Why Do Larger Lenders obtain Higher Returns in Syndicated Lending? Evidence from Sovereign Loans

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Abstract

Institutions that fund larger shares of a syndicated loan typically receive larger percentage compensations in the form of up-front fees. This paper uses a sample of sovereign syndicated loan contracts in the period 1990-1997 to explore why this is the case. We test the hypotheses whether higher up-front fees for larger funding commitments are aimed at reducing the number of lenders (so as to mitigate potential ex post coordination problems), or whether they aim at compensating larger lenders for certain services. We find that the choice of the up-front fees does not affect the number of banks that join the syndicate. The up-front fee is positively related to the probability of future renegotiation and to a proxy for the information asymmetry between the borrower and the syndicate members. There is no significant relationship between the up-front fee and the probability of insolvency. These results are consistent with the hypothesis that large lenders obtain a higher up-front fee as a compensation for anticipated services traditionally associated with relationship lenders in times of liquidity shortages, namely coordinating renegotiation and refinancing.

JEL classification: G21; G33; F34

Keywords : Financial Intermediation, Relationship Lending; Number of Lenders; Syndicated loans. Sovereign debt, Liquidity problems, Insolvency

1 Introduction

A syndicated loan is a single facility financed by a group of lenders under the same contractual conditions. Although the contract is the same for all banks in the lending syndicate[1], they do not necessarily receive the same return on their loans. Besides periodical interest payments, banks also receive *up-front fees* at the time the contract is signed. These upfront fees can differ across banks. In our sample of sovereign syndicated loans, the average difference between the top and bottom up-front fees is 16 basis points. This up-front fees differential is substantial seen that the average lifetime of sovereign syndicated loans is typically quite short. In fact, the "annualized" up-front fee differential is on average 10 basis points, i.e. just over 10 percent of the interest spread. This means in a typical bank syndicate, some banks earn on average 10 percent more than some others, while the loan conditions are the same.

The structure of the up-front fees is announced by the borrower and her arrangers at the start of the syndication process. The percentage up-front fee normally increases in discrete steps in the size of the loan commitment made by the individual lenders in the syndicate. For example, the up-front fee may be 30 basis points of the committed funds for banks providing $50 million or more, while only 20 basis points for institutions providing less than $50 million.

The paper studies the economic motivations for the borrower's choice of the up-front fees structure. Specifically, we investigate the question whether a relatively higher compensation to larger lenders can be explained by potential liquidity problems[2] of the borrower ex post. Sovereign borrowers who appreciate the possibility of such liquidity problems will structure the loan agreement in a way that minimizes the expected damage of possible disorderly workouts of the loan agreement. Bolton and Scharfstein (1996) explain that disorderly workouts are more likely to

[1] We will use the terms "banks" and "lenders" interchangeably. Although the set of lenders that are active in the syndicated loan market is diverse (banks, finance companies, insurance companies, etc) by far the most important participants are commercial banks.

[2] In the context of sovereign lending, borrowers are said to face *liquidity problems* or to be *solvent but illiquid* if they would need to or would like to renegotiate the terms of loan rather than to repudiate outright.

happen as the *number of lenders* increases.[3] Thus, our first hypothesis is that sovereign borrowers offer a higher up-front fees to larger lenders with the aim to reduce the number of lenders in the syndicate.[4]

Our second (and related) hypothesis to explain why borrowers offer a relatively higher compensation to larger lenders is that larger lenders may play an important coordination role in case of distress due to liquidity shortages. There is empirical evidence from the corporate loan market showing that one of the main functions of a borrower's *relationship lender* is to act as a liquidity insurer in situations of unanticipated liquidity shortages.[5] Additional evidence shows that the key element that explains whether a bank views itself as a borrower's relationship lender is the relative size of the bank's share of the borrower's externally attracted funds. Large lenders are likely to play a similar role in coordination of the other lenders in a sovereign debt environment. For instance, JP Morgan coordinated the refinancing of the Korean state in 1997 (See e.g., Morris and Shin, 2004).

Our data consists of 85 syndicated loans issued by sovereign states in the period 1990-1997.[6] In our empirical model our endogenous variables are the up-front fees differential and the number of banks that join the syndicate. This model reflects the possibility that the borrower and her arrangers may target a certain number of banks to join the syndicate and design the up-front fees structure accordingly.

We obtain the following results. First, we find that the up-front fees differential is affected by our proxy for the probability of liquidity shortages, but not by the probability of insolvency. Second, the up-front fees differential is positively affected by our proxies for the information

[3] See Preece and Mullineaux (1996), Bolton and Freixas (2000), and Brunner and Krahnen (2006) for some empirical evidence on coordination costs between lenders.

[4] Indeed, if banks cannot fully diversify away their risk or otherwise face limited financing capacities, they will have to be compensated for making larger funding commitments.

[5] See e.g., Elsas and Krahnen (1998), Boot (2000) and Elsas (2005) for some empirical evidence and a discussion of the set of services provided by relationship lenders.

[6] That is all sovereign syndicated loans for which data exists on the composition o the syndicate and the upfront fees structure. We have just added sovereign loans from the periods 1983-1989 and 1998-2005 to our sample. A new draft that reflects the enlarged dataset will be ready by May 2008.

asymmetry between borrowers and lenders. This finding is expected based on the empirical study of Bruche (2004) and the theoretical work of Morris and Shin (2004) who show that under information asymmetries between lenders and borrowers, and in the absence of common knowledge among lenders, the coordination failure may result in some lenders foreclosing on the loan because they fear similar action from other lenders. Third, we find that up-front fees do not affect the number of banks that join the syndicate. The number of banks that join the syndicate is essentially explained by the size of the loan.[7]

These finding suggest first of all, that potential future liquidity problem affect the design of the loan agreement and, specifically, the upfront fees structure. The finding that the up-front fees differential does not affect the number of banks tentatively suggests an important role of the large lenders in the syndicate when resolving ex post coordination problems in workouts. Large banks seem to provide certain services for the borrower that are usually associated with relationship lending, services which may include the mitigation of costs associated with information asymmetries or liquidity shortages of the borrower. Moreover, the findings show that the upfront fees structure is the actual mechanism used to compensate larger lenders for the provision of these services, and potentially also for increased risk-taking.

Our analysis of sovereign syndicated loans provides answers to important questions concerning the structure of sovereign syndicated loans and the determinants of the number of lending relationships of sovereign borrowers. The study also tentatively suggests the important role played by large lenders in coordinating workouts in sovereign debt markets. Interestingly, corporate syndicated loans are designed and arranged identically. Consequently, some findings of this paper may perhaps generalize to private firms and this calls for an important research agenda in the context of corporate syndicated loans. For example, no studies on corporate syndicated loans have addressed the role of the upfront fees structure.

[7] Petersen and Rajan (1994), Ongena and Smith (2000) and Machauer and Weber (2000) found that the size of the borrower is an important determinant of the number of lending relationships.

The rest of the paper is organized as follows. In the next section we relate this paper to the existing literatures on syndicated lending, relationship lending, and the number of lending relationships of borrowers. We also derive the empirical hypothesis in the next section. Section 3 presents the empirical model, Section 4 the dataset, and Section 5 the results. Section 6 presents several robustness tests. The last section concludes.

2 Related literature and the empirical hypotheses

2.1 Sovereign vs. corporate debtors

There are two essential differences between corporate and sovereign debt markets. The first difference is the inability of the creditors to collateralize the assets of the sovereign debtors. Sovereigns such as governments and central banks benefit from the so-called *sovereign immunity* at home and abroad. Sovereign borrowers in default are however subject to at least two risks, namely the risk to loose access to international capital markets and the risk of international trade disruption. Lenders may no longer grant loans to sovereign borrowers in default, including letters of credit, i.e. essential financial instruments for international trade.[8]

The second difference between the sovereign and the corporate debt markets is the absence of legal frameworks for orderly workouts akin to national bankruptcy codes. The resulting lack of coordination among lenders is the focus of the current debate promoted by IMF First Deputy Managing Director Anne Krueger between private and official organizations (e.g. Eichengreen and Portes, 1995; IMF, 2001; White, 2002; Kletzer, 2006). These two issues, i.e. the lack of protection of creditors and the lack of coordination between lenders, are relevant for the next sections.

