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Determinants of bank loan syndication structures for emerging market borrowers

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Abstract This paper investigates loan, borrower and country-level characteristics that influence bank loan syndicate structures lending to borrowers from emerging countries. It finds that main syndication motives such as loans portfolio diversification, regulatory pressure and management costs affect the structure of syndicates in a manner which is consistent with the benefits of syndication. Syndicates also adapt their structure to the banking environment of the borrower country and to mitigate potential agency problems stemming from the syndication process. Banking structure, regulation and financial development are the main drivers of the structuring of syndicates lending to borrowers from emerging markets. Structure is also sensitive to the legal environment in order to mitigate agency problems and re-contracting risk in case of borrower distress.

Keywords: *bank, loan, syndication, syndicate structure, emerging markets*

INTRODUCTION

In the last decade, the volume of syndicated loans in emerging markets has grown considerably from US\$91.8bn in 1995 to US\$379.8bn in 2005. Currently, syndicated lending corresponds to more than 11 per cent of the private credit of financial institutions

in Singapore, almost 23 per cent in Mexico and close to 36 per cent in the Russian Federation (figures based on author's computations, with figures on syndicated loans from the Dealscan database and with figures for private credit by financial institutions from Beck *et al.*, 2000¹). Syndicated lending

therefore represents a substantial portion of bank lending in these markets. Indeed, syndicated loans have always been an important source of international financing for emerging economies.² This is the natural consequence of the various advantages of syndicated lending.

Briefly, a syndicated loan is a loan which is provided to the borrower by two or more banks, known as participants, which is governed by a single loan agreement (see, for example, Esty, 2001³). Such a loan allows the lenders to diversify loan portfolios and thus avoid excessive single-name exposure in compliance with regulatory limits, at the same time as maintaining a relationship with the borrower. Such lending helps to exploit the comparative advantages of syndicate members in terms of financing (cutting down origination costs) and eventually in terms of information sharing. It also allows the diversification of income sources through the collection of fees. Borrowers can also gain advantages from syndication.^{2,4} These include the ability to arrange cross-border transactions, uniform terms and conditions, more competitive pricing, a more flexible funding structure, larger loans compared with public finance, as well as speed and discretion when arranging the deal.

These numerous advantages of syndicated lending for banks and borrowers show that they can provide an important financing vehicle for emerging markets and thus for their economic development. Indeed, syndicated lending contributes to enhancing the sources of external finance in these countries. Moreover, if syndicated loans reduce the cost of

borrowed funds, they also contribute to favour the financing of companies. Furthermore, the expansion of syndicated loans increases the diversification possibilities for banks in terms of risk and income, which decreases the likelihood of bank failures. As a consequence, the expansion of syndicated loans contributes to financial stability, which is a fundamental issue for emerging economies. Indeed, the availability of foreign credit to emerging countries is considered as one means for deepening capital markets in these countries and potentially reducing the severity of crises.⁵ However, in times of financial crisis, syndicated lending generally tends to fall rapidly (cut by half after 1997, for instance). The less-developed country (LDC) debt crisis in the USA during the 1980s provides an example of how syndicated lending can contribute to financial instability.

While these benefits are especially important for emerging markets' finance, the agency problems related to syndications can have severe consequences for emerging markets. Syndicated loans generate specific agency problems due to informational frictions between the senior and the junior members of the syndicate. First, private information about the borrower creates an adverse selection problem, as the arranger may be inclined to syndicate loans from bad borrowers. However, such opportunistic behaviour generates reputation risk for the arranger and negatively affects the success of future syndications.⁶ Secondly, the participant banks delegate monitoring tasks to the arranger whose efforts are unobservable for participant banks, which results in a moral hazard problem. Nonetheless, the arranger has

fewer incentives to monitor the borrower than if it were to lend the full amount of the loan.⁷ Finally, handling a borrower's financial distress is more complicated in a syndicate setting because lenders must reach a collective decision.⁸

A crucial input to mitigate these problems is the structure of the syndicates, which, if adapted, can reduce agency costs related to the syndication.⁶ The arranger has concerns about the monitoring efforts of participants and can consequently influence the size, the concentration and the composition of the syndicate, which involves explicit and implicit cost/revenue trade-off. The arranger decides on the institutions they will invite to participate, chooses the initial menu of designated amounts for participation, the dollar size of each bracket and the associated fees for each bracket. They also reserve the right to close the syndication at any time prior to the designated end of the offering period. In order to provide a credible signal about the borrower's quality and to align monitoring incentives, the arranger can adjust their own portion of the loan.^{9,10} This can be achieved by retaining a larger share of the loan, which acts as a signal regarding the borrower's quality and as a commitment device regarding the arranger's monitoring effort. Smaller syndicates allow arrangers to minimise the management costs of a group lending process, to prevent free-riding, to avoid hold-up problems and to resolve borrowers' financial distress problems more efficiently. However, large syndicates might allow the exploitation of scale economies. Seeking to develop or maintain reputation through reciprocity and repeat dealing is also an

argument in favour of larger syndicates. Enhancing fee income could also be achieved by forming a larger syndicate with small proportional holdings for each member.

Specific features of syndicated loans to borrowers from emerging markets can be compared with the corresponding features of similar deals arranged for borrowers from industrialised countries. On average, they have higher spreads (172.22 bps vs 160.50 bps) and lower maturities (55 months vs 81 months). These figures (based on the author's computations on the Dealscan database) are consistent with the fact that these borrowers are more risky than those from industrialised markets. Regarding their structures, one can observe that the arranger retains a greater share of the loan (14.35 per cent vs 11.70 per cent) while the percentage of lenders from the same country as the borrower is much lower (7.94 per cent vs 29.48 per cent). This is consistent with the agency problems inherent in the syndication, which could be more important for borrowers from emerging countries.

This paper will empirically investigate the determinants of bank loan syndication structures for emerging market borrowers, considering the pros and cons of syndicated lending, its impact on syndicate structures and the financial specificities of emerging markets. To achieve this goal, it uses loan, borrower and country-level variables for 10,930 loan facilities over the 1990–2006 period. Existing findings show that syndicates in the US market are structured to enhance monitoring efforts and to facilitate renegotiation.^{9–11} The paper contributes to this literature in several ways. First, it focuses on bank loan syndicates lending to borrowers

from 50 emerging countries, where such loans represent an important source of financing and where local specificities may have a significant influence on how the syndicates are structured. Secondly, in addition to examining the influence of loan and borrower characteristics on the structure of the syndicates, the paper exploits the cross-country dimension of the sample to investigate the impact of country-level characteristics on the structure of the syndicates.

