ARRANGER CERTIFICATION IN PROJECT FINANCE

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Abstract

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Key words: international corporate governance, bank lending, project finance, syndication
JEL classification: G21, G32, F34, K33

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Few ideas resonate as succinctly with financial economists as does the notion that trusted financial intermediaries can provide valuable certification for an unknown security issuer in new issues markets where information is asymmetrically distributed. Despite this essential plausibility, the empirical evidence on certification in the finance literature is both mixed and less than fully comparable. For example, it is unclear in which new issues markets (securities or banking) certification can be effective, and how certification should express itself—as a higher price paid by investors for new securities or as a more accurate price reflecting all inside information. Equally unresolved is which party can best provide certification, an objective third party (auditor, underwriter) with no economic interest in the issuing firm or a stake-holding corporate insider such as a venture capitalist or a relationship bank. Perhaps the most intriguing unresolved question is how certifying agents are compensated for providing their services and for the use of their reputational capital. Will they be paid directly, with a higher underwriting spread or arranger fee, or will they be compensated indirectly through increased market share? Equally interesting is another question: who will pay the compensation for putting reputation at stake? Banks' customers or the banks – other than the arranger of the deal – involved in the transaction?

There is a large body of theoretical and empirical evidence on certification in new issues markets, which largely traces from Booth and Smith's (1986) prediction that a trusted agent can credibly assert that issue prices for risky assets reflect potentially adverse private information. They specifically predict that investment bank underwriters will be particularly effective certifying agents, and present evidence supporting this prediction. Later authors look for evidence of certification in investment banking and security issuance processes, with most—Blackwell, Marr, and Spivey (1990), Ng and Smith (1996), Cooney, Kato, and Schallheim (2003)—supporting the proposition that highly reputable banks can and do certify that issue prices reflect all material adverse information. The studies that do not support certification in investment banking, especially Chemmanur and Loutskina (2006), generally suggest that prestigious banks have significant market power that allows them to extract rents from issuers and investors that overwhelm any possible beneficial certification effects. Other researchers examine whether venture capitalists [Megginson and Weiss (1991), Lee and Wahal (2004), Li and Masulis (2004), Chemmanur and Loutskina (2006)], auditors [Dichev and Skinner (2002)], lead arrangers of syndicated loans [Dahiya, Puri, and Saunders (2003), McCahery and Schweinbacher (2006), and Narayanana, Rangan and Rangan (2007)], relationship banks [Benzoni and Schenone (2005) and Bharath, Dahiya,

Saunders, and Srinivasan (2007)], and ratings agencies [Sufi (2007)] can provide similarly valuable certification, and most find at least partial support for the certification abilities of these agents.

Though many of these are excellent studies, they all suffer from the twin difficulties of separating certification effects from other influences (particularly market power) and identifying all possible spill-over and unmeasured wealth effects occurring outside the financing event being studied. An example of the "commingling effect" is how prestigious venture capitalists and Bulge Bracket underwriters impact the degree of underpricing in IPO's. Megginson and Weiss (1991) find that highly reputable venture capitalists and underwriters reduced IPO underpricing during the 1980-87 period, but within a few years Beatty and Welch (1996) and later Lee and Wahal (2004) find that this effect flipped after 1990, with more prestigious agents being associated with *greater* underpricing. While top-quality investment banks may be able to certify that all information about a new issuer is being disclosed, and their involvement puts the banks' reputational capital at stake, their growing market power and distributional abilities after 1990 meant that the banks were able to capture all the benefit of certification (and more) in the form of greater underpricing. In turn, the banks were able to internalize the benefits of higher underpricing through their control of the IPO share allocation process, allocating hot issues to favored retail and institutional clients. The "incomplete effects" problem implies that, even if certification occurs and is valuable, there may be important positive or negative spill-over effects not observed during the issue process itself. As a positive example of this, Duarte-Silva (2007) shows that when a firm planning a seasoned equity offering signs with an unexpectedly prestigious underwriter its stock price reacts positively on the announcement and the stock's bid-ask spread falls significantly thereafter. On the negative side, Ng and Smith (1996) show that underwriters often require issuing firms to offer warrants as compensation for accepting underwriting risk. In both cases, the costs and benefits of employing a prestigious underwriter will not be fully measured by examining a security sale itself.

Our study overcomes these problems by examining lead arranger certification in a sample of over 4,000 project finance (PF) loans arranged worldwide between 1991 and 2005. Esty (2007, pg. 213) defines project finance as "the creation of a legally independent project company financed with equity from one or more sponsoring firms and non-recourse debt for the purpose of investing in a capital asset." These are inherently complex projects with large risks and massive informational asymmetries—yet which are funded with small amounts of private equity contributions by project sponsors and much larger amounts of non-recourse syndicated loans, which are the principal external, capital-market financing.[2]

[2] In recent years, several project finance bond issues have been sold, as described in Dailami and Hauswald (2007). These have proven to be highly cyclical, however, and even in the peak years account for a small minority of PF debt financings. For example, Thomson One Banker reports that project finance loans totaled US$120 billion during 2005, compared to US$26.7 billion in project bonds.

