



BANK FOR INTERNATIONAL SETTLEMENTS

BIS Working Papers

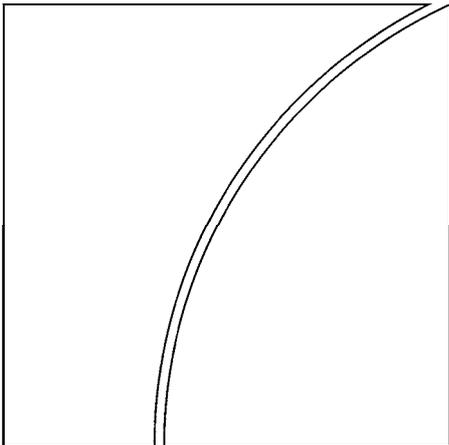
No 350

The value of repeat lending

by Blaise Gadanecz, Alper Kara and Philip Molyneux

Monetary and Economic Department

July 2011



JEL classification: D40, F30, G21

Keywords: syndicated loans, repetitive lending, arranger opportunistic behaviour, arranger reputation, opaque borrowers

BIS Working Papers are written by members of the Monetary and Economic Department of the Bank for International Settlements, and from time to time by other economists, and are published by the Bank. The papers are on subjects of topical interest and are technical in character. The views expressed in them are those of their authors and not necessarily the views of the BIS.

Copies of publications are available from:

Bank for International Settlements
Communications
CH-4002 Basel, Switzerland

E-mail: publications@bis.org

Fax: +41 61 280 9100 and +41 61 280 8100

This publication is available on the BIS website (www.bis.org).

© *Bank for International Settlements 2011. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

ISSN 1020-0959 (print)

ISBN 1682-7678 (online)

The value of repeat lending

Blaise Gadanecz^{a,*}, Alper Kara^b and Philip Molyneux^c

^a *Bank for International Settlements, Basel, Switzerland*

^b *Hull University Business School, UK*

^c *Bangor Business School, Bangor University, Wales, UK*

Abstract

The unique structure of syndicated lending results in information asymmetries within the lending syndicate between banks of varying degrees of seniority. While previous studies have attempted to use indirect proxy measures to capture the effects of such information asymmetries, in this paper we propose a more direct measure. This offers new insights into how junior and senior banks rely on their own and each other's information sets in lending syndicates. In particular, we look at the previous number of borrowing/lending relationships between individual borrowers and lenders and the duration of these interactions. Using this new, direct and explicit measure on a sample of 5,842 syndicated loan transactions between 1993 and 2006, we find that when participant banks have information inferiority in the syndicate they require higher loan spreads to compensate for this asymmetry. This is amplified when the borrowers are more opaque. We thus show how junior participant banks with repeat relationships with the same borrower graduate from uniformed to informed lenders (the spread goes down as asymmetry diminishes) and how they rely both on the arranger's reputation and their own repeat experience with the borrower.

JEL classification: D40, F30, G21

Keywords: syndicated loans, repetitive lending, arranger opportunistic behaviour, arranger reputation, opaque borrowers

* The views expressed are those of the authors and should not be taken to reflect those of the BIS.
Corresponding author: blaise.gadanecz@bis.org. The authors would like to thank to Werner De Bondt, Ingo Fender, Stefano Gatti, Kaushik Jayaram, Alberto Pozzolo, Kostas Tsatsaronis, as well as the seminar participants at the Bank for International Settlements, for valuable comments and suggestions. We would also like to thank Serge Grouchko for his help with the data.

1. INTRODUCTION

The unique structure of syndicated lending results in information asymmetries within the lending syndicate between banks of varying degrees of seniority. While previous studies have attempted to use indirect proxy measures to capture the effects of such information asymmetries, in this paper we propose a more direct measure. This offers new insights into how junior and senior banks rely on their own and each other's information sets in lending syndicates.

Syndicated lending, where two or more banks agree jointly to make a loan to a single borrower, has evolved into one of the world's largest sources of funding. Prior to the recent economic and financial crisis, some \$3.4 trillion in new facilities was raised during 2007, amounting to one third of all funds raised internationally, including bond and equity issuance. In a typical syndicated loan, "arranger" (or "senior") banks are situated at the core of the process. They help to put together the deal at a given set of terms and sell parts of the loan to "participant" (or "junior") second tier banks, as well as other investors, assigning parts of the loan to themselves ("loan retention"). Because participant banks typically do not have the critical size, experience or desire to arrange loans themselves, they do not normally negotiate directly with the borrowing firm, but have more of an "arm's-length" relationship acting through the arranger (Simons, 1993 and Sufi, 2007). In syndicated lending, participant banks depend heavily on arranger banks both before and after loan signing. The delegation of responsibility and reliance on arrangers leads to information asymmetries among syndicate members (Pichler and Wilhelm, 2001; Lee and Mullineaux, 2004; Jones et al., 2005; Sufi, 2007; Bharath et al., 2010; Ivashina, 2009; Focarelli et al. 2008).¹

One strand of the literature investigates the implications of information asymmetries among lenders on the structure of loan syndicates and possible opportunistic behaviour consequences

¹ From the point of view of information asymmetries and risk sharing, loan syndications are not unlike securitisations, where originators of structured products parcel out risk to a broad array of investors (CGFS (2003)). The originator of a securitisation may know more about the underlying assets than the investors who are called in to share the risk. There are, however, two important differences. Firstly, in securitisation, there is a pool of homogeneous assets bundled together on which the risk sharing takes place, while a syndicated loan is one single asset (contract), even if various tranches of the loan may be marketed to different lender classes. Secondly, in securitisation, there is a (vertical) slicing of risk, via an ordering of losses and guarantees of varying strength. The principle is that the least risk averse investors get hit by losses first and/or benefit from the least insurance, while the most risk averse ones get hit last and enjoy the strongest guarantees. In syndicated lending, there is no such slicing of risk, with all lenders getting hit at the same time (in proportion to their participation amounts) in case of default.

(Simons, 1993; Jones *et al.* 2005; Panyagometh and Roberts, 2002; and Sufi, 2007). These studies conclude that arranger opportunistic behaviour is non-existent. Arrangers are found to hold larger proportions² of low quality loans granted to borrowers that require more monitoring.

Another strand of the literature looks at the effects of such information asymmetries on loan pricing (Ivashina, 2009; Focarelli *et al.*, 2008 and Bharath *et al.*, 2010). These studies find that when arrangers retain a higher proportion of a syndication, participants view borrowers as less risky and the loans carry lower prices. To measure information asymmetries, the aforementioned studies use the size of the syndicate or the share of the loan held by the arranger. These indirect proxies, however, fail to capture the information set of the banks regarding the borrower. In the case of repeat lending, participants will not solely rely on information passed on by the arranger, but are likely to consider their own information set as well, which they have assembled through repeat interactions with the same borrower.³ As a consequence we suggest that a direct measure of participant banks' past relationships with borrowers provides a better indicator of syndication information asymmetries than the aforementioned indirect proxies.

