SYNDICATE STRUCTURE AS A RESPONSE TO POLITICAL RISK IN THE PROJECT FINANCE LOAN MARKET

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Abstract

This paper examines how political risk affects the structure of project finance (PF) loan syndicates. Using a sample of 495 loan tranches worth $151 billion, we document high levels of debt ownership concentration: the largest single bank holds 20.3% while the top five banks collectively hold 61.2% of a typical PF loan tranche. We show that both syndicate size and concentration are functions of political risk. As country risk increases, debt concentration initially declines, but later increases in high-risk countries, creating what we call a syndicate "smile." In contrast to LaPorta et al (1998), who find that equity ownership and shareholder rights are substitutes, we show that debt ownership and creditor rights are complements. Finally, we show that loan pricing is a positive function of syndicate size and concentration. Viewed collectively, these results are consistent with bank syndicates providing, and charging for, valuable monitoring, deterrence, and recontracting services. On a more theoretical level, the results illustrate the continuous nature of debt ownership and refute the overly simplistic distinction between single bank creditors and atomistic bondholders commonly described in the literature.

Key words: bank lending, project finance, syndication, political risk, creditor rights
JEL classification: G21, G32, F34

SYNDICATE STRUCTURE AS A RESPONSE TO POLITICAL RISK IN THE PROJECT FINANCE LOAN MARKET

Banks extended syndicated loans worth more than $1.7 trillion in 1999, making the syndicated loan market the largest single source of corporate funding worldwide (see **Table 1**). Not only is this market large, it is also growing at a compound annual rate of more than 10% per year over the past decade. Despite its size and growth, there has been surprisingly little empirical research on the market for syndicated loans.[1] In this paper, we analyze the relatively small, but nevertheless important, segment of syndicated project finance (PF) loans. The PF segment exceeded $90 billion in 1999, down from a high of $102 billion in 1997 before the Asian crisis, but up significantly from the $40 to 60 billion level observed during the early 1990s.

Project-financed investments differ from corporate-financed investments because the assets are financed as stand-alone entities rather than as part of a corporate balance sheet. Although creditors may have partial recourse for a period of time or for a fraction of the total loan amount, project debt is, by definition, non-recourse to project sponsoring organizations. Despite the non-recourse nature of project lending, project companies tend to be highly levered. Esty et al (1999) show that projects have an average debt-to-total capitalization ratio of 69% in 1998, with a range of 50% to 90%. Similarly, the average leverage ratio for a project in our sample is 69.4%. Most of this debt comes in the form of syndicated bank loans. According to *Project Finance International (*various issues*)*, bank loans accounted for 78.4% of project debt in 1999, and banks have historically accounted for more than 90% of total project debt. Because the use of high leverage entails greater distress costs, and the use of bank debt entails tighter covenants, stricter oversight, and shorter loan maturities than public debt, there must be countervailing benefits that justify the use of high leverage and bank debt.

Although both high leverage and bank debt are hallmarks of project finance, we focus exclusively on the role of bank debt in this paper to understand the determinants and benefits of alternative syndicate

[1] There has been some previous research: Preece and Mullineaux (1996), Dennis and Mullineaux (2000), and Simons (1993) study aspects of syndicate structure; Altman & Suggitt (2000) study default rates; Megginson et al (1995) study announcement day returns; and Boehmer and Megginson (1990) study the loan pricing.

structures. Campbell and Kracaw (1980), Diamond (1984), and Fama (1985) describe the monitoring role played by banks while Bolton and Scharfstein (1996) and Gertner and Sharfstein (1991) describe the advantages in terms of recontracting. Subsequent empirical research has shown that banks do, indeed, have a positive impact on firm performance and value.[2] In the context of sovereign lending, banks play an additional role of deterring voluntary default. For example, Chowdry (1991) asserts that "Loans are made by syndicates of banks in order to make the penalty for default severe enough so borrowers would choose not to default voluntarily." Similarly, Shanks (1998, p. 99), in an article on managing political risk, notes:

> *"The greatest potential for minimizing and managing political risks, however, probably lies in structuring the financing package to include influential multilateral, bilateral, and commercial institutions upon whom the host government must depend for access to capital for its future needs…"*

In this paper, we test whether syndicate structure is a function of political risks and whether loan pricing is related to syndicate structure. In examining this two-part hypothesis, we first test for a relation between syndicate structure and political risk, where structure is defined in terms of debt concentration and syndicate size, and political risk is measured in terms of country risk ratings and creditor rights. Whereas country risk ratings provide an independent assessment of sovereign risks including the probability of default, creditor rights measures the ability to enforce loan repayment terms and seize collateral in the event of default. We use LaPorta et al's (1998, 1999) index of creditor rights and classification of legal origins to measure creditor rights, and Berkowitz, Pistor, and Richard's (1999) legality index to measure the rule of law and enforcement. The second part of our analysis involves testing for a relation between loan pricing and syndicate structure under the assumption that banks add value by monitoring project performance, deterring sovereign interference, and, in the event of default, providing low-cost recontracting.

Our sample contains 495 tranches from syndicated project finance loans made between 1986 and 2000. These loans come from 61 different countries and have a total value of $151 billion. With this

[2] This list includes, among others: Datta, Iskandar-Datta, and Patel (1999), De Long (1991), Gorton and Schmid (2000), James (1987), Lummer and McConnell (1989), and Hoshi, Kashyap, and Scharfstein (1991).

sample, we document high levels of debt ownership concentration, a relation between syndicate structure and political risks, and a relation between loan pricing and syndicate concentration. At closing, the largest single debt provider holds an average (median) of 20.3% (14.8%) of the tranche. The top five banks collectively hold an average (median) of 61.2% (57.3%) of tranche debt. Although the largest share declines as tranche size increases, the largest single bank still holds almost 10% of tranches over $500 million. The concentration of debt ownership far exceeds the concentration of equity ownership documented in US companies and is more similar to equity ownership in other countries (La Porta et al, 1999).[3]

Second, we show that syndicate concentration is a function of both country risk ratings and creditor rights. The *average* share held by an individual arranging bank, one of the lead banks responsible for assembling the syndicate and negotiating key loan terms, forms a "smile" when graphed against country risk. In contrast, the *total* share held by all arrangers forms a "frown" when graphed against country risk. The reason why the *total* arranger share is rising (falling) while the *average* arranger share is falling (rising) is because the *number* of arrangers increases at a faster rate. In addition, we document a significant positive relation between creditor rights and debt concentration after controlling for country credit risk and legal enforcement.

Having documented that both syndicate concentration and size are functions of political risk, we then show that loan pricing is a function of syndicate structure. Lender compensation (loan fees and spreads) is positively related to country risk. Holding country risk, creditor rights, and size constant, there is a significant, positive relation between loan pricing and the share held by arranging banks. One interpretation of this finding is that monitoring, deterrence, and recontracting benefits increase with arranger share, and the additional compensation reflects compensation for providing greater benefits. An alternative, yet not mutually exclusive, interpretation is that the higher compensation represents monopoly

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[3] Demsetz and Lehn (1985), Morck, Shleifer, and Vishny (1988), Holderness and Sheehan (1988), McConnell and Servaes (1990), Gorton and Rosen (1995), and Himmelburg et al (1999) all study equity

rents in the oligopolistic arranger market. According to Loanware data, the top ten banks arranged approximately 35% to total syndicated loans during the 1990s. From earlier evidence, we know that total arranger share increases not because the banks hold larger individual shares, but rather because the number of arrangers increases. Thus, high arranger share reflects the presence of several arranging banks leaving fewer to arrange competing loans. Although we cannot pinpoint the exact reason why compensation increases with syndicate concentration, we can, nevertheless, conclude there is a link between political risk, syndicate structure and loan pricing, which was our original contention.

Our paper differs from previous research in three important ways. First, we study banks as delegated monitors in an environment where their presence is likely to have first-order effects. As mentioned earlier, debt accounts for approximately 70% of total project capital, and banks have historically provided the majority of the project debt. In contrast, debt accounts for only 30% of total capital in the typical industrial firm. Second, in contrast to the previous research on the reasons for syndication, the determinants of debt structure (maturity, priority, public vs. public, etc.), and the impact of bank relationships on firm performance, we study debt ownership concentration. The syndicates in our sample contain from two to 62 banks, though large syndicates can have 100 or more banks. This analysis highlights the continuous nature of debt ownership and refutes the overly simplistic distinction between single bank creditors and atomistic bondholders commonly described in the literature. We are not aware of any research on the level of concentration, the determinants of concentration, or the impact of syndicate structure on loan pricing. Finally, and in contrast to most of the previous research on equity ownership and shareholder rights (LLSV 1998, 1999, 2000; Claessens et al 1999, 2000; Johnson et al 1999; and Nalbantoglu and Savasoglu, 2000), we focus exclusively debt ownership and show that creditor rights and debt ownership are complements.[4] The previous research on equity finds that ownership and legal rights are substitutes. Although our paper is a first step towards answering Shleifer and Vishny's (1997) call for

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concentration in US firms.

[4] Johnson et al (1999) analyze the relation between many variables, including creditor rights, and market performance during the Asian crisis. Creditor rights are not significant.

further research on the governance role played by large creditors, further research is clearly needed to explore the reasons for these differences between debt and equity ownership.

This article is organized into five sections. In the next section, we review the relevant banking and governance literature as a way to generate testable hypotheses regarding the relations between syndicate structure, political risk, and loan pricing. Section II discusses our dataset and provides univariate analyses of project, political risk, syndicate structure, and loan pricing variables. Our analysis on the determinants of syndicate structure appears in Sections III, while our analysis of loan pricing appears in Section IV. We conclude with a brief discussion of our findings in Section V.

I. Related Literature and Hypotheses

The primary goal of this paper is to analyze the relation between syndicate structure and political risk in the context of project finance loans. Before reviewing the related literature, it is important to define what a bank syndicate is and how it functions. A bank syndicate is a collection of banks that jointly extend a loan to a specific borrower. Unlike a loan sale to a third party, syndication involves a direct contract between each member bank and the borrower (Pennachi, 1988; and Gorton and Pennachi, 1995). Within a syndicate, at least in its simplest form, there are *arranging banks* (arrangers) and *providing banks* (providers)—we reserve the term *participating banks* to refer to all syndicate members collectively. Prior to closing a loan, the arranging banks meet with the borrower, conduct a credit review, negotiate terms and conditions, and prepare an information memorandum for providing banks (see Rhodes, 2000; Howcroft and Solomon, 1985; and Terrell and Martinson, 1978). Once the key terms are in place, the arranging banks market the loan to providing banks to gauge their interest in participating in the deal, often on a "take-it-or-leave-it" basis.[5] The process of syndication allows us to assume that syndicate structures are endogenous responses to project risks. This distinction between borrower-arranged financing structures

[5] In an underwritten deal, the process works somewhat differently. The arranging banks agree to make the loan, and later attempt to syndicate it to providing banks.

and creditor-arranged structures is a critical aspect of our paper. After closing, the arranging banks monitor compliance with loan covenants (some elements are delegated to an "agent" bank), negotiate contingent agreements when they arise, and lead negotiations in default situations. Because the arranging banks play a more prominent role both leading up to and after syndication, we focus most of our attention on the arranging banks.

