

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

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Abstract. This paper examines the impact of the distribution method on the loan syndicate structure and spread. Although privately placed deals are associated with riskier and less transparent borrowers than traditional 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, privately placed deals are associated with syndicates that are smaller, more homogeneous in terms of lender industries and countries, and more concentrated. Propensity score matching models show that even after removing the differences in characteristics between the two groups, privately placed deals have a lower average spread than syndications.

Keywords: syndicated loan market, privately placed deals, information asymmetry, matching models, selection bias.

1. Introduction

From the growing research that has been conducted in the past fifteen years on the syndicated loan market, we know that one of the key differences between syndicated loans and sole-lender loans is the addition of lender-lender relationships among the syndicate members and the 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 the latter 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, privately placed loans deals are structured differently than syndications and involve more informed (about each other) parties, they represent a very interesting instrument through which examine asymmetric information effects on syndicate structure and loan spread.² Loan distribution methods can differ according to the resulting concentration and information asymmetry premiums that are ultimately charged to the borrowers. Typically, syndications that involve many lenders would considerably reduce the concentration premium but, because of adverse selection and moral hazard problems, would be more exposed to an information asymmetry premium within the syndicate. However, it is unclear a priori how privately placed deals would compare because of the multidimensionality of the syndicate structure. For instance, privately placed deals are generally associated with a higher lead share, which increases the concentration premium, but are also associated with fewer lenders, which reduce the information asymmetry premium. Other structure measures, such as the heterogeneity of lenders in terms of their industries (e.g. banks, investment bankers, etc.) or countries, can also differ between the two distribution methods and affect the information asymmetry premium. Descriptive statistics show that, on average, loan spreads and fees are lower for privately placed deals than for syndications (120.34 bps vs

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¹ In [1], a club deal is defined 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”. Contrary to traditional syndications, club deal borrowers request the participation of specific institutions.

² The structure of a syndicate is related to the identity of its members and their characteristics. Syndicate structure is often measured by the number of lenders, the loan share retained by the lead arranger and the concentration index.

224.01 bps), indicating lower financing costs for the borrower. The objective of the paper is to explain this difference and see if it can be attributable to structure and borrower characteristics.

The remainder of the paper is organized as follows. Section 2 briefly discusses the related literature on the determinants of syndicate structure and loan spreads. The sample, the methodology and the results obtained are presented and assessed in section 3. Section 4 concludes the paper, while section 5 makes some important acknowledgments and section 6 provides the references.

2. The Determinants of Syndicate Structure and Loan Terms

The structure of a loan syndicate is related to the information asymmetries between the lead arranger and the participants in the syndicate or between the lenders and the borrowers. 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 [2]. 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 [3] and positively related to the number of lenders in the syndicate [4]. There is a negative relation between loan rating and lead share [5]. Loan syndicates can also imply a free riding problem which reduces each lender's incentive to monitor and renegotiate if necessary. For instance, the authors in [6] find that the number of lenders is negatively related to abnormal returns following loan announcements because of the higher renegotiation costs. Further, the authors in [7] 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. Authors in [8] observe that smaller and more concentrated syndicates are more likely to be formed for riskier borrowers, while the author in [9] observes that lead arrangers retain a larger share and form more concentrated syndicates when borrowers require more intense due diligence and monitoring. Finally, 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 [10] [11].

The impact of syndicate structure on loan terms has also been studied. For instance, larger banking syndicates lend for longer maturities, but due to a decline in contractual flexibility and monitoring, lend at lower yield spreads [12]. Loan yields are found to be higher for a syndicated loan with fewer lenders, higher concentration and larger retention [13]. Finally, the author in [14] 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.