The following section discusses the tested determinants of the syndicate structure. Data, methodology and variables are presented subsequently, followed by the results. Finally, the paper concludes.

DETERMINANTS OF SYNDICATE STRUCTURE

This paper investigates the factors that influence syndicate structure and analyses whether that structure is a response to the specific agency problems generated by bank loan syndication. The paper also investigates the impact of particular advantages of syndication for lenders on the syndicate structure.

Syndicate structure is measured with three different dependent variables. Following previous research,⁹⁻¹¹ the paper uses the total syndicate size (*number of lenders*) and the number of senior syndicate members (*number of arrangers*). This distinction is made because senior members of the syndicate have different concerns and motivations compared with other participants. Therefore, the influence of the same factors can differ in terms of sign and significance depending on the lender's status in the syndicate hierarchy. To avoid biased results, the paper does not distinguish the number of participants, as

the same financial institution can have several roles in a syndicate, being simultaneously an arranger and a participant, involving both senior and junior status.

The paper also uses the percentage of the arrangers' total portion of the loan (*share of arranger*) as a measure of syndicate concentration. When several arrangers are present in the syndicate, the paper uses the average of their respective shares.

Loan characteristics

The study first tests the role of several loan characteristics that might affect the structure of the syndicate. Increased loan size (*loan size*) is expected to be positively related to syndicate size and negatively to the arranger's retained portion of the loan. Indeed, the motives to diversify loan portfolios and to be in accordance with regulation are more likely to play a role for larger loans, thus implying more lenders in the syndicate as well as a reduced arranger's share.

Maturity of the loan (*maturity*) is also considered, although whether it plays a positive or negative role is ambiguous. Greater maturity is associated with greater monitoring costs as long-term loans incur control of collateral and covenant costs. As a consequence, the moral hazard problem involved in syndicated loans is enhanced and therefore implies a smaller syndicate and/or a larger 'core' of arrangers, as well as a larger arranger's share. Furthermore, if one considers a positive relationship between maturity and credit risk,^{12,13} syndicates should be smaller and/or the number of arrangers should be larger, with a greater portion of the loan retained by the arranger in order to enhance monitoring efforts and prevent

free-riding. However, if credit risk and maturity are negatively related,¹⁴ syndicates should be larger and/or the number of arrangers should be smaller, with the latter retaining a smaller portion of the loan. *Maturity* can also be considered as a proxy of the future relationship strength and a proxy of the lenders' incentives to monitor the borrower, as longer maturity implies a longer relationship and therefore more monitoring.

The presence of guarantors in the loan agreement is taken into account, with a dummy variable equal to one if at least one guarantor exists (*guarantors*). A guarantor gives additional protection for the lenders, as the guarantor will honour a part or the totality of the claim in case of loan default. The presence of a guarantor mitigates agency problems resulting from adverse selection in line with the better information owned by the arranger on the borrower. However, empirical literature on the role of collateral in loan contracts provides evidence in favour of the 'observed-risk hypothesis' according to which banks should be able to sort borrowers from the information they have on their quality.^{15,16} As a consequence, banks should demand more protection schemes from riskier borrowers. Accordingly, the presence of a guarantor may signal a riskier loan and, consequently, a loan plagued by greater agency problems. Smaller syndicates and/or larger syndicate 'cores', with arrangers holding larger loan shares, should promote more effective monitoring, also avoiding duplicative monitoring of the collateral. The existence of a guarantor can also be considered as a proxy of the level of information asymmetry between the lenders and the borrower. Furthermore,

according to the 'lazy bank' model,¹⁷ the guarantor can be seen as a proxy of the lenders' monitoring incentives.

Additionally, if the loan is sponsored, a dummy variable (*sponsors*) equal to one is included. A sponsor is usually an individual capital investor who is involved in the project and might also act as an adviser and eventually as an additional monitor of the borrower. The presence of a sponsor should be positively related to syndicate size and/or negatively to the number of arrangers and negatively to the arrangers' share. Debt seniority is also taken into account through a dummy variable (*senior debt*) equal to one if the debt is senior. If it works as an effective protection for all the lenders, syndicates and number of arrangers should be smaller, while the arrangers' portion of the loan should be larger. *Senior debt* can be used as a proxy of monitoring incentives by the lenders, as such a feature might reduce their incentives to monitor the borrower.

The presence of covenants, which aim at restricting the discretionary power of the borrower, is taken into account with a dummy variable (*covenants*) equal to one if the loan agreement includes covenants. The presence of covenants in a loan agreement is expected to reduce the risk of loan default, and enhance the ability to monitor the borrower, thereby reducing the monitoring costs. It appears that covenants should favour larger syndicates and/or a smaller number of arrangers as well as smaller portions retained by the arranger. Indeed, covenants should reduce potential moral hazard behaviour of syndicate members during the monitoring process. However, empirical evidence tends to show the opposite: a positive link between the presence of covenants and

the probability of default of the borrower (eg Foster *et al.*, 1998¹⁸). This is in accordance with the 'observed-risk hypothesis', where riskier borrowers are offered more binding loan agreements. Therefore, arguments exist for both a positive and negative relationship. Similar to the *guarantors* variable, the presence of covenants serves both as an information asymmetry proxy and monitoring incentives.

To account for the impact of publicly available information on syndicate structure, the regressions include an information asymmetry proxy (*S&P rating*) equal to one if a Standard and Poor's senior debt rating is available. One can expect a positive coefficient as the existence of a rating mitigates the adverse selection problem and therefore allows the formation of a larger syndicate and/or a reduced syndicate 'core' with few arrangers, holding a smaller stake of the loan.

Borrower's market presence is proxied through a variable (*borrower presence*) equal to the occurrence of a particular borrower in the sample, which gives a broad indication of the borrower's presence regarding international syndicated lending and therefore their reputation. Other studies have constructed similar indicators to investigate the benefits of lending relationships for the banks and the influence of past alliances on syndicate composition respectively.^{19,20}

One can expect a positive coefficient regarding syndicate size and a negative one regarding arranger's share for this variable as lending to a more present and therefore more reputable borrower should involve less informational friction within the syndicate compared with a new or less known borrower.

Lead lender reputation (*lead lender presence*) is also taken into account in some of the regressions using a proxy related to the number of times a particular lender acts as an arranger, a co-arranger, an agent or a co-agent in a syndicate in the sample. This variable should negatively affect the arranger's retained portion of the loan if one considers that reputation and the signalling and commitment role of the retained share are substitutes and that the presence of a lender allows that lender to acquire more reputation.