The banks that arrange these credits become insiders to the project through working with the PF vehicle company's shareholders (known as project sponsors), and then must arrange the bulk of external financing by attracting other banks to become members of a loan syndicate. A PF loan sample overcomes both the commingling and the incomplete effects problems because PF loans are fully self-contained, one-time financing events, where there is no previous lending relationship between the arranging bank and the project sponsor and no shares of the sponsor trade before or after the funding event. Lead arranging banks serve as the classic delegated monitors [Diamond (1984, 1991)], with the power and duty to screen out of the market potential borrowers with adverse information before a loan is arranged and then ameliorate moral hazard problems through ongoing monitoring of borrowers after the loan closes. We will thus use the ideal sample to test for certification, as PFs are totally self-contained financial entities so *all* of the relevant pricing variables can be measured. This is true for no other corporate financing sample.

Project finance is also an economically significant and growing financial market, worthy of empirical analysis in its own right. Esty and Sesia (2007) reports that a record $328 billion in PF funding was arranged in 2006, up from a cyclical low of $165 billion in 2003 and substantially above the previous record $217 billion in 2001. PF has also been gaining global financing market share over the past two decades, especially as a vehicle for channeling development capital to emerging markets. Over 60 percent of the value (and 68 percent of number) of loans in our sample are arranged for borrowers located outside of North America and western Europe, with over 40 percent of the total being arranged for Asian projects. In spite of its importance, only a few theoretical [(Shah and Thakor (1987), Berkovitch and Kim (1990), Chemmanur and John (1996), John and John (1991)], descriptive [Kensinger and Martin (1988), Smith and Walter (1990), Brealey, Cooper, and Habib (1996), Kleimeier and Megginson (2000), Blanc-Brude and Välilä (2007), Esty (2001, 2002, 2007)] and empirical PF studies [Esty and Megginson (2003), Sorge (2004)] have thus far been published.

Though creation of a vehicle company is the seminal step in all project financings, the work of the syndicated loan lead arranging bank is arguably the most crucial. The bank selected by the project sponsors must perform three vital and difficult tasks. First, it must conduct due diligence on the vehicle company and the project itself to ensure that all potential adverse inside information is revealed before loan syndication. This is especially difficult because the project sponsor has no prior operating history and need not be concerned about reputational effects—it will arrange but a single financing before expiring—and thus has great incentive to hide adverse information about the project and the sponsor's own motives. Second, the lead arranger must attract a sufficient number and diversity of participating banks to fund the PF loan at a price that is both low enough to ensure project solvency and high enough to adequately

compensate the banks for the (known and unknown) risks they are taking by extending credit.[3] The lead arranger must also design an optimal loan syndicate that will deter strategic defaults [Chowdry (1991), Esty and Megginson (2003)] but allow for efficient renegotiation in the event of liquidity defaults.[4] Finally, the lead arranger must spearhead monitoring of the borrower after the loan closes and discourage the sponsor (or the project's host government) from expropriating project cash flows. This is especially difficult in project finance, since many such projects have extremely high up-front costs but then generate large free cash low streams after the project is completed [Bolton and Scharfstein (1996), Esty and Megginson (2003)]. Furthermore, the lenders, represented by the lead arranger, typically have little or no power to seize assets or shut down project operations in host countries, so deterrence must be expressed through some other mechanism [Repullo and Suarez (1998)]. In spite of these complexities, Kleimeier and Megginson (2000) show that PF loans have lower spreads than many other types of syndicated loans, despite being riskier non-recourse credits with longer maturities--suggesting that the unique contractual features of project finance and the underlying risk management process in fact reduce default risk.

We examine lead arranger certification in PF loan syndications in four ways. First, we test the *valuable certification hypothesis*, which predicts that certification by prestigious arrangers will allow loans to be arranged for a lower cost (measured by the spread charged over benchmark lending rates, such as LIBOR or Euribor) than would be required for less prestigious arrangers. Second, we test a logical corollary to this hypothesis which predicts that prestigious lead arrangers can successfully syndicate loan packages that are larger and which require lower sponsor equity contributions than can less prestigious arranging banks. Though we are limited to examining only successfully syndicated loans, we expect that prestigious arranging banks will be able to complete loan syndications with terms and contractual features that other arrangers could not complete. Third, we evaluate how prestigious arrangers are compensated for their services and for use of their reputational capital. Are top arrangers compensated through higher direct arranging fees, as predicted by the direct compensation hypothesis or indirectly through higher market share, as predicted by the indirect compensation hypothesis? Fourth, we examine who pays–-the borrower who signals its better quality by paying higher fees or the banks invited to join the syndicate

[3] In the general syndication phase of a project finance funding, the Mandated Lead Arrangers (MLAs) sell a part of the arranged loan to other participant banks. The certification of the borrower quality in this phase should emerge as the result of the private information available to the MLAs and the extensive advisory work played in the initial underwriting phase.