Syndicate composition and structure has a major influence on loan pricing (Harjoto *et al.*, 2006; Sufi, 2007; Focarelli *et al.*, 2008 and Ivashina, 2009). In a bilateral loan the price is determined by a single lender depending on its information set about the riskiness of the borrower and the loan terms. In lending syndicates the price of the loan is determined by negotiations between the arranger and the participant banks. Based on the aforementioned literature, it is reasonable to expect that information asymmetries between arrangers and participants would be reflected in loan spreads. On the one hand, participant banks might require an extra risk premium at the pricing stage if they have less information than the arranger on the credit quality of the prospective borrower. On the other hand, participant

² A larger share of the loan retained by the arranger increases the latter's "skin in the game" and is often viewed as a mechanism to alleviate arranger opportunistic behaviour.

³ There are different types of possible repeat interactions within a syndicate: same banks working together on multiple occasions as a group of senior arrangers or as a group of junior banks for the same borrower or for different borrowers; same junior banks working with the same senior banks on multiple occasions for the same borrower or for different borrowers. However, because of the computational intensity of the multitude of different possible combinations of banks and borrowers, and for the purposes of this paper, our comprehensive empirical investigation focuses on *individual* banks' repeat interaction with the same borrower in a junior or senior capacity, independent of which other banks in the syndicate they may have had repeat interactions with.

banks may demand higher prices to hedge against any possibility of ex-post arranger opportunistic behaviour in monitoring activities.

There is extensive analysis in the extant financial literature on how information asymmetry issues between borrowers and lenders are dealt with by means of pricing and structuring loan contracts. Diamond (1984) was among the first academics to explore the issue of delegated monitoring in financial intermediation theory. Monitoring a borrower, to ensure that (s)he meets his/her contractual obligations laid down in the loan contract, typically involves increasing returns to scale, which implies that it is more efficiently performed by specialised firms. Therefore, individual investors tend to delegate the monitoring activity, instead of performing it themselves. This introduces the problem that the information produced by the monitor may not be reliable (Campbell and Krackaw, 1980). Thus, the monitor has to be given incentives to perform its job properly. A bilateral loan with a single lender can give rise to a principal-agent relationship between the lender and the borrower. In a syndicated loan with multiple lenders, one can think of such a relationship between senior and junior lenders. Although, in theory, the junior lenders are responsible for making their own analysis about the borrowers' riskiness, in practice they often act as principals who give a mandate to the senior arranger bank to screen and monitor the borrower. Some lead banks originating syndicated credits may exploit the procedure by passing on risky loans to junior syndicate participants whose knowledge about the true level of risk involved may be limited. From this type of activity, the senior banks gather syndication fees, but do not hold the loans on their balance sheets. The transfer of risk in the economy, in such a way or by other means, via credit derivatives or structured products for instance, to market participants who may have limited knowledge about the risk, has been an area of intense focus for policymakers, especially in the wake of the financial crisis of 2007 (for an overview, see Joint Forum (2011)).

In this paper we examine the effects of information asymmetries among lenders of various seniorities on syndicated loan spreads using direct measures of the arrangers' and participants' information sets about the borrower. Specifically, we measure the past relationship of each participant and arranger separately by using the previous number of borrowing/lending interactions as well as the duration of these relationships. This enables us to compare the information set of the syndicate participants with that of the arranger for each transaction. Subsequently we use these new, direct and explicit bank information variables to

investigate the impact of past lending relationships (between arrangers, participants and borrowers) as well as syndicate information asymmetries on syndicated loan pricing.

Using a sample of 5,842 syndicated loan transactions, we find that when participant banks have information inferiority compared to the arrangers in the syndicate, they require higher returns for the increased risk (arising from the asymmetries). This effect is amplified when the borrowers are more opaque.⁴ The availability of a borrower credit rating significantly reduces information asymmetries among syndicate members. We also provide evidence that the presence of reputable arrangers leads to lower prices only for those borrowers with fewer asymmetric information problems. For opaque borrowers, mandating a reputable arranger facilitates access to the syndicated loan market but does not lower the cost of borrowing.

The rest of the paper is structured as follows: The following section provides a brief literature review on arranger opportunistic behaviour and pricing, also noting the influence of arranger bank reputation. Section 3 details the data, methodology and variables. In Section 4 we present the results and Section 5 concludes.

2. OPPORTUNISTIC BEHAVIOUR, REPUTATION AND LOAN PRICING

The literature on financial intermediation explains the nature and purpose of banking in terms of the bank's capacity to mitigate asymmetric information. In this respect, banks are quite distinct compared to other "arm's lengths" lenders and providers of direct finance such as bonds. Established literature (see for example Petersen and Rajan, 1994; Berger and Udell, 1995; Bhattacharya and Thakor, 1993; Boot, 2000) suggests that relationship banking, involving repeat lending to the same borrower, helps to reduce information asymmetries and lowers loan spreads.

Asymmetric information has two facets in loan syndications. Firstly, there are information asymmetries between the group of lenders and the borrower. Secondly, there are information asymmetries among the arranger and participant banks. The arranger is likely to have more

⁴ Defined as either not having a credit rating or accessing the syndicated loan market for the first time See Section 4.2.

proprietary information about the borrower than participants, either because it has experience in lending to the particular borrower/sector, or because it is the borrower's relationship bank. Information asymmetries among the syndicate members may arise before and after loan signing. At the pricing phase, the participant banks depend on the arranger to evaluate the riskiness of the borrower.⁵ Here there is a first type of opportunistic behaviour problem. As the lead bank is likely to know more about the borrower, it may be tempted to retain lower shares of riskier loans, syndicating a higher proportion to less informed participants and collecting syndication fees upfront. Subsequently, once the loan is extended, participant banks rely on arranger banks to monitor the performance of the borrower. Delegation of monitoring to the arranger leads to the second type of opportunistic behaviour as the arranger bears all the costs attached to the monitoring activity, but shares only part of the benefits from engaging in a relationship.

Several studies (Simons, 1993, Jones *et al.* 2005, Panyagometh and Roberts, 2002 and Sufi, 2007) have examined the role of arrangers and potential opportunistic behaviour. Simons (1993) and Jones *et al.* (2005) find that arrangers typically retain larger shares of loans if borrower credit ratings are lower. Panyagometh and Roberts (2002) also find that arrangers do not take advantage of information asymmetries and hold larger loan shares when company credit ratings are subsequently downgraded. Sufi (2007) shows that when borrowers require high levels of monitoring, lending syndicates tend to be more concentrated. In such cases, the lead bank retains a higher share of the loan, a finding also confirmed by Haas and van Horen (2010). In summary, there is a consensus in the literature that arranger banks do not appear to exploit their information advantages and the share of the loan held by the arrangers actually acts as a signal of their commitment to efficiently monitor the borrower.⁶

One factor limiting arranger opportunistic behaviour is the arranger's reputation. As the arrangers are responsible for due diligence, allocation of the loan to other syndicate members, and ex post monitoring, banks in the syndicate will often rely on the lead bank's reputation in making lending decisions (Ross, 2010). Since the arranger and participants are repeat players in the loan syndication market, if the lead arranger shirks in its due diligence and monitoring

⁵ At this stage, in most cases, an information memorandum is provided by the arranger to the participants. The document generally contains information of facility terms and conditions and financial information (balance sheet, income and cash flow statements) of the borrower. The document may also contain background information on how the funds will be used, and, in the case of project finance, a description of the project itself. The contents of the information memorandum may vary from deal to deal.