The study also controls for borrower characteristics as a robustness check in some of the regressions. The primary focus is on the borrower's creditworthiness and profitability, with the *leverage* and *profitability* variables (equal to the ratio of total debt to total capital and to the ratio of net income to total assets respectively). One can expect the latter to have a positive influence on the syndicate size measure and a negative influence on the arranger's share. The former should have a negative impact on the number of lenders and a positive impact on syndicate concentration. Finally, the study also controls for borrower's size with the logarithm of total assets.

The type (*term loan and revolving bank facility*) and the purpose (*general corporate, debt repayment, project finance and working capital*) of the loan are controlled for through the inclusion of dummy variables. Variables for other types and purposes are not included in the regressions, as they represent less than 5 per cent of the sample. These control variables serve also as proxies of information asymmetry and monitoring incentives of the lenders, which are affected by the type and the purpose of

the loan. Dummy variables taking benchmark rate (*Libor* and *Euribor*), facility issue year, year, region and industry are also included in the regressions.

Banking environment

The paper now turns to the discussion of country-level variables that may influence the size and concentration of a syndicate. The first category of country-level variables examines the role of banking structure. *Overheads*, the ratio of banking overhead costs to total banking assets, measures cost inefficiency of a banking industry. As syndicated loans imply the sharing of administration and origination costs, cost inefficiency is expected to encourage the formation of larger syndicates. However, the opposite can also be observed for this variable if the arrangers consider the level of cost inefficiency to be too large to invite the (local) participants into the syndicate. *Concentration*, defined as the assets of the three largest banks as a share of all bank assets, proxies market structure of the banking industry. One can expect this variable to have a negative influence on the syndicate size, as greater concentration means a lower number of potential participants. Furthermore, banks with greater market share already benefit from diversified loan portfolios and have little incentive to diversify further.

Two variables are added that take the development of bond markets into account, measured with the ratio of private domestic debt securities to GDP (*private bond markets*) and the ratio of public domestic debt securities to GDP (*public bond markets*). Bonds directly compete with syndicated loans for the large financing needs of companies. This

negative influence may however be offset by the positive impact of bond markets, which contribute to increased information for participant banks in loan syndicates,²¹ therefore limiting adverse selection problems.

The second category of country-level variables is for banking regulation. A supervisory feature is introduced through *NPL definition*, a dummy variable equal to one if a formal definition of non-performing loans exists. If binding, such a regulatory feature should have a positive influence on syndicate size as it enhances transparency on the loans portfolio of participant banks and allows the arranger to reduce their retained portion of the loan. However, if most of the local potential participants appear to have an excessive level of NPL on their balance sheets, this regulatory proxy can have an opposite effect on the syndicate size and concentration variables, as the presence of 'bad banks' within the syndicate can exacerbate agency problems. Regulations on lending abroad should positively impact syndicate size, as such regulation reduces diversification opportunities for domestic banks. One can therefore expect that the coefficient of *abroad loan prohibited*, a dummy variable equal to one if making loans overseas is prohibited, should be positive, as such prohibitions make syndication more attractive to gain more diversified loan portfolios. However, the opposite can also be observed if local lenders have excessively concentrated portfolios due to such regulation, making them less eligible to enter a syndicate.

The third and last category of country-level variables takes the legal environment into account. Two

indicators for legal institutions are included in the estimations. Protection of creditor rights is measured with the index provided by La Porta *et al.* (1998)²² (*creditor rights*). This index is scored on a scale from zero to four with a higher score indicating better protection. Law enforcement is measured with the 'Rule of Law' index also provided by La Porta *et al.*²² (*rule of law*). This indicator ranges from zero to ten with a higher score indicating a better enforcement of the law. The expected sign of the coefficient for both these variables is ambiguous. Esty and Megginson (2003)²³ find that syndicates funding project finance in countries with weak creditor rights and poor legal enforcement are larger and more diffuse, with arrangers keeping a smaller stake of the loan. Thus, lenders seem to structure the syndicates in order to facilitate re-contracting in countries where creditors have strong and enforceable rights. Larger and more diffuse syndicate structures are more adapted in such a case as they minimise hold-up problems in the event of reorganisation. Furthermore, better legal protection of banks mitigates the moral hazard problem induced by syndicated loans. Indeed, better protection of creditors decreases the need to monitor the borrower, which reduces agency problems resulting from the monitoring efforts of banks involved in the syndicate.

However, on a more global basis, the agency problems resulting from all lending decisions should also be mitigated, which may favour the choice of a standard bilateral loan rather than a syndicated loan for the lead bank. Indeed, the motive for risk-sharing should play a lesser role in well-

protected legal environments. In such a case, monitoring should be more important in the presence of high legal risk (few legal rights and low contract enforcement), through a smaller syndicate and/or a larger number of arrangers, as well as a larger arranger share.

The number of syndicated loan facilities in a particular country is controlled for through the inclusion of the *syndicated loan issues* variable. The latter allows control for the development of the syndicated lending market, which should be positively related to the syndicate structure and negatively related to the arranger's share. By development of the syndicated lending market, this means the reputation of borrowers from a particular emerging market, which should mitigate the agency problems related to syndication when reputation reduces information frictions between the borrower and the syndicate.

DATA AND METHODOLOGY

The sample of syndicated loans comes from the Dealscan database, provided by the loan pricing corporation (LPC, Reuters). Data concerning financial structure come from Beck *et al.* (2006),¹ while data on banking regulation come from Barth *et al.* (2005).²⁴ Indicators of legal environment come from La Porta *et al.* (1998).²² Borrower's characteristics are extracted from the Compustat database. Sample size is determined by information availability on the variables used in the regressions. Following Lee and Mullineux (2004),¹¹ the study uses only syndicated, completed and fully confirmed deals, excluding private placements (private placements imply the sale of the loan to a selected group

of lenders and therefore do not generate a process similar to 'standard' syndication with the agency problems already discussed; as such, all private placement loans are dropped). This provides a full sample of 10,930 loan facilities from 50 emerging countries for the period between 1990 and 2006.

Following the focus on emerging countries, syndicated loans come from four geographical areas: Asia, Latin America, Central and Eastern Europe, and Middle East, which account respectively for 70.6 per cent, 12.7 per cent, 9.7 per cent and 7 per cent of the total number of loan facilities in the sample. The frequencies of loan facilities and the average loan size and syndicate

size (measured by the number of lenders) by country are displayed in Table 1.

A strong heterogeneity can be observed in these figures. The largest syndicated lending markets appear to be in Asia, with 1,500 loans in Korea, Hong Kong and Taiwan during the investigated period. In addition, the average loan size ranges from US\$44bn in Vietnam to US\$957bn in Saudi Arabia, while the smallest syndicates are in Lithuania (six lenders) and the largest in Turkey (almost 22 lenders). Table 2 provides the number of lenders participating in the syndications by their nationality.