[8] See e.g., Eaton and Gersovitz (1981); Cole *et. al*, (1995) Grossman and Han (1999); Rose (2005). In their seminal article, Bulow and Rogoff (1989) challenged the sovereign immunity and claimed that sovereign debt is not sustainable unless creditors have the right to seize debtor's cash and assets available abroad. In fact, jurisprudence in the USA has proved exceptions against sovereign immunity; e.g., Delaume, 1994. See also the case *Elliott Associates vs. The Republic of Peru* discussed in IMF (2001). However, seeking repayment through courts remains quite a time-consuming and hazardous task. See Eaton and Fernandez (1995) for a survey.

2.2 The optimal number of lenders and relationship lending

The role played by financial intermediaries in the mitigation of information asymmetries problems has been extensively documented theoretically and empirically. In his early seminal work, James (1987) found empirical evidence that the issuance of bank loans has a positive impact on the value of the firm, unlike the issuance of publicly tradable debts.[9] Bank loans are thus found to signal the quality of the borrower to public markets participants. However, previous studies failed to answer the question whether banks hold private information or are simply better skilled than other participants. Reported results simply emphasized the *peculiarity* of banks. The subsequent literature actually focused on the number of lending relationships and in particular on the presence of *relationship lenders*, whether lenders are banks or not.

The impact of the number of lenders on borrowing costs has been well documented theoretically. Sharpe (1990), Diamond (1991) and Rajan (1992) showed that a small number of lending relationships decreases the costs resulting from information asymmetries.[10] The authors viewed the small number of lending relationships as an indicator of the presence of *relationship lenders* who extract private information through a close and repeated lending relationship. This turns to be particularly valuable for the small and non-public debtor for whom information asymmetries are more acute. Therefore, fewer lenders help address costs associated with information asymmetries between borrowers and lenders.

For the borrower, there is another advantage in having a few creditors that relates to their cohesion. The smaller number of lenders results in further concentration of voting rights. This may turn to be particularly valuable to both the debtor and her lenders in the event of financial distress. In fact, should the debtor be solvent but face temporary liquidity shortages (*solvent* but *illiquid*), the concentration of voting rights helps obtain rapid agreement on new terms of debt between the

[9] Specifically, empirics showed that the renewal of bank loans and the credit rating of the lending institution positively affects the value of the firm (e.g., Lummer and McConnel, 1989; Billett et al.,1995; Megginson et al., 1995).

[10] Petersen and Rajan (1994) empirically confirmed that the borrower has a larger set of lenders as the amount of asymmetric information declines.

debtor and her creditors.[11] Therefore, by compensating larger lenders in a syndicate, the borrower may attempt to reduce the number of lenders and thereby the lenders coordination costs. In line with this theory, the borrower increases the up-front fee to the largest lender as the probability of liquidity shortages increases. Instead, the number of lenders and coordination costs are irrelevant in case of insolvency since the borrower is unable to repay debts and is unlikely to renegotiate.[12]

There is a third reason why a borrower may be interested in reducing the number of lenders. The coordination failure among lenders may result in early repayments of debt although the project is viable and the borrower can repay in full at maturity. The so-called "common pool problem" is created as at least one creditor withdraws from the pool of lenders and requests early repayment even though the project is viable. The resulting non-optimal disorderly workout is caused by high information asymmetries between borrowers and lenders and the lack of common knowledge between lenders. Therefore, cutting the number of banks is likely to reduce the probability of the occurrence of disorderly workout.[13] As Morris and Shin (2004) emphasized, the common pool problem is particularly acute in sovereign debt markets where no orderly workout frameworks exist akin to bankruptcy codes. Hence, in line with this theory, the borrower who suffers from information issues may be reluctant to contract with an excessive number of lenders fearing the common pool problem.

Hypothesis 1: *The up-front fees differential is aimed at offering banks an incentive to commit larger amounts so as to reduce the number of banks in the syndicate.*

[11] Though, settlements that are not sufficiently costly can be counter-productive to creditors since the borrower may not exert sufficient effort and strategically default. Bolton and Scharfstein (1996) demonstrated theoretically that there is an optimal debt structure that balances these effects. See also Bolton and Freixas (2000). In line with this theory, Ongena and Smith (2000) showed empirically that weak creditor rights and poor legal enforcement are associated with more lending relationships since costly renegotiation precludes debtors from defaulting strategically.

[12] Similar results are observed empirically in syndicated loan markets. Preece and Mullineaux (1996) and Dennis and Mullineaux (2000) reported that the value of the syndicated loan is a negative function of the number of syndicated lenders since this number is believed to increase the renegotiation costs. Also, Esty and Megginson (2003) showed that the ownership structure of project finance is more scattered as the legal environment of the borrower is weaker. Consistently with Bolton and Scharfstein (1996) and Ongena and Smith (2000), in a poor legal environment, the larger number of lenders aims at deterring strategic defaults.

[13] Morris and Shin (2004) and Bruche (2004) also showed theoretically that the common pool problem would augment loan prices. In their sample of distressed German firms, Brunner and Krahnen (2006) reported that whenever information asymmetries are substantial, banks tend to pool under some legal process. The coordination of lenders has a positive impact on the value of banks' shares. The pooling process benefits to creditors as well as borrowers.

The discussion in previous paragraphs implies that the borrower increases the up-front fees differential so as to reduce the number of banks in the syndicate as information issues and/or the probability of liquidity shortages increase. Instead, the insolvent sovereign borrower is indifferent to the number of lenders, and thus would not increase the up-front fees differential. The risk of default is captured by the interest spread and compensates lenders evenly.

Therefore, Hypothesis 1 induces that the up-front fees differential is determined by information issues and the probability of liquidity shortages. The probability of insolvency has no impact. The probability of insolvency is captured by the interest spread. Moreover, because the structure of the up-front-fees is aimed at controlling for the number of lenders, the hypothesis implies that the up-front fees differential has an impact on the number of banks joining the syndicate (controlling for other factors, e.g. the size of the loan). Explicitly, the up-front fees differential has a negative impact on the number of lenders.

Empirical implications: 1. *The up-front fees differential is explained by information asymmetries and the probability of liquidity shortages.* 2. *The up-front fees differential has a negative relationship with the number of banks that join the syndicate.*

2.3 Relationship lending and the holder of the largest share of borrowers' debts.

A second alternative for compensating the larger lender with larger up-front fees relates to the association of the relationship lender with the bank that holds the largest share of the borrower's debts. The literature outlined so far made no difference between banks.