⁶ Albertazzi *et al.* (2011) arrive at a similar conclusion in respect of the securitisation market.

activities, it faces a credible threat of loss of reputation and future income (Pichler and Wilhelm, 2001). Investment and commercial banks engaged in an arranger role have to build trust with potential participants, on pain of foregoing substantial fee income from subsequent syndicated loan arranging activities⁷. More reputable arrangers, who are well known and experienced in the syndicated loan market, have greater ability to overcome opportunistic behaviour problems (Sufi, 2007; Ivashina, 2009)^{8,9}

Although there is a body of literature investigating the implications of lender information asymmetries on the structure of loan syndicates, so far only a few studies have explored the effect of such information asymmetries directly on loan spreads. Focarelli et al. (2008) test whether syndicated loans, where a larger share of the facility is retained by the arranger (signalling arranger commitment) have lower prices. Controlling for various factors, they find that loans where arrangers' retain a higher proportion are judged as less risky and hence have lower prices. Ivashina (2009) finds that information asymmetry within a lending syndicate and the cost of borrowing can be reduced by increasing the share of the loan retained by the lead arranger. Bharath et al.'s (2010) work is a rare attempt to quantify information asymmetries among syndicate members¹⁰. They use observed syndicate structure to proxy for information asymmetries among syndicate members. Specifically they utilize three main proxies: the loan share retained by the arranger(s), the size of the syndicate (number of lenders involved) and the concentration of holdings by syndicate members. A compact syndicate structure with a small number of participants is expected to entail lower information asymmetries between participants and the arranger. Arrangers also signal their commitment by holding a larger share of the loan.

A shortfall of the abovementioned literature is the reliance on indirect proxies to measure information asymmetries. These measures (typically, loan share retained by arrangers and

⁷ Thomson Financial reports that the fee income from global debt underwriting activities (including bond and loans) amounted to \$6.6 billion in 2007 and two thirds of this was earned by the top 10 arrangers.

⁸ Gopalan et al. (2007) and Gatti et al. (2008) point out that reputable and experienced lenders can enhance monitoring and this attracts participants.

⁹ From a borrowers' perspective, the reputation of the arranger bank is also an important factor in the success of syndication. Dennis and Mullineaux (2000), Lee and Mullineaux (2001) and Panyagometh and Roberts (2002) examine the influence of arranger's reputation on the success of loan syndications. They find that reputable arrangers generally have a wider network of contacts compared to their less reputable counterparts. *Ceteris paribus*, they are better placed to establish a wider, more geographically diverse range of participants when setting up a syndicate. Moreover, these studies also suggest that borrowers incur lower interest spreads if they mandate a reputable arranger.

¹⁰ They find that relationship banking is more valuable (and therefore yields lower spreads) when information asymmetries are higher between the borrower and lenders and also among the syndicate members.

features of the syndicate structure) fail to directly capture the participant banks' information set about the borrower. The following section describes the direct measures we use to gauge previous lending relationships and syndicate information asymmetries, and is followed by the pricing model and sample description.

3. METHODOLOGY and DATA

Following the loan pricing literature (among others, Agbanzo et al., 1999, Carey and Nini, 2007 and Ivashina, 2009), we rely on a linear model that explains loan price as a function of information asymmetries among lenders, existence of previous lending relationships, arranger reputation and a number of control factors in relation to loan terms, borrower characteristics and the macroeconomic environment. Prior to introducing the models, we explain the construction of the variables used to measure previous lending relationships and information asymmetries among syndicate members.

3.1 Measures of previous lending relationships

Following Boot (2000), we measure previous lending relationships according to the number of (bank-borrower) interactions and time length of such relationships¹¹. Firstly, there might be multiple interactions where the creditor and the borrower engage in lending/repayment cycles several times. As the interaction increases between the counterparties through engagement of successive lending/repayment cycles, the bank's extraction of proprietary information may be amplified. Hence we use *repetitive lending* – the number of loans contracted between the same lender and borrower before the present loan – as the first proxy for defining the extent of the relationship between the bank and the borrower. Secondly, a longer period of interaction between the borrower and the lender (independent of the number of lending/repayment cycles) may lead to a lessening of information asymmetries over time

¹¹ The term relationship banking is not sharply defined in the literature, apart from references to “close bank relationships” (Boot, 2000). A typical feature relates to obtaining customer-specific (soft and hard) information that is not readily available public information. In syndicated lending participant banks' ability to form “close banking relationships” may be limited. As proxy measures, we focus on the number and cumulative duration of previous bank-borrower relationships. In the remainder of the paper we often use the term “repeat lending” rather than relationship lending as this better explains past interactions between arrangers, participants and borrowers in a syndicated loan format, although we recognise that more repetitive lending activity implies stronger relationships.

and strengthens the relationship. Thus we use *length of the relationship* as a second parameter for capturing the intensity of the relationship¹².

We measure *repetitive lending* and *length of the relationship* separately for both arrangers and participants to gauge the impact of these factors on pricing. In general, arrangers are assumed to be the relationship banker of the borrower and participant banks rely mostly on the arranger bank for proprietary customer information. This might be the case when the participant joins a syndicate for a specific borrower for the first time. However, the participant bank will be likely to become more familiar with the same borrower in case of repetitive lending and, over time, information asymmetries will diminish. Thus, in subsequent syndications for the same borrower, the participants are likely to rely to a lesser extent on the arrangers, and to a greater extent on the information gathered through their own repeat interaction with the borrower..

We calculate these repeat lending variables for each loan, for both arrangers and participants, as follows:¹³

1. *Arrangers' repetitive lending (ArrRepeat)* is the average number of loans that all arrangers have previously arranged for the borrower before the present loan between 1993 and 2006¹⁴.
2. *Arrangers' length of relationship (ArrLength)* is the average of all arrangers' length of relationships (measured in years) from the time when they first arranged a syndicated loan transaction for a specific borrower up to the present loan between 1993 and 2006¹⁵.
3. *Participants' repetitive lending (PartRepeat)* is the average of all syndicate participants' previous number of participations in syndications for the borrower

¹² Due to data restrictions both of these measures are calculated from 1993 onwards. Dealings prior to 1993 as well as dealings outside of the syndicated loan market are not considered.

¹³ Additionally we employ an alternative simpler relationship variable, *Rel_dummy*, a dummy variable taking the value of 1 if either arrangers or participants have a past relationship with the borrower (acting as arrangers or participants, respectively) and 0 otherwise. Ivashina (2009) employs a dummy variable, but only for any previous relationship between the arranger and the borrower.