There is a strong presence of lenders

Table 1: Number of loan facilities, mean loan size and mean number of syndicate members by borrower country

Country	<i>n</i>	Mean loan size (US\$)	Mean no. lenders	Country	<i>n</i>	Mean loan size (US\$)	Mean no. lenders
United Arab Emirates	62	687,418	14.7419	Latvia	23	60,875	11.5217
Argentina	208	222,249	8.5385	Mexico	429	372,797	10.5524
Azerbaijan	14	841,247	14.4286	Malaysia	314	232,522	9.3981
Bulgaria	26	220,200	10.5000	Oman	40	441,180	16.1750
Bahrain	61	244,084	16.0984	Pakistan	38	114,868	8.9211
Brazil	278	250,827	9.0791	Panama	38	158,708	10.4474
Chile	211	217,543	10.5592	Peru	47	162,776	7.0213
China	661	117,082	8.5991	Philippines	219	180,674	11.1598
Colombia	75	186,177	9.7200	Poland	119	240,739	11.6218
Czech Republic	72	181,154	11.5139	Qatar	37	651,716	20.4865
Egypt	66	406,105	17.2727	Romania	44	116,893	12.3409
Estonia	19	49,790	8.7368	Russia	313	330,483	13.6102
Guatemala	18	109,794	7.1667	Saudi Arabia	64	957,724	14.8594
Hong Kong	1,370	239,866	12.6844	Singapore	366	203,249	8.9645
Croatia	58	119,256	14.4310	El Salvador	11	86,045	8.6364
Hungary	133	175,406	12.6391	Slovakia	40	123,873	10.2500
Indonesia	790	103,212	12.3848	Slovenia	62	100,014	11.4032
India	404	118,058	10.2550	Thailand	582	94,573	11.1684
Iran	24	199,604	9.4167	Trinidad and Tobago	13	284,923	9.6154
Israel	28	197,662	15.2500	Turkey	344	265,874	21.8895
Kazakhstan	85	115,190	16.1529	Taiwan	1,515	188,493	10.8620
Korea	1,420	204,405	9.3296	Ukraine	35	84,897	11.3143
Kuwait	40	426,312	15.1000	Uruguay	9	134,777	7.7778
Sri Lanka	9	68,555	9.6667	Venezuela	53	256,000	8.3019
Lithuania	15	47,158	6.4000	Vietnam	26	44,448	7.6923
				Total/mean	10,930	206,929	11.2983

Table 2: Frequencies of lenders by nationality

Country	<i>n</i>	Frequency	Country	<i>n</i>	Frequency	Country	<i>n</i>	Frequency
Algeria	2	0.01	Hong Kong	328	0.87	Oman	124	0.33
Andorra	9	0.02	Hungary	426	1.13	Pakistan	19	0.05
Angola	3	0.01	Iceland	17	0.05	Panama	146	0.39
Argentina	143	0.38	India	72	0.19	Peru	16	0.04
Australia	184	0.49	Indonesia	42	0.11	Philippines	3	0.01
Austria	1,708	4.52	Iran	80	0.21	Poland	256	0.68
Azerbaijan	5	0.01	Ireland	181	0.48	Portugal	184	0.49
Bahrain	638	1.69	Israel	140	0.37	Qatar	213	0.56
Belgium	819	2.17	Italy	1,102	2.92	Romania	53	0.14
Bermuda	41	0.11	Ivory Coast	1	0.00	Russia	116	0.31
Brazil	218	0.58	Japan	2,581	6.83	Saudi Arabia	394	1.04
Bulgaria	28	0.07	Jordan	242	0.64	Singapore	52	0.14
Canada	795	2.11	Kazakhstan	21	0.06	Slovakia	73	0.19
Cayman Islands	5	0.01	Kenya	2	0.01	Slovenia	43	0.11
Chile	92	0.24	Korea	164	0.43	South Africa	170	0.45
China	71	0.19	Kuwait	258	0.68	Spain	691	1.83
Colombia	26	0.07	Latvia	52	0.14	Sweden	100	0.26
Costa Rica	1	0.00	Lebanon	4	0.01	Switzerland	617	1.63
Croatia	69	0.18	Libya	1	0.00	Taiwan	295	0.78
Cyprus	17	0.05	Lithuania	14	0.04	Tunisia	69	0.18
Czech Republic	261	0.69	Luxembourg	423	1.12	Turkey	164	0.43
Denmark	103	0.27	Macau	3	0.01	USA	5,260	13.93
Egypt	288	0.76	Malaysia	39	0.10	Ukraine	4	0.01
El Salvador	4	0.01	Malta	23	0.06	UAE	669	1.77
Estonia	13	0.03	Mauritius	12	0.03	UK	2,433	6.44
Finland	37	0.10	Mexico	318	0.84	Uruguay	1	0.00
France	3,466	9.18	Mongolia	10	0.03	Uzbekistan	4	0.01
Germany	7,360	19.49	Morocco	43	0.11	Venezuela	39	0.10
Ghana	45	0.12	Netherlands	1,950	5.16	Zambia	3	0.01
Greece	260	0.69	Nigeria	26	0.07	Zimbabwe	2	0.01
Honduras	1	0.00	Norway	84	0.22			
Total							37,584	1

from industrialised countries, with lenders from Germany being the most represented (19.5 per cent of the sample and 7,360 times in a syndication), followed by the USA, France and Japan. Lenders from emerging countries are far less present, the leaders being from United Arab Emirates, with 669 instances of syndicate membership, corresponding to 1.8 per cent of the sample.

Table 3 lists descriptive statistics for the variables. Definitions for these are provided in the appendix.

Finally, Table 4 presents a breakdown of the annual number of loans and loan

size. The market grows relatively quickly until the Asian flu crisis in 1997 where one can note an important downturn, the number of syndicated loans being cut by half. The market seems to recover slowly after that date.