Yet, Holmström and Tirole (1997) showed theoretically that only a fraction of funds needs to be financed by monitoring firms to deter the strategic default.[14] Also, in a multivariate empirical analysis, Elsas (2005) found that the main determinant of a bank being the relationship lender of a given borrower is the share of this borrower's debt the bank holds. Time length of the lending

[14] The remaining financing arm's-length creditors may be public markets or banks. See also Carletti (2004).

relationship is not a significant determinant. Besides, liquidity insurance is the main service provided by relationship banks.[15]

Recent studies on syndicated loans also emphasized the monitoring role of the banks that take the largest share of the loan. In particular, lead banks hold a larger share of the loan as the amount of information about the borrower is smaller and credit risk is relatively higher. These empirical studies also documented evidence that the banks that hold the largest stake of the loan have a monitoring function over the lifetime of the loan.[16]

The last type of service the larger lenders in syndicated loans may provide to borrowers relates to the coordination of other lenders. As outlined in previous sections, borrowers and lenders face the "common pool problem" in the presence of information of asymmetries (Morris and Shin, 2004). The threat of pre-emptive payments whenever financial trouble occurs is even more severe in a weak legal environment. In line with Brunner and Krahnen (2006) who documented the cost advantage of coordination between lenders, the syndicated loan market has established its own rules which are in substance self-disciplining *vis-à-vis* lenders. The first clause is the *sharing clause* thereby any amount repaid by the borrower is distributed *pro-rata* banks' individual commitments. For instance, if $10 million is obtained, $1 million is given to the bank that funded 10% of the loan. The second clause is the *cross-default clause* thereby any bank that is participant in a defaulted loan should declare all other loans it participates in default too (see e.g., Rhodes, 2004). These two binding clauses strongly promote the cohesion of the group of creditors. Consequently, banks which hold the largest stake of the loan will prevent any adverse decision from the pool of banks. The large stake also enables the bank to pressure on other banks to find a new agreement and in

[15] Elsas (2005) based the analysis on a survey of German banks whereby each bank would answer whether or not it views itself as the *Hausbank* for each of the firms in the sample and related banks' answers to firms' specifics. In their earlier empirical analysis, Elsas and Krahnen (1998) explained that the *Hausbank* is viewed as the most important lender of a firm with more intensive and timelier information than any other banks. *Hausbanks* have a so-called "close relationship" with borrowers comparable to relationship lenders as formulated by Boot (2000). Also, Elsas and Krahnen (1998) found that relationship lenders provide liquidity insurance in situations of unexpected deterioration of borrower ratings. Therefore, *Hausbanks* bear a "special responsibility" if its borrowers face financial distress.

[16] Dennis and Mullineaux (2000); Lee and Mullineaux (2004). Sufi (2006) also found that information asymmetries are mitigated by "how close" any of the lenders is in terms of geography and previous lending relationsips.

particular to avoid pre-emptive claim. This is consistent with past experience of sovereign bank debt renegotiation. For instance, Citibank chaired most of the London Clubs of Latin American countries in the 1980's (e.g., Cline, 1995).

Though, no contracts explicitly bind larger lenders to become a special lender. Nevertheless, because lending is a repeated game, the larger lender who insufficiently responds consistently with being a special lender hurts her reputation as an institution that is able to fulfill the function of special lender. This constitutes an effective incentive for the larger lender to commit to providing special lenders services in times of distress.

Hypothesis 2: *Larger up-front fees compensate larger lenders for a set of services associated with relationship lending, i.e. reducing the borrower's opaqueness, providing liquidity insurance, and coordinating the lenders in time of liquidity shortages.*

The discussion in previous paragraphs induces that borrowers compensate special lenders *via* up-front fees *in se*. As a matter of fact, the up-front fees differential would be determined by the cost of information related services and liquidity shortages related services and the probabilities that these services actually are provided over the life of the loan. Thus, Hypothesis 2 implies that the up-front fees differential is determined by the probability of the borrower encountering liquidity shortages. Consistently with this hypothesis, insolvency risk has no impact on up-front fees (insolvency would cause default on debts inducing no role for the larger lender). A second implication of this hypothesis is that information asymmetries increase the up-front-fees differential. First, being the relationship lender, the larger lender helps mitigate costs associated with information asymmetries between borrowers and lenders. Second, liquidity shortages may lead to pressure from other lenders for foreclosing the loan. The larger are the information asymmetries, the larger is this probability. The larger lender helps the borrower containing the pressure again by mitigating asymmetries information, this time *ex-post*.

Empirical implications: 1. *The up-front fees differential is determined by information asymmetries, liquidity shortages, and to some extent by the number of lenders.* 2. *The up-front fees differential has no impact on the number of banks joining the syndicate.*

2.4 The size of the loan and the number of lenders.

An alternative explanation for the number of participants in syndicated loans follows the line of research on the borrower's size and its impact on the number of lenders. In fact, akin to the size of the firm, the size of the loan may best explain the number of banks participating in the syndicate.[17]

The size of the loan may have an impact on the up-front fees differential as well through two alternative channels. First, if Hypothesis 2 holds (the larger lender is the relationship lender), the larger loan size and the associated larger number of lenders induce larger costs of coordination between banks at the expense of the larger lender. Second, assuming limited financing capacities of banks, the larger loan size may require larger up-front fees differential to give banks an incentive to commit larger amounts and make the deal successful. Simons (1993) found that risk diversification due to limited financing capacities of banks is the main motivation for the existence of syndicated loans. Under either of the two channels, the size of the loan may have an impact on the up-front fees differential too.

Hypothesis 3: *The number of joining banks and the up-front fees differential relate to the size of the loan*.

The discussion induces two empirical implications. First, the loan size, not the up-front fees differential, would mainly explain the number of banks joining the syndicate. Second, the loan size may have an impact on the up-front fees differential, either because the number of lenders and the associated coordination costs are larger, or because banks face limited financing capacities.

[17] Empirical analyses of the number of lenders of private firms concluded that the number of lenders of a firm is mainly explained by its size (e.g., Petersen and Rajan, 1994; Ongena and Smith, 2000; Machauer and Weber, 2000).

Empirical implications: 1. *The size of the loan is a determinant of the number of banks joining the syndicate.* 2. *The size of the loan and the number of lenders induce larger up-front fees differential.*

3 Model specifications

The empirical model investigates the determinants of the up-front fees differential and the number of joining banks. Using separate multivariate models may create endogeneity issues. In fact, the structure of the up-front fees is determined before the syndication is launched. As a result, the structure may be set according to the *targeted* number of banks joining the syndicate. Therefore, there is room for causality, not only of the up-front fees differential on the number of joining banks, but also of the number of joining banks on the up-front fees differential. This translates in Model (1)-(2) of simultaneous equations composed of multivariate Models (1) and (2).

3.1. The determinants of the up-front fees differential

Equation (1) translates the impact of the probability of financial shortages and information problems on the up-front fees differential.

$$\begin{aligned} \textit{Up-front fees differential}_{i,j,k} = \quad & \textit{Constant} + \Psi_0.\textit{Dummies}_{i.k} \\ & + \psi_1 \textit{Number of joining banks}_i \\ & + \psi_2 \textit{Liquidity}_{j,k} \\ & + \psi_3 \textit{Solvency}_{j,k} \\ & + \psi_4 \textit{Public information}_{j,k} \\ & + \psi_5 \textit{Variability of income growth}_{j,k} \\ & + \Psi_6 \textit{Country Dummy}_{j,k} \\ & + \textit{Error}_{i,j,k} \end{aligned} \tag{1}$$

where a subscript *i* indicates that the variable refers to the *i*th loan observation, subscript *j* indicates *j*th country and subscript *k* indicates *k*th year. Table I reports the details of all of the variables.

The *up-front fees differential* is the difference between the top and bottom up-front fees. For each loan,

Up-front fees differential = *up-front fee*$_{\max}$ – *up-front fee*$_{\min}$

where *up-front fee*$_{max}$ and *up-front fee*$_{min}$ are respectively the largest and the lowest up-front fee offered to potential lenders. The up-front fees differential represents the compensation that the largest lender obtains in addition to other lenders'. Model (1) relates the *up-front fees differential* to a set of exogenous factors consistently with Hypotheses 1, 2 and 3. Table 1 defines all variables.

Number of joining banks is the number of banks that joined the syndicate during the syndication phase, i.e. loan participants who were not mandated by the borrower to arrange the loan. Non-arranging banks may constitute the effective target of the structure of the up-front fees.