¹⁴ For instance, if a loan syndicate is managed by two arrangers with 2 and 4 previous transactions with the borrower then *ArrRepeat* will be 3 for the current loan syndicate's arrangers.

¹⁵ For instance, in a loan syndicate with two arrangers, if an arranger has known the borrower for 5 years and the other for 6 then *ArrLength* will be 5.5.

weighted by their amount of participation in the current loan¹⁶. As participants contribute to the loan disproportionately, by using a weighted average we control for the importance given to the loan by a specific participant's previous relationship with the borrower¹⁷.

4. *Participants' length of relationship (PartLenght)* is an average of all participants' length of relationship from the time when they first engaged in a syndicated loan transaction with the borrower. Once again we use values weighted by participant contributions to the current loan.¹⁸

3.2 Measures for information asymmetry among arrangers and participants

To capture the effect of information asymmetries among arranger and participant banks we introduce a ratio comparing the *previous lending relationships between the arrangers and participants (RepeatRatio)* and the *number of participants per arranger (PartPerArr)*. *RepeatRatio* is equal to *ArrRepeat* divided by *PartRepeat*. A greater *RepeatRatio* ratio signals an information superiority of the arrangers over participants. *PartPerArr* equals the number of participants divided by the number of arrangers organising the syndicate. A larger amount of arrangers per participant reflects the possibility of a more intensive information exchange between the arrangers and participants. Moreover, as arrangers mostly undertake monitoring activities, a larger number of arrangers would lower debtor moral hazard, which should be reflected in lower credit risk for participants and therefore lower loan pricing.

3.3 Two stage estimation methodology

¹⁶ Ideally this measure can be calculated more precisely by integrating the amount of the past loans to the borrower since the lender will be paying more attention to the borrower if it contributes larger amounts. However more data on the bank side is needed to calculate this complicated proxy as the amount of the loans should be weighted with the total assets (or total loans) of the bank to gauge the real importance of the loan to the bank. However, considering that participant banks contribute to syndicated loans more or less in similar amounts such a measure is unlikely to yield different results. Also, our alternative repetitive lending measures, length of relationships and number of past lending arrangements are highly correlated, and this is likely to be the same for alternative relationship measures such as total past loans to borrower and the share of total loans to individual bank's balance sheets.

¹⁷ For instance, assume that a loan syndicate has two participant banks (excluding the arrangers) with a record of 2 and 4 previous transaction with the borrower. They contribute to the loan at 60% and 40% respectively (as a percentage of participants shares only, excluding the arrangers share). In this case *PartRepeat* would be calculated as $(0.60 \times 2) + (0.40 \times 4)$ equalling 2.8.

¹⁸ For instance, assume that a loan syndicate has two participant banks (excluding the arrangers) which have known the borrower for 1 and 5 years respectively. If the participants contribute to the loan at 60% and 40% respectively (as a percentage of participants shares only, excluding the arrangers share), then *PartLenght* would be calculated as $(0.60 \times 1) + (0.40 \times 5)$ equalling 2.6.

We utilize a two-stage estimation methodology to take into account the simultaneity effects between loan price and arrangers' loan retention. Ivashina (2009) points out that the lead bank share and loan price are simultaneously determined as a result of the interaction between participants' demands and the lead bank's demand. Participants may demand a lower price if the arranger retains a larger share, because in such cases, the arranger has more incentives to perform monitoring duties. On the other hand, the arranger sets the loan price depending on its own retained share, and the latter has implications for its own credit risk exposure and diversification of its loan portfolio. As in Ivashina (2009), we estimate a two-stage least squares model. At the first stage we estimate arrangers' share retention by using control variables to reflect the borrower's credit risk as well as the risk of the specific loan. The following model is estimated:

$$\begin{aligned}
\% \text{ arrshare}_i = & \beta_0 + \beta_1 \text{Firsttime}_i + \sum_{i=1}^L \sum_{j=1}^J \beta_j \times \text{Loan terms}_{i,j} + \sum_{s=1}^{S-1} \beta_s \times \text{Loan purpose}_s + \\
& \sum_{p=1}^{P-1} \beta_p \times \text{Instrument type}_p + \sum_{k=1}^{K-1} \beta_k \times \text{Borrower credit rating}_k + \\
& \sum_{l=1}^{L-1} \beta_l \times \text{Borrower sector}_l + \sum_{m=1}^{M-1} \beta_m \times \text{Market of issuance}_m + \\
& \sum_{y=1}^{Y-1} \beta_y \times \text{Year}_y + e_i
\end{aligned} \tag{1}$$

Variables are described below;

- *% arrshare* is the portion of the syndicated loan retained by the arranger divided by the total loan size.
- *Firsttime* is a dummy variable that identifies first time borrowers in the syndicated loan market and takes the value 1 if the borrower taps the market for the first time and 0 otherwise. The lack of familiarity of market participants with a new borrower, requiring intensive monitoring, signals potentially higher information asymmetries and may have an impact on loan price¹⁹.
- To control for loan terms we utilize: *loan size*, *maturity*, *presence of guarantees* and *presence of collateral*.
 - *Log loan size* is the natural logarithm of the syndicated loan's size expressed in USD millions
 - *Maturity* is the duration of the loan in years.

¹⁹ Due to data restrictions firms entered the market prior 1993 cannot be detected. Any firm appearing on the database after 1993 for the first time is marked as a first time borrower.

- *Guarantee* is a dummy variable taking the value of 1 if the loan is guaranteed and 0 otherwise. The loan is guaranteed by a third party in the event that the borrower defaults.
- *Collateral* is a dummy variable taking the value of 1 if there are any properties or assets pledged to secure the loan and 0 otherwise. Collateral becomes subject to seizure on default.
- *Loan purpose* is a set of dummy variables depending on the purpose of the loan classified as general corporate use, capital structure, project finance, transport finance, corporate control and property finance.
- *Instrument type* is a set of dummy variables depending on the type of the deal classified as term loan, revolving credit, standby facility, evergreen facility, note issuance facility, mezzanine loans and multiple option facility.
- *Borrower credit rating* is a set of dummy variables reflecting the credit rating (AAA, AA, A, BBB, BB, BB, CCC, CC, C or not rated) of the borrower issued by the credit agencies (Moody, S&P or Fitch) at the time of the issuance.
- *Business sector* is a set of dummy variables depending on the business of the borrower which is classified as contraction and property, high-tech industry, infrastructure, population related services, state, manufacturing and transport.
- *Market of issuance* (representing the population of investors targeted by the senior arrangers) are proxied with two dummy variables for loans issued in the US or European financial markets.
- *Year* dummy variables (1993 to 2006) are used to control for macroeconomic environment.