Following examples in the literature^{9-11,23} one can estimate the following set of individual equations for the syndicate size-dependent variables using Poisson regressions (Equations 1 and 2). Negative binomial regressions are not used as overdispersion is weak in the sample; Tobit regressions, however, give qualitatively similar results. Tobit regressions are used for the syndicate

Table 3: Descriptive statistics for the sample

Variable	<i>n</i>	Mean	Std. dev.	Min.	Max
Number of lenders	10,930	11.2983	8.1207	2	78
Number of arrangers	8,747	3.0388	2.9404	1	32
Share of arranger(s)	572	0.1339	0.1715	0	1
Loan size	10,930	206.9290	903.5280	0.022	81,078.450
Maturity	10,930	54.3310	39.1371	1	600
S&P rating	10,930	0.0673	0.2506	0	1
Guarantors	10,930	0.0898	0.2858	0	1
Sponsors	10,930	0.0926	0.2899	0	1
Covenants	10,930	0.2436	0.4293	0	1
Senior debt	10,930	0.5270	0.4993	0	1
Borrower presence	10,930	5.0209	5.8614	1	36
Lead lender presence	1,727	335.9822	441.7586	1	1,998
Syndicated loans issues	10,930	795.7952	552.3781	9	1,515
Overheads	10,207	0.0327	0.0217	0.0063	0.1418
Concentration	10,219	0.5610	0.1843	0.2493	1
Private bonds market	8,646	0.1720	0.1524	0.0003	0.5570
Public bonds market	9,150	0.1563	0.1219	0.0033	0.5375
NPL definition	9,131	0.6746	0.4685	0	1
Abroad loan prohibited	9,150	0.4099	0.4919	0	1
Creditor rights	8,724	2.7727	1.2614	0	4
Rule of law	8,724	6.3505	1.8141	1.9000	8.5700
Leverage	1,712	0.2099	0.1490	0	1.1625
Firm size	1,714	7.7755	1.7208	2.3567	13.6108
Profitability	1,714	0.0359	0.0619	-0.4129	0.8128

Std. dev, standard deviation; Min, minimum; Max, maximum

Table 4: Annual breakouts of the number of loans and average loan size

Year	<i>n</i>	Loan size (US\$m)
1990	7	419,180
1991	5	334,221
1992	81	110,778
1993	330	91,114
1994	493	113,798
1995	769	111,704
1996	1,207	109,273
1997	1,482	150,041
1998	614	192,301
1999	538	231,899
2000	842	280,847
2001	642	237,271
2002	666	200,699
2003	673	228,878
2004	923	260,398
2005	1,069	346,995
2006	589*	324,631

* Only 598 loans are observed in 2006 as the database stops in August 2006

concentration dependent variable (Equation 3). Qualitatively similar results can be obtained using ordinary least squares regressions.

Equations 1–3 are as follows:

Number of lenders = $f(\text{intercept, loan characteristics, banking environment})$ (1)

Number of arrangers = $g(\text{intercept, loan characteristics, banking environment})$ (2)

Share of arranger = $h(\text{intercept, loan characteristics, banking environment})$ (3)

Poisson regression assumes the data follow a Poisson distribution, which is skewed with non-negative and discrete values and variance increasing with the mean. Given the integer nature of the syndicate size-dependent variable, this estimation technique is the most appropriate. As the syndicate

concentration-dependent variable has a lower bound at zero and an upper bound at one, Tobit regression is the most appropriate.

RESULTS AND DISCUSSION

The paper now proceeds in two steps. First, the results are provided using the full sample with loan characteristic-dependent variables only and with the addition of borrower characteristics as a robustness check in subsequent regressions. Each time, two regressions for the syndicate size variables (*number of lenders* and *number of arrangers* — Equations 1 and 2) are performed. A third regression for the syndicate concentration variable (*share of arranger* — Equation 3) is performed without controlling for borrower characteristics, as the information regarding the retained portion of the loan by the arranger is only available for 534 loan facilities, and the addition of borrower characteristics from Compustat drastically reduces the sample size.

In a second step, banking environment variables are introduced into the regressions for Equations 1–3, and a robustness check is also performed including borrower characteristics in the regressions for the syndicate size variables in subsequent regressions. Again, such a robustness check for the *share of arranger* regression is not performed due to the loss of information when merging the sample with Compustat data.

Results for syndicate size and concentration with individual characteristics only

Results are provided in Table 5. Loan characteristics such as loan size or maturity can be endogenous and

therefore bias the estimations. Finding reasonable instruments to tackle this problem is very difficult due to data availability. Therefore, as a robustness check, each of the regressions is performed omitting each time one of the potentially endogenous variables (loan size, maturity, guarantors, sponsors, covenants or senior debt). This procedure does not alter the reported results.

All regressions have satisfactory statistics in terms of the likelihood ratio chi-square statistic, as well as in terms of pseudo R^2 . The paper first discusses the results obtained in regressions (1.1), (2.1) and (3.1) (ie without controlling for borrower characteristics).

Loan size (in logarithm) is positive and significant in all regressions regarding the syndicate size variable, suggesting as expected that larger syndicates, both in terms of total number of lenders and arrangers, form around larger loans in accordance with the motives of the diversification of loan portfolios and regulatory-driven issues. In such cases, the arranger retains a smaller share for evident diversification and regulatory compliance purposes. The coefficient of *maturity* is significantly negative in regressions (1.1) and (3.1) and significantly positive in regression (2.1). This finding can be explained by the fact that greater maturity strengthens the moral hazard problem through higher monitoring costs of the loan as well as by a positive relationship between maturity and credit risk.^{12,13} Therefore, smaller syndicates are better adapted to handle these problems, with a larger number of arrangers, each holding a larger portion of the loan.

Debt seniority seems to work as an effective protection device for all the

Table 5: Estimation results for syndicate size and concentration 1/2

Specification	(1.1)	Marginal effect	(2.1)	Marginal effect	(3.1)	(1.2)	Marginal effect	(2.2)	Marginal effect
Endogenous variable	No. lenders		No. arrangers		Share of arranger	No. lenders		No. arrangers	
Intercept	-5.3215*** (0.7539)		-6.7571*** (1.1282)		308.1880*** (27.6133)	-2.1822 (2.0862)		-8.8387** (4.3263)	
Loan size	0.3368*** (0.0090)	3.4876	0.3131*** (0.0148)	0.8679	-0.9823*** (0.1711)	0.3380*** (0.0145)	3.7936	0.3479*** (0.0283)	0.9954
Maturity	-0.0015*** (0.0003)	-0.0157	0.0010** (0.0004)	0.0027	-0.0128*** (0.0043)	-0.0019*** (0.0005)	-0.0213	0.0007 (0.0008)	
S&P rating	0.0186 (0.0279)		0.0585 (0.0490)		10.7854*** (0.6226)	-0.0591 (0.0415)		0.0769 (0.0953)	
Guarantors	0.0466** (0.0218)	0.4913	0.0068 (0.0380)		-0.5330 (0.5434)	0.0473 (0.0446)		0.1030 (0.0808)	
Sponsors	0.0050 (0.0264)		-0.0729 (0.0421)		-5.0351*** (0.4881)	-0.0122 (0.0559)		0.0131 (0.0956)	
Covenants	0.0554** (0.0246)	0.5818	-0.0246 (0.0429)		3.8203*** (0.4252)	0.0950** (0.0449)	1.0847	0.1280 (0.0908)	
Senior debt	-0.1147*** (0.0321)	-1.1920	-0.1598*** (0.0572)	-0.4394	1.0989 (3.3800)	-0.0465 (0.0612)		-0.1504 (0.1161)	
Borrower presence	0.0045** (0.0019)	0.0467	0.0097*** (0.0033)	0.0269	0.0013 (0.0009)	0.0068*** (0.0010)	0.0764	0.0019 (0.0036)	
Syndicated loan issues	0.0001** (0.0001)	0.0004	0.0001** (0.0001)	0.0002	-0.0115*** (0.0013)	0.0001*** (0.0000)	0.0012	0.0002*** (0.0000)	0.0007
Lead lender presence					0.0003 (0.0002)				
Firm size						-0.0364*** (0.0099)	-0.4095	-0.0004 (0.0185)	
Leverage						-0.0977* (0.1097)	-1.0972	-0.3111* (0.1739)	-0.8903
Profitability						0.3156 (0.2178)		0.3192 (0.4557)	
<i>n</i>	10,930		8,747		534	1,710		1,388	
LR chi ²	22,159.64***	5,022.06***		3,656.57***	4,341.10***		1,230.99***		
Pseudo R ²	0.2242		0.1192		0.0336	0.2714		0.1668	