3. Tests and results

3.1. The impact of the distribution method on loan spread and syndicate structure

In order to study the impact of the distribution method on the syndicate structure and the loan spread, an international sample of 147,655 syndicated loans between 1987 and 2009 is generated from Dealscan, a database maintained by the Reuters' Loan Pricing Corporation (LPC). Corporate information about the borrowers is taken from the Compustat Global database. Results from a univariate comparison of the loan spread and other variables according to the distribution method of the syndicated loan are available in Figure 1. The average spread for syndications is almost twice as large as the spread for privately placed deals. In terms of syndicate structure, the total number of lenders is significantly lower for privately placed deals, as is the number of participants. However, they involve more lead arrangers. Interestingly, privately placed deals are, on average, more homogeneous in terms of institution types but more heterogeneous in terms of countries involved. Regarding borrowers in privately placed deals, they have higher leverage, lower profitability and a greater percentage are rated. Finally, almost half of the privately placed deals are international loans. These results give preliminary evidence that significant differences in the structure of the syndicate and loan spread exist between privately placed deals and syndications.

To control for all factors, a multivariate analysis is needed. Because the syndicate structure and loan spread (and other terms) are not determined simultaneously in a privately placed deal, loan spread and syndicate structure are studied separately. The general forms of the two models examined are given by equations (1) and (2).

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

$$SPREAD = \beta_1 * DIST + \beta_2 * STRUCTURE + \beta_3 * X_2 + \varepsilon \quad (2)$$

Variables	Syndications			Privately placed deals			Equality of	
	N	Avg	Std Dev	N	Avg	Std Dev	Means t-value	Variance F-value
Loan-specific variables:								
Spread	103636	224.01	242.24	2072	120.34	128.97	35.37***	3.53***
Syndicate structure variables:								
Number of lenders	145594	5.26	6.80	4413	4.86	4.25	5.98***	2.56***
Number of leads	145595	1.33	1.48	4413	3.95	3.78	45.95***	6.48***
Number of participants	147655	3.87	6.41	4461	0.90	2.66	68.82***	5.81***
Number of lender financial industries	141508	1.30	0.58	4380	1.27	0.49	3.86***	1.36***
Number of lender countries	145580	2.35	2.46	4413	2.80	2.24	-13.12***	1.22***
Loans syndicated in North America	147655	53.91%	0.50	4461	4.48%	0.21	147.15***	5.80***
Loans syndicated in Europe	147655	11.06%	0.31	4461	38.07%	0.49	-37.62***	2.41***
Loans syndicated in Asia	147655	29.87%	0.46	4461	47.72%	0.50	-23.57***	1.19***
Syndicate concentration index	38406	46.00%	0.37	1850	32.96%	0.18	28.35***	4.22***
Loan share retained by lead (%)	34879	55.86	34.05	1794	90.94	21.99	-63.75***	2.40***
Borrower-specific variables:								
Log total real assets (millions USD)	34475	8.12	3.16	1093	9.21	3.44	-10.31***	1.18***
Leverage (%)	34509	28.18	780.09	1093	46.63	174.77	-2.74***	19.92***
ROE (%)	26322	30.79	87.64	955	25.96	187.06	0.79	4.56***
Rated borrowers	147655	85.97%	0.35	4461	95.14%	0.22	-27.40***	2.61***
North American borrowers	147655	54.13%	0.50	4461	5.13%	0.22	138.02***	5.10***
European borrowers	147655	11.64%	0.32	4461	35.17%	0.48	-32.70***	2.22***
Asian borrowers	147655	28.07%	0.45	4461	47.03%	0.50	-25.07***	1.23***
Borrower from emerging country	147655	12.64%	0.33	4461	25.69%	0.44	-19.77***	1.73***
International loans	147655	32.66%	0.47	4461	49.43%	0.50	-22.11***	1.14***

***, **, * reflect significance at the 99%, 95% and 90% level, respectively.

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

In models (1) and (2), STRUCTURE is one of the syndicate structure measures identified in Figure 1 and in model (2), SPREAD is the all-in loan spread over LIBOR. The right-hand side variable DIST is a dummy variable that equals one if the distribution method is a privately placed deal and zero otherwise. Based on existing theories, a set of control variables that reflect loan- and borrower-specific factors are combined to form X_1 and X_2 . The variables' detailed definitions and measurements are available upon request.

The results for model (1) using six structure variables are available in Figure 2 below (results for the remaining structure variables are qualitatively similar). Fixed effects related to borrower country and industry, loan type and purpose, as well as calendar dummies are not tabulated to save space. Interestingly, even after controlling for borrower risk and information asymmetries, the distribution method still has an impact on the syndicate structure. Privately placed 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 in [8] and [9].

Independent variable	LEADS		PARTICIPANTS		INDUSTRIES		COUNTRIES		HH-INDEX		LEAD-SHARE	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
INTERCEPT	-3.417	-20.80 ***	27.344	39.41 ***	-1.226	-19.44 ***	-11.106	-50.61 ***	2.128	58.38 ***	183.196	39.32 ***
DIST	2.085	28.74 ***	-6.373	-20.71 ***	-0.212	-7.62 ***	-1.095	-11.25 ***	0.089	6.62 ***	36.969	22.28 ***
SIZE	-0.014	-3.18 ***	0.368	19.12 ***	0.011	6.32 ***	0.114	18.70 ***	-0.007	-7.16 ***	-0.982	-7.74 ***
RELAMT	0.058	4.17 ***	0.391	6.62 ***	0.028	5.27 ***	0.152	8.15 ***	-0.213	-11.73 ***	-20.031	-9.02 ***
OPAQUE	0.175	6.52 ***	-1.652	-14.51 ***	-0.141	-13.66 ***	-0.231	-6.42 ***	0.071	11.69 ***	7.837	10.38 ***
INFO_synd_loan	0.011	4.38 ***	0.083	7.59 ***	0.004	3.62 ***	0.040	11.52 ***	-0.003	-4.11 ***	-0.247	-2.66 ***
INFO_All	-0.002	-7.54 ***	0.003	2.08 **	-0.001	-5.73 ***	0.001	2.21 **	0.003	7.27 ***	0.273	5.12 ***
Borrower_Europe	0.513	11.14 ***	0.686	35.51 ***	-0.212	-11.93 ***	1.563	25.30 ***	0.052	4.34 ***	18.672	11.85 ***
Borrower_Asia	1.210	25.57 ***	1.595	7.94 ***	0.138	7.51 ***	1.140	17.95 ***	-0.251	-22.96 ***	-8.116	-5.72 ***
GDP	0.000	-8.34 ***	0.000	-11.74 ***	0.000	6.96 ***	0.000	-10.61 ***	0.000	8.72 ***	0.000	3.34 ***
EMERGING	0.026	0.43	-4.210	-16.32 ***	-0.011	-0.46	0.446	5.47 ***	0.170	14.27 ***	18.065	11.96 ***
CIVIL	-0.566	-15.30 ***	-2.786	-17.73 ***	-0.072	-5.04 ***	-0.269	-5.42 ***	0.095	12.08 ***	8.393	8.25 ***
INTERNATIONAL	0.191	6.85 ***	-0.277	-2.34 **	-0.014	-1.28	0.891	23.82 ***	0.000	0.02	1.358	1.69 *
MTY	-0.955	-3.61 ***	0.389	5.42 ***	0.095	13.01 ***	0.085	-3.73 ***	-0.071	-19.06 ***	-6.907	-14.02 ***
AMT	0.289	36.64 ***	1.738	55.50 ***	0.111	39.13 ***	0.694	69.56 ***	-0.089	-48.84 ***	-8.799	-29.19 ***
MULT-TRANCHE	0.043	1.82 *	0.204	2.06 **	0.056	6.28 ***	-0.008	-0.26	0.056	11.34 ***	4.765	7.68 ***
N		27914		27914		27621		27914		27914		8541
Adj. R ²		0.281		0.3079		0.2145		0.4371		0.4823		0.3409
F-value		228.32***		259.76***		158.11***		452.56***		180.54***		93.01***

***, **, * reflect significance at the 99%, 95% and 90% level, respectively.

Fig. 2: Multivariate regressions for six syndicate structure measures using model (1).

Results for three different specifications of model (2) are available in Figure 3. They show that the distribution method is a significant determinant of the loan spread in all three regressions, 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 privately placed deals of approximately 20 bps.

3.2. 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. Specifically, subjects or companies with certain characteristics may be more likely to be associated with privately placed deals than others. We use a propensity score matching approach to control for the selection bias induced by the distribution method. Propensity score matching (PSM), introduced in [15] and developed in [16] [17], among others, has become a popular approach to estimate treatment effects of economic programs or medical procedures. We estimate propensity scores using a logistic model for the likelihood that a privately placed deal is selected as the distribution method. Explanatory variables are based on our intuition and the literature on the characteristics of syndicated loan borrowers. They include, among others, the capacity of the loan to be syndicated [4], the experience of the borrower on the loan market and the intensity of its relationships with lenders.

Variables	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Intercept	389.58	24.76 ***	228.72	10.35 ***	211.78	8.66 ***
DIST	-21.55	-3.31 ***	-20.64	-3.11 ***	-21.43	-2.77 ***
Number of leads	-4.41	-7.73 ***	-1.83	-2.51 **	-2.22	-2.55 **
Number of participants	-1.32	-6.80 ***	-0.29	-1.17	-0.27	-0.27
Number of lender financial industries	25.76	16.65 ***	22.83	12.28 ***	22.72	10.45 ***
Lead-bank dummy	-90.98	-25.37 ***	-56.08	-14.06 ***	-49.29	-10.81 ***
Lead-investment-firm dummy	26.66	5.14 ***	-10.34	-1.31	8.08	0.88
Number of lender countries	-5.39	-9.11 ***	-4.16	-6.01 ***	-3.77	-4.71 ***
U.S. lead dummy	6.56	2.13 **	-1.76	-0.42	1.70	0.35
Japanese lead dummy	-16.52	-2.69 **	-22.82	-3.65 ***	-18.01	-2.80 **
U.K. lead dummy	7.93	1.75 *	6.39	1.13	12.17	1.77 *
Syndicate concentration index			37.44	3.77 ***	25.33	2.24 **
Loan share retention by lead			0.03	0.30	0.12	1.16
Lead reputation	-9.47	-2.89 ***	0.76	0.18	0.89	0.19
Borrower size	-5.08	-12.52 ***	-2.81	-5.76 ***	-4.91	-7.07 ***
Loan amount to borrower assets ratio	11.59	9.38 ***	24.28	2.81 ***	26.39	2.90 ***
Borrower leverage					0.12	3.98 ***
Borrower ROE					-0.02	-2.37 **
Borrower rating dummy	0.78	0.33	9.12	3.13 ***	8.25	2.45 **
Borrower's number of past loans	-0.48	-2.12 **	-1.16	-3.26 ***	-0.98	-1.68 *
Borrower's number of past Dealscan transactions	0.13	4.69 ***	0.28	1.37	-0.12	-0.31
European borrower dummy	-16.01	-3.66 **	-5.94	-0.88	-6.56	-0.81
Asian borrower dummy	-93.55	-20.29 ***	-61.76	-9.62 ***	-56.38	-7.48 ***
Borrower's country GDP	0.00	5.35 ***	0.00	2.42 **	0.00	1.52
Emerging-country-borrower dummy	77.31	13.87 ***	33.97	5.49 ***	34.35	4.97 ***
Common-law-country dummy	20.49	5.94 ***	8.60	2.09 **	10.44	2.14 **
International loan dummy	22.83	8.69 ***	14.61	4.16 ***	12.79	3.22 ***
Loan maturity	39.12	25.94 ***	-1.26	-0.65	-3.02	-1.38
Loan amount	-6.09	-8.37 ***	-4.80	-4.39 ***	-3.90	-3.17 ***
Multiple-tranche-loan dummy	23.18	11.25 ***	20.37	8.56 ***	20.79	7.70 ***
N	27621		8529		8602	
Adj. R ²	0.4016		0.2851		0.2812	
F-value	320.64***		57.95***		42.66***	

***, **, * reflect significance at the 99%, 95% and 90% level, respectively.

Fig. 3: Multivariate regressions for the loan spread using model (2).

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. For comparison and robustness, we use four different matching methods: kernel matching, local linear regression (LLR) matching and nearest k-neighbor matching with 2 and 3 neighbors, respectively. Results for the first two matching methods are available in Figure 4 (the remaining two methods show qualitatively similar results), where ATT is the average treatment effect on the treated.

Outcome variable	Sample	Panel A - Kernel matching					Panel B - LLR matching				
		Treated: Privately placed deals	Control: Syndications	Diff.	S.E.	t-stat	Treated: Privately placed deals	Control: Syndications	Diff.	S.E.	t-stat
Loan spread	Unmatched	105.52	166.96	-61.44	8.78	-7.00 ***	105.52	166.96	-61.44	8.78	-7.00 ***
	ATT	105.00	138.66	-33.66	6.02	-5.59 ***	104.91	124.87	-19.96	8.82	-2.26 **
Number of leads	Unmatched	4.34	1.60	2.74	0.09	29.46 ***	4.34	1.60	2.74	0.09	29.46 ***
	ATT	4.35	2.27	2.08	0.20	10.41 ***	4.35	2.57	1.78	0.27	6.49 ***
Number of participants	Unmatched	1.78	7.37	-5.59	0.41	-13.78 ***	1.78	7.37	-5.59	0.41	-13.78 ***
	ATT	1.80	7.38	-5.58	0.22	-25.74 ***	1.79	7.35	-5.56	0.52	-10.68 ***
Number of lender industries	Unmatched	1.32	1.54	-0.22	0.04	-6.30 ***	1.32	1.54	-0.22	0.04	-6.30 ***
	ATT	1.32	1.47	-0.15	0.03	-5.16 ***	1.32	1.43	-0.12	0.04	-2.68 ***
Number of lender countries	Unmatched	3.47	3.38	0.09	0.15	0.63	3.47	3.38	0.09	0.15	0.63
	ATT	3.49	4.29	-0.80	0.13	-6.06 ***	3.48	4.58	-1.10	0.23	-4.76 ***
Loan concentration index	Unmatched	0.31	0.29	0.02	0.02	1.00	0.31	0.29	0.02	0.02	1.00
	ATT	0.30	0.24	0.06	0.01	4.35 ***	0.30	0.21	0.09	0.02	3.98 ***
Loan share retention by lead	Unmatched	84.97	40.60	44.37	2.20	20.20 ***	84.97	40.60	44.37	2.20	20.20 ***
	ATT	84.65	44.42	40.23	2.08	19.38 ***	84.81	45.32	39.49	3.49	11.32 ***

***, **, * reflect significance at the 99%, 95% and 90% level, respectively.

Fig. 4: Outcome variables using matching techniques.

Without matching, the average spread difference is 61.4 bps smaller for privately placed deals. Using kernel matching, spreads are still lower for privately placed 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, privately placed deals are still associated with lower spreads. They 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. The concentration index of club deals is 6% higher than for syndications, while the total lead share is almost twice as large. Results are robust to sensitivity analyses such as changing bandwidth or kernel and trimming the data.

4. Conclusion

Although their average loan spread is lower, univariate statistics show that borrowers in privately placed deals have, on average, higher leverage and lower profitability, are less transparent (i.e. not rated), have fewer repeat loans with the same lenders, and are twice as likely to be from an emerging country. Multivariate analysis shows that part of the explanation lies in country effects, and in differing syndicate structures between privately placed deals and syndications. A propensity score matching approach finds that a significant difference remains between the two distribution methods even after controlling for a selection bias.

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