Syndicate banks perform three important functions: they monitor borrower compliance, deter strategic defaults, and provide low-cost recontracting in the event of default. Previous research has analyzed each of these roles. For example, Campbell and Kracaw (1980), Diamond (1984), and Fama (1985) show that banks add value by monitoring creditors. Existing empirical research supports the notion that monitoring is valuable. James (1987) and Lummer and McConnell (1989) show that announcements of new bank loans generate positive abnormal returns while De Long (1991), Hoshi, Kashyap, and Scharfstein (1991), and Gorton and Schmid (2000) document a positive relation between bank finance and firm performance. Gilson (1990) and Kaplan and Minton (1994) show that management turnover following poor performance is more likely in bank-financed firms, which may explain why performance improves. More recently, however, Rajan (1992), Houston and James (1996), Kang and Stulz (1998), Weinstein and Yafeh (1998), and Morck and Nakamura (1999) have highlighted the disadvantages of bank control, namely the danger of getting locked into banking relationships. The fact that project finance involves a one-time transaction rather than an on-going relationship, and involves multiple rather than creditors implies that concerns regarding lock-in are probably less relevant in this setting.

Banks also play a role in deterring default and providing low-cost recontracting in the event default actually occurs. The deterrence role results from implicit threats to make default costly either by withholding future lending (Chowdry, 1991) or by making restructuring more complicated. Gertner and Scharfstein (1991), Diamond (1991), and Bolton and Scharfstein (1996) show that information and coordination costs are positively related to the number of creditors, which, in our case, is equivalent to syndicate size. Gilson, John, and Lang (1990) provide evidence consistent with these models: the time

and cost of restructuring increases as the number of creditors increases, yet declines with the fraction of bank debt. Similarly, Preece and Mullineaux (1996) show that the positive abnormal return associated with new bank loans is negatively related to the number of banks in the lending syndicate. According to the authors, the increasing costs of renegotiation gradually offset the benefits of monitoring as syndicate size increases.

We explore these roles—monitoring, deterrence, and recontracting—in the context of large project finance transactions. In particular, we study the relation between syndicate structure, defined as debt ownership concentration and syndicate size, and political risk. Before presenting our hypotheses on debt concentration and size, we define political risk and describe how we measure it.

We view political risk largely as a proxy for the probability of costly default due to either strategic or liquidity reasons. Strategic default consists of direct or indirect expropriation by host governments. It also consists of illegitimate appropriation of value by managers or other capital providers (see Johnson et al, 2000, on tunneling in emerging markets). Strong legal rights combined with efficient enforcement mechanisms protect creditors against strategic default and provide them with an avenue for redress in the event of default. We measure the level of creditor rights using creditor rights index and their categorization of legal origin (LLSV 1998 and 1999). Whereas the former is on a scale from 0 (weak protection) to 4 (strong), the latter distinguishes between countries with civil law (weak protection) and common law (strong) systems. We measure the rule of law and legal enforcement using Berkowitz, Pistor, and Richard's (BPR, 1999) legality index. This index is derived from a principal components analysis of five legality variables: efficiency of judiciary system, rule of law, corruption, risk of expropriation, and risk of contract repudiation.[6]

Liquidity problems represent a second kind of default. Here, we envision a variety of macroeconomic, political, and competitive factors that can cause an otherwise willing borrower to be unable to service his or her debt obligations. Our measure of liquidity risk, though it clearly incorporates

[6] The PRS Group has produced the International Country Risk Guide containing these ratings since 1982.

elements of creditor rights and vulnerability to strategic default by host governments, is *Institutional Investor*'s Country Risk Rating (II Rating).[7] *Institutional Investor* publishes ratings twice per year based on a survey of international bankers. The ratings are forward-looking and are based on a scale from zero (high risk) to 100 (low risk). In summary, we assume that weak (strong) creditor rights or low (high) II Ratings signify high (low) political risk.

A. Hypotheses

Our empirical analysis falls into four sections each of which tests one or more of the hypotheses described below. In Section II, we analyze the level of debt concentration in PF loan syndicates. Next, we use regression analysis to study the relation between syndicate structure and political risk. The first set of regressions analyzes the monitoring role of banks and focuses on the shares held by arranging banks; the second set of regressions focuses on the deterrence and recontracting role of banks and focuses on the number of banks in the syndicate (syndicate size)—see Section III. The key idea here is that political risk makes these roles, particularly monitoring and recontracting, more costly, and thus banks endogenously structure syndicates to minimize the costs associated with political risk. Finally, in Section IV, we examine the relation between syndicate structure and loan pricing after controlling for various loan characteristics including political risk.

A.1. Debt ownership concentration

Arranging, monitoring, and, in the event of default, restructuring highly leveraged, non-recourse loans is a complex undertaking. Both the incentive to monitor and the ability to restructure at low cost are positive functions of debt concentration. In fact, existing models of bank versus bond finance highlight the benefits of concentrated credit provision by banks (Diamond, 1991). One of the most important things

[7] This rating is based on information provided by leading international banks. Approximately 75 to 100 banks provide confidential ratings for each country. The results are weighted by a formula that gives greater weight to banks with more global exposure and better country analysis systems.

banks monitor is the project's cash flow "waterfall"—the allocation of cash flows according to a strict, contractual hierarchy of claims.[8] Because completed projects have low marginal costs, they tend to generate significant amounts of free cash flow, which can be siphoned off by corrupt management, controlling shareholders, or host governments. For this reason, we predict that debt ownership in general and PF debt ownership in particular should be highly concentrated. In Section II, we measure debt ownership to establish baseline levels of concentration for later analysis.

A.2. Loan Concentration (Share) and Political Risk

Banks, as credit providers, have conflicting objectives in deciding how much of a risky loan to hold in their portfolios. On the one hand, they might want to hold smaller shares of risky loans as a way to diversify their portfolios. On the other hand, agency considerations such as adverse selection and moral hazard could force banks to hold larger shares of riskier loans. During the syndication process, the only way for arranging banks to signal loan quality is for them to hold larger shares of riskier loans. Holding larger shares also ensures that arranging banks have the incentive to monitor on-going performance. To the extent that monitoring entails a fixed cost that is positively related to political risk, arranging banks have to hold larger shares of riskier loans to offset the incremental costs, assuming size is held constant.

In general, the evidence on syndicated transactions and equity ownership supports the agency imperative over the diversification motive. In the case of syndicated bank loans, Simons (1993) and Dennis and Mullineaux (2000) find that arranging banks retain larger shares of riskier loans; Gorton and Pennachi (1995) find the same thing in the case of loan sales.[9] Apparently, reputation alone is not sufficient to mitigate agency concerns. Instead, arranging banks must hold larger positions and expose themselves to greater potential losses to be credible. Recent studies on equity ownership are also

[8] Esty and Millett (1998) describe the details of cash waterfall in the context of the Petrozuata project.

[9] Adverse selection also appears in models of equity investment. Leland and Pyle (1977) show that entrepreneurs signal firm quality by their ownership share while Admati and Pfleiderer (1994) show that "inside" venture capitalists also signal quality by their ownership positions. Similarly, Lerner (1994) shows that lead VCs maintain their shares in subsequent rounds of investment.

consistent with the agency hypothesis: LLSV (1998, 1999) and La Porta et al (1999) show that equity ownership and shareholder rights are substitutes. In countries where shareholders have weaker rights (e.g. they face greater risk), companies exhibit more concentrated equity ownership. Thus, while we recognize the potential for a negative relation between loan shares and political risk due to diversification motives, we expect there will be a positive relation due to agency considerations. It is possible, however, that both hypotheses are true, thereby necessitating a non-linear regression specification.

A.3. Syndicate Size and Political Risk

Just as banks face conflicting incentives with regard to monitoring, they face conflicting incentives with regard to recontracting in the event of default as well. The expected cost of default can be reduced by minimizing either the probability of default or the costs associated with default once it occurs. Chowdry (1991) views syndicated lending as one way to deter strategic default by making it costly. According to his model, arranging banks have an incentive to increase syndicate size because all parties understand that other, non-participating banks will grant future credit to defaulting borrowers as long as they personally have not lost money previously. This threat of costly default is credible given the limited number of banks that arrange and participate in the market for syndicated loans.[10] Of course, the guilty party must also be dependent on external finance for this threat to be credible. For this reason, one might expect such a threat to be more credible against developing countries. Based on this logic, we should observe a positive relation between syndicate size and political risk.

Bolton and Scharfstein (1996), however, point out that the problem with this approach to deterring default is that it makes recontracting more costly. They present a model in which low quality firms—projects in high-risk countries in our setting—borrow from banks while high quality firms issue public debt. The argument is that low quality firms are more susceptible to liquidity defaults while high quality

[10] The market for arranging syndicated corporate and sovereign loans has historically been concentrated in the hands of a few major US banks, particularly Chase/Chemical, Citicorp, Bank of America, and JP Morgan (see Loanware database or UN (1991)).

firms are more susceptible to strategic defaults. Somewhat curiously, the role of reputation as a constraining factor on high-quality firms is noticeably absent from their model. Nevertheless, and in contrast to Chowdry's (1991) model, the Bolton-Scharfstein model predicts a negative relation between syndicate size and political risk. With little empirical evidence to draw upon other than Preece and Mullineaux's (1996) finding that abnormal returns are negatively related to syndicate size, we have little ex ante reason to favor one hypothesis over the other. Instead, our analysis is a "horserace" between these two opposing theories.

A.4. Syndicate structure and loan pricing

Our basic assumption with regard to loan pricing is that borrowers compensate banks for the benefits they provide; not for the benefits the banks get themselves. For example, better diversification is a bank benefit, not a borrower benefit, and so we should not expect loan pricing to increase as loan shares decline. On the other hand, when arranging banks hold larger shares, it should lead to quicker syndication and better monitoring of management and other deal participants. These benefits accrue to project sponsors and they should be willing to pay for them. Thus, we predict that loan pricing, both fees and spreads, should be positively related to the fractional shares held by arranging banks.

With regard to syndicate size, the same logic applies. Low-cost recontracting is largely a bank benefit, particularly in a system with absolute priority. The fact a borrower has defaulted usually, though not always, signifies that the firm's assets are worth less than the fixed claims against it. Thus speedy, low-cost recontracting will largely benefit creditors. On the other hand, to the extent that syndicate size deters host governments from expropriating project cash flows, then syndicate structure will provide a benefit to the project sponsors. In this case, we would expect the sponsors to be willing to pay for higher expected cash flows absent the threat of expropriation. If this were true, then we should observe a positive relation between loan pricing and syndicate size. Given the role arranging banks play in assembling syndicates and restructuring loans, it is not clear whether loan pricing will be related to the total number of

banks or to the number of arranging banks. We test both variables in Section IV.

II. Data and Methodology

Our sample of syndicated loans comes from Capital DATA's Loanware database, which contains information on more than 102,000 syndicated loan tranches made between 1980 and April 2000. We began with all 6,505 loan tranches with project finance listed as the loan purpose. When the database listed more than one loan purpose code, we included all tranches that had project finance listed as one of the purposes. We excluded tranches less than $75 million (10.1% by value and 59.1% by number) because they tend to have simpler and less interesting syndicate structures.[11] This screen yielded 2,677 loan tranches, a yield of 87.0% by value and 41.2% by number. Because the unit of observation is a loan tranche, multiple tranches from the same loan appear as separate observations in our database—22 loans, containing 49 tranches, have more than one tranche in the dataset. Table 1 describes the full population of syndicated loans and the subset of project finance loans based on loan signing date.