All macroeconomic numbers are those of the year in which the loan is issued. Exogenous factors include *liquidity* that proxies for the probability of liquidity shortages of the borrower. *Liquidity* equals the ratio of the amount of foreign currency reserves available to the sovereign relative to the public and publicly guaranteed (PPG, thereafter) short-term debt (lifetime less than a year). It reflects the ability of the sovereign debtor to face macroeconomic adverse shock that may result in temporary financial troubles, e.g., sudden fall of the domestic currency. The larger is the availability of foreign reserves relative to the total short-term debts, the less likely is the sovereign going to face liquidity shortages. Ratios based on foreign reserves and short-term debts as proxies for the probability of liquidity shortages have been widely used in recent empirical studies of sovereign debts (e.g., Eichengreen and Mody, 2000; Hale, 2005). If the sovereign faces liquidity shortages, she will negotiate new terms on debts. Therefore, the up-front fees differential is larger as the ratio *liquidity* is smaller. This is consistent with Hypotheses 1 (the number of lenders) and 2 (larger lenders are relationship lenders). The sign of ψ_2 is expected to be negative.

Solvency is equal to the ratio of the total amount of PPG long-term debt (lifetime more than a year) relative to GNP. The ratio is also a standard proxy for solvency in the empirical literature.

The larger is the amount of debts relative to GNP the less likely is the sovereign debtor going to be able to meet full debt repayments at maturity. The ratio proxies for default and in line with Hypotheses 1 and 2, it should not have any impact on the up-front fees differential. The reason for this is that neither the number of lenders nor the relationship lender would reduce the costs of default. Default risk is rather captured by interest spread so that lenders are compensated evenly. Therefore, ψ_3 is expected to be insignificant.

Liquidity and *Solvency* are cornerstone variables in the analysis. Previous literature highlighted the credit-diversification purpose of syndicated loans (Simons, 1993). It is therefore essential to ensure that compensation for costs associated with liquidity shortages are not payments for higher risk-taking. If *solvency* had an impact on the up-front fees differential, we would conclude that, whether *liquidity* has an impact or not, the larger lender obtains compensation for risk-taking, neither for accomplishing relationship lending services, nor for helping reduce the number of lenders. A significant impact of *solvency* would be inconsistent with Hypotheses 1 and 2.

Public information equals the ratio of the PPG debts contracted from all of the private creditors (namely bond and bank debts) by the issuing country relative to the total amount of PPG debts issued by less-developed countries (LDC, thereafter). *Public information* is a proxy for the information about the sovereign available to the credit market participants. The larger is the amount of a given borrower's debts that financial institutions hold relative to all LDC debts, the larger is the amount of information banks hold about the sovereign borrower. The rationale is based on the fact that the more credit markets participants contract lending relationship, the larger is the amount of information they extract. The larger is the available information, the less likely are information asymmetries. If the costs associated with information asymmetries are lower, borrower is less constrained to reduce the number of lenders to prevent e.g., the "common pool problem". Therefore, the sovereign borrower is not constrained to reduce the number of lenders and/or

compensate the larger lender for reducing information asymmetries costs. Therefore, *up-front fees differential* is expected to be negatively related to *public information*.

Variability of income growth is equal to the variability of the GNP per capita growth around its average value over the five years before the date of the loan. *Variability of income growth* is a proxy for risk but also for the potential asymmetries of information. The variable indicates the extent to which sovereign may hide new information. The higher the variability of income the more a borrower is able to hide information on future incomes.[18] The lenders will therefore request larger payments for larger funding amounts. The variability of income is therefore expected to affect positively the price differential and ψ_5 to be positive.

Dummies is a vector of two dummy variables. One dummy takes the value *1* if the country is Turkey and a second dummy takes the value *1* if the country is India, *0* otherwise. The country dummies correct for specific effects of highly represented countries in the data set, namely Turkey and India. Upper-case coefficient Ψ_6 is also a vector. *Dummies* controls for biases due to over-represented countries. The reason why a dummy is not included for all countries is that many countries have less than two observations.

3.2. The number of banks that join the syndicate.

Model (2) translates the impact of the up-font fees differential on the number of banks that join the syndicate.

$$\begin{aligned} \textit{Number of joining banks}_{i,j,k} \quad = \quad & \textit{Constant} \\ & + \varphi_1 \textit{Up-front fees differential}_i \\ & + \varphi_2 \textit{Loan size}_i \\ & + \varphi_3 \textit{Number of arrangers}_i \\ & + \varphi_4 \textit{Lifetime}_i \\ & + \Phi_5 \textit{Dummies}_{j,k} \\ & + \textit{Error}_{i,j} \end{aligned} \qquad (2)$$

[18] The variability of per capita income is sometimes used in empirical studies as a proxy for potential information asymmetries; e.g., Lee (1991).

where a subscript *i* indicates the *i*th *loan*, a subscript *j* indicates the *j*th country and *k* indicates the *k*th year. Upper-case coefficients indicate vectors.

Loan size is the total amount of the loan expressed in constant billions of 1995 US dollars. Each loan size is reported in the currency of denomination and in current US dollars at the date of issuance. For comparability purpose, the US dollar values are inflated up or deflated down to January 1995 dollar values. The computation is based on the monthly consumption prices inflation figures provided by the U.S. Department of Labor. We expect the borrower to offer incentives to creditors to provide larger amounts in order to raise the requested funds. As the targeted amount increases, the up-front fees differential is likely to widen. This is consistent with Hypothesis 3. If the larger borrower bears larger borrowing costs, we expect ψ_5 to be significantly positive.

Hypothesis 1 predicts that the borrower will increase the *up-front fees differential* so as to obtain larger individual commitments from banks and thereby reduce the number of participants. If the borrower instead prefers compensating the larger lender for a set of services associated with relationship lending (Hypothesis 2), the impact is insignificant. Therefore, the estimate of Model (1)-(2) will enable to conclude on which hypothesis, whether Hypothesis 1 or 2, explains why the probability of liquidity shortages would determine the *up-front fees differential*. Therefore, φ_1 is expected to be negative if Hypothesis (1) holds (the up-front fees differential is aimed at reducing the number of lenders). Instead, if φ_1 is insignificant and the probability of liquidity shortages and the information asymmetries have an impact in Model (1), but not solvency, then Hypothesis (2) holds (the up-front fees differential compensates the larger lender for services associated with relationship lending).

If the *number of joining banks* was determined by the size of the loan (Hypothesis 3), the impact of *loan size* would be positive. Model (2) controls for the exogenous impact of the up-front fees differential accordingly to Hypotheses 1 and 2. Therefore, consistent with Hypothesis 3, φ_2 is expected to be positive.

The third exogenous factors is the *number of arrangers* which is the number of banks that arranged the loan. *Number of arrangers* may have an impact on the number of banks joining the syndicate if one assumes that each bank is in charge of contacting a certain number of banks. This has its importance since one may wonder whether the number of lenders was not actually determined *ex-ante*. Also, the relationship lenders may be the arrangers of the loan. We discuss and test this issue in further details in the section of robustness tests.

Lifetime is the duration of the loan. The time length of the loan is sometimes found to have an impact on the number of lenders in a syndicated loan (e.g., Dennis and Mullineaux, 2000; Lee and Mullineaux, 2004; Sufi, 2006). *Dummies* is a vector of two dummy variables of over-represented countries. One dummy takes the value 1 if the country is Turkey, 0 otherwise. Another dummy takes the value 1 if the country is India, 0 otherwise.

Model (1)-(2) helps disentangle Hypotheses 1 and 2. In fact, if the expected *liquidity* had an impact on *up-front fees differential* and *up-front fees differential* had a negative impact on *number of joining banks*, then indeed the larger up-front fees would aim at reducing the number of lenders. The reduced number of lenders mitigates the costs associated with financial distresses due to liquidity shortages. If instead *up-front fees differential* had no significant impact on *number of joining banks*, then Hypothesis 2 would hold. The larger up-front fees differential is explained by the costs sustained by larger lenders whenever liquidity shortages would occur (the borrower is *solvent* but *illiquid*).

Model (1)-(2) is estimated by using a two-stage least squares estimator. A necessary condition for identification of the model is that the number of exogenous variables excluded from the equation must not be less than the number of endogenous variables included in that equation. The identification condition is satisfied in each equation of Model (1)-(2).