[4] Other studies examining the impact that syndicate structure can have on loan pricing or the valuation of securities issues include Simons (1993), Dennis and Mullineaux (2000), Pichler and Wilhelm (2001), Casolaro, Focarelli, and Pozzolo (2007), Lee and Mullieaux (2004), Altunbas, Gadanecz, Kara, and Lucchetta (2007), Sufi (2007), and Ball, Bushman, and Vasvari (2007). All of these studies find that syndicate structures are selected deliberately to solve specific agency or contracting problems.

that are expropriated by the market power of the lead arranger--or any certification identified, and ask how this payment is made. Finally, we also make a methodological contribution to the certification literature by constructing two lead arranger "prestige" variables based on prior years' market share hitherto unexamined in the PF literature. Though similar measures have been used in studies of syndicated loan [Sufi (2007)] and securities markets [Megginson and Weiss (1991) and Carter, Dark, and Singh (1998)], this will be the first such application to PF lending.

Our results strongly support the valuable certification hypothesis. We find that, *ceteris paribus*, spreads are significantly lower for loan packages arranged by prestigious banks, and this is robust to various alternative specifications. Prestigious arrangers also successfully syndicate larger and more highly leveraged PF loans in comparison to loans arranged by less prestigious banks. Additionally, prestigious arrangers charge overall fees that are no higher than those charged by arranging banks with lower market shares—and there is limited evidence that overall fees are actually lower for top banks—so prestigious banks can arrange syndicated project finance loans at economically and statistically significantly lower cost than can less prestigious arrangers. We also show that banks participating in syndicates arranged by prestigious banks, rather than the project sponsors, actually pay for prestigious-arranger certification. They do so by accepting lower non-arranger upfront fees in loan syndicates organized by more prestigious arrangers.

Our paper is organized as follows. Section I surveys the relevant literature, beginning with and focusing on theoretical and empirical applications of certification to security and syndicated loan markets. Section II presents our sample selection strategy, characterizes the final sample of PF loans, and describes the methodology we employ to test for certification. Section III presents our empirical tests of the valuable certification hypothesis' predictions regarding the impact of lead arranger prestige on loan spreads, loan size and leverage. Section IV empirically examines the structure of upfront fees (overall, arranger, and non-arranger fees) and differentiates between the predictions of the direct and indirect compensation hypotheses. Section V presents a variety of robustness tests for the validity of our loan spread, size, leverage, and upfront fee results, and section VI concludes.

I. How should certification be expressed in project finance debt contracts?

What bundle of services are project sponsors seeking when they commission top-tier banks to arrange the syndicated loan package for their project? First and foremost, sponsors seek a bank that can successfully syndicate complex PF loans, and this requires both distribution capability and certification of the project's quality and risk. A bank's distribution abilities are highly correlated with its size and the geographic sweep of its network, and with its ability to attract local banks to the loan syndicate. This

should be particularly important for PF loans, since local banks bring not only local knowledge and ties, but also serve as a political bond to help ensure that a host government will not interfere in a project's evolution [Nini (2004), Mian (2006)]. The arranging bank must also have access to specialist engineering, legal, financial, logistical, market assessment, and risk assessment skills that will allow the bank to effectively evaluate a project's true potential and to ensure that all relevant adverse information is disclosed. Sponsors presumably also seek prestigious arranging banks that can certify a project's value and risk to potential syndicate members. This involves an arranging bank finding and then disclosing adverse inside information that the sponsors might have. The sponsors might also seek an arranger able to structure a loan syndicate that maximizes the ability of the creditors to monitor them after the project is completed, and to intervene if the sponsors or host government try to expropriate project cash flows.[5] This bonding action makes sense because we have known since Jensen and Meckling (1976) that entrepreneurs—and by extension borrowers—will capture the benefits of successful bonding through higher firm valuations.

If certification can thus reduce the cost of arranging a particular financial transaction, then "certified" projects will have lower overall financing costs than will projects arranged by less prestigious banks. Alternatively, certification might allow a project to be implemented/funded that would not be funded without aid from a prestigious agent. Therefore, in an environment characterized by asymmetric information between project sponsors (organizers) and capital providers, *certification will create economic value by minimizing search and information costs***.** Absent certification of project value by a trusted intermediary/certifier, each potential lender will feel compelled to independently analyze the project's value and cash flows. If project size or a desire for risk diversification prevents a single lender from financing the entire project, this need for individual project assessment will mean duplication of search efforts by two creditors, tripling of effort by three, quadrupling by four, etc. At the very least, this multiplication of effort will raise the cost of arranging project funding, since a loan must be priced to cover all banks' search costs; at worst, it will cause the project to fail as search costs become excessive.

As noted above, we create a two-part test to see whether certification works and how top arranging banks are compensated for providing this service. First, our **valuable certification hypothesis** predicts that certification by prestigious arrangers will create economic value by allowing the loan to be arranged for a lower cost than would be required for a less prestigious arranger. Specifically, once we control for other factors, loans arranged by prestigious banks should have lower spreads. If we

[5] Though not the focus of our study, we can speculate how arranging banks and project sponsors get together. Since, by definition, there is no prior relationship between any bank and a new project's sponsors, the most likely answer is that prestigious arrangers and sponsors of high-value projects find each other through a double sorting process described for investment banks and issuing firms in Fernando and Spindt (2005), and for venture capitalists and private companies by Sørensen (2007).

find that loan spreads are no different for loans arranged by banks with high versus low market shares, this will indicate either that certification does not occur in PF lending or that it occurs but the market is so competitive that no premiums are created. A finding that prestigious banks charge higher loan spreads than do banks with low arranger market share would suggest that prestigious banks enjoy sufficient market power that they can charge borrowers a premium for their loan arranging services—just as Bulge Bracket investment banks seem to do when underwriting IPOs. This is in fact what McCahery and Schweinbacher (2006) and Cook, Schellhorn, and Pellman (2003) document in their studies of lead arranger certification in the general syndicated loan market.[6] The VCH also predicts that prestigious banks can arrange larger and more leveraged loans than can banks with lower market shares.