****** Insert Table I about here ******

Although comprehensive in many ways, the Loanware database has two shortcomings for our purposes. First, it provides detailed project information only after 1995, and even then on an apparently random basis. As a result, we are unable to collect potentially interesting data items such as project leverage or sponsor characteristics. Second, the database contains many holes. Incompleteness affects our sample size significantly because most observations lack syndicate information as well as other key variables such as loan fees or spreads. Interestingly, Table I shows that the presence of syndicate information is not related to either tranche size or signing date.

Of the 2,677 PF tranches greater than or equal to $75 million, 495 tranches worth $150.5 billion have usable syndicated share information, for a yield of 20.0% by value and 18.5% by number. Loanware reports syndicate structure as of the signing date and so we are unable to track what happens to ownership

[11] Altman and Suggitt (2000) use a $100 million threshold in their analysis of syndicated loan default rates.

after the loan has closed.[12] Given the reported dollar investment made by each bank at syndication, we manually calculate several concentration measures for each tranche, including the Herfindahl-Hirschman Index (HHI)[13], the share of the five largest participating banks (five-bank concentration ratio, CR5), the largest single bank share (CR1), and the total share held by arranging banks. We define arrangers to include any bank that is listed as a mandated arranger, arranger, or co-arranger in the database. In addition, we collect several other variables from the Loanware database such as the number of arrangers, number of providers, loan fees and spreads, loan maturity, signing date, and project location. After reviewing the project description, we assign each tranche to one of eight sectors (Industrial, Mining, Oil & Gas, Petrochemical, Power, Telecom, Transportation, and Leisure & Property); Loanware recently added a sector variable to the database and we verified our classification was consistent with recent assignments.

As discussed above, we use two measures of political risk—country risk and creditor rights—in our analysis. We collect the most recent II Rating prior to closing as our measure of country risk. As a word of caution prior to describing our results, it is important to remember that the II Rating is an inverse scale so that country risk decreases as the II Rating increases. We also collect International Country Risk Group's (ICRG) political and composite ratings for each country as a way to test the sensitivity of our results to the country credit ratings; in general, the results do not change.

Table II presents the geographic distributions for various sub-samples of syndicated loan tranches. The full sample of syndicated loans and the subset of PF loans are concentrated in the US and UK. When countries are sorted by the dollar value of all PF loans (column 4), the PF sub-sample exhibits greater dispersion than the full sample: 68.0% of PF loans are in the Top 15 countries compared to 82.7% of all syndicated loans. The sub-samples of PF loan tranches greater than $75 million (columns 6 and 7) and of

[12] Although arranging banks often sell down their ownership positions after closing, they are usually restricted in how much they can sell. These restrictions are contained in the loan documents and, therefore, are well known by other participating banks.

[13] The HHI is given by the formula $HHI = \sum_{i=1}^{N} S_i^2$ where S_i is the dollar share of the i^{th} bank. Other studies of corporate governance use the Herfindahl index to measure the concentration of control rights (see, for example, Demsetz and Lehn, 1985; or Gorton and Schmid, 1999).

PF loans with syndicate data (columns 8 and 9) have geographic distributions similar to those of the full sample of PF loans. Although our sample corresponds to the full database of PF loans, we were somewhat surprised at the relative absence of projects from South American countries.

****** Insert Table II about here ******

We also measure political risk in terms of creditor rights. LLSV (1998) provide measures of creditor rights based on a scale from 0 (weak protection) to 4 (strong protection).[14] There are three disadvantages of the LLSV index. First, the index is based on a single point in time and, therefore, does not reflect changing political or legal conditions. Slightly more problematic is the fact that the LLSV index exists for only 49 countries, entirely omitting many key countries such as Russia and China and many regions such as Eastern Europe and the Middle East. Finally, the creditor rights index yields some counter-intuitive results. For example, the US, Canada, and Australia are classified as having weak creditor rights while Nigeria, Indonesia, and India are classified as having strong creditor rights. A more general classification scheme based on legal origin—common law vs. civil law—yields more intuitive results: the US, Canada, and Australia are all common law countries. LLSV (1998) show that common law countries tend to have stronger creditor rights on average—their later paper (LLSV, 1999) provides a classification for a much larger set of countries. **Appendix 1** provides a breakdown of our sample by II Rating and legal origin.

Having described our dataset and defined key terms like political risk and ownership concentration, we turn to the univariate analysis of key variables. Table III presents four panels containing the results, one each for project, political risk, syndicate structure, and loan pricing variable. To illustrate the importance of size effects, Table III is broken into two sections, one for all 495 loan tranches greater than $75 million in size, and the other for the 74 loan tranches greater than $500 million in size.

****** Insert Table III about here ******

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[14] LLSV (1998, p. 1135) award one point if there is no automatic stay on assets, secured creditors get paid first, there are restrictions on reorganizations, and if management does not stay in reorganizations.

A. Project Variables

Panel A provides general information about the projects and loan tranches in our sample. Because project data is available for only a limited number of observations, the sample sizes drop from 495 to as low as 45 observations for some variables. For the full sample, the average (median) tranche size is $304 ($180) million and is part of a project costing $820 ($586) million. Panel A also confirms our earlier assertion that projects are highly-leveraged transactions. Projects have a debt-to-total capitalization ratio of 69.4% (70.7%), and the tranches provide 47.8% (43.8%) of total capital. The average tranche matures in just over nine years. In terms of size effects, the tranches over $500 million are from projects with less leverage, but longer maturities.

B. Political Risk Variables

Panel B presents descriptive statistics for our two political risk variables and our legal enforcement variable. The average PF loan is in a country with an II Rating 68.5.[15] For purposes of comparison, New Zealand, Iceland, and the United Arab Emirates had 1999 II Ratings of 74.0, 67.8, and 63.2, respectively. Yet the projects, as indicated by the large standard deviation, exhibit significant heterogeneity with respect to country risk. For instance, 10% of our projects have ratings below 44.0; Egypt (45.4), India (44.3) and Argentina (42.4) had II Ratings at this level in 1999. Our second political risk measure, the LLSV (1998) creditor rights index, shows that the average project is based in a country with limited creditor protection: the average score is 2.4 on a scale from 0 to 4. The larger projects tend to be in countries with less country risk and greater creditor rights. Finally, the BPR legality index, which runs from 8.51 (weak protection and enforcement) to 21.91 (strong protection and enforcement), has an average score of 17.6 and a standard deviation of 4.0. Once again, our sample exhibits significant heterogeneity across an important variable.

[15] In a comparison across different types of syndicated loans, Kleimeier and Megginson (2000) show that PF loans are based in countries with significantly higher average country risk.

C. Syndicate Structure Variables

In Panel C, we observe two striking results for the concentration ratios of project finance loan tranches. First, debt ownership is highly concentrated. On average, the single largest bank holds 20.3% of the loan (a median of 14.8%), the five largest banks hold 61.2% (57.3 %median), and the average Herfindahl-Hirschman Index is 14.9% (10.25%). In dollar terms, the largest single bank holds an average of $61.7 million while the top five banks hold a total of $186.0 million in loans greater than $75 million. These concentration ratios are much higher than the 10-15% ownership stake commonly observed for all insiders or board members in studies of US equity ownership (Morck, Shleifer, and Vishny 1998; McConnell and Servaes, 1990; and Himmelberg, Hubbard, and Palia, 1999), and more closely resemble the equity ownership structures in countries with weak shareholder protection (La Porta et al, 1999). Even compared to equity blockholdings, debt syndicates are highly concentrated. Holderness and Sheehan (1988) find that 20% (15%) of publicly traded firms in 1984 had at least one non-officer (officer) that owned more than 10% of the firm. We find that the largest single bank provides 10% or more of the total loan in 72% of our tranches.

Second, there are noticeable size effects across the two samples: the single largest (top five) bank share declines by more than half, from 20.3% (61.2%) for all tranches greater than $75 million to 9.6% (36.7%) for the tranches greater than $500 million. Similarly, the average arranger share falls from 16.7% to 7.0%. What is more surprising is the fact that the total arranger share does not decline much at all: the average total arranger share falls from 39.2% to 34.2%. The reason total arranger share stays relatively flat is that there are more arrangers in the larger deals: 5.8 versus 3.6 banks. These facts provide clues as to the role played by arranging banks in PF loan syndicates.

D. Loan Pricing Variables

Panel D describes the loan pricing variables used in this study. In terms of loan fees, the median commitment fee (the fee charged for making funds available) is 30 basis points, the minimum participation

fee is 30 basis points for the smallest providers, and the maximum participation fee is 50 basis points for the largest providers. The variable Undrawn Return is the sum of all fees paid assuming the borrower does not draw down any of the loan proceeds; it is approximately equal to the commitment fee. In terms of loan spreads, the mean and median spreads over LIBOR are 122.8 and 102.5 basis points, respectively (107.9 and 97.5 for the larger tranches). We also calculate the mean and median spreads over other base rates such as HIBOR (Honk Kong) and SIBOR (Singapore); this variable is known as the Loan Spread whereas the spread over LIBOR is the LIBOR Spread. Finally, we collect the Drawn Return, which equals the sum of fees and spreads assuming the loan is fully drawn. The mean and median drawn returns are 132.2 and 122.2 basis points. The fees and spreads are slightly smaller for the larger tranches. As a caveat to the analysis in Section IV, it is important to note that loan pricing data is reported far less frequently than other data items.

In summary, this analysis shows that projects are highly leveraged transactions, that PF loans exhibit highly concentrated debt ownership, that many projects are located in high-risk countries, and that there are significant size effects. We now attempt to explain these relationships empirically using OLS regression analysis. Section III examines the relation between syndicate structure and political risk; Section IV examines the relation between syndicate structure and loan pricing after controlling for the level of political risk.

III. Syndicate Structure and Political Risk

In this section, we examine the relation between syndicate structure and political risk using two sets of Tobit regressions. The Tobit specification is required due to the censored nature of our data, as syndicate loan shares run between 0% and 100%. In the first set of regressions, we analyze monitoring incentives by estimating a regression with bank loan shares (concentration) as the dependent variable; in the second set of regressions, we analyze recontracting and deterrence incentives by estimating a regression with syndicate size (number of banks) as the dependent variable. Both sets of regressions use similar

independent variables controlling for tranche characteristics, project characteristics, and political risk. In particular, the tranche variables are: SIZE (the *inverse* of tranche size, in millions of US dollars); MATURITY (tranche maturity, in years); and dummy variables equal to one for REFINANCED, GUARANTEED, and SECURED loans. The project variables consist of seven sector dummy variables (Mining, Oil & Gas, Industrial, Telecommunications, Transportation, Petrochemicals, Power; Leisure & Property is the omitted sector). We do not include other measures of project risk for one of two reasons. First, given the non-recourse nature of the loans, sponsor characteristics are less relevant to the overall lending decisions. And second, data limitations preclude us from collecting such data. Without a doubt, other project characteristics are important. For example, whether a project contains a long-term, off-take (purchase) contract or a fixed-price, turnkey construction contract has a major effect on the overall level of risk. Yet our database does not include this information nor can we get it from the proprietary loan documents supporting each deal. Finally, the political risk variables include II RATING (the contemporaneous *Institutional Investor* country risk rating); II RATING SQUARED (the *Institutional Investor* rating squared as a way to detect non-linear relations); WEAK CREDITOR RIGHTS (a dummy variable for civil law countries); and the BPR LEGALITY INDEX to control for legal enforcement.