4 Sampling and data description

The sample of syndicated loans is assembled from *Loanware Dealogic* and various issues of the *International Financing Review* (IFR), i.e. the most important professional magazine for practitioners. We screened the text version of the loans in IFR because it contains more comprehensive details on syndicated loan deals than the available electronic resources such as *Thomson Financial* and *Loanware Dealogic*. For example, these electronic resources suffer from a lack of accuracy regarding the composition of the syndicate and the structure of the up-front fees. We manually checked our observations to avoid data quality problems.

We selected all syndicated loans issued by LDC[19] sovereigns, i.e. states, republics and kingdoms, government entities such as ministries, and central banks. We also included local public entities such as provinces and municipalities. The screening of public firm issuers required an additional look-up. Unless the credit facility received an explicit guarantee from a sovereign agent, we verified whether there were explicit guarantees from the state in the statutes of the firm.

The syndicated loans are issued in the period between January 1990 and December 1997, a period that does not include several major shockwaves that occurred in the international debt markets (think of South-East Asia, end 1997 and 1998); Russia, 1998; Turkey, 2001; and Argentina, 2001-2002). In this period, LDC public entities issued 246 syndicated loans. Of these 246 syndicate loans, 184 reported at least one up-front fee. After a second screening of issuers as outlined above, the sample is composed of 130 syndicated loans that are issued or guaranteed by LDC sovereigns between January 1990 and December 1997 and report up-front payments. However, of the 130 observations, 29 are reported with missing fees at the top or bottom ends making the calculation of the difference between the top and bottom fees impossible, one

[19] The World Bank defines less-developed countries (LDC) as countries whose yearly per capita income is less than US$ 9,655 (in 1997). Notice that the group of LDC includes emerging markets. Also, the quality and homogeneity of LDC data are usually an issue. In order to ensure the quality and the homogeneity of the macroeconomic data, all of the macroeconomic data is obtained from a single source, i.e. the *World Development Indicators* issued by the World Bank.

idiosyncratic loan agreement was deleted[20], and 15 do not report the number of banks in the sample. The final sample includes 85 syndicated loans issued or guaranteed by 23 states. Unfortunately, a further three observations[21] cannot be used to estimate of Model (1)-(2) because an explanatory variable *variability of income growth* is missing.

Table 2 and 3 report the description of the sample. The average bottom up-front fee is 0.39% and the average top up-front fee is 0.55%. The average up-front fees differential is therefore 0.16%, or 16 basis points. The top up-front fee is 40.3% larger than the lowest up-front fee. This will cost the borrower a maximum amount of 181.9 thousands US dollars for the average 115.1 million US dollars loan.[22]

5 Empirical results

Table 4 summarizes the two-stage least-squares estimates of Model (1)-(2). The three main results are:

1. *the up-front fees differentials have no significant impact on the number of joining banks*;
2. *the probability of liquidity shortages and information issues are the main determinants of the up-front fees differentials, not the probability of insolvency*;
3. *the loan size is the main determinant of the number of joining banks*.

The details of the results and their interpretation are the following.

5.1. The up-front fees differential and the number of lenders.

The main finding is that, controlling for other factors, the *up-front fees differential* has no significant impact on the *number of joining banks* at 10% levels, the *z*-statistics being equal to -

[20] *Zambian copper conundrum* loan guaranteed by Zambian Ministry of Finance, signed on 17 July 1997. "The principal outstanding is at least 150% covered by copper contracts", in the International Financing Review, No. 1181 May 3 1997, p.58. The value of the security would affect the value of the loan but cannot be estimated. Besides, since there is a single securitized loan in the sample, including a dummy variable is a statistical nonsense.

[21] Oman 1996, and Slovenia 1993, 1996. The reason why Slovenia misses some *variability of per capita income* observations, is due to the five-year period lag. Slovenia entered international debt markets relatively early after the independence and therefore GNP figures of the previous five years are unavailable.

[22] Figures are consistent with the sample of syndicated loans in Esty and Megginson (2003) (36.9-53.1bp).

0.25. Therefore, the up-front fees do not constitute an incentive device aimed at helping the borrower reduce the number of lenders. The results reject Hypothesis 1.

The finding is difficult to relate to the previous empirical studies since none of them looked at the impact of pricing on the structure of syndicated loans. Though, issues relating to information asymmetries and lenders coordination failure are found to be resolved by contracting with fewer banks, which is beneficial to the borrower (e.g., Petersen and Rajan, 1994; Ongena and Smith, 2000; Brunner and Krahnen, 2006). Also, in syndicated loans, Lee and Mullineaux (2004) and Sufi (2006) did find that higher concentration of syndicated loans is meant to promote monitoring. Our finding is inconsistent with the up-front fees being aimed at reducing the number of lenders. Probably, there are other mechanisms that allow for a control over the number of lenders.

5.2. The up-front fees differential and relationship lending

If Hypothesis 2 holds, we expect a positive impact of the probability of liquidity shortages and the variability of income growth on the up-front fees differentials. Besides, we expect that the proxy for public information (*public info*) has a negative impact as information asymmetries decrease as the amount of public information increases. To make sure the up-front fees differential does not compensate for additional risk-taking, *solvency* should have no impact on the up-front fees differential, yet.

The results are the following. Both the probability of liquidity shortages and the variability of income growth have a significant and positive impact on the up-front fees differentials at level 5% in Model (1)-(2) estimates. Moreover, the probability of insolvency has a non-significant impact on the up-front fees differential, *z*-statistics being 1.03. Therefore, the up-front fees differential does not remunerate for further risk-taking but does relate to information issues and the probability of liquidity shortages. These results need to be complemented by the previous finding that the up-front fees differentials have non-significant impact on the number of joining banks. Hence, in conclusion, larger lenders obtain a separate compensation from the borrower paid up-front for

mitigating information issues and helping in times of liquidity shortages. The results are consistent with previous findings.[23] We find new evidence in the sovereign syndicated loan market that the borrower actually is the one who compensates the larger banks for informational costs.

The impacts of informational issues and the probability of liquidity shortages are also economically significant. The results show that the sovereign debtor with the lowest *liquidity* (0.21) would incur an increase of 0.17bp in the up-front fees differential with respect to the country that presents the average *liquidity* value of 1.82. The increase is nearly as much as the average up-front fees differential (0.16bp). Moreover, in the sample, the median value of the *variability of income growth* is 0.11. If the *variability of income growth* is 0.3 (20 observations presents 0.30 or more in the *variability of income growth*), the increase in the up-front fees differential amounts to 0.04basis points, which is a fourth of the average up-front fees differential.

The results are consistent with Bolton and Scharfstein (1996), Brunner and Krahnen (2006) who found that coordination among lenders is valuable. In addition, the lack of coordination between lenders theoretically augments the price of the loan in particular in markets where no coordination device exists such as bankruptcy codes (Morris and Shin, 2004; Bruche, 2004). This is consistent with our finding that there is a straight relationship between the up-front fees differential and the probability of liquidity shortages where coordination services are requested. Given that the borrower actually is the one who pays for this, it seems that the borrower benefits from the presence of the larger lender. The larger lender is therefore likely to help reduce the lack of coordination due to other factors. This is consistent with the past experience of sovereign debt settlements.[24]

[23] Dennis and Mullineaux (2000), Lee and Mullineaux (2004) and Sufi (2006) among others showed that the lead-banks (banks which hold the larger share of the loan) have a monitoring function. The tests are based on the impact of the ratio of R&D of the firm relative to its assets and a dummy for the presence of credit rating on the share held by the larger banks or the concentration ratios of corporate syndicated loans. Authors found a strong impact of opaqueness indicators on both the share held by lead bank and the concentration ratio. The authors assumed that the concentration and the largest share held by the lead banks enhanced monitoring.

[24] The finding is also consistent with the role of liquidity insurer of the larger lender in German credit markets (Elsas and Krahnen, 1998; Elsas, 2005). Previous empirical studies did not find any impact on the interest spreads though. The

5.3. The up-front fees and the number of lenders are determined by lending amounts.

Estimates of Model (1)-(2) show that the *loan size* has a strong positive impact at 0.01 level, *z*-statistics being 7.03. This is consistent with previous empirical work not only on small business data (e.g., Petersen and Rajan, 1994; Ongena and Smith, 2000), but also on syndicated loans (Sufi, 2006).