The main model is estimated in the second stage by using computed arranger shares derived from first stage estimates in equation (1):

$$\begin{aligned}
loanprice_i = & \beta_0 + \beta_1 ArrRepeat_i + \beta_2 ArrLenght_i + \beta_3 PartRepeat_i + \beta_4 PartLenght_i + \\
& \beta_5 DiffRepeat_i + \beta_6 PartPerArr_i + \beta_7 ArrShare_i + \beta_8 ArrReputation_i + \\
& \beta_9 Firsttime_i + \sum_{i=1}^I \sum_{j=1}^J \beta_j \times Loan\ terms_{i,j} + \sum_{s=1}^{S-1} \beta_s \times Loan\ purpose_s + \\
& \sum_{p=1}^{P-1} \beta_p \times Instrument\ type_p + \sum_{k=1}^{K-1} \beta_k \times Borrower\ credit\ rating_k +
\end{aligned}$$

$$\sum_{l=1}^{L-1} \beta_l \times \text{Borrower sector}_l + \sum_{m=1}^{M-1} \beta_m \times \text{Market of issuance}_m + \sum_{y=1}^{Y-1} \beta_y \times \text{Year}_y + e_i \quad (2)$$

where,

- *Loan price* is measured as basis points spread over LIBOR. Like Bharath et al. (2010), Ivashina (2009) and Sufi (2007) we use the all-in drawn spread (AISD) which measures the interest rate spread plus any fees associated when the facility is drawn. Thus, AISD is an all-inclusive measure of loan price.
- *ArrRepeat*, *ArrLength*, *PartRepeat* and *PartLenght* are the previous lending relationship indicators that are explained in detail in section 3.1 above.
- *RepeatRatio* and *PartPerArr* are the proxies, described in section 3.2 above, that capture the level of information asymmetries among syndicate members.
- *Arranger share* is the estimated share retention of the arranger from equation 1.
- *ArrReputation*, takes the value of 1 if the arranger bank is declared as a top 10 arranger (in terms of number of deals) by the Thomson Reuters Financial League tables between 1993 and 2006, and 0 otherwise²⁰.
- Additionally we employ a simple alternative relationship variable, *Rel_dummy*, that represents any interaction between the lending syndicate and the borrower. *Rel_dummy* is a dummy variable taking the value of 1 if either arrangers or participants have a past relationship with the borrower and 0 otherwise.

Control variables for *loan terms*, *loan purpose*, *instrument type*, *borrower credit rating*, *borrower sector*, *market of issuance*, *year* and *firsttime* are the same as described above in the first-stage model²¹.

3.4 Data

We obtained our data from Loanware, a commercial database that contains detailed information on syndicated loan contracts. Information is provided on the loan terms (such as maturity, loan size, collateral, covenants) and identification of the borrower, lead arrangers,

²⁰We also used an alternative proxy to measure arranger reputation where we assigned the top ten arrangers with highest activity in terms of number of deals and total volume. This yielded similar results and so is not reported here. Results are available from the authors on request.

²¹In alternative specifications we controlled for country of origin for the borrower, for that of the lenders, and for those cases where at least one of the lenders has the same nationality as the borrower. However we do not find a significant impact of these controls on major findings of the paper.

and participant lenders. Variables that are central to the analysis are only partially available in the database, and those deals with missing information were excluded.²² We also exclude those loans where there are no participants other than the arrangers themselves²³. The final sample includes 5,842 syndicated loans facilities granted to non-financial firms between 1993 and 2006.

3.5 Descriptive Statistics

Table 1 presents the summary statistics for the basic loan characteristics of the sample. The average number of arrangers is 3.3 institutions per syndicate and a typical syndicated loan has an average of 13.6 providers. On average the arrangers retain around 40 per cent of the loan and this share increases to 43 per cent if the firm does not have a credit rating²⁴. In other words, arrangers' commitment increases as asymmetric information between the group of lenders and the borrower widens. The average size of a typical syndicated loan is \$396 million. The average maturity and loan pricing (spread + fees) amount to 3.6 years and 116 basis points over LIBOR, respectively.

Table 2 displays descriptive statistics and correlations relating to the repeat lending measures. On average participants banks have a longer borrower relationship than arrangers - both in terms of the number of past transactions and duration of the relationships (Panel A). *RepeatRatio*, reflecting the difference in the level of asymmetric information between the arranger and participant banks, has a mean value of 0.95. The mean and median *RepeatRatio* values suggest that on average the previous lending relationship experience of the arranger and participants are similar. A visual inspection of the data reveals where this finding stems from. Arrangers tend to work with the same participant banks when they are extending new loans, or rolling over deals to existing borrowers. In other words the loan syndication structure in terms of participants changes only slightly when the same borrower taps the market. However, this is not the case for all transactions in our sample. As the minimum and maximum figures suggest, in some transactions there is scope for large information asymmetries among syndicate participants.

²² Specifically, the identification of the banks having the lead arranger and participant titles is only partial. Furthermore, there is only partial information available on the respective shares of the loan retained by individual banks, the number of times one bank has interacted with a specific borrower, and the loan spread.

²³ In some syndicated loans, arrangers assign the entire facility to themselves. In such cases there is no asymmetric information among arrangers and participants.

²⁴ Mean difference tests show that the difference is statistically significant.

We also examine the association between our relationship variables through correlation analysis (presented in Table 2, Panel B). Coefficients show that our alternative relationship variables for arrangers and participants are highly correlated. This has implications for our analysis. Firstly, it does not make a difference if we measure repeat lending either by the number of interactions or length of time of the lending relationships. Secondly, as arrangers and borrowers mainly work together in successive deals the value of their relationship variables (both repetition and length) are similar. Due to multicollinearity issues therefore we can only employ one of these variables at a time in the regressions, the findings of which are presented in the following section.

[Insert Tables 1 and 2 about here]

4. RESULTS

4.1 Whole sample

In Table 3 we report the coefficient estimates from the second stage of the two stage estimations.^{25,26} The estimates are presented in six columns employing the key independent variables alone (Columns I – V) or simultaneously (Columns VI). The signs and significance of the variables are consistent in all models. *PartRepeat*, the direct proxy for the repeat experience of the participants with the borrower, is found to be negative and statistically significant (Column I)²⁷. As the interaction increases between syndicate members and the borrower through the engagement of successive lending/repayment cycles, banks' extraction

²⁵ Results of the first stage regressions estimating arranger share are available upon request. In addition, a robustness test was done using LIBOR only instead of LIBOR + fees as the dependent variable. The results, very similar to those reported in this section, are also available upon request.

²⁶ We briefly report on the control variables utilized. The coefficients are in line with the existing literature on the pricing of syndicated loans. In accordance with Carey and Nini (2007), spreads are lower when the loans are arranged in the European market. Spreads increase with maturity and decrease with the size of the facility. All else equal, externally guaranteed loans carry lower spreads while the presence of collateral tends to be associated with higher interest rates. The latter result, which is commonly observed in the literature, is attributed to the fact that lenders demand (and obtain) collateral pledges only from those borrowers that pose the higher risk. We find that the proxies for overall market conditions do not have a significant effect in the pricing regression. It appears that the year dummy variables account for most of the systematic variation in the spreads. Control variables are not reported.