A. Loan concentration and political risk

Table IV presents the results on the relation between loan concentration and political risk, which is intended to shed light on the monitoring role played by member banks. We measure loan concentration using six different dependent variables: Herfindahl Index, largest single bank share, combined share of the top five banks, total arranging bank share, average arranging bank share, and average providing bank share (we do not included total providing bank share because it is the complement of total arranging bank share). Based on the Chi-square statistics, all of which are significant at the 1% level, the regressions explain a significant amount of variation in syndicate structure. Of the project and tranche variables, only size is consistently significant: it is positive and significant at the 1% level in most regressions. The positive

coefficient on the inverse of tranche size corresponds to a negative relation between concentration and size (larger loans have less concentrated arranger shares), as documented in the univariate analysis in **Table III**. The project sector variables are also jointly significant in five of the six regressions.

****** Insert Table IV about here ******

The political risk variables are also significant. The BPR Legality Index is positive and significant in five out of six regressions. The positive sign indicates that as enforcement mechanisms strengthen, debt becomes more concentrated and individual banks are willing to hold larger shares. Moving from a country like Turkey with an index rating of 11.84 to a country like Australia with a rating of 20.44, increases the largest single bank share by 6.9% [= (20.44 – 11.84)*0.008]. Such a change represents a 34% increase over the average share held by the largest single bank (6.9% divided by 20.3% from **Table III**). The one disadvantage of this variable is that it is available for only 49 countries, which causes the sample size to drop from 495 to 389 observations.

After controlling for legality, the Weak Creditor Rights dummy variable is negative and significant in four regressions, which implies that tranches for loans in civil law countries are less concentrated. This result, however, does not hold for the more controversial creditor rights index. Nonetheless, this finding is interesting for two reasons. The first reason is the magnitude of coefficient: the largest single share declines by 3.2% in civil law countries. When you consider that the largest single share is on average 20.3% in our sample (see **Table III**), the 3.2% decline equals a 16% reduction. Using similar calculations, the Herfindahl Index and total arranger share decline by 25% and 38%, respectively, in civil law countries. The second reason this finding is interesting is that it stands in contrast to the negative relation between the concentration of equity ownership and equity (anti-director) rights found by LLSV (1998). Here, we find a positive relation between debt concentration and strong creditor rights.

The coefficients on country risk are also significant—in those instances where they are not significant, they are close. With the exception of regression number 4 on the total arranger share, the coefficient on country risk is negative while the coefficient on country risk squared is positive. Because

the II Rating and country risk are negatively related, these findings suggest that loan syndicates become *less* concentrated as country risk increases. But the positive coefficient on the squared rating term implies that concentration begins to increase once a critical threshold level has been passed—the last row of **Table IV** (and **Appendix 2**) shows the calculated inflection point for the country risk rating. Graphical representations of the relationship between country risk and concentration measures appear in **Figure 1** (Herfindahl Index, largest single share, average arranger share, and average provider share); the figures are based average values for the independent variables. The figure reveals a somewhat lopsided syndicate "smile" in which debt ownership concentration is highest in high countries. In terms of shares, the average arranging bank holds 15% of tranches low-risk countries, yet as much as 30% or more of tranches in high-risk countries.

****** Insert Figures 1 and 2 about here ******

The one dependent variable that does not produce a "smile" is total arranger share. Unlike the other regressions in **Table IV**, regression #4 shows that the coefficient on country risk is significantly *positive*, while the coefficient on country risk squared is significantly *negative*. The signs on these coefficients imply that the relation between total arranger share and country risk forms a "frown" (see **Figure 2**). Whereas the share measures have inflection points ranging from 80-90 on the II Rating scale, total arranger share has its inflection point at 53. At first, the "smile" relation for the average arranger share and the "frown" relation for the total arranger share may appear contradictory. What explains this apparent contradiction is the fact that the number of arranging banks involved in the syndicate also exhibits a "frown" relation with country risk—see the results in the next section. The degree of concavity shown in **Figure 2** indicates large differences in syndicate structure: arranging banks hold approximately 30% of tranches in high- and low-risk countries, but as much as 50% in countries with moderate risk.

The quadratic results in **Table IV** provide limited support for the diversification hypothesis and significantly more support for the agency hypotheses. Initially banks try to diversify their holdings as political risk increases, thereby causing individual loan shares and overall syndicate concentration to fall.

But this trend reverses itself in short order as banks quickly begin to hold larger shares. It is not surprising that arranging banks hold larger shares because they need to signal loan quality and to offset the increased cost of monitoring projects in high-risk countries. What is particularly striking, however, is the fact that even the providing banks hold significantly larger shares of tranches in the riskiest countries. We view this finding as strong evidence against the diversification hypothesis and attribute the finding to the fact that risky loans require stronger signals of quality and greater monitoring of on-going performance.

B. Syndicate Size and Political Risk

Table V presents the results on the relation between syndicate size and political risk, which is intended to shed light on the deterrence and restructuring roles played by member banks. Syndicate size is measured in four ways: the number of total banks, arranging banks, providing banks, and Top 10 banks. The number of Top 10 banks is defined as the number of banks in the current tranche that are among the top 10 arranging banks ranked by the total cumulative dollar value of financing arranged from 1990 to 2000.[16] While inclusion in the list of top ten banks varies over time, the same banks tend to appear year after year. For example, the average number of Top 10 arranging banks over the entire decade that appear in any particular year is eight while the minimum number of Top 10 banks in any given year is seven. The main problem with this variable is that Capital Data retroactively combines lending records following mergers and acquisitions. Thus if Bank A buys Bank B, then Bank B's historical lending record will added into Bank A's lending activity, and Bank B will no longer appear in the historical data. For this reason, the reported lending activity of the Top 10 banks overstates their actual lending activity during the period. Nevertheless, the league table's stability over time gives us confidence that the variable provides a meaningful measure of participation by leading banks. Using the same Tobit specification for censored dependent variables that range from zero to 62, we again find a high degree of explanatory power in the

[16] The list includes Chase, Citigroup, Barclays, Deutsche Bank, ABN-Amro, BankAmerica, HSBC, Warburg Dillon Read, Greenwich NatWest, and Banque Nationale de Paris.

regressions reported in **Table V**. As before, the chi-square statistics are all significant at the 1% level, and few of the project or tranche variables other than size are significant. The coefficient on the inverse of tranche size is positive and significant at the 1% level, which reflects the fact that more banks are needed to finance larger tranches.

****** Insert Table V about here ******

In at least three of the four regressions, the political risk variables are significant. The weak creditor rights (civil law) dummy variable is positively related to the number of total banks and providing banks, but negatively related to the number of arranging banks and Top 10 banks. Consistent with all banks holding smaller shares in civil law countries, tranches in civil law countries contain 2.3 additional banks. The average number of banks in our syndicates is 14.4, so2.3 additional banks represents a 22% increase. In contrast, the number of arranging banks and Top 10 banks is significantly lower in civil law countries, probably because of diversification motive—few banks want to step forward and take the larger arranger role. Instead, they would prefer to join as a providing bank with a smaller share. With regard to the BPR legality index, syndicate size declines as legal enforcement becomes stronger. Again, this result illustrates the complementary nature of debt ownership and legal protection.

Like the results on loan shares, syndicate size has a non-linear relation with country risk, but the relation is a "frown" rather than a "smile" (see **Figure 3**). The coefficients on the country risk (II Rating) variable are positive; the coefficient on the squared term is negative. Interestingly, the relation is the opposite for the Top 10 banks. Tranches for projects in the most risky countries include a greater number of Top 10 banks.

****** Insert Figure 3 about here ******

These results are consistent with both the deterrence and recontracting hypotheses. On the one hand, Chowdry (1991) asserts that banks can credibly threaten to withhold future lending in the event of strategic default by increasing syndicate size, which is exactly what we observe at least through moderately risky countries (II Ratings of 60-80). The fact that the number of Top 10 arranging banks involved in the

syndicate increases with political risk further corroborates this hypothesis. Yet as we move from the moderately risky to high-risk countries, syndicate size *declines*, a finding that is more consistent with a desire to achieve low-cost contracting. In fact, the number of banks drops quite sharply from 16 banks to four to ten banks in the most risky countries in our sample. In countries like these, where liquidity defaults are as likely as strategic defaults, creditors can reduce the expected recontracting costs by reducing syndicate size. The danger of low-cost recontracting, of course, is that it can encourage borrowers to default strategically (Botlton and Scharfstein, 1996). Perhaps this is why we observe a greater number of Top 10 banks as a way to discourage default.

Although our results are consistent with aspects of the various theoretical models on bank lending, there is an alternative explanation based on restricted capacity that might explain the "frown" relating syndicate size and political risk, and the "smile" relating loan shares and political risk. Because lending to highly risky countries is a complex activity requiring dedicated staff with specialized underwriting skills, only a limited number of the largest banks participate in the market for this kind of loan. As a result, syndicates contain fewer banks holding larger shares. The fact that we observe an increase in the number of Top 10 banks from one in the safest countries to four in the riskier countries is consistent with this alternative interpretation. Although we have not tested this theory empirically, we have confirmed it with bankers from two of the Top 10 banks. According to these bankers, the subset of banks available for inclusion in a syndicates declines as country risk increases.

C. Sensitivity analysis

We ran sensitivity analysis to make sure the results in **Tables IV** and **V** were robust to alternative regression specifications and independent variables. Instead of a quadratic specification, we tried a spline regression specification with two, three, and four break points. In most instances, the fit was not nearly as good as the quadratic specification. Next, we replaced the *Institutional Investor* country risk rating with ICRG's composite rating and obtained similar, but slightly less significant, results. We also replaced the

tranche size variable (inverse of tranche size in millions) with the absolute size in millions, the natural logarithm of size in millions, and a combination of linear and quadratic size terms; the results did not change. Instead of the BPR legality index, we tried the various legality, enforcement, and corruption variables individually. The problem with this approach is that the variables are highly correlated. As a result, the multi-dimensional legality index provided more meaningful results. Finally, we included a set of time dummy variables based on the tranche signing date which were not jointly significant using an F-Test. Based on this analysis, it appears that our results are sufficiently robust.

IV. Loan Pricing as a Function of Syndicate Structure

Our maintained hypothesis is that bank syndicates provide valuable monitoring, deterrence, and recontracting services. Whether or not they charge for these benefits in the context of project finance loans is an open question and the subject of this section. The Capital DATA Loanware database provides information on both loan spreads and fees, though this data is not collected consistently or completely. Where possible, we use the following dependent variables in our loan pricing regressions: two variables to measure fees (undrawn returns, minimum and maximum participation fees, and commitment fees), two variables to measure loan spreads (the spread over LIBOR and the spread over all base rates such as HIBOR), and one variable to measure the combination of fees and spreads, the drawn spread.