Estimates of Model (1)-(2) show a positive impact of the *number of joining banks* on the *up-front fees differential*, *z*-statistics being 1.80. Two channels may explain this result. First, the loan size being larger, the borrower needs to attract larger individual commitments and therefore increase up-front fees paid to larger commitments. Alternatively, the larger size implies a larger number of lenders. If the larger lender is indeed promoting coordination between lenders as previously outlined, the larger number of lenders implies larger costs of coordination. Although this result is relatively ambiguous, it constitutes new evidence of the loan size or the number of lenders explaining the up-front fees differential.

6 Robustness analysis

6.1. Endogeneity

Results suggest that the two endogenous variables *up-front fees differential* and *number of joining banks* are not actually jointly determined. We use the Hausman test regarding the instruments and all of the coefficients to verify whether OLS estimators of Models (1) and (2) are consistent. The hypothesis that OLS estimators of each of the instruments and all of the coefficients together cannot be rejected at standard levels. We report the OLS estimators of Models (1) and (2) in columns 4 and 5 of Table 4. The results are unchanged.

findings presented here provide evidence that the larger lender is paid for liquidity insurance and/or creditors' coordination through the up-front fees.

6.2. The number of arrangers

The study extends to the number of arranging banks. Arrangers receive separate and never disclosed payments. Because these banks usually take the largest stake of the syndicate, we suspect these banks to fulfill the alternative role of relationship lenders that we are investigating. Also, the number of arrangers is selected *before* the contract is designed and submitted to banks so that the analysis of the impact of the up-front fees differential on the syndicate structure may be misleading.

Similarly to the investigation of the determinants of the *number of joining banks*, we look at the impact of information issues, *liquidity* and *solvency*, as well as the *loan size* on the *number of arrangers*. Model (4) describes the determinants of *number of arrangers* as follows:

$$\begin{aligned} \textit{Number of arrangers}_{i,j,k} = \quad & \textit{Constant} + \gamma_1 \textit{Liquidity}_{j,k} + \gamma_2 \textit{Solvency}_{j,k} \\ & + \gamma_3 \textit{Public information}_{j,k} + \gamma_4 \textit{Variability of income growth}_{j,k} \\ & + \gamma_5 \textit{Loan size}_i + \Gamma_6 \textit{Dummies}_{i.k} + \textit{Error}_{i,j,k} \end{aligned}$$

where a subscript *i* indicates that the variable refers to the *i*th loan observation, subscript *j* indicates the *j*th country, and *k* indicates the *k*th year. Upper-case coefficients indicate vectors.

In line with Hypothesis 1, we expect that the proxies for public information and information asymmetries respectively have a positive and a negative impact on the number of arrangers. If the arrangers provided liquidity insurance, the *liquidity* is expected to have a positive impact. If the arrangers provided pre-commitments in the facility and foster the success of the fund raising, the loan size should have a positive impact on the number of arrangers.

First column of Table 5 summarizes the results of the *Tobit* censured estimation of Model (4). We find that *solvency* has a negative impact on the *number of arrangers* significant at the 5% level. *Variability of income growth* significantly increases the number of arrangers at the 0.05 level. *Loan size* has no impact at standard significance levels.

The results seem to show that the borrower would attempt to reduce information asymmetries by mandating several arrangers so as to reduce information asymmetries. However, the results are to be considered with care since the statistical performance of Model (4) is poor, R^2 equals 3.20.

6.3. The number of joining banks

Firstly, because the *number of joining banks* may not be the actual target of the *up-front fees differential*, we substitute the *number of joining banks* with other factors that may affect the coordination costs. In line with Esty and Megginson (2003), Model (5) relates the *mean share* held by banks in the syndicate as an indicator for concentration to exogenous factors. Unfortunately, in our sample, only 19 observations reported the committed amount for each bank. The number of observations is insufficient to enable an analysis based on the Herfindahl-Hirschman Index alike e.g., Lee and Mullineaux (2004) and Sufi (2006) (the Herfindahl-Hirschmann Indicator is the sum of the squares of each individual committed amount). We find that the *up-front fees differential* has a non-significant impact on the *mean share* held by each bank. The *loan size* remains the main factor of the *mean share*. This is consistent with the previous empirical studies. However, in the sample, no other factors actually have an impact on the *mean share*, in particular *liquidity* and *solvency* are insignificant at 10% level.

Still, in our analysis of the robustness the *number of joining banks*, Model (6) substitutes the *number of joining banks* in Model (2) with the total *number of lenders* in the syndicate, akin to Lee and Mullineaux (2004). Again, the *loan size* is the main factor while the *up-front fees differential* is not found to have any impact on the *total number of lenders*. Therefore, we conclude that the results of the analysis based on the *number of joining banks* are robust. The *up-front fees differential* does not aim at controlling the number of banks in the syndicate.

6.4. The up-front fees differential

Because the up-front fees differential may not be the actual gain of the larger lender, we conduct the analysis using different endogenous variables. Model (7) substitutes the *Up-front fees differential* in Model (1) with *relative differential*. *Relative differential* is defined by the difference between the top and bottom all-in margins relative to the bottom all-in margin. This represents the gain for the largest commitment relative to the smallest.

To calculate the *relative differential* we compute the equivalent yearly payments of the top and bottom up-front fees. The calculation is based on the payment and repayment schedules as reported in the *International Financing Review*. If the review did not report the schedules, we estimated of the schedule of cash-flows based on available details of similar loans. The all-in margin of banks is the sum of the interest spread and the calculated yearly equivalent received up-front fee.

We find that the *relative differential* is sensitive to *liquidity*, *Loan size*, and *Lifetime* at standard significance levels, which too determine the *up-front fees differential.* The *Solvency* indicator is again insignificant. Therefore, the finding that liquidity and information issues determine the up-front fees differential, not solvency, is robust.

6.5. Explanatory variables

Because previous empirical studies suggested several liquidity indicators, we substituted the *liquidity* indicator first with the ratio of foreign currencies reserves to the total amounts of short-term debt and imports second with the ratio of reserves to GNP. The significance of the estimates is not affected. Also, we made an estimation of the duration of the loan based on cash-flows schedules. The substitution of the *lifetime* of the loan by its estimated *duration* had no impact on the results.

We replaced *solvency* with the average foreign currency debts long-term sovereign credit rating at the date of signature of the loan. The average credit rating is obtained from *Moody's*, *Standard & Poor's*, and *Fitch Ratings*. The results are not affected. In fact, the mean rating does not affect the up-front fees differential significantly, while the liquidity proxy is still significant at the level 5%.

Information opacity is also proxied by the *number of ratings*, number of rating agencies reporting a rating on this country on the date of signature of the contract. We find that *number of ratings* has a negative impact on the *up-front fees differential* whether *public info* is included in the model or not. Other variables significances are unchanged.

Last, in Model (2), we controlled for the excessive pricing of the loan that may result in a number of joining banks larger than targeted. This may mitigate the estimated effect of the other explanatory variables, especially the *up-front fees differential*. Yet, adding other pricing terms is delicate statistically speaking as they are likely to be determined by other explanatory variables. Moreover, it is difficult to determine overpricing by merely adding the interest spread and/or the mean up-front fee. Though, it is usually admitted that oversubscription from banks (the sum of bid amounts are superior to the targeted loan size) signals over-pricing of the loan. Therefore, we included the dummy variable *oversubscription* which takes the value 1 if the loan was oversubscribed, 0 otherwise. *Oversubscription* has a significant impact on the *number of joining banks* at the level 1%. Yet, significances of other explanatory variables remain unchanged.