The second question we ask is *how and by whom are certifying agents (bank arrangers) compensated for providing certification for PF projects?* We present two different, though not necessarily conflicting hypotheses. The **direct compensation hypothesis** (DCH) asserts that certifying agents will be compensated by direct payment. In our project finance loan sample, this most likely should express itself as higher arranging fees being paid to top-tier PF loan arrangers than to less-prestigious arrangers in otherwise similar projects. After adjusting for all other relevant factors, "certified projects" should have lower overall funding costs than "non-certified" projects, but the fees for the arranger should be higher, indicating that the arranger fee is where surplus is extracted from the borrower. In contrast, the **indirect compensation hypothesis** (ICH) asserts that certifying agents will be compensated principally with a greater market share in the overall PF loan market. If certification creates economic value, yet top banks are not paid directly, then they must capture the return on their reputational capital by capturing a higher share of all profitable loans. This hypothesis is most similar to Tufano (1989), who shows that "innovators" (investment banks that develop new security products) take their compensation in the form of higher market share rather than in higher fees or costs for the first issues of the new securities. Mimicking banks actually charge higher fees for follow-on products. Casolaro, Focarelli, and Pozzolo (2003) find support for a similar effect in the global syndicated loan market and Bharath, Dahiya, Saunders, and Srinivasan (2007) document a similar phenomenon in the U.S. syndicated loan market.

II. Data and Methodology

We employ a merged sample of project finance syndicated loans signed between January 1, 1991 and December 31, 2005 which is drawn from the Reuters/Loan Pricing Corporation's *Dealscan* database and the *ProjectWare* database. While the *Dealscan* database has been employed in many empirical

[6] McCahery and Schweinbacher (2006) find that prestigious arrangers receive higher loan spreads and retain larger fractions of loans in the syndicate, while Cook, Schellhorn, and Pellman (2003) find that

syndicated loan studies, the only study employing *ProjectWare* we know of is Corielli, Gatti, and Steffanoni (2006).[7] Ours is the first study to employ both databases, and we do this because each provides valuable information the other lacks. While *Dealscan* provides very detailed information about the syndicate structure and the pricing of the loans, both in terms of spread and fees, *ProjectWare* has particularly rich data regarding the financial structure of the projects, especially project debt-to-equity ratios, and provides information about the key contracts that the project finance vehicle company sets up to design, build and manage a venture.

A project finance loan typically consists of several tranches that fund the same project but often have different syndicates and thus also different arrangers. Therefore, we focus on the loan tranche as our basic unit of observation. We collect detailed information about each tranche, including its size, spread, upfront fees, maturity, signing date, number and identity of bank arrangers and syndicate members, and syndicate structure. We also collect project-related variables, including measures of country risk and creditor rights in the project's host country, industry risk, cash flow risk (cash flow currency different than loan currency), operational risk (the existence of general and financial covenants) and vehicle company structure—including equity contributions and, where available, project covenants and sponsor information. All our proxies, except those describing the project's home country and the vehicle company structure, are obtained from *Dealscan*. Based on the borrower's name, host country, sponsor's name, and the year of loan signing, we identify those projects that are also reported in the *ProjectWare* database and add the vehicle company structure proxies to each matched loan tranche observation in our sample. (Our variables are explained in detail in Table A-1 of the appendix.) Overall, we obtain a sample of 4,122 loan tranches from *Dealscan*, of which 472 can be matched with *ProjectWare*.

A. Loan and project characteristics

Table I presents summary information about our sample. Panel A presents summaries of the loans' characteristics, while Panel B describes the geographic distribution of the loans. The values are reassuringly similar to those reported in other empirical PF loan studies, including Kleimeier and Megginson (2000), Esty and Megginson (2003), Sorge and Gadanecz (2007), Corielli, Gatti, and Steffanoni (2006), and Hainz and Kleimeier (2006). The average (median) loan size is $188.98 million ($79.45 million), in 2005 US dollars, and the mean spread is 169.2 basis points (bp) (140.0 bp) above the base lending rate, which is typically LIBOR. There is great variability in both size and spread, with loan size ranging between $380,000 and $21.59 billion, and spreads ranging from -295 bp (a *discount* to

high reputation lenders can charge higher rates, averaging 86 basis points for their full sample of loans.

[7] Examples of studies using *Dealscan* include Althunbaş and Gadanecz (2004), Carey, Post and Sharpe (1998), Hainz and Kleimeier (2006), Ivashina (2005), Qian and Strahan (2007), and Sufi (2007).

LIBOR) to 1,400 bp (a 14 percentage point premium). There are two types of upfront fees, the arranger upfront fee that goes directly to the mandated lead arranging (MLA) bank, and the non-arranger upfront fee, which is paid by the MLA to the other banks participating in the loan syndicate. The average (median) arranger upfront fee is 19.8 bp (0 bp), and the mean non-arranger upfront fee is 59.2 bp (50.0 bp). There are, on average, 7.5 banks (5 banks) participating in each loan syndicate, while there are 2.5 arrangers and 2.1 lead arrangers (median of 1 for both) organizing the average loan, so the average size of a PF loan syndicate is 10.0 banks (median of six banks).

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

The mean (median) loan maturity is 104.7 months (84 months) and the mean and median year of loan signing is 2000. These maturities are similar to those presented in Kleimeier and Megginson (2000), who document that PF loan maturities are much longer than those on other syndicated loans arranged for U.S. or international borrowers, despite being higher in average risk. Ratings for the 236 loans with S&P ratings show that PF loans are indeed risky credits. Our ratings proxy, which ranges from 1 for AAA ratings to 28 for D ratings, has an average value of 12.3 (median of 13), corresponding to a rating of about BB- or slightly below investment grade.

The last section of Panel A presents summary data about the projects for which these loans are extended. The typical PF loan is booked in a country with moderate risk, as measured by the *Euromoney* Country Risk Index, which assigns low-risk developed countries index values of near 100 and assigns extremely high-risk countries values close to zero. Loans are extended to borrowers headquartered in countries with an average (median) country risk value of 76.53 (80.65). In addition to country risk, which mainly reflects political risk and economic performance of a country, we also measure the quality of the creditor rights in the country in which the project is located. An average project is located in a country with a LaPorta, López-de-Silanes, Shleifer, and Vishny (1998) creditor rights score of 2, reflecting only moderate creditor rights. These findings are in line with Hainz and Kleimeier (2006) who argue that PF is preferable over on-balance sheet syndicated loans when political and regulatory risks are relatively high and economic performance of the host country is relatively weak.[8] In such circumstances, the limited recourse nature of PF provides incentives to lenders, especially multilateral development banks like the World Bank or national development banks, to actively manage the political risk of the project.

As shown in most other PF studies, the typical project is characterized by higher leverage than observed for other corporate borrowers. On average, the debt-to-equity ratio of PF vehicle companies is 3.41 (2.59) reflecting a 77 percent (72 percent) debt-to-total capital ratio. As described by Esty (2002) and

[8] Many recent studies—especially Bae and Goyal (2006), Djankov, McLeish, and Shleifer (2006) and Qian and Strahan (2007)—document the first order importance of strong creditor rights protection both for the amount and cost of credit granted in a given country.

others, project finance involves heavily leveraging up capital-intensive projects that, once built, generate large amounts of free cash flow. The commitment to payout this cash flow as debt service minimizes the temptation for sponsors and/or host country governments to pre-empt this cash flow for themselves. PF loans are subject to a wide set of loan covenants, and are secured loans collateralized by all project assets.[9] In our sample, 47 percent of the projects have currency risk—the currency of the project's cash flow differs from the currency of debt repayment—while 16 percent of projects have financial covenants and between 11 and 33 percent have risk management contracts. Due to serious non-reporting biases, these values are almost certainly low estimates of the actual frequency of covenant and risk management covenant usage.

B. Geographic distribution of project finance loans

Panel B of Table I shows that U.S. borrowers receive the single largest number (700) and value ($136.6 billion) of PF loans, but over 60 percent of our sample loans are extended to borrowers located outside of the developed economies of North America and Western Europe. Almost half (2,036 of 4,122, or 49.4 percent) of the total number and 41.3 percent ($317.4 billion of $768.6 billion) of the total value of all loans are extended to Asian borrowers, with projects in Taiwan, Australia, China, and Indonesia all receiving between 242 and 262 loans, worth $32.0 billion to $55.9 billion. Western European borrowers are the third largest recipients of PF loans (588 loans, worth $130.4 billion), after Asia and North America, with the United Kingdom and Spain receiving 193 and 189 loans, worth $51.2 billion and $28.3 billion, respectively. In terms of number of loans received, Eastern Europe (256 loans, worth $52.5 billion) and Latin America (227 loans, worth $42.1 billion) rank fourth and fifth, respectively, but the Middle East and Turkey region ranks fourth in terms of total loan value (207 loans, worth $68.9 billion). The reason for this is the extremely large average size of loans arranged for the two to three dozen petroleum-related projects in each of the Persian Gulf countries of Saudi Arabia ($666.0 million), Qatar ($483.9 million), and the United Arab Emirates ($546.4 million). A mere 54 loans, worth $8.7 billion, are extended to projects in Africa.

C. Measuring arranging bank prestige

[9] In a bank lending context, Rajan and Winton (1995) model covenants and collateral as contractual devices that increase a lender's incentive to monitor, and empirical support for these predictions are presented in Dichev and Skinner (2002), Vasvari (2006), and Jiménez, Salas, and Saurina (2007). Project finance loans also have features of both transactions loans and relationship loans, as described in Boot and Thakor (2000). The need for ongoing relationships between borrower and creditor/monitor is a key reason why PF loans are overwhelmingly privately placed.

Before turning to the all-important question of the prestige of the lead arranging bank in each loan syndicate, we must define how we compute arranger market share. We use two methods of computing share. The first is to average the market share of each bank in a loan tranche when there are two or more lead arrangers; the second is to sum the shares of multiple arrangers. We compute both measures over 1, 3, 5, and 7 year measurement periods *prior* to the signing date of each loan. These values are all presented in Panel A of Table I. Lead arrangers have a 1-year market share of 0.82 percent, computed as an average, and 1.73 percent computed as a sum. These values fall steadily over 3, 5, and 7 year measurement periods, to 0.55 percent (average) and 1.16 percent (sum) for the prior seven years. Median share values are roughly half the mean market shares, but show the same declining patterns over increasing measurement periods. In our regression analyses, we use the lead arranger market share in the three years prior to the signing of the loan. Besides preventing a reduction in sample size, this measurement also allows us to avoid any potential endogeneity problems between our lead arranger market share proxy and our size proxy.[10]

Table II presents summary information about those banks that most frequently serve as lead arrangers for PF loans. Over the entire 1987-2005 estimation period, more than 1,000 banks served as lead arrangers for project finance loans. However, we only report the aggregate loan volumes for the top 33 leading arrangers. All of these banks served as lead arrangers for at least $14.7 billion worth of loans, and the median bank on this list arranged 69 loans over this fifteen-year period. Eight banks arranged at least 100 loans, while ABN AMRO Bank arranged an amazing 218 loans worth almost $50 billion. Table II also presents annual lead arranger market shares for 1987-2004. This is the basic measure on which our lead arranger prestige proxies are based. Market shares of individual banks vary widely from year to year, so a multi-year rather than a single-year market share proxy is preferable for this study.[11]

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

Closer examination of the lead arranger share data presented in Table II reveals two important details about the global project finance loan market. First, leadership in loan underwriting is remarkably *non-concentrated* and contestable. The final row of Table II presents a summation of the market shares of the

[10] Although in the next sections we present results based on the prior three years market share, we also check the robustness of the coefficients using prior 1, 5 and 7 years market share data. The coefficient for lead arranger market share is robust and, more importantly, the signs and significance levels are the same for the proxies based on the prior 1-year, 3-year, 5-year, or 7-year market share. Results are available upon request.

[11] As a robustness check we also employ a different measure of lead arranger market share using the number of loan tranches listed on *Dealscan* instead of their dollar amount. Again, results are robust although sometimes less significant than using loan values. We also see if using *Project Finance International* annual league table rankings of lead arrangers yields qualitatively different results, and find this does not. Results are available upon request.

33 banks listed, and the annual sums rarely account for over 40 percent of total number of PF loan tranches arranged that year. Furthermore, it is rare for any single bank to achieve as much as a 3 percent market share for more than four consecutive years. This relative contestability contrasts sharply with the pattern observed in lead underwriting market shares for IPOs, seasoned equity offerings, and public debt offerings, where the same ten largest banks account for two-thirds or more of global security underwritings year after year. On the other hand, Table II also shows that banks can and do achieve prominence as lead arrangers, and that this prominence tends to endure long enough to be economically relevant. Almost one in five (18.9%) of the data cells in Table II represent a bank achieving at least a 2.0 percent share of the lead arranger market for a given year, and above-average individual market shares tend to last multiple periods. In such a contestable market, the competition to become recognized as a prestigious lead arranger will likely be intense, as will be the payoff from achieving such prominence.

D. Methodology for estimating loan spreads and fees

To formally test whether valuable certification occurs in the PF loan market—and to determine who pays for it—we must specify a model for loan spreads and fees. We draw on loan pricing studies and the methodologies presented in, among others, Booth (1992), Dennis, Nandy, and Sharpe (2000), Altunbaş and Gadanecz (2004), Carey and Nini (2004), Nini (2004), Vasavari (2006), and Gupta, Singh, and Zebedee (2006). First, we separate our observations into different quartiles based on the lead arranger market share and assess, by means of a Wilcoxon test, whether the average spread, total upfront fees, arranger and non arranger upfront fees, size and leverage of project finance loans with high lead arranger market share are different from PF loans with low lead arranger market share. Second, we conduct regression analyses to test our hypotheses using spread, loan size, leverage, and fees as our dependent variables. In particular, we analyze the impact of our lead arranger proxy (and other control variables) on all dependent variables using a reduced-form estimation that leads to unbiased coefficients. As Dennis, Nandy, and Sharpe (2000) point out, the characteristics of a loan contract are all determined simultaneous and are thus endogeneous, so we employ a simultaneous estimation approach which specifically models the interdependencies between these endogenous loan characteristics. Since we focus in this paper on the impact of the lead arranger on the loan characteristics, but not primarily on the interdependencies among the loan characteristics, a reduced-form estimation is sufficient. For each of our six loan features—spread, size, leverage, overall upfront fees, upfront arranger fees, and upfront non-arranger fees—we estimate a single regression, which includes (besides the lead arranger proxy) only proxies that control for project risk:

$$loan\ feature = \alpha + \beta_1\ lead\ arranger\ market\ share + \beta_2\ country\ risk + \beta_3\ creditor\ rights + \beta_4\ cash\ flow\ risk + \beta_5\ project\ life + \Sigma_i\ \gamma_i\ operation\ risk\ dummies + \Sigma_i\ \delta_i\ industry\ risk\ dummies + \varepsilon \quad \text{(Eq. 1)}$$

Note, however, that due to the lack of a better measure, we use loan maturity as a proxy for the project's life. In particular, we estimate equation (1) with OLS for the loan features spread and loan size (in logs of 2005 US dollars). The remaining loan features—overall upfront fee, arranger upfront fees, non-arranger upfront fees and leverage--are censored variables, which can only take values at or above zero, and we therefore apply a maximum likelihood estimation of a Tobit model to equation (1). As goodness-of-fit measures we report adjusted R^2 for the OLS regressions and McKelvey-Zavoina pseudo R^2 for the Tobit regressions. The latter measure has been chosen due to its superior properties, as shown by Veall and Zimmermann (1994).

To more fully capture project risk, we follow Esty and Megginson (2003) and conduct a 2-stage regression. First, we estimate equation (1) for the loan feature spread as shown in equation (2):

$$spread = \alpha + \beta_1\ lead\ arranger\ market\ share + \beta_2\ country\ risk + \beta_3\ creditor\ rights + \beta_4\ cash\ flow\ risk + \beta_5\ project\ life + \Sigma_i\ \gamma_i\ operation\ risk\ dummies + \Sigma_i\ \delta_i\ industry\ risk\ dummies + \upsilon \quad \text{(Eq. 2)}$$

The resulting error term υ of this regression reflects unexplained, residual project risk and can be included as an additional risk proxy so that for the remaining loan features fees, size, and leverage equation (1) becomes:

$$loan\ feature = \alpha + \beta_1\ lead\ arranger\ market\ share + \beta_2\ country\ risk + \beta_3\ creditor\ rights + \beta_4\ cash\ flow\ risk + \beta_5\ project\ life + \Sigma_i\ \gamma_i\ operation\ risk\ dummies + \Sigma_i\ \delta_i\ industry\ risk\ dummies + \eta_5\ \upsilon + \varepsilon \quad \text{(Eq. 3)}$$

E. Univariate tests for spreads, size, leverage, and fees

As noted above, we begin our analysis by performing a simple distributional analysis of the main sample of PF loans. In Table III, we sort loan observations into quartiles based on lead arranger market shares to observe the spread, size, leverage, and fees of PF loans with more versus less prestigious lead arrangers (at different levels of lead arranger market share). Fees are reported in three categories: (1) total upfront fees, which are the total amount of fees the borrower pays to the MLA for organizing the loan facilities, (2) upfront arranger fees, the fraction of the total fees retained by the lead arranging bank(s), and (3) upfront non-arranger fees, which are distributed to participating banks in the loan syndicate.

The valuable certification hypothesis predicts that project finance loans arranged by more prestigious arrangers—those with higher market shares—will have lower spreads and should be larger

and more levered than loans arranged by less prestigious banks. The findings in Table III regarding spreads and size strongly support the VCH. Mean and median spreads decrease monotonically and significantly as arranger share increases, while mean and median loan sizes increase with increasing arranger market share. These patterns hold for both average (Panel A) and summed (Panel B) arranger market share measures.

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

The leverage results, while generally supporting the VCH's predictions, are much less consistent. Panel A reveals that leverage is significantly higher only for more reputable arrangers with the highest certification ability—those arrangers in the highest market share quartile. When lead arrangers pool their certification ability, as illustrated in Panel B, the effects on leverage are mixed. However, the relatively small number of observations for leverage (debt-to-equity ratios can be computed for only 187 loans) should caution us not to interpret these results too strongly.[12] This suggests the need to employ multivariate analysis, which we do shortly.

Table 3 also presents evidence regarding how and by whom prestigious arranging banks are compensated for providing certification. The direct compensation hypothesis predicts that top arranging banks will be paid higher direct fees, while the indirect compensation hypothesis predicts there will be no difference in fees paid. The results generally support the DCH, in that mean upfront arranger fees increase significantly and monotonically with arranger market share, according to both the average and summed measures of market share. Mean upfront non-arranger fees decline steadily but not always significantly with both measures of arranger prestige. Median non-arranger fees also generally decline with arranger prestige. Interestingly, the median upfront arranger fee is zero for all arranger share quartiles, suggesting that separate fees are paid to arrangers in a minority of loans—but when these fees are paid, prestigious arrangers receive disproportionate shares.[13] There is no clear univariate association between overall upfront fees and lead arranger prestige. While at first overall fees increase with arranger prestige, these begin to decrease once the lead arranger market share reaches moderate levels. Furthermore, not all of the differences between lead arranger market share quartiles are significant. Overall, the data suggests that prestigious MLA's are able to organize bank syndicate at lower cost than can less prestigious arrangers

[12] To illustrate, let's compare the loans with very low versus very high prestige arrangers. Whereas on average, less prestigious arrangers are associated with loans of $ 130.75 million in real size, a spread of 193.91 basis points (bp), a total upfront fee of 70.03 bp, non arranger fee of 65.80, arranger fee of 9.38 and a debt-to-equity ratio of 3.59, highly prestigious arrangers are associated with loans of $ 248.89 million in size with a spread of 156.12 bp, a total upfront fee of 65.80 bp, non arranger fee of 54.72, arranger fee of 28.11 and a debt-to-equity ratio of 4.08.

[13] This interpretation must, however, be tempered somewhat by the fact that arranger fees are reported far less consistently than are overall upfront and non-arranger fees.

but leading banks are also able to keep a higher portion of the total fees that are paid by asserting their bargaining power toward other members of the syndicate.

These simple sample analyses, however, do not allow us to control for project risks. We therefore proceed with regression analysis where we can take these risks directly into account.

III. Empirical tests of the valuable certification hypothesis

A. Regression analyses of loan spreads

Table IV reports regression result for different samples. For spread, as for all four dependent variables, we employ the largest possible sample in regressions (1) and (2). Regression (3) is based on a sample for which spread, size, fee and control variables are available and can thus be compared across dependent variables. For the leverage estimation, regression (4) is based on a sample for which spread, size, leverage and control variables are available.

Table IV shows that spread is negatively related to lead arranger market share (the prestigious arranger proxy) after all other factors are accounted for, strongly supporting the VCH. This is true for both lead arranger market share proxies in Panels A and B of Table IV. Each one percentage point increase in lead arranger market share is associated with a reduction in spreads of between 9 and 17 bp using average arranger share, and by 5-6 bp using summed arranger share. Since the average (median) spread on all sample loans is 169.2 bp (140.0 bp), and the 3-year average market share of lead arrangers varies between 0 and 8.36 percent for loans in our sample, these estimated coefficients reflect an economically and statistically significant relationship between arranger prestige and loan cost.

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

Examining the coefficients of the different risk proxies reveals exactly how these project features interact with spreads. Regarding the impact of country characteristics, the significant negative coefficient on country risk shows that spreads are lower in low-risk countries, as expected. Each one point increase in the country risk rating—corresponding to reduced political risk—is associated with a reduction in spreads of between 2.6 and 3.4 bp, depending upon the specific model, sample, and arranger share proxy employed. Furthermore, spreads are significantly negatively related to cash flow or currency risk, so loans with such risk have spreads that are between 23 and 45 bp *lower* than those without, depending upon the specific regression examined. This finding is in line with Kleimeier and Megginson (2000) and Corielli et al. (2006). The most logical explanation for this finding is that only the most creditworthy projects with currency risk will be funded, so this actually proxies for underlying project value rather than a mismatch between project and loan cash flows, per se. Many loan pricing studies (including ours—see below)

document a similarly puzzling positive coefficient for a dummy variable proxying the use of collateral in a loan, and have explained this result in the same way.

Both regression 2 estimations, for average and summed arranger share, show the expected significantly negative relationship between loan spread and the creditor rights protection offered in the project's host country. However, both regression 3 estimations show exactly the opposite result—a *positive* and significant relation between creditor rights and spread, with coefficient values that are approximately the same magnitude as in regressions 2, just of opposite sign. This can be partly be explained by two factors. First, the relationship between creditor rights and spreads is non-linear. Average spreads are low (135 bp) for borrowers in countries with creditor right levels of 2 and 4, moderate (177 bp) for creditor right levels of 0 and 3, and high (203 bp) for creditor right level of 1. Second, the sample used in regression 3 imposes more stringent data requirements and thus contains only a subsample of the tranches used in regressions 1 or 2. This subsample contains relatively more tranches from borrowers in countries with strong creditor rights. Regressions 1 and 2 thus capture better the decrease in spreads when moving from weaker creditor rights levels (0 and 1) to moderate ones (2) while regression 3 captures the increase in spreads when moving from moderate creditor rights levels (2) to stronger ones (3). It therefore appears that there is no unique, generally valid relationship between spreads and creditor rights. Looking ahead, we will see that the creditor rights variable also plays a surprisingly small and generally insignificant role in all the loan size and leverage estimations. The relative unimportance of creditor rights in project finance lending contrasts sharply with results presented in almost all other studies of international lending, which show that creditor rights significantly increases the volume of cross-border lending and reduces its cost. This suggests that project finance contracting technology is especially effective at mitigating, or at least minimizing, the hazards that creditors face in more general lending to borrowers in low protection countries.

We find that loan spreads are not significantly related to project life, as proxied by loan maturity. On the other hand, projects with general covenants have loans that are dramatically more expensive—between 79 and 116 bp dearer, depending upon the model and sample examined—than do loans without general covenants. As discussed above for creditor rights, we believe that general covenants have an impact similar to that found for collateral in other studies: they allow riskier projects to be funded and these have higher spreads but are employed only in low risk countries where enforcement is likely to be more practicable. Financial covenants are significantly negatively related to spread in the two regressions using average arranger share, and are also negatively related to spread in the summed arranger share estimations, though insignificantly so. The