The independent variables fall into three categories. There are loan-specific variables similar to the ones used in **Tables IV** and **V**. The only differences are we redefine SIZE as the natural log of tranche size in millions rather than the inverse of tranche size, add a dummy variable to measure CURRENCY RISK (equals one if the loan is denominated in the domestic currency and zero otherwise), and add a set of year dummy variables to account for temporal changes in syndicated loan pricing. We also tried to capture other measures of emerging market loan pricing by using variables such as JP Morgan's Emerging Market Bond Index, but they were not significant. The second set of variables is the same set of political risk measures used previously: II RATING, II RATING SQUARED, WEAK CREDITOR RIGHTS, and

BPR's LEGALITY INDEX. And finally, we include two variables to measure syndicate structure: TOTAL ARRANGER SHARE (and it's squared term) is a measure of syndicate concentration while NUMBER OF ARRANGING BANKS is a measure of syndicate size. While we tried other measures of concentration such as the largest single bank share and the Herfindahl Index, and other measures of size such as the number of Top 10 banks and the Number of Total Banks, we focus on the arranging banks given their importance in creating and managing the syndicates. These other measures of syndicate structure do not exhibit the same level of significance. With these variables, we estimate OLS regressions and test for significance using White (1980) corrected standard errors.

Below, we discuss the results from **Table VI** in three sections. Section A discusses the loan-specific variables; Section B describes the political risk variables; and Section C discusses the syndicate structure variables, which is the crux or our argument. Before reviewing the specific results, it is worth noting that the overall fit is very good with R-squared statistics between 26.8% and 38.7%, and F-statistics that are all significant at the 1% level.

****** Insert Table VI about here ******

A. Loan specific variables and loan pricing

Among the loan-specific variables, only two come in significant with any degree of regularity. Indicating some scale effects in lending spreads, tranche SIZE is negative and significant in the regression on loan spreads and drawn returns. The difference between the spread on a $100 million tranche and the spread on a $1 billion tranche, holding all else equal, is about 20-25 basis points. The other variable that is significant in four out of eight regressions is the REFINANCING dummy variable. The spreads and fees on refinanced loans are lower by 10-30 basis points on average, a finding that is consistent with the idea that refinanced loans are safer than new loans. Other loans such as the GUARANTEED dummy variable are not significant, but have signs that are consistent with what one might predict ex ante. For example, guaranteed loans have lower rates, but since we do not know anything about the nature of the guarantee or

the guarantor, it is not surprising that the variable is not significant.

B. Political risk and loan pricing

All four political risk variables are significant, though at least one of them has a sign that is difficult to interpret. Across the board, the country risk variable is negative and the squared risk term is positive. This finding implies, not surprisingly, that loan pricing declines as country risk declines (remember, country risk declines as the II RATING increases from 0 to 100), but does so at a declining rate. **Figure 4** presents a graphical representation of this result. It shows how loan fees and spreads decrease in a non-linear fashion as country risk declines. The BPR LEGALITY INDEX is also negative and significant in most regressions. Thus, as legal enforcement improves, loan pricing declines quite dramatically even after controlling for overall country risk. Using the example from before, a loan made in Turkey with an index rating of 11.84 will have a loan spread that is 48 basis points higher than an otherwise comparable loan made in Australia with a rating of 20.4 [= (20.44 – 11.84)*5.57 from regression #3].

****** Insert Figure 4 about here ******

The final political risk variable, the WEAK CREDITOR RIGHTS variable as proxied by the civil law dummy variable, is negative and significant in all regressions. This result—loan pricing is lower in civil law countries—is counter-intuitive given LLSV's (1998) assertion that capital providers in civil law countries have weaker rights and, therefore, fact greater risks. The only explanation we have for this finding is that it reflects the fact that banks provide fewer benefits in civil law countries due to their weaker positions. Because they provide fewer services, the correspondingly can charge less. Further research is needed to fully understand what the civil law dummy variable is actually measures and whether there are better proxies for creditor rights.

C. Syndicate structure and loan pricing

There are two syndicate structure variables, one related to loan concentration and one related to syndicate size. The first (second) four regressions analyze the relation between the total share held by (the number of) arranging banks and loan pricing after controlling for loan characteristics and political risk. Total arranger share is consistently positively related to loan pricing. It is significant at the 10% level in regressions #2 (maximum participation fee) and #3 (loan spreads), significant at the 11% level in regression #1 (undrawn returns), and significant at the 12% level in regression #4 (drawn returns). The squared share terms are all negative, but only two exhibit statistical significance. **Figure 5** (*representative not exact due to slightly changed regression specifications*) presents a graphical representation of the relation between the total arranger share and both the maximum participation fee and the loan spread. Based on the regression results, the difference in participation fees for a loan in which the arrangers hold 15.4% (the 25% quartile) and a loan in which they control 57.8% (the 75% quartile) is 25.2 basis points, an almost 50% increase over the average maximum participation fee of 53.1 basis points (see **Table III**). The change in loan spread is also approximately 25 basis points (23.3 to be exact).

****** Insert Figure 5 about here ******

The results based on the number of arranging banks are qualitatively similar. As the number of arranging banks increases, loan pricing increases. In fact, loan pricing increases until there are 11-16 arranging banks (the inflection points at the bottom of **Table VI**. With an average of 3.6 arranging banks, and an inter-quartile range of 1 to 4 banks, it is clear that pricing increases over a range that incorporates over 97% of our syndicates. Depending on how many banks are currently in the syndicate, adding an additional arranging bank increases participation fees and spreads by anywhere from one to five basis points.

V. Summary and Conclusions

This paper examines the relations between syndicate structure, political risk, and loan pricing. We find that ownership concentration of project finance debt is high, and significantly higher than equity

concentration in most US industrial firms. Second, we show that syndicate structure is a function of political risk. Overall concentration forms a "smile" when graphed against country risk ratings, with high-risk countries exhibiting the highest levels of concentration. At the same time, find that debt ownership and creditor rights are complements, which is the opposite of what LLSV (1998) find for equity ownership and shareholders rights. While our measure of creditor rights is admittedly imperfect, it is, nonetheless, picking up an important determinant of syndicate structure after controlling for country risk and legal enforcement. We also show that syndicate size forms a "frown" when graphed against country risk ratings, with moderate-risk countries exhibiting the largest syndicates. Finally, we show that loan pricing is positively related to the number of arranging banks and the share held by them. Viewed collectively, these results provide support for the hypothesis that bank syndicates provide, and charge for, valuable monitoring, deterrence, and recontracting services.

We view these results as an initial foray into the largely unexplored realm of syndicated lending. The paper provides an important first step towards understanding debt ownership. Yet there is clearly a need for additional research. We have not shed light on the exact nature of the benefits created through syndicate structure. Are the benefits related to improved monitoring, reduced probability of default, or some combination of the two? Is it possible to show that structure affects project operating performance or default rates, and if so, how? There is also a need to clarify the monitoring role played by banks and the degree to which different monitoring structures are used for different assets. In this paper, we examine how *political risk* affects syndicate structure in a sample of international loans, while in a related paper, we analyze how *credit risk* similarly affects syndicate structure in a sample of loans to US borrowers (Esty, Kleimeier, and Megginson, 2000). By restricting the sample to loans in a single country, yet expanding the types of loans analyzed, we hope to shed light on the relation between monitoring, credit risk, and loan pricing. A final direction for future research is a refinement in the analysis of syndicate structures. In this paper, we simplify the analysis by categorizing banks as either arrangers or providers. In reality, there are at least five levels of participation within a syndicate: mandated arrangers, arrangers (co- and lead), lead

managers, managers, and participants. What determines the number of participants at each level, and how do different syndicate shapes affect performance? Again, we address these issues in related work.

This last point regarding the complexity of syndicate structures highlights one of the most important contributions of our paper. Syndicated loans represent an intermediate, yet increasingly popular, form of financing. The fact that PF syndicates range in size from two banks for the smallest loans to 130 banks for the largest loans such as Eurotunnel's $13.2 billion loan, has not been adequately recognized in financial theory. Reality is far more complex than most of the simple financing models admit, and the range between private debt and public bonds is far more continuous than discrete. Our hope is that this paper will help inform future models of debt choice by clarifying the structure of actual debt ownership and highlighting some of the most important determinants of syndicate structure.

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Table I
Distribution of Syndicated Loans Over Time

Signing Date	All Loan Types		Project Finance Loans All Tranches		Project Finance Loans Tranches >$75 Million		Project Finance Loans Tranches > $75 million with Syndicate Data		Tranches with Syndicated Data: Percent by	
	Value ($B)	Number	Value ($B)	Number	Value ($B)	Number	Value ($B)	Number	Value	Number
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10=8/6)	(11=9/7)
1980	$92.3	1,112	$10.1	105	$7.7	30	$0.0	0	0.0%	0.0%
1981	182.4	1,552	14.5	151	11.6	47	0.0	0	0.0	0.0
1982	164.4	1,665	9.9	119	7.6	35	0.0	0	0.0	0.0
1983	102.9	1,243	10.8	128	8.4	39	0.0	0	0.0	0.0
1984	207.1	1,790	12.1	158	8.6	40	0.0	0	0.0	0.0
1985	242.4	1,533	6.6	65	5.4	20	0.0	0	0.0	0.0
1986	232.1	1,501	9.8	99	8.2	33	0.8	2	9.8	6.1
1987	369.6	2.209	22.6	152	19.1	60	0.7	4	3.7	6.7
1988	604.9	3,187	20.3	239	15.1	76	0.7	3	4.6	3.9
1989	735.5	4,445	30.2	251	25.6	107	4.4	13	17.2	12.1
1990	624.7	5,433	48.3	314	43.1	121	5.2	25	12.1	20.7
1991	612.5	5,921	55.6	419	48.9	166	6.3	21	12.9	12.7
1992	673.9	7,246	53.3	481	44.9	192	6.9	28	15.4	14.6
1993	837.3	6,933	55.8	468	47.1	181	9.8	31	20.8	17.1
1994	1,137.6	8,025	63.9	468	55.7	190	11.1	39	19.9	20.5
1995	1,481.9	8,786	76.7	586	67.8	258	19.6	73	28.9	28.3
1996	1,654.2	10,213	60.3	510	50.3	191	16.4	66	32.6	34.6
1997	2,101.6	11,456	102.6	550	94.3	286	27.2	77	28.8	26.9
1998	1,727.8	10,057	78.7	516	70.4	251	18.4	61	26.1	24.3
1999	1,971.6	8,883	90.8	628	80.6	300	11.4	46	14.1	15.3
2000	544.2	1,791	32.1	98	30.9	54	11.7	6	37.9	11.1
Total	**$16,300.2**	**102,774**[a]	**$864.3**	**6,505**	**$751.9**	**2,677**	**$150.5**	**495**		
% of Total			5.3%	6.3	4.6	2.6	0.9	0.5		
% of Project Finance					87.0	41.2	17.4	7.6		

Source: Capital DATA Loanware

[a]There are a total of 105,018 loan tranches in the Loanware database. Signing date is missing for 2,244 tranches, reducing the sample to 102,774.