Hence, we can conclude that our results are apparently robust. The main finding relates up-front fees differential on sovereign syndicated loans to compensating larger lenders for services associated with relationship lenders, neither for default risk nor so as to reduce the number of lenders. Moreover, the number of lenders is essentially determined by the size of the loan which also has an impact on the up-front fees differential.

7 Concluding remarks

We investigate the factors affecting the up-front fees differential (the difference between top and bottom up-front fees) in syndicated loans in the context of sovereign debts. Typically, larger up-front fees are promised to larger lenders at the beginning of the syndication phase. All other compensations and conditions are equal for all syndicate participants. Firstly, we examine whether larger up-front fees differential aims at reducing the number of banks participating in the syndicated loan. The second hypothesis is that the up-front fees differential compensates larger lenders for a set of services typically associated with relationship lenders that are provided in times of liquidity shortages, e.g., liquidity insurance and coordination of other lenders. The third

hypothesis assumes that the borrower gives incentives to obtain larger individual commitments from banks as the size of the loan increases.

There are three empirical models consistent with the outlined hypotheses. Two are multivariate linear equations that relate first the up-front fees differential, second the number of non-arranging banks that participate in the syndicated loan (number of joining banks) to the borrower's information issues, probabilities of liquidity shortages and of insolvency. The third model is a system of simultaneous equations where both the up-front fees differential and the number of joining banks are endogenous. The estimation employs a sample of sovereign syndicated loans between January 1990 and December 1997.

we find that the up-front fees differential is essentially related to the probability of liquidity shortages and information asymmetries, not insolvency. The main determinant of the number of lenders is the loan size. Besides, the number of joining banks and the size of the loan have an impact on the up-front fees differential, but the reciprocal does not hold. These findings are consistent with the hypothesis that the large lenders obtain compensation not for reducing the number of lenders but for a set of services provided in situation of liquidity shortages.

The rationale for the up-front fees differential being dependent on the number of lenders – but not reciprocally – can be explained as follows. First, lenders have limited financing capacities. As a result, the borrower needs to increase payments to make the deal a success. Alternatively, as the size of the loan expands, the number of lenders increases, thus enhancing the coordination costs for the larger lenders.

This paper answers important questions about the reasons why larger lenders obtain a larger compensation in syndicated loans. The findings constitute new evidence of the relationship lender function of the lead bank in the syndicated loans. Moreover, the syndicated loan is found to constitute a valuable tool for coordinating lenders, especially in the sovereign debt market where no binding bankruptcy rules exist.

The results are consistent with the experience of 1980's sovereign debt settlements. First, all renegotiation committees (London Clubs) were chaired by leading banks, especially Citibank. Second, within Brady deal settlements, large banks were inclined to refinance ("*money option*") while smaller banks favored the conversion of their claims into bonds with a discount ("*exit option*"). Besides, in 1997 JP Morgan helped coordinate lenders to obtain swift refinancing of debts of the Korean government in financial distress (e.g., Cline, 1995; Morris and Shin, 2004).

Appendix: The syndication procedure and an illustration

The rising of funds through loan syndication is always split into three phases: *pre-mandate*, *mandate*, and *post-mandate* phases.

In the *pre-mandate phase* the borrower identifies the borrowing needs and makes various contacts with potential arranging banks. The borrower may demand a competitive bid or select a small number of banks through private contacts. This phase is essential for the rest of the syndication and will typically last a few weeks. The potential arranger(s) and the borrower must agree on the terms of the bid before any syndication is launched.

The *mandate phase* is the syndication phase. At this stage, both the borrower and the pool of arrangers have their reputation at stake. Arranging banks intend to prove their ability to raise the requested funds. The arrangers then collect the lending commitments (*book-running*) and rank the syndicators accordingly (e.g. lead-manager, manager, co-manager, participant).

The *post-mandate phase* starts at the signature ceremony and consists in the execution of the documentation. For further details, see Rhodes (2004).

Example of syndicated loan

Below is a reality-based illustration of syndicated loan offered to potential lenders. The milestones of the fund raising are the following. Rumors of the pre-mandate phase (search for arranging institutions) were disclosed in July 1996: "*A limited number of banks were asked to submit bids on an individual basis and the borrower will be moulding the arranging group, along with consensus pricing*" (IFR No. 1143, July 27, 1996). The deal was prepared for public syndication and published four weeks later as displayed in this box (IFR No. 1147, August 24, 1996). At the end of the mandate phase that lasted five weeks, the signature ceremony took place marking the success of the deal. At this occasion, the definitive structure of the syndicate was revealed (IFR No. 1152, September 28, 1996).

General information	
Borrower name	*Republic of Borrowland*
Date of signature	23 September 1996
Type of loan	Term loan
Purpose of the loan	Finance – General Purpose
Business of borrower	Sovereign state
Arrangers	*Bank 1*, *Bank 2*, *Bank 3*, *Bank 4*, *Bank 5*.
Loan information	
Amount	150 Million
Currency	US Dollar
Lifetime	7.00 years
Maturity	23 September 2003
Basis rate	London Inter-Bank Offered Rate (LIBOR)
Spread	50bp, rising to 60bp for years six and seven
Cash flow information	
Drawdown	Within three months of signing
Tranches	1
Repayment information	Five equal semi-annual installments starting 60 months after signing
Details of up-front fees	
Lead-management fee	30bp for 10 million USD
Management fee	25bp for 7.5 million USD
Participation fee	20bp for 5 million USD

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Table 1: Description of variables

Variable	Description
	Endogenous variables
Endogenous variables used in Models (1), (2) and (3).	
Up-front fees differential	equals ($up\text{-}front\ fee_{max} - up\text{-}front\ fee_{min}$) where $up\text{-}front\ fee_{max}$ is the top up-front fee and $up\text{-}front\ fee_{min}$ is the bottom up-front fee.
Number of joining banks	Number of non-arranging banks that participate in the syndicated loan.
Endogenous variables used in the robustness tests	
Relative differential	equals $\frac{AMargin_{max} - AMargin_{min}}{AMargin_{min}}$ $AMargin_{min}$ and $AMargin_{max}$ are respectively the bottom and top end all-in margins. The all-in margin is the sum of the yearly equivalent up-front fee and the yearly equivalent interest spread. The yearly equivalent values takes account for the cash-flows schedules (disbursements and repayments) and the variations in the value of the interest spread over the life of the loan. For instance, $AMargin_{max}$ is the sum of the yearly equivalent top up-front fee plus the equivalent single interest spread.
Number of arrangers	Number of mandated financial institutions for syndicating the loan.
Total number of banks	Total number of financial institutions that participate in the syndicate, equals the number of arrangers (who keeps a stake of the loan) plus the number of joining banks.
Mean share	equals $\frac{Loan\ size}{Number\ of\ lenders}$ the average size of the committed share for each loan.

Table 1: Description of variables (continued)

Variable	Description
	Exogenous variables
Liquidity	Ratio of foreign currencies reserves relative to short-term (lifetime under a year) foreign currency public and publicly guaranteed debts (PPG).
Solvency	Ratio of public and publicly guaranteed (PPG) long-term debts relative to GNP.
Public information	Ratio of the country's total amount of PPG international debts contracted from private creditors (banking and bond debts) relative to all LDCs PPG long-term debts contracted from private creditors debts.
Variability of income growth	Five years variability of GNP per capita growth in the issuing economy. For country i, year $j = 0$, $V(dIncome)_{i,j} = \sum_{j=-4}^{0} \frac{\left(\text{GNP per Capita growth}_{i,j} - \textit{Average}\ \text{GNP per capita growth over the last 5 years}_{0}\right)^2}{5}$
Loan size	Loan amount in constant billion 1995 US dollars, indexed to US consumer prices.
Lifetime	Time duration of the loan in years.
India	Dummy=1 if India is country of risk of the issuer, 0 otherwise.
Turkey	Dummy=1 if Turkey is country of risk of the issuer, 0 otherwise.