²⁷ As noted before, due to complications of multicollinearity, we only use one relationship variable which is *PartRepeat*. In untabulated regressions we observe similar results for other relationship variables (*PartLenght*, *ArrRepeat* and *ArrLength*,) described above.

of proprietary information amplifies and the subsequent reduction in information asymmetries reduces risk and therefore loan spreads. There is a similar effect with *ArrRepeat*, the direct proxy for the repeat experience of the arranger(s) with the borrower, although lower in magnitude (Column II). The negative and significant coefficient on the alternative, less precise *Rel_dummy* variable (Column III), denoting any previous interaction between the borrower and any of the participant(s) or arranger(s) also confirms our findings, which also coincide with Ivashina (2009). It is to be noted, though, that the more precise measure of previous interaction with the borrower, *PartRepeat*, dominates the dummy variable *Rel_dummy* when the two are jointly introduced into the model (column VI).

[Insert Table 3 about here]

Two variables employed to signal the possible information asymmetries among arrangers and participant banks are *RepeatRatio* and *PartPerArr*. We report a significant and a positive coefficient for *RepeatRatio* (Column IV). Arrangers' information advantage over participants, gained through previous lending relationships with the prospective borrower leads to higher spreads. In other words, if participant banks have information inferiority in the syndicate, they demand a higher spread due to asymmetries between them and the borrower. This finding may have several interpretations. Firstly, it is noticeable that participants have a tendency to demand higher spreads for the increased risk that arises from information asymmetries when arrangers have information superiority. Secondly, participants seem to be aware of the potential of opportunistic behaviour (in the form of insufficient monitoring by the arrangers) and therefore require a higher spread for the risk involved. Finally, our results demonstrate the bargaining power of participant banks on the pricing of syndicated loans. Participants have the ability to influence pricing depending on their own information set about the borrower.

We also find that *PartPerArr* is positive and significant (Column V), indicating that loan spreads increase when the number of participants per arranger increases. The flow of information between the arrangers and participants during the formation stage of the syndicate is potentially limited since the arranger(s) need to market the loan to a larger group of participants. Potential information asymmetries observed in such syndicates are higher and participants attempt to compensate for such asymmetries by demanding higher spreads.

4.2 Opaque borrowers

We further examine the impact of asymmetric information on the cost of borrowing for opaque borrowers. While in the literature, firm opacity often refers to lesser known business models or firm structure, because of data availability, we proxy it here with the absence of ratings and first-time loan signings. Firstly, we include into the main regressions a dummy variable to indicate first-time borrowers. A higher degree of information asymmetry is expected for new firms in the debt market and for firms which do not have a credit rating. Arguably, for such borrowers information asymmetries between arranger and syndicate members can be high. Therefore, arranger opportunistic behaviour is more likely to occur. In untabulated results we find that the coefficient and sign of this variable indicates that a new borrower tapping the market pays higher spreads.

[Insert Tables 4 and 5 about here]

Secondly, we divide our sample into two groups of firms with and without credit ratings.²⁸ Table 4 presents the results for firms without a credit rating and Table 5 for firms with a credit rating. The results reveal that the impact of *PartRepeat* and *RepeatRatio* on loan spreads is significantly higher for borrowers without a credit rating: both variables display significantly higher coefficients when compared to the whole sample.. It appears that borrowers that potentially have higher information asymmetries benefit more from previous repeat lending in terms of lower spreads. Besides, the magnitude of information set differences between arrangers and participants has a stronger effect on spreads when the borrower does not have a credit rating. The constants are also lower, with more effect going into the information variables.²⁹ In other words, for opaque borrowers the effect of information asymmetries among arranger and participant banks is much stronger. For borrowers with a credit rating both *PartRepeat* and *RepeatRatio* are insignificant. The availability of credit ratings significantly reduces information asymmetries and the impact of information set differences among arrangers and participants on spreads.

4.3 Arranger reputation and loan retention

²⁸ Again, the existence of a credit ratings may be an imperfect proxy for borrower, since, for instance, only borrowers of a certain size need a rating. Having said that, for data availability reasons, we retained this proxy.

²⁹ As with the whole sample, the more precise measure for previous interaction with the borrower, *PartRepeat*, dominates the dummy variable in the case of unrated borrowers (column VI).

Another interesting finding is the relation between arranger reputation and loan spreads. Sufi (2007) argues that reputation can mitigate, but not completely eliminate, problems of asymmetry. Arrangers refrain from opportunistic behaviour to protect their reputation and to secure future business from both lenders and borrowers. The literature (Dennis and Mullineaux, 2000; Lee and Mullineaux, 2001; Panyagometh and Roberts, 2002) also reports that arranger reputation leads to lower spreads for borrowers. Here we provide evidence that partially supports this argument. We find *ArrReputation* to be statistically significant only for borrowers with a credit rating. For less opaque borrowers, an experienced and well known arranger has an impact on the pricing and lowers spreads. Perhaps participants have more confidence on reputable arrangers' monitoring skills and do not anticipate arranger opportunistic behaviour. Hence they agree to lower spreads. Reputation effects on pricing are not significant for opaque borrowers (proxied for by the absence of ratings and/or first-time loan signings). Mandating a reputable arranger certainly facilitates opaque firms' access to funds in the syndicated loan market but does not benefit them in terms of lowering borrowing costs.

Theory predicts that asymmetric information will cause participants to demand higher spreads and greater loan retention by lead/arranger banks should reduce this effect (Ivashina, 2009). Like Bharath et al. (2010) and Ivashina (2009) we find a negative relationship between the share of the loan retained by the arranger and the spread (Table 3). Greater loan retention reduces participant banks' anticipation of arranger opportunistic behaviour, as the arranger is expected to put the optimum effort into monitoring the borrower. However, this does not seem to be the case for opaque borrowers (Table 4). For borrowers without a credit rating, we report a positive relationship between the share held by the arranger and the spread. This finding reflects the fact that we are unable to control for the borrowers' default risk in these models through credit ratings. In fact, the results capture the default risk effects of the borrowers' on spreads. Arrangers keep a higher share of risky loans and this is more likely for opaque borrowers (Panyagometh and Roberts, 2002 and Sufi, 2007). In our sample the average share retained by the arranger is 37% for borrowers with a credit rating and 43% for borrowers without a rating.

Overall, the certification effect of obtaining a credit rating provides an alternative market test for borrower's credit standing and places credit risk in a quantifiable band for creditors' assessment. On the other hand, for unrated borrowers there remains greater uncertainty. The

certification effect of the credit rating together with arrangers' reputation is strong enough to lower spreads, whereas, the arranger reputation by itself does not guarantee lower spreads. This is consistent with findings in the extant literature that the effects of information asymmetries are not necessarily lowered just by reputation even if arrangers hold larger shares of unrated issues.