Table II

Distribution of Syndicated Loans by Country

(Sorted by the dollar value of all Project Finance Loans)

No.	Country	All Loan Types Value ($B)	All Loan Types Number	PF Loans All Tranches Value ($B)	PF Loans All Tranches Number	PF Loans with Tranches >$75 M Value ($B)	PF Loans with Tranches >$75 M Number	PF Loans with Tranches >$75 M with Syndicate Data Value ($B)	PF Loans with Tranches >$75 M with Syndicate Data Number	PF Loans with Syndicate Data Percent by Value	PF Loans with Syndicate Data Percent by Number
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10=8/6)	(11=9/7)
1	USA	$9,827.0	59,290	$141.2	964	$127.6	511	$20.2	75	15.8%	14.7%
2	UK	1,500.0	7,233	110.4	405	105.4	221	17.1	47	16.2	21.3
3	Indonesia	112.4	1,591	47.6	330	41.6	127	8.9	30	21.4	23.6
4	Australia	390.4	2,062	46.1	268	41.2	143	10.9	33	26.5	23.1
5	China	100.2	1,634	37.1	558	24.8	118	7.3	38	29.4	32.2
6	Malaysia	82.1	1,004	26.0	195	23.1	88	5.6	24	24.2	27.3
7	Thailand	77.0	1,273	24.9	204	23.6	48	5.1	18	21.6	37.5
8	Hong Kong	180.3	1,743	24.9	159	22.2	79	13.9	38	62.6	48.1
9	Taiwan	68.4	577	24.7	83	23.6	48	17.5	25	74.2	52.1
10	Canada	544.3	2,711	24.5	148	22.4	80	2.3	7	10.3	8.8
11	Turkey	67.2	946	17.9	240	13.0	82	1.6	7	12.3	8.5
12	Saudi Arabia	67.1	316	16.0	99	14.3	40	3.6	8	25.2	20.0
13	Mexico	148.6	902	15.8	130	13.4	50	0.5	4	3.7	8.0
14	Italy	260.8	1,969	15.3	81	13.9	32	0.8	5	5.8	15.6
15	India	49.5	729	15.2	129	12.8	54	0.9	5	7.0	9.3
Average										**22.2%**	**21.2%**
Totals:											
	Top 15 Countries	**$13,475.3**	**83,980**	**$587.6**	**3,993**	**$522.9**	**1,721**	**$116.2**	**364**		
	Full Database	**$16,300.2**	**102,774**	**$864.3**	**6,505**	**$751.9**	**2,677**	**$150.5**	**495**		
	Top 15 / Full Database	**82.7%**	**81.7%**	**68.0%**	**61.4%**	**69.5%**	**64.3%**	**77.2%**	**73.5%**		

Source: Capital DATA Loanware

Table III

Univariate Analysis of Syndicate Structure

This table provides a univariate description of the main variables used in the study. The variables are broken into four groups: project variables (Panel A), political risk variables (Panel B), syndicate structure variables (Panel C), and loan pricing variables (Panel D). The table shows the number of loan tranches with data available, and the mean, median, and standard deviation for each variable.

	Project Finance Loan Tranches >$75m				Project Finance Loan Tranches >$500m			
Variable	**Number**	**Mean**	**Median**	**Std. Dev.**	**Number**	**Mean**	**Median**	**Std. Dev.**
Panel A: Project Variables								
Project Size ($ millions)	113	820.0	586.0	1302.1	20	1927.9	1304.7	2683.8
Tranche Size ($ millions)	495	304.0	180.0	540.9	74	948.2	702.3	1194.3
Leverage: Debt/Total Project Size (%)	45	69.4%	70.7%	13.7%	9	65.6%	68.0%	13.4%
Tranche/Total Debt (%)	45	66.3%	67.6%	28.2%	9	60.5%	59.5%	34.9%
Tranche/Total Project Size (%)	113	47.8%	43.8%	26.2%	20	42.5%	43.6%	23.2%
Maturity (Years)	474	9.4	9.0	4.8	74	10.2	10.0	5.6
Panel B: Political Risk Variables								
Instit. Investor Rating [0-100 low risk]	493	68.5	68.5	18.2	74	70.4	72.5	16.7
LLSV (1998) Creditor Rights [0-4 strong]	408	2.4	2.0	1.4	60	2.5	3.0	1.5
BPR (1999) Legality Index	408	17.6	19.1	4.0	60	18.5	20.4	3.6
Panel C: Syndicate Structure Variables								
Concentration Ratios								
Herfindahl-Hirschman Index (HHI)	495	14.9%	10.25%	13.5%	74	5.7%	4.9%	3.4%
Largest Single Share (CR1)	495	20.3%	14.8%	16.2%	74	9.6%	8.0%	5.3%
Top Five Shares (CR5)	495	61.2%	57.3%	25.6%	74	36.7%	33.4%	15.6%
Arranging Banks								
Total Arranger Share (%)	495	39.2%	33.0%	28.5%	74	34.2%	30.2%	25.9%
Number of Arrangers	495	3.6	2.0	3.9	74	5.8	4.0	5.8
Average Arranger Share (%)	490	16.7%	11.4%	16.1%	73	7.0%	5.9%	5.0%
Providing (Non-arranging) Banks								
Total Non-Arranger Provider Share	495	60.8%	67.0%	28.5%	74	65.8%	69.8%	11.6%
Number of Non-Arranger Providers	495	11.0	9.0	9.3	74	22.2	21.0	11.6
Average Non-Arranger Provider	457	9.3%	6.5%	9.9%	73	3.6%	3.1%	2.5%
Total Number of Banks	495	14.4	12.0	10.3	74	28.0	25.5	11.7
Syndicate Shape (Providers/Arrangers)	490	5.7	3.5	6.5	73	8.4	5.2	9.4
Panel D: Loan Pricing Variables								
Fees (bp)								
Commitment	262	31.9	30.0	20.3	47	29.1	25.0	15.1
Participation (Minimum)	266	36.9	30.0	29.3	56	29.8	27.5	18.5
Participation (Maximum)	266	53.1	50.0	36.1	56	47.9	42.5	29.5
Spreads (bp)								
LIBOR Spread	292	130.7	120.0	83.0	46	107.9	97.5	59.2
Loan Spread	404	122.8	102.5	79.1	68	105.0	95.0	53.1
Drawn Return	287	132.2	122.2	77.9	46	112.3	100.8	60.3
Undrawn Return	349	30.4	28.4	23.5	65	28.5	28.6	19.8

Source: Capital DATA Loanware; La Porta, Lopez-de-Silanes, Shleifer, Vishny (LLSV, 1998).

Table IV

Determinants of Syndicate Structure—Concentration and Share Measures

This table shows the results of Tobit regressions on syndicate structure variables. The dependent variables are various concentration and share measures pertaining to the entire syndicate (Herfindahl Index, Largest Single Bank Share, Five Largest Bank Shares), arranging banks (total and average share), and providing banks (average share). The table shows the coefficient and t-statistic, corrected for heteroscedasticity, in parentheses.

	Concentration and Share Measures					
	Herfindahl Index	**Largest Single Share**	**Top 5 Banks Share**	**Total Arranger Share**	**Average Arranger Share**	**Average Provider Share**
	Reg. #1	Reg. #2	Reg. #3	Reg. #4	Reg. #5	Reg. #6
Constant	**0.288****	**0.395****	**0.692****	0.279	0.195	**0.153***
	(3.06)	**(3.44)**	**(3.27)**	(1.12)	(1.64)	**(2.06)**
Inverse of Tranche Size ($m)	**14.398****	**16.782****	**40.344****	**8.000***	**15.623****	**8.330****
	(8.19)	**(7.82)**	**(10.14)**	**(1.72)**	**(7.09)**	**(6.00)**
Institutional Investor Rating	**-0.007****	**-0.009****	**-0.014***	**0.012***	**-0.007***	**-0.004***
	(-2.58)	**(-2.70)**	**(-2.20)**	**(1.65)**	**(-1.94)**	**(-2.01)**
II Rating Squared	**0.00004***	**0.00005***	0.00007	**-0.0001***	0.00004	**0.00003***
	(2.04)	**(2.20)**	(1.48)	**(-2.14)**	(1.51)	**(1.69)**
Weak Creditor Rights (Civil Law) Dummy Variable	**-0.037***	**-0.032***	**-0.082****	**-0.149****	-0.022	-0.017
	(-2.57)	**(-1.81)**	**(-2.59)**	**(-3.94)**	(-1.21)	(-1.50)
BPR Legality Index	**0.007***	**0.008***	**0.024****	-0.007	**0.011****	**0.005***
	(2.12)	**(2.03)**	**(3.35)**	(-0.88)	**(2.63)**	**(2.06)**
Maturity (Years)	0.001	0.0004	**0.005***	0.003	0.001	0.0005
	(0.88)	(0.25)	**(1.73)**	(0.80)	(0.85)	(0.51)
Refinanced Loan Dummy Variable	-0.013	-0.019	-0.055	-0.0001	0.003	-0.014
	(-0.63)	(-0.76)	(-1.24)	(-0.00)	(0.13)	(-0.93)
Guaranteed Loan Dummy Variable	-0.019	-0.022	-0.022	-0.026	-0.008	-0.008
	(-1.36)	(-1.25)	(-0.70)	(-0.69)	(-0.43)	(-0.71)
Secured Loan Dummy Variable	-0.009	-0.002	-0.032	**0.070***	0.014	**-0.023***
	(-0.74)	(-0.11)	(-1.26)	**(2.32)**	(0.98)	**(-2.54)**
Sector Dummy Variables	Included *	Included *	Included *	Included *	Included *	Included
Number of Observations	389	389	389	389	387	362
Likelihood Ratio	109.82	103.08	151.62	52.53	82.22	69.79
Prob. > Chi-Square	0.000	0.000	0.000	0.000	0.000	0.000
Inflection point for II Rating	88	86	n/m	53	90	83

Source: Capital DATA Loanware database; La Porta, Lopez-de-Silanes, Shleifer, Vishny (LLSV, 1998).

Note: * and * * denote significance at the 10% and 1% level in a one-tailed test, respectively.
NM denotes not meaningful.