Poisson and Tobit regression results taking loan and borrower characteristics into account. The dependent variables are number of lenders, number of arrangers and share of arranger (Equations 1, 2 and 3 respectively), equal to the number of lenders and arrangers forming the syndicate and to the portion of the loan retained by the arranger(s). Definitions of variables appear in the appendix. Dummy variables for loan type, loan purpose, benchmark rate, year, region, industry sector and loan facility active date are included in the regressions but are not reported. Robust standard errors clustered at the borrower level in brackets. ***, ** and * correspond to coefficients significantly different from zero at the 1%, 5% and 10% level. Marginal effects are shown for significant variables only.

lenders, leading to smaller syndicates and a lower number of arrangers. The presence of a guarantor mitigates agency problems resulting from adverse selection, in line with the better information owned by the arranger regarding the borrower, leading to a larger syndicate. The restriction of discretionary borrower power through the presence of covenants has an ambiguous effect on syndicate structure.

On the one hand, it seems to reduce the risk of loan default effectively, and to enhance the ability to monitor the borrower, thereby reducing the monitoring costs, leading to larger syndicates. On the other hand, increasing the size of the syndicate in the presence of covenants induces the arranger to retain a larger share of the loan, thereby signalling effective monitoring of these covenants when a

larger number of lenders enter the syndicate.

One can also observe that borrower transparency, proxied with the existence of a senior debt rating by Standard and Poor's, has no impact on syndicate size but positively affects the share of the arranger. As most of the rated borrowers in the sample have an investment grade, one can infer that the existence of a rating does not add much information and therefore induces the arranger to mitigate potential agency problems stemming from informational friction by retaining a larger portion of the loan. In fact, the arrangers usually perform screening actions within a relationship-based framework and external public information does not add supplementary elements to reduce borrower opaqueness. Finally, as expected, borrower presence is positively related to syndicate size, while the development of syndicated lending in a particular emerging country also mitigates agency problems leading to larger syndicates and smaller shares of the loan retained by the arranger.

When controlling for borrower characteristics (regressions 1.2 and 2.2), one can observe that most of the coefficient signs remain unchanged, although some of them are no more significant, especially *debt seniority* for both regressions, *maturity* in regression (2.2) and *guarantors* in regression (1.2). This may be the effect of reducing the sample size or the prevalence of the borrower characteristics impact on syndicate structure. Firm size has a negative impact on overall syndicate size, while leverage has a modest negative influence on both the number of lenders and arrangers. The former can be explained by the fact that larger firms

can be considered as more risky and therefore imply a smaller syndicate to manage agency problems. The latter indicates that riskier firms imply a more concentrated syndicate to handle similar problems.

Regarding the marginal effects for regressions (1.1), (2.1), (1.2) and (2.2.), one can observe that the most important drivers of syndicate size are the size of the loan and debt seniority. For instance, a one-point increase of the logarithm of the loan size would imply more than three additional lenders in the syndicate. Leverage is the most important driver among borrower characteristics.

Results for syndicate size and concentration with individual and country-level characteristics

Results of the estimations are provided in Table 6. Due to colinearity problems, the variables *syndicated loans issues* and *lead lender presence* are dropped after introducing other relevant country-level variables. *Abroad loan prohibited* is also dropped from regression (3.2) due to colinearity problems.

One can observe that all regressions have satisfactory statistics in terms of the likelihood ratio chi-square statistic, as well as in terms of pseudo R^2 . The paper first discusses the results obtained in regressions (1.3), (2.3) and (3.2) (ie without controlling for borrower characteristics).

Most of the loan characteristics coefficients are robust across the estimations, except for the regression (3.2), where the sample size is significantly reduced. The paper therefore concentrates next on discussing the coefficients of the banking environment variables.

Banking structure clearly matters for

Table 6: Estimation results for syndicate size and concentration (2/2)