5. CONCLUSION

Recent studies have examined opportunistic behaviour by arrangers in loan syndications. Although these studies do explain the influence of asymmetric information on the structure and formation of the lending syndicates, they often do not use direct indicators of the lenders' knowledge about the borrower. Rather, they rely on indirect indicators for arrangers' and participants' information sets that are contingent on syndicate size and arranger behaviour. In this paper, we use alternative (direct) indicators for gauging information asymmetries among the members of lending syndicates. In particular, we measure the relationship of each participant and arranger separately by using the previous number of borrowing/lending interactions and duration of these interactions with the borrower.

We find that when participant banks have information inferiority in the syndicate, higher spreads are charged. This is amplified when the borrowers are likely to be more opaque. Our results imply that participants with information inferiority consider possible arranger opportunistic behaviour in monitoring and therefore require higher spreads. The availability of borrower credit ratings significantly reduces information asymmetries and nullifies the impact of information set differences among arrangers and participants. Rated borrowers are also less likely to benefit from relationship banking in terms of the cost of borrowing. One other significant finding is the link between arranger reputation and loan spreads. We provide evidence that the presence of reputable arrangers leads to lower spreads but only for those borrowers with potentially fewer asymmetric information problems. All in all, our results suggest that there are complex interactions between borrower ratings, arranger reputation and share retention in mitigating information asymmetries in the syndicated lending business. From a policy perspective, insofar as junior banks are shown to rely also on their own information set (in addition to certification through arranger reputation and retention), policy initiatives aimed at limiting the effects of opportunistic behaviour by senior

banks, such as imposing minimal retention requirements by the latter, may be less warranted. This is in line with the findings of Fender and Mitchell (2009) in respect of aligning incentives in securitisation.

Table 1
Summary statistics of basic loan characteristics

Variable	Mean	Median
Number of Arrangers	3.3	2
Number of Providers	13.6	11
Arranger share – all firms	40.4	36.0
– firms with credit rating	37.0	31.5
– firms without credit rating	42.8	40.0
Spread + fees over LIBOR (basis points)	116	85
Amount (USD million)	396	150
Maturity (years)	3.6	3
Number of observations	5,842	

Table 2
Summary statistics and correlations between repeat lending variables

ArrRepeat is an average of all arrangers' previous lending arrangements with the borrower. For instance, if a loan syndicate is managed by two arrangers with 2 and 4 previous transaction record with the borrower then ArrRepeat will be 3 for the current loan syndicate's arrangers. **ArrLength** is measured by years, this proxy is the average of all arrangers' length of relationship from the time when they engage in first syndicated loan transaction with the borrower. For instance, in a loan syndicate with two arrangers, if an arranger has known the borrower for 5 years and the other for 6 then ArrLength will be 5.5. **PartRepeat** is an average of all syndicate participants' previous lending arrangements with the borrower, weighted by their amount of participation in the current loan. **PartLength** is an average of all participants' length of relationship from the time when they engage in first syndicated loan transaction with the borrower (weighted by participant contributions).

Panel A

	Mean	Median	Min	Max
ArrRepeat	0.66	0.37	0	7
PartRepeat	0.83	0.80	0	7
ArrLength	0.87	0.26	0	12
PartLength	1.28	0.89	0	12
RepeatRatio	0.95	1.00	0.43	2.32

Panel B: Correlations

	ArrRepeat	ArrLength	PartRepeat	PartLength
ArrRepeat	1.00			
ArrLength	0.73	1.00		
PartRepeat	0.84	0.63	1.00	
PartLength	0.53	0.82	0.67	1.00
Number of observations		5,842		

* All coefficients are significant at 1% level.

Table 3
Determinants of loan spread – asymmetric information effect among lending syndicate

Dependent Variable: Loan Price (spread + fees, basis points over LIBOR)						
	I	II	III	IV	V	VI
ArrShare [†]	-17.69* (9.19)	-19.58** (9.21)	-19.58** (9.21)	-19.75** (9.27)	-17.84* (9.29)	-17.84* (9.20)
PartRepeat [†]	-22.74*** (4.13)					-19.62*** (5.27)
ArrRepeat [†]		-13.88** (3.66)				
Rel_dummy			-10.31*** (2.49)			-2.57 (3.20)
RepeatRatio [†]				8.65* (5.32)		
PartPerArr [†]					3.71** (1.62)	
ArrReputation	-8.00*** (2.54)	-7.47*** (2.55)	-7.89*** (2.55)	-7.51*** (2.54)	-6.78** (2.55)	-8.03*** (2.54)
Constant	334.88*** (47.77)	328.42*** (47.668)	330.29*** (47.78)	350.12*** (48.24)	316.79** (47.75)	334.11*** (47.67)
Control Variables[‡]						
Contract characteristics						
1. Log loan size						
2. Maturity						
3. Presence of guarantees						
4. Presence of collateral						
5. Market of issuance						
6. Instrument type – term loan, revolving credit, standby facility, evergreen facility, not issuance facility, mezzanine loans and multiple option facility.						
Borrower characteristics						
7. Credit rating – AAA, AA, A, BBB, BB, BB, CCC, CC, C, and not rated.						
8. Loan purpose – general corporate use, capital structure, project finance, transport finance, corporate control and property finance.						
9. Business Sector – contraction and property, high-tech industry, infrastructure, population related services, state, manufacturing and transport.						
Other variables						
10. Year fixed effects – 1993 to 2006						
Number of observations: 5,867 in all models						
R ²	43%	43%	42%	42%	43%	43%

Note: Robust standard errors are reported in parenthesis.

***, ** and * represents significance levels at 1%, 5% and 10%, respectively

[†]Log form is used.

[‡]Coefficients are not reported and available upon request

Table 4
Determinants of loan spread – opaque borrowers

Dependent Variable: Loan Price (spread + fees, basis points over LIBOR)						
	I	II	III	IV	V	VI
ArrShare [†]	36.98** (16.95)	34.04** (16.99)	35.10** (17.02)	33.61* (17.28)	35.61** (17.30)	36.92** (16.97)
PartRepeat [†]	-37.18*** (5.93)					-41.23*** (8.51)
ArrRepeat [†]		-23.26*** (5.38)				
Rel_dummy			-13.32*** (3.12)			2.76 (4.49)
RepeatRatio [†]				18.68** (8.03)		
PartPerArr [†]					3.48 (2.23)	
ArrReputation	-2.42 (3.23)	-2.11 (3.23)	-1.94 (3.25)	-1.44 (3.24)	-0.87 (3.25)	-2.43 (3.23)
Constant	149.50** (70.08)	151.39* (70.63)	135.62* (70.29)	120.57* (71.98)	126.79* (72.07)	151.76** (70.17)
Contract characteristics						
1. Loan size						
2. Maturity						
3. Presence of guarantees						
4. Presence of collateral						
5. Market of issuance						
6. Instrument type – term loan, revolving credit, standby facility, evergreen facility, not issuance facility, mezzanine loans and multiple option facility.						
Borrower characteristics						
7. Loan purpose – general corporate use, capital structure, project finance, transport finance, corporate control and property finance.						
8. Business Sector – contraction and property, high-tech industry, infrastructure, population related services, state, manufacturing and transport.						
Other variables						
9. Year fixed effects – 1993 to 2006						
Number of observations: 3,507 in all models						
R ²	36%	36%	35%	35%	36%	36%

Note: Robust standard errors are reported in parenthesis.