Figure 1: Syndicate Share Measures

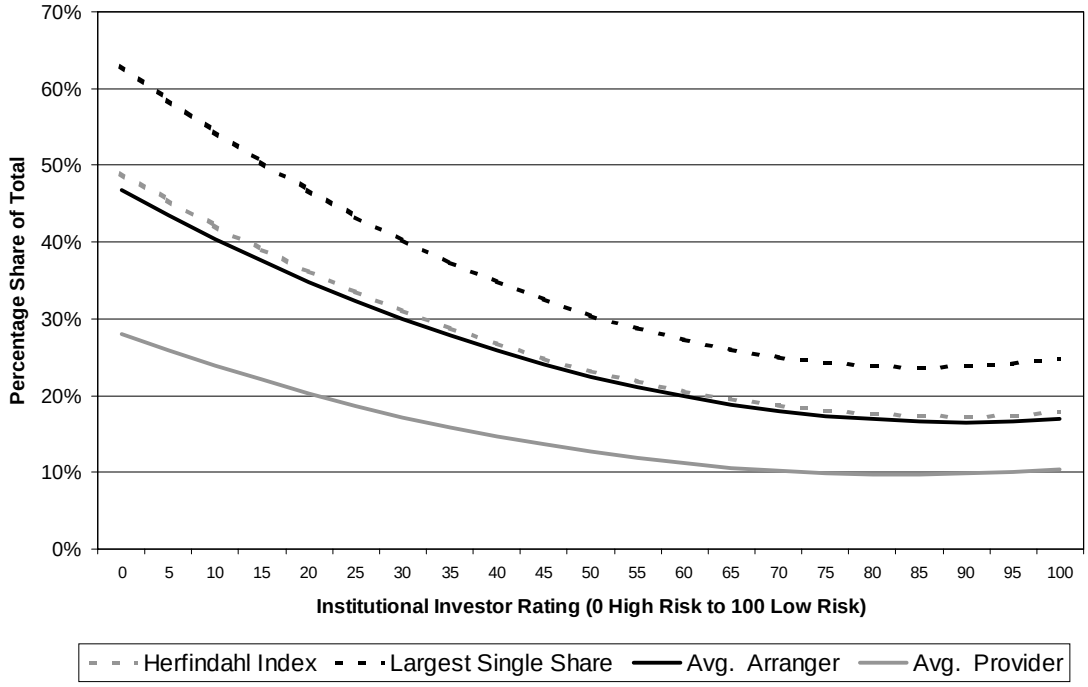


Figure 2: Total Arranger Share of Syndicate

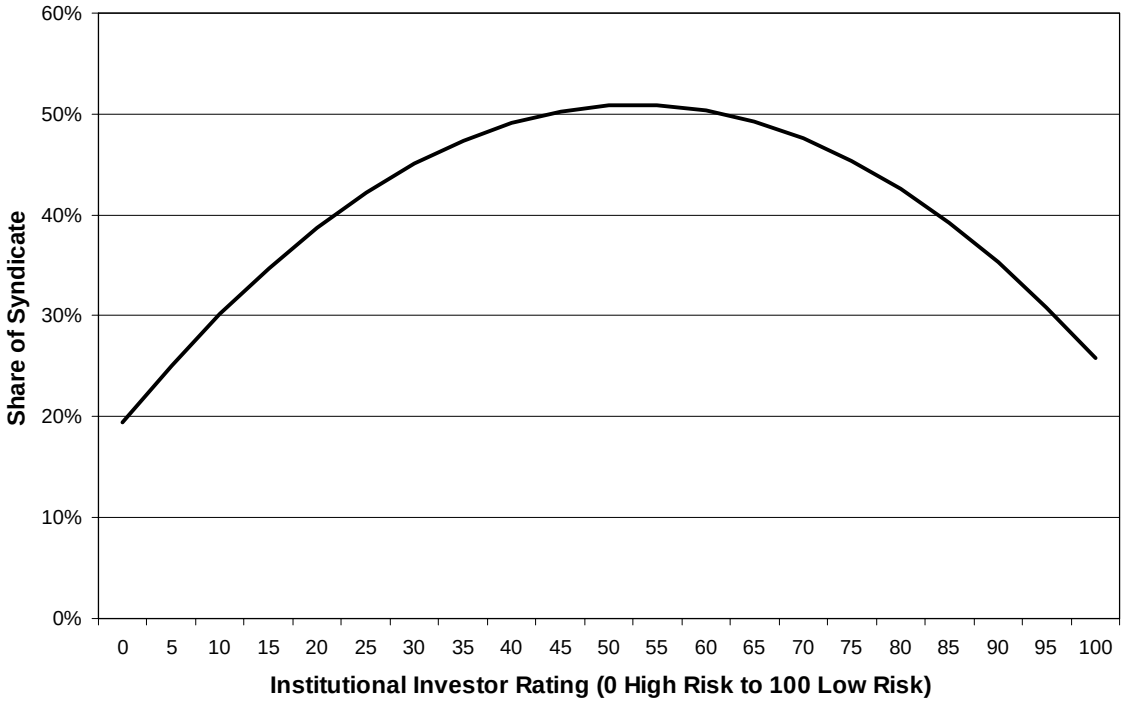


Table V

Determinants of Syndicate Structure—Syndicate Size

This table shows the results of Tobit regressions on the number of banks included in the syndicate. The dependent variables are the number of total banks, arranging banks, providing banks, and Top 10 arranging banks.

	Syndicate Size (Number of Banks)			
	Total Number of Banks	**Arranging Banks**	**Providing Banks**	**Number of Top10 Arranging Banks**
	Reg. #1	Reg. #2	Reg. #3	Reg. #4
Constant	10.069	3.796	7.627	**4.981****
	(1.41)	(0.83)	(1.12)	**(3.80)**
Inverse of Tranche Size ($m)	**-1585.447****	**-508.580****	**-1286.018****	**-177.472****
	(-11.90)	**(-5.76)**	**(-10.09)**	**(-6.96)**
Institutional Investor Rating	**0.724****	**0.377****	**0.403***	**-0.091***
	(3.45)	**(2.81)**	**(2.01)**	**(2.39)**
II Rating Squared	**-0.004****	**-0.003****	-0.002	**0.001***
	(-2.99)	**(-3.05)**	(-1.40)	**(2.09)**
Weak Creditor Rights (Civil Law) Dummy Variable	**2.275***	**-1.828****	**3.448****	**-0.439****
	(2.11)	**(-2.60)**	**(3.35)**	**(-2.15)**
BPR Legality Index	**-0.807****	**-0.479****	**-0.489***	0.013
	(-3.32)	**(-3.14)**	**(-2.11)**	(0.29)
Maturity (Years)	**-0.271****	-0.028	**-0.238***	-0.018
	(-2.79)	(-0.45)	**(-2.56)**	(-1.00)
Refinanced Loan Dummy Variable	2.144	-0.028	2.103	0.134
	(1.40)	(-0.03)	(1.44)	(0.48)
Guaranteed Loan Dummy Variable	0.969	-0.732	1.344	-0.043
	(0.91)	(-1.06)	(1.32)	(-0.22)
Secured Loan Dummy Variable	1.101	0.545	0.667	-0.106
	(1.27)	(0.97)	(0.80)	(-0.66)
Sector Dummy Variables	Included *	Included	Included *	Included
Number of Observations	389	389	389	389
Likelihood Ratio	176.42	84.73	137.00	72.80
Prob. > Chi-Squared	0.000	0.000	0.000	0.000
Inflection point for II Rating	81	64	n/m	79

Source: Capital DATA Loanware database; La Porta, Lopez-de-Silanes, Shleifer, Vishny (LLSV, 1998).

Note: * and * * denote significance at the 10% and 1% level in a one-tailed test, respectively.

NM denotes not meaningful.

Figure 3: Number of Banks in the Syndicate

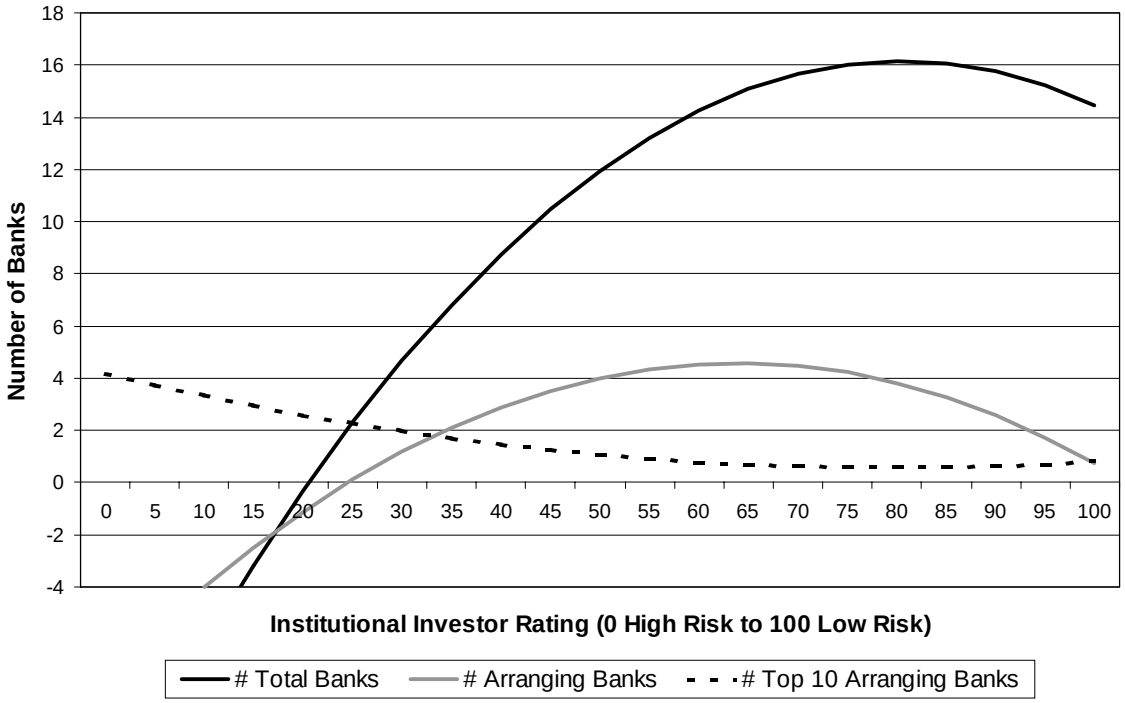


Table VI

The Effect of Syndicate Structure on Loan Pricing

This table shows the results from OLS regressions on the pricing of syndicated project finance loans. The dependent variables are drawn return, participation and commitment fees, and LIBOR spreads. The independent variables include measures of loan risk and syndicate structure. The table shows the coefficient and t-statistic, corrected for heteroscedasticity, in parentheses.

