	-49.263	5.711	-8.63	***	104.908	127.027	-22.120	6.225	-3.55	***
Epanechnikov kernel	ATT							104.786	129.518	-24.732	6.223	-3.97	***

		Panel C - 1:2 matching						Panel D - 1:3 matching					
Outcome variable	**Sample**	**Treated: Club deals**	**Control: Syndications**	**Difference**	**S.E.**	**t-stat**		**Treated: Club deals**	**Control: Syndications**	**Difference**	**S.E.**	**t-stat**	
SPREAD	Unmatched	105.519	166.957	-61.438	8.777	-7.00	***	105.519	166.957	-61.438	8.777	-7.00	***
	ATT	104.908	121.212	-16.304	8.017	-2.03	**	104.908	122.136	-17.228	7.326	-2.35	***
LEADS	Unmatched	4.344	1.604	2.740	0.093	29.46	***	4.344	1.604	2.740	0.093	29.46	***
	ATT	4.349	2.540	1.809	0.243	7.43	***	4.349	2.528	1.820	0.227	8.03	***
PARTICIPANTS	Unmatched	1.781	7.374	-5.593	0.406	-13.78	***	1.781	7.374	-5.593	0.406	-13.78	***
	ATT	1.793	7.585	-5.793	0.381	-15.20	***	1.793	7.316	-5.523	0.332	-16.63	***
INDUSTRIES	Unmatched	1.316	1.539	-0.223	0.035	-6.30	***	1.316	1.539	-0.223	0.035	-6.30	***
	ATT	1.318	1.454	-0.136	0.037	-3.70	***	1.318	1.432	-0.114	0.034	-3.31	***
COUNTRIES	Unmatched	3.471	3.379	0.092	0.146	0.63		3.471	3.379	0.092	0.146	0.63	
	ATT	3.483	4.876	-1.393	0.199	-6.99	***	3.483	4.694	-1.211	0.178	-6.81	***
HH-INDEX	Unmatched	0.307	0.286	0.021	0.021	1.00		0.307	0.286	0.021	0.021	1.00	
	ATT	0.304	0.209	0.095	0.018	5.17	***	0.304	0.215	0.089	0.017	5.300	***
LEAD-SHARE	Unmatched	84.967	40.599	44.368	2.196	20.20	***	84.967	40.599	44.368	2.196	20.20	***
	ATT	84.813	43.815	40.999	2.683	15.28	***	84.813	46.984	37.830	2.512	15.060	***
Sensitivity analyses for *SPREAD* :													
Trimming:													
2% (11 cases excluded)	ATT	105.45592	120.497389	-15.04147	8.116	-1.85	**	105.4559	121.6639	-16.208	7.3988	-2.19	**
5% (22 cases excluded)	ATT	106.57024	117.761606	-11.19137	7.929	-1.41	*	106.5702	118.6051	-12.0349	7.3642	-1.63	*
10% (44 cases excluded)	ATT	107.6306	118.565	-10.9343	8.224	-1.33	*	107.6306	119.224	-11.5933	7.6106	-1.52	*

Table 7. Propensity score adjustment of the outcome model

This table summarizes the results for regression models (1) and (2) when the loan spread or one syndicate structure measure is regressed against an indicator variable for the distribution method, controlling for loan-specific and borrower-specific variables. The propensity score obtained with model (7) is added as an explanatory variable, *PROPENSITY*, to control for the selection bias. Multivariate regressions are estimated using OLS and t-values are corrected for heteroskedasticity. "*", "**" and "***" indicate significance at the 10%, 5% and 1% levels, respectively. N is the number of observations used in each model specification. Borrower industry, loan purpose, loan type, and year dummy variables are not reported to save valuable journal space.