***, ** and * represents significance levels at 1%, 5% and 10%, respectively

[†]Log form is used.

^{*}Coefficients not reported and are available upon request

Table 5
Determinants of loan spread – borrowers with credit rating

Dependent Variable: Loan Price (spread + fees, basis points over LIBOR)						
	I	II	III	IV	V	VI
ArrShare [†]	8.71 (11.61)	8.44 (11.60)	8.41 (11.61)	8.30 (11.64)	8.99 (11.64)	8.58 (11.62)
PartRepeat [†]	-2.24 (4.76)					-1.31 (5.81)
ArrRepeat [†]		-3.18 (4.49)				
Rel_dummy			-1.62 (3.32)			-1.10 (4.06)
RepeatRatio [†]				-1.52 (6.99)		
PartPerArr [†]					2.56 (2.22)	
ArrReputation	-18.33*** (3.87)	-18.29*** (3.87)	-18.38*** (3.87)	-18.28*** (3.86)	-17.79*** (3.89)	-18.37*** (3.87)
Constant	245.03*** (50.27)	258.38*** (50.47)	257.08*** (50.26)	258.42*** (51.54)	250.18*** (50.66)	257.20*** (50.28)
Contract characteristics						
1. Loan size						
2. Maturity						
3. Presence of guarantees						
4. Presence of collateral						
5. Market of issuance						
6. Instrument type – term loan, revolving credit, standby facility, evergreen facility, not issuance facility, mezzanine loans and multiple option facility.						
Borrower characteristics						
7. Loan purpose – general corporate use, capital structure, project finance, transport finance, corporate control and property finance.						
8. Business Sector – contraction and property, high-tech industry, infrastructure, population related services, state, manufacturing and transport.						
Other variables						
9. Year fixed effects – 1993 to 2006						
Number of observations: 2,360 in all models						
R ²	59%	59%	59%	59%	59%	59%

Note: Robust standard errors are reported in parenthesis.

***, ** and * represents significance levels at 1%, 5% and 10%, respectively

[†]Log form is used.

^{*}Coefficients not reported and are available upon request

REFERENCES

- Agbanzo, L., Mei, J., Saunders, A., 1999. Credit spreads in the market for highly leveraged transaction loans. *Journal of Banking and Finance* 22, 1249–1282.
- Albertazzi, U., Eramo, G., Gambacorta, L., Salleo, C., 2011. Securitization is not that evil after all. BIS Working Papers No. 341, March.
- Berger, A., Udell, G., 1995. Relationship lending and lines of credit in small firm finance. *Journal of Business* 68, 351-381.
- Bharath, S., Dahiya, S., Saunders, A., Srinivasan, A., 2010. Lending Relationships and Loan Contract Terms. *Review of Financial Studies*, forthcoming.
- Boot, A.W., 2000. Relationship banking: What do we know? *Journal of Financial Intermediation* 9, 7-25.
- Campbell, T.S. and W.A. Kracaw, 1980: Information production, market signalling and the theory of financial intermediation. *Journal of Finance* 35, 863-82
- Carey M., Nini, G., 2007. Is the corporate loan market globally integrated? A pricing puzzle. *Journal of Finance* 62, 2969-3007.
- Champagne, C., Kryzanowski, L., 2007. Are current syndicated loan alliances related to past alliances? *Journal of Banking and Finance* 31, 3145–3161.
- Committee on the Global Financial System, 2003. Credit risk transfer. CGFS Publications No. 20, January.
- De Haas, R., van Horen, N., 2010. The crisis as a wake-up call: Do banks tighten screening and monitoring during a financial crisis? DNB Working Paper no. 255.
- Esty, B., Megginson, W., 2003. Creditor rights, enforcement, and debt ownership structure: Evidence from the global syndicated loan market. *Journal of Financial and Quantitative Analysis* 38, 37–59.
- Fender, I., Mitchell, J., 2009. The future of securitisation: how to align incentives. *BIS Quarterly Review*, September.
- Focarelli, D., Casolaro, L., Pozzolo, A.F., 2008. The pricing effect of certification on syndicated loans. *Journal of Monetary Economics* 55, 335-349.
- Dennis, S., Mullineaux, D., 2000. Syndicated loans. *Journal of Financial Intermediation* 9, 404-26.
- Diamond, D., 1984: Financial intermediation and delegated monitoring. *Review of Economic Studies* 51, 393-414
- Harjoto, M., Mullineaux, D., Yi, H.C., 2006. A comparison of syndicated loan pricing at investment and commercial banks. *Financial Management* 35, 49–70.
- Ivashina, V., 2009. Asymmetric information effects on loan spreads. *Journal of Financial Economics* 92, 300-319.
- Gatti, S., Kleimeier, S., Megginson, W., Steffanoni, A., 2008. Arranger certification in project finance. Working paper, available at SSRN: <http://ssrn.com/abstract=968289>
- Gopalan, R., Nanda, V., Yerramilli, V., 2007. Lead arranger reputation and the loan syndication market. Working paper, available at SSRN: <http://ssrn.com/abstract=1034044>
- Joint Forum, 2011. Report on asset securitisation incentives, July. Available from the BIS website under <http://www.bis.org/publ/joint26.pdf>
- Jones, J., W. Lang and P. Nigro, 2005. Agent bank behavior in bank loan syndications. *Journal of Financial Research* 28, 385-402.
- Lee, S.W., Mullineaux, D.J., 2004. Monitoring, financial distress, and the structure of commercial lending syndicates. *Financial Management* 33, 107-30.

- Panyagometh, K., Roberts, G.S., 2002. Private information, agency problems and determinants of loan syndications: Evidence from 1987–1999, Working paper, Schulich School of Business.
- Panyagometh, K., Roberts, G., 2010. Do lead banks exploit syndicate participants? evidence from ex post risk. *Financial Management*, forthcoming.
- Petersen, M., Rajan, R, 2004. The benefits of lending relationships: evidence from small business data. *Journal of Finance* 49, 3-37
- Pichler, P., Wilhelm, W., 2001. A theory of the syndicate: Form follows function. *Journal of Finance* 56, 2237–2264.
- Ross, D., 2010. The “dominant bank effect”: How high lender reputation affects the information content and terms of bank loans?. *Review of Financial Studies*, forthcoming.
- Simons, K., 1993. Why do banks syndicate loans? *New England Economic Review*, Federal Reserve Bank Boston, 45-52
- Sufi, A., 2007. Information asymmetry and financing arrangements: evidence from syndicated loans. *Journal of Finance* 17, 629- 668.