Specification	(1.3)	Marginal effect	(2.3)	Marginal effect	(3.2)	(1.4)	Marginal effect	(2.4)	Marginal effect
Endogenous variable	No. lenders		No. arrangers		Share of arranger	No. lenders		No. arrangers	
Intercept	-1.013 (1.0335)		-7.0200*** (1.8680)		1,011.0700*** (108.0027)	-2.1943* (1.1603)		-11.2469*** (2.5146)	
Loan size	0.3583*** (0.0127)	3.3832	0.3152*** (0.0197)	0.8237	-9.5641*** (0.6823)	0.3140*** (0.0111)	3.1900	0.3429*** (0.0242)	0.8912
Maturity	-0.0009*** (0.0003)	-0.0079	0.0010*** (0.0004)	0.0026	0.1387*** (0.0233)	-0.0008*** (0.0003)	-0.0087	0.0017*** (0.0004)	0.0045
S&P rating	-0.0196 (0.0316)		0.0863 (0.0621)		-14.0148*** (2.2448)	-0.0419 (0.0357)		0.0792 (0.0702)	
Guarantors	0.0629** (0.0280)	0.6097	-0.0339 (0.0489)		-3.1918 (1.7622)	0.0196 (0.0339)		0.1552** (0.0703)	0.4305
Sponsors	-0.0316 (0.0331)		-0.0534 (0.0493)		-9.1459*** (2.9128)	-0.0687 (0.0638)		-0.1463 (0.0983)	
Covenants	0.0655** (0.0291)	0.62834	0.1263*** (0.0487)	0.3424	-17.0854*** (1.4264)	-0.0174 (0.0306)		0.1055 (0.0666)	
Senior debt	-0.0515 (0.0425)		-0.1821** (0.0757)	-0.4688		0.0552 (0.0490)		-0.0684 (0.1036)	
Borrower presence	0.0059** (0.0023)	0.0558	0.0040 (0.0036)			0.0047*** (0.0014)	0.0484	-0.0071*** (0.0027)	-0.0186
Firm size						0.0282*** (0.0104)	0.2872	0.0455** (0.0223)	0.1182
Leverage						-0.0889 (0.0709)		-0.5430*** (0.1453)	-1.4110
Profitability						-0.3142* (0.1809)	-3.1923	-0.0320 (0.4355)	
Overheads	-2.5744 (1.3878)	5.1474***	13.4536 (1.4067)	107.3121	-3.5410*** (77.9109)	-35.9688 (10.3179)	8.7684***	22.7847 (2.8374)	
Concentration	-0.1899** (0.0800)	-1.7929	-0.2265 (0.1227)		-56.4651*** (12.6297)	-0.7934*** (0.1521)	-8.0594	-1.3265*** (0.3226)	-3.4470
Private bond markets	-0.4844*** (0.1333)	-4.5731	-1.1272*** (0.2668)	-2.9460	-197.9709*** (33.2235)	-0.9008*** (0.1482)	-9.1507	-1.2490*** (0.3099)	-3.2455
Public bond markets	-0.1576 (0.1375)		-0.2528 (0.1942)		19.4016*** (7.0084)	-0.5504*** (0.1601)	-5.5916	-0.3350 (0.3299)	
NPL definition	0.2186*** (0.0526)	1.9517	-0.6026*** (0.0941)	-1.8653	12.7364 (11.8107)	-0.4463*** (0.1289)	-5.2327	-1.1488*** (0.2654)	-4.4119
Abroad loan prohibited	0.2044*** (0.0342)	1.9224	-0.1151** (0.0543)	-0.3020		-0.5371*** (0.1170)	-5.4089	-0.6540** (0.2528)	-1.6625
Creditor rights	0.0059 (0.0142)		0.0624** (0.0256)	0.1630	7.6447** (3.4819)	-0.1387*** (0.0199)	-1.4089	-0.0132 (0.0434)	
Rule of law	-0.0114 (0.0103)		0.0326 (0.0178)		-0.9518 (0.8284)	0.1075*** (0.0222)	1.0925	0.1867*** (0.0468)	0.4852
<i>n</i>	6,028		5,051		136	1,099		897	
LR chi ²	10,341.07***	3,030.53***		1,315.72***	2,096.38***		805.36***		
Pseudo R ²	0.2114		0.1318		0.1436	0.2349		0.1844	

Poisson and Tobit regression results taking loan and borrower characteristics, as well as bank market structure, financial development, bank regulation and legal risk into account respectively. The dependent variables are *number of lenders*, *number of arrangers* and *share of arranger* (Equations 1, 2 and 3 respectively), equal to the number of lenders and arrangers forming the syndicate and to the portion of the loan retained by the arranger(s). Definitions of variables appear in the appendix. Dummy variables for loan type, loan purpose, benchmark rate, year, region, industry sector and loan facility active date are included in the regressions but are not reported. Robust standard errors clustered at the borrower level in brackets. ***, ** and * correspond to coefficients significantly different from zero at the 1%, 5% and 10% level. Marginal effects are shown for significant variables only.

the syndicate structure in emerging markets. The cost level of the banking industry exerts a positive impact on the total number of arrangers, as the coefficient of *overheads* is significantly positive. The sharing of administration and origination costs encourages the formation of a larger syndicate's 'core'. Furthermore, a less cost-efficient banking market forces the arrangers to share costly monitoring efforts as local participants appear cost-inefficient. In addition, greater concentration lowers the number of potential participants to join and form a syndicate. Banks holding greater market shares already benefit from diverse loan portfolios and have little incentive to diversify further. Greater concentration is also associated with a smaller arranger's share as the latter must retain less of the loan due to fewer potential lenders in the syndicate, according to the diversification and regulatory compliance arguments. Furthermore, the development of bond markets reduces syndicate size as they are in direct competition with syndicated loans, especially in the case of private bonds. Using alternative proxies for financial structure, such as the ratio of private credit of financial institutions to GDP or stock market capitalisation to GDP,¹ does not alter the results.

The coefficient of *NPL definition* is significant but positively influences the number of lenders and negatively influences the number of arrangers. Such a regulatory feature seems to enhance bank transparency, allowing the formation of a larger syndicate with fewer arrangers, as problems related to informational friction regarding the loan portfolio's quality of participants are less important. The regulation on lending abroad positively affects syndicate size, as

such regulation reduces diversification opportunities for domestic banks and increases their appetite for funding shares in syndicated loans while diversifying their portfolio. In such a context, the number of arrangers is reduced in order to leave room for (local) participants.

Better creditor rights protection has a positive and significant impact on the number of arrangers and on the portion of the loan retained by the arranger. This result appears to be consistent with the re-contracting risk hypothesis. Better protection of creditors might reduce lenders' incentives to monitor borrowers and consequently exacerbate free-riding problems, which can be tackled through an adapted syndicate structure with a larger 'core' of arrangers, each retaining a larger share of the loan. It is also worth noting that, as other creditors can benefit from such protection, the syndicate must increase its monitoring of the borrower to avoid inefficient re-contracting in case of distress, especially hold-up problems. In such cases, syndicates with larger cores of arrangers with more concentrated shares are more often adapted.

Regarding marginal effects, one may note that, among the banking environment characteristics, banking structure and financial development are the most important drivers of syndicate structure. For instance, a one-point increase of the *overheads* variable would add more than 13 arrangers.

Turning now to the discussion of the estimations' results including borrower risk characteristics, one can see that several loan characteristics are not significant in regression (1.4) especially. This can be explained by the sample size effect or alternatively by the fact that taking borrower risk into account can

increase the influence of the banking environment on syndicate design.