	SPREAD			LEADS			PARTICIPANTS		
Variables	**Coeff.**	**t-value**		**Coeff.**	**t-value**		**Coeff.**	**t-value**	
INTERCEPT	368.636	19.78	***	-3.870	-19.40	***	-31.510	-37.31	***
DIST	-24.925	-3.38	***	1.560	18.47	***	-5.586	-15.62	***
LEADS	-4.429	-6.74	***						
PARTICIPANTS	-1.510	-6.69	***						
INDUSTRIES	24.354	13.86	***						
LEAD-BANK	-94.204	-23.99	***						
LEAD-INVEST	27.512	4.72	***						
COUNTRIES	-4.519	-6.71	***						
REPUTATION	-6.286	-1.76	*						
SIZE	-8.165	-13.86	***	-0.041	-7.64	***	0.339	14.93	***
RELAMT	11.866	9.72	***	0.063	4.42	***	0.394	6.57	***
LEVERAGE	0.194	7.24	***						
PROFIT	-0.022	-2.61	***						
OPAQUE	-0.380	-0.14		0.159	5.12	***	-1.346	-10.23	***
INFO_synd_loan	-0.934	-1.81	*	0.014	2.41	**	0.207	8.19	***
INFO_All	0.200	0.55		-0.008	-1.78	*	-0.065	-3.64	***
Borrower_Europe	-17.259	-2.97	***	0.417	6.33	***	-0.429	-1.54	
Borrower_Asia	-88.021	-15.53	***	1.376	21.82	***	3.340	12.51	***
GDP	0.001	3.20	***	0.000	-3.36	***	0.000	-8.21	***
EMERGING	53.999	8.17	***	-0.076	-1.04		-4.615	-14.85	***
CIVIL	29.226	7.20	***	-0.717	-15.61	***	-2.804	-14.43	***
INTERNATIONAL	15.647	5.14	***	0.184	5.37	***	-0.612	-4.22	***
MTY	35.229	19.73	***	-0.061	-2.98	***	0.406	4.67	***
AMT	-4.005	-4.28	***	0.306	31.89	***	1.963	48.29	***
MULT-TRANCHE	16.106	6.98	***	0.078	2.91	***	0.211	1.87	*
PROPENSITY	52.461	1.50		1.600	3.99	***	-16.038	-9.45	***
N	19631.000			19750			19750		
Adj. R^2	0.385			0.2838			0.3036		
F-value	213.10***			160.72***			176.73***		

Table 8. Endogenous switching regressions results for the loan spread with a selection correction

This table presents the impact of the loan distribution method on the loan spread with a correction for endogeneity using switching regressions. Coefficients are estimated using maximum likelihood which simultaneously estimates the three models: the selection model and the two regimes. Endogeneity caused by the selection variables is corrected with the selection model defined in equation (7). "*", "**" and "***" indicate significance at the 10%, 5% and 1% levels, respectively. N is the number of observations used in the regressions.

	Selection model			**SPREAD for Syndications**			**SPREAD for Club deals**		
	Coeff	**Std.Err.**		**Coeff**	**Std.Err.**		**Coeff**	**Std.Err.**	
INTERCEPT	-2.49	0.22	***	176.09	18.77		-418.29	63.04	***
LEADS				-5.00	0.71	***	-0.06	1.60	
PARTICIPANTS				-2.16	0.24	***	-1.67	1.80	
INDUSTRIES				28.76	1.85	***	14.24	6.41	**
LEAD-BANK				-112.98	3.30	***	2.34	8.83	
COUNTRIES				-5.89	0.70	***	-5.24	2.53	**
REPUTATION				-14.96	3.97	***	36.55	17.22	**
SIZE	0.03	0.01	***	-8.34	0.65	***	0.46	1.74	
RELAMT				4.50	0.68	***	-51.32	40.43	
LEVERAGE	0.00	0.00		0.16	0.03	***	0.01	0.06	
PROFIT				-0.02	0.01	***	-0.24	0.11	**
OPAQUE	0.13	0.06	**	-10.29	2.99	***	49.69	15.06	***
INFO-SYND-LOAN	0.02	0.01	***	-0.51	0.30	*	2.56	0.59	***
INFO-ALL	-0.01	0.01							
FIRST-SYND-LOAN	0.04	0.03							
REL-LENDERS	0.02	0.02							
REL-LEADS	-0.02	0.02							
POOL-LENDERS	0.00	0.00							
POOL-LEADS	0.00	0.00	**						
BORROWER-EUROPE	0.73	0.07	***	-23.44	5.47	***	113.56	17.91	***
BORROWER-ASIA	0.65	0.07	***	-74.06	5.67	***	67.41	17.62	***
GDP				0.00	0.00		0.00	0.00	
EMERGING				52.78	6.47	***	31.99	12.40	***
CIVIL				20.76	3.95	***	14.32	6.63	**
INTERNATIONAL	-0.20	0.04	***	22.14	3.37	***	-36.76	10.00	***
CAPACITY	-0.24	0.02	***	48.08	1.69	***	-29.33	6.08	***
AMT	0.06	0.01	***	-5.02	1.00	***	9.69	2.93	***
MULT-TRANCHE				16.33	2.43	***	21.04	5.91	***
N	19631								
rho0	-0.9648***								
rho1	0.9934***								