Table 2: Up-front fees differential and the number of lenders by countries

For each country, the table reports the number of loans contracted or guaranteed by sovereigns with the following information being required: the difference between the top and bottom up-front fees (*up-front fees differential*) and the *loan size* in constant 1995 million US$. The total number of lending institutions (*Number of banks*) and the number of banks joining the syndicate (*Number of joining banks*) are also reported. The difference between the number of lenders and the number of joining banks is the number of arranging institutions that participate in the facility. The sample of individual loans stems from the *International Financing Review* for the period between January 1990 and December 1997. The reported values are mean values calculated over the sample period.

Country	Number of observations		Means			
	Up-front fees differential	Number of lenders	Up-front fees differential	Loan size	Number of banks	Number of joining banks
Algeria	1	0	0.1000	90.72	.	.
China	5	4	0.2760	198.03	19.25	16.75
Colombia	2	2	0.1875	261.77	23.50	21.50
Czech Rep.	2	2	0.0375	140.39	13.50	12.50
Ghana	2	1	0.1250	58.28	14.00	12.00
Hungary	5	5	0.1520	46.36	11.00	8.00
India	12	11	0.1229	88.94	13.73	10.27
Kazakhstan	1	1	0.1250	47.06	15.00	14.00
Lithuania	2	2	0.1375	82.30	16.50	7.00
Malaysia	2	2	0.0000	120.22	6.00	5.00
Oman	2	2	0.0112	342.22	45.00	36.50
Philippines	3	2	0.1667	73.40	8.50	7.50
Pakistan	3	1	0.0417	97.81	28.00	20.00
Russian Fed.	1	1	0.2000	187.65	29.00	26.00
South Africa	5	5	0.0850	108.91	15.20	10.60
Seychelles	1	1	0.3000	27.89	5.00	4.00
South Korea	4	4	0.2650	101.16	17.25	11.25
Slovakia	1	1	0.0500	111.75	13.00	8.00
Slovenia	2	2	0.1250	80.90	10.00	6.50
Thailand	5	1	0.0790	78.82	70.00	64.00
Turkey	29	26	0.2045	140.29	20.50	18.19
Tunisia	3	3	0.0833	122.71	21.67	18.67
Zimbabwe	7	6	0.1678	48.74	13.50	11.17
Total	100	85	0.1570	115.61	17.96	14.76

Table 3: Descriptive statistics of the sample

Highest and *lowest up-front fees* are respectively the top and bottom up-front fees in percentage points. *Up-front fees differential* is the difference between top and bottom up-front fees. *Number of lenders* is the number of financial institutions committing to lending for each loan contract after syndication. *Number of joining banks* is the number of non-arranging banks participating in the syndicate. *Loan size* is the credit amount in constant millions of 1995 US dollars. *Liquidity* is the ratio of foreign currency reserves relative to public and publicly guaranteed short-term debt (less than a year maturity). The ratio proxies for the sovereign's ability to repay in the short-run. *Solvency* is the ratio of long-term debt (more than a year maturity) relative to GNP. The ratio proxies for the long-run ability to repay of the borrower. *Solvency* proxies for the probability of default. *Public information* is the ratio of the country's private creditors debt relative to the total less-developed countries private creditors debt.

Variable	Num. of Obs.	Mean	Std. Dev.
Up-front fees differential	100	0.157	0.135
Highest up-front fee	100	0.550	0.543
Lowest up-front fee	100	0.390	0.484
Number of banks	85	17.96	11.248
Number of joining banks	85	14.76	10.681
Loan size (million 1995 USD)	100	115.61	119.06
Liquidity *Reserves to Short-term Debt*	100	2.211	4.154
Solvency *Long-term Debt to GNP*	100	0.260	0.135
Public information *Country's Bond and Bank Debt to all LDC Bond and Bank Debt*	100	0.031	0.025
Variability of income growth *Variability of GNP per capita growth in the last five years*	97	0.137	0.160

Table 4: Models estimates

Variables are defined in Table 1. Model (1)-(2) is a model of a system of simultaneous equations described by Models (1) and (2). Model (1)-(2) is estimated using two-stage least squares (2SL). Models (1) and (2) are estimated separately using ordinary-least squares (OLS). Country dummies for India and Turkey were included but not reported in the table for clarity purpose. Below the coefficient estimates *z*-statistics are given in brackets for the 2SL, *t*-statistics for the OLS. Number of observations: 100 reporting *up-front fees differential*, 85 reporting both *up-front fees differential* and *number of joining banks*. In addition, the effective number of observations used for the model estimate is reduced because of three observations without *variability of income growth* (see Table 3). ***, **, * indicate respectively significance at 1%, 5%, 10% levels.

Eq.	(1)-(2)		(1)	(2)
Dependent var.	*Up-front fees differential*	*Number of joining banks*	*Up-front fees differential*	*Number of joining banks*
Up-front fees differential	. .	-4.947 [-0.25]	. .	1.066 [0.13]
Number of joining banks	0.003* [1.80]	. .	. .	. .
Number of arrangers	. .	0.199 [0.57]	. .	0.140 [0.43]
Liquidity	-0.017** [-2.10]	. .	-0.020** [-2.45]	. .
Solvency	0.970 [1.03]	. .	0.115 [1.18]	. .
Public Info	1.170** [2.38]	. .	1.635*** [3.13]	. .
Variability of income growth	0.223*** [3.00]	. .	0.202** [2.44]	. .
Loan size	. .	0.572*** [7.03]	0.190* [1.82]	0.562*** [7.61]
Lifetime	0.023*** [5.85]	-0.619* [-1.70]	0.019*** [4.57]	-0.706** [-2.45]
Constant	-0.047 [-0.87]	10.251*** [4.61]	-0.015 [-0.30]	7.870 [3.89]
R-squared	31.3	42.6	29.1	44.2
All coeff.=0?	41.0	61.3	6.14	15.6
N	82	82	97	85

Table 5: Further results

Variables are defined in Table 1. *Number of arrangers, Mean share*, *Total number of lenders* and *Relative spread* are endogenous variables. Model (4) explains the *number of arrangers*. We estimate the model using the *Tobit* censured model. Model (5) explains the *mean share* of the syndicate. Model (6) is identical to Model (2), *Total number of lenders* substituting *up-front fees differential*. (7) is identical to Model (1), *relative differential* substituting *up-front fees differential*. *t*-statistics are given in brackets below estimated coefficients. Number of observations: 100 reporting up-front fees differential, 85 reporting both the up-front fees differential and the number of joining banks, 95 both the up-front fees differential and the number of arrangers. In addition, the effective number of observations used for the model estimate is reduced because three observations were reported without *variability of income growth* (see Table 3). ***, **, * indicate respectively significance at 1%, 5%, 10% levels.

Eq.	(4)	(5)	(6)	(7)
Dependent var.	*Number of arrangers*	*Mean share*	*Total number of lenders*	*Relative differential*
Up-front fees differential	. .	-2.420 [-0.62]	1.895 [0.23]	. .
Number of arrangers	. .	-0.325** [-2.07]	1.131*** [3.48]	. .
Liquidity	-0.026 [-0.10]	0.186 [0.68]	. .	-0.009** [-1.86]
Solvency	-5.375* [-1.65]	-2.944 [-0.89]	. .	0.094 [1.63]
Public Info	-10.019 [-0.59]	-6.648 [-0.38]	. .	0.155 [0.51]
Variability of income growth	5.447** [2.10]	0.580 [0.22]	. .	0.070 [1.42]
Loan size	-0.106 [-0.03]	0.260*** [8.25]	0.563*** [7.59]	0.126** [2.07]
Lifetime	0.032** [2.26]	0.200 [1.17]	-0.714** [-2.47]	-0.007*** [-3.08]
Constant	2.010 [1.26]	4.900*** [3.00]	9.624*** [5.27]	0.075** [2.63]
R-squared	3.20	54.6	49.1	29.0
All coeff.=0?	12.2	10.7	19.0	6.1
N	94	83	85	97