	Arranging Bank Share				**Number of Arranging Banks**			
	Undrawn Returns [a]	**Maximum Partici-pation Fee**	**Loan Spread** [c]	**Drawn Returns** [b]	**Undrawn Returns** [a]	**Maximum Partici-pation Fee**	**Loan Spread** [c]	**Drawn Returns** [b]
	Reg. #1	Reg. #2	Reg. #3	Reg. #4	Reg. #5	Reg. #6	Reg. #7	Reg. #8
Constant	**121.39****	**160.64****	**613.10****	**555.49****	**128.05****	**193.73****	**640.84****	**577.02****
	(4.48)	**(4.23)**	**(6.67)**	**(5.42)**	**(4.74)**	**(4.79)**	**(6.81)**	**(5.62)**
Ln Tranche Size ($millions)	1.55	-1.99	**-10.55***	**-12.47***	0.65	**-5.85***	**-13.11***	**-16.63***
	(0.97)	(-0.63)	**(-1.97)**	**(-1.75)**	(0.41)	**(-1.73)**	**(-2.14)**	**(-2.21)**
Maturity (Years)	**-0.57***	0.46	0.99	-0.72	-0.58	0.39	1.07	-0.67
	(1.67)	(0.70)	(1.15)	(-0.55)	(-1.64)	(0.57)	(1.24)	(-0.51)
Refinanced Loan Dummy Variable	**-12.55****	1.12	-14.28	**-33.32***	**-12.88****	0.51	-15.42	**-33.83***
	(-2.71)	(0.18)	(-1.02)	**(-1.90)**	**(-2.80)**	(0.08)	(-1.13)	**(-1.98)**
Secured Loan Dummy Variable	5.59	4.67	12.12	5.90	5.78	1.84	13.31	8.52
	(1.52)	(0.67)	(1.05)	(0.43)	(-1.60)	(0.26)	(1.08)	(0.61)
Guaranteed Loan Dummy Variable	-4.13	-2.78	-18.56	-23.80	-4.34	-1.70	-19.69	-22.30
	(-1.51)	(-0.49)	(-1.32)	(-1.46)	(-1.58)	(-0.29)	(-1.37)	(-1.34)
Currency Risk Dummy Variable	0.36	10.18	-3.70	14.83	1.39	11.02	-1.14	15.99
	(0.08)	(1.28)	(-0.38)	(0.97)	(0.33)	(1.39)	(-0.12)	(1.08)
Institutional Investor Rating	**-2.66****	**-2.75***	**-9.87****	**-6.72***	**-2.54****	**-2.51***	**-9.47****	**-6.29***
	(-3.63)	**(-2.51)**	**(-3.56)**	**(-2.54)**	**(-3.32)**	**(-2.10)**	**(-3.43)**	**(-2.41)**
II Rating Squared	**0.02****	**0.02***	**0.08****	**0.05***	**0.02****	**0.02***	**0.07****	**0.05***
	(3.37)	**(2.27)**	**(4.05)**	**(2.46)**	**(3.01)**	**(1.86)**	**(3.88)**	**(2.33)**
Creditor Rights (Civil Law) Dummy Variable [e]	**-7.72***	**-13.75****	**-20.45***	**-24.53***	**-8.82***	**-16.48****	**-23.57****	**-27.89***
	(-2.36)	**(-2.76)**	**(-2.21)**	**(-2.04)**	**(-2.75)**	**(-3.14)**	**(-2.65)**	**(-2.45)**
BPR Legality Index	-0.84	**-2.55***	**-5.57***	-4.63	-0.88*	**-2.56***	**-5.71***	**-4.71***
	(-0.99)	**(-1.90)**	**(-1.98)**	(-1.64)	(-1.06)	**(-1.89)**	**(-2.08)**	**(-1.67)**

Total Arranger Share (%)	29.95	**101.79****	**145.58****	109.34				
	(1.62)	**(3.18)**	**(2.71)**	(1.58)				
Total Arranger Share Squared	-16.95	**-57.63**	**-123.6****	-88.96				
	(-0.84)	**(-1.72)**	**(-2.13)**	(-1.22)				
Number of Arranging Banks					**1.99****	**5.82****	**4.71***	**5.07***
					(2.90)	**(4.76)**	**(1.97)**	**(1.67)**
Number of Arr. Banks Squared					**-0.08****	**-0.18****	**-0.21***	-0.21
					(-3.13)	**(-3.54)**	**(2.46)**	(1.52)
Sector Dummy Variables [d]	Included	**Included ***	Included	**Included ***	Included	Included	Included	**Included ***
Year Dummy Variables	Included	Included	Included	Included	Included	Included	Included	Included
Number of Observations	288	216	326	221	288	216	326	221
R-Squared	33.1%	38.7%	27.8%	31.9%	32.8%	36.9%	26.8%	31.6%
F-Statistic	5.05	4.29	4.58	3.17	4.81	4.05	4.88	3.29
Prob. > F-Statistic	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inflection Points (Calculated)								
II Rating	74	78	65	69	76	76	80	69
Arranger Bank Share/Number	NM	88%	59%	NM	12.4	16.5	11.4	12.0

Source: Capital DATA Loanware database; La Porta, Lopez-de-Silanes, Shleifer, Vishny (LLSV, 1998, 2000).
Note: * and * * denote significance at the 10% and 1% level in a one-tailed test, respectively. NM denotes not meaningful.

[a] Undrawn returns annual return expressed in basis points that will accrue to a senior provider if the facility is undrawn throughout its life, as calculated by Capital DATA.

[b] Drawn returns are the annual return in basis points that will accrue to the provider if the facility is fully drawn throughout its life, as calculated by Capital DATA.

[c] Loan spread includes loans priced off LIBOR, as well as other base rates such as Singapore's SIBOR and Hong Kong's HIBOR.

[d] There are dummy variables for seven sectors: industrial, mining, oil & gas, petrochemical, power, telecommunications, and transportation. The omitted sector contains leisure & property projects.

[e] The Creditor Rights Dummy Variable equals one for civil law countries according to LLSV (2000).

Figure 4: Loan Pricing as a Function of Country Risk

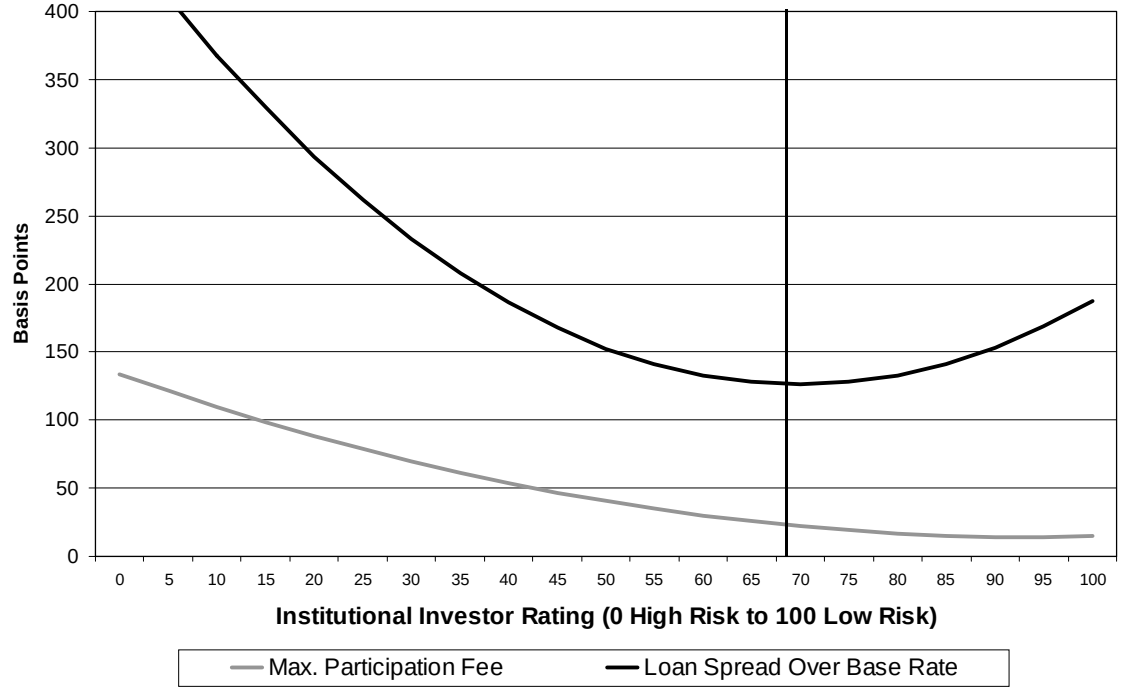
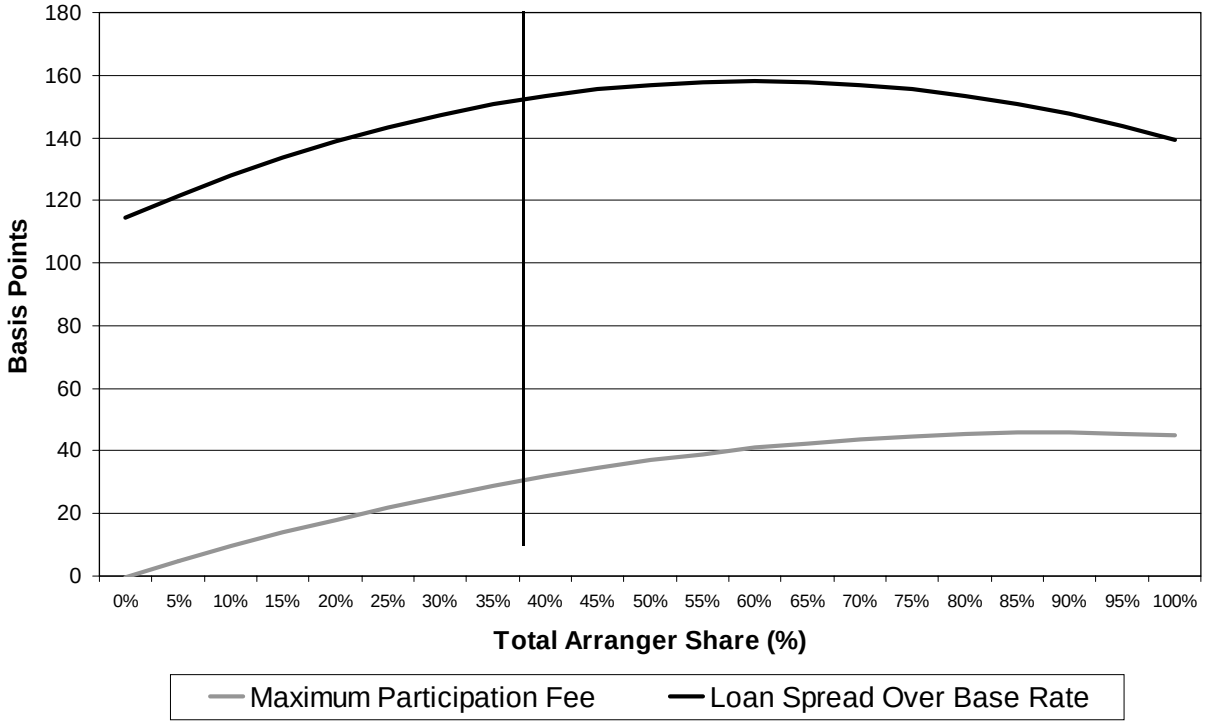


Figure 5: Loan Pricing as a Function of Total Arranger Share



Appendix 1
Matrix of Countries Based on Political Risk

This table shows a distribution of sample countries based on their *Institutional Investor* country credit ratings (on a scale from 0 high risk to 100 low risk) as of September 1999. The numbers in parentheses following the country indicate the country credit rating. The table also separates firms based on their legal origin according to LLSV (1998). Legal origin is a proxy for creditor rights: on average, common law countries provide strong creditor protection than civil law countries do. The countries in bold have the most number of projects in our database.

		Institutional Investor Country Risk Ratings	
		Low Risk (High II Rating)	**High Risk (Low II Rating)**
LLSV Legal Origin	**Common Law (stronger)**	**United Kingdom (90.2)** **United States (90.9)** **Canada (83.5)** Singapore (81.9) **Australia (75.8)** New Zealand (74.0)	**Hong Kong (61.3)** **Malaysia (51.7)** **Thailand (48.3)** India (44.2) Zimbabwe (25.1) Kenya (24.8) Nigeria (17.9)
	Civil Law (weaker)	Switzerland (93.0) **Germany (92.0)** **France (91.4)** Austria (89.4) **Spain (87.2)** Denmark (85.1) Taiwan (75.3, 2)	Mexico (48.2) **Philippines (45.9)** Columbia (44.1) Argentina (42.4) Peru (37.0) Brazil (36.5) **Turkey (38.9)** **Indonesia (27.1)**