The impact of *concentration* is now more pronounced as the coefficient exhibits a negative sign in both regressions (1.4) and (2.4), while *overheads* is now significantly negative in regression (1.4). This result suggests that when taking into account borrower risk, local banks appear excessively cost-inefficient to enter a syndicate and therefore the latter is reduced in size. No significant changes regarding the proxies for the development of bond markets are observed, but the signs of regulatory proxies dealing with bank loan portfolios transparency and overseas lending are affected, both becoming negative in regression (1.4). In the sample of 1,099 loan facilities used to perform this regression, the mean value of *NPL definition* becomes 0.79. Therefore, more than three-quarters of the loans are syndicated in emerging markets where most of the banks can be screened by the arrangers regarding their loan portfolio quality. Thus, when taking borrower risk into account, such a regulatory feature seems to reduce drastically the potential participants and therefore implies a smaller syndicate. A similar argument can be used to explain the negative influence of prohibiting overseas lending, as most local banks can appear insufficiently diversified and lacking knowledge regarding sophisticated deals when controlling for borrower risk.

Finally, when including borrower risk proxies, one finds that legal risk has an influence on syndicate structure, which is more consistent with agency problems related to syndication. A legal environment with better creditor protection decreases the size of the

syndicate while a stronger rule of law increases the number of lenders. Lenders having the benefit of better legal protection can consider syndication as a less attractive device compared with bilateral loans with emerging market borrowers, while lower legal risk increases the potential for a larger syndicate as re-contracting risk is mitigated through stronger rule of law.

Among the banking environment characteristics, the main drivers of syndicate structure appear to be banking structure and financial development, but now also banking regulation. Regarding marginal effects, one can observe that a one-point increase in *overheads* implies an increase of more than 23 arrangers in the syndicate. The number of lenders is strongly sensitive to banking structure (36 and eight lenders lower following a one-point increase in *overheads* and *concentration* respectively) and bank regulation (nine and five lenders lower following an increase from zero to one in *NPL definition* and *abroad lending prohibited* respectively).

CONCLUSION

Following other studies,^{9–11} the present study has investigated the determinants of the size and concentration of bank syndicates lending to borrowers from emerging markets by analysing the role of loan characteristics. Additionally, the paper has examined the influence of banking environment factors on the syndicate design inspired by recent literature on the role of institutions in banks' behaviour.^{24,25}

The observed impact of tested variables suggests the prominence of certain motives for the formation of syndicates with adapted structure. Some of the results are consistent with existing

APPENDIX

Table A1: Brief description of all variables and their sources

Variable	Description	Source
<i>Loan contract characteristics</i>		
Number of lenders	Number of lenders in the syndicate	Dealscan
Number of arrangers	Number of arrangers in the syndicate	Dealscan
Share of arranger	Portion of the loan retained by the arranger (average of the portions retained if more than one arranger)	Dealscan
Loan size	Size of the loan (US\$m)	Dealscan
Maturity	Maturity of the loan in months	Dealscan
S&P rating	=1 if the borrower has a senior debt rating by Standard & Poor's	
Guarantors	=1 if there is at least one guarantor	Dealscan
Sponsors	=1 if there is at least one sponsor	Dealscan
Covenants	=1 if the loan agreement includes covenants	Dealscan
Senior debt	=1 if debt is senior	Dealscan
Borrower presence	Number of times a particular borrower is present in the sample	Dealscan
Lead lender presence	Number of times a particular lender participates as an arranger co-arranger, agent or co-agent in syndication in the sample	Dealscan
<i>Borrower characteristics</i>		
Firm size	Logarithm of borrower's total assets	Compustat
Leverage	Ratio of total debt to total capital	Compustat
Profitability	Ratio of net income to total assets	Compustat
<i>Control variables</i>		
Term loan	=1 if the loan is a term loan	Dealscan
Revolver	=1 if the loan is a revolving bank facility	Dealscan
Corporate purposes	=1 if the loan purpose is general corporate purposes funding	Dealscan
Debt repayment	=1 if the loan purpose is debt repayment funding	Dealscan
Working capital	=1 if the loan purpose is working capital funding	Dealscan
Project finance	=1 if the loan purpose is project finance funding	Dealscan
Libor	=1 if the benchmark rate is Libor	Dealscan
Euribor	=1 if the benchmark rate is Euribor	Dealscan
<i>Banking environment characteristics</i>		
Syndicated loan issues	Number of syndicated loan facilities in a particular country	Dealscan
Overheads	Ratio of banking overhead costs to total banking assets	Beck <i>et al.</i> (2000) ¹
Concentration	Assets of the three largest banks as a share of total banking assets	Beck <i>et al.</i> (2000) ¹
Private bond markets	Public domestic debt securities to GDP	Beck <i>et al.</i> (2000) ¹
Public bond markets	Private domestic debt securities to GDP	Beck <i>et al.</i> (2000) ¹
NPL definition	=1 if a formal definition of non-performing loans exists	Barth <i>et al.</i> (2005) ²⁴
Abroad loan prohibited	=1 if banks are prohibited from granting loans abroad	Barth <i>et al.</i> (2005) ²⁴
Creditor rights	An index aggregating four aspects of creditor rights. The index ranges from zero (weak creditor rights) to four (strong creditor rights)	La Porta <i>et al.</i> (1998) ²²
Rule of law	An index indicating the law enforcement. The index ranges from zero (weak enforcement) to ten (strong enforcement)	La Porta <i>et al.</i> (1998) ²²

findings in the literature.^{9–11} Overall, syndicates are structured in order to exploit the benefits of syndication and to minimise agency problems related to loan characteristics and country financial, regulatory and institutional environment. Most of these characteristics matter for syndicate structure and concentration in emerging markets. The main drivers among banking environment features are banking structure, bank regulation and financial development.

More precisely, the number of lenders and arrangers increases with loan size as the arranger's share decreases, while borrower transparency does not affect syndicate design. The overall size of the syndicate increases with covenants and guarantor presence, and decreases with debt seniority as well as with loan maturity, while the latter positively affects the number of arrangers. Borrower's and lead lender's presence acts as a reputation signal, mitigating agency problems and therefore increasing the size of the syndicate. These results remain robust when controlling for borrower characteristics.

Regarding the influence of the banking environment, one can observe that a more costly banking industry involves larger syndicates while a more concentrated banking industry reduces the number of lenders. Financial development, in particular bonds markets, negatively affects the size of the syndicate. Regulation of banking activities and loan portfolio transparency have a positive impact on syndicate size while reducing the number of arrangers. Syndicates are structured in a consistent manner in order to mitigate re-contracting risk.

However, when controlling for

borrower risk, the influence of the banking environment on syndicate design changes. One can observe that overall banking cost-inefficiency reduces the number of potential participants, while regulatory devices providing greater bank transparency and prohibition of overseas lending also negatively influence the number of lenders. These results suggest that most of the local banks appear ineligible for entering syndication, probably because of bad loans on their balance sheets and insufficient diversification and expertise regarding sophisticated deals. Finally, including borrower risk proxies changes the influence of the legal risk on syndicate design, as better lender protection reduces the attractiveness of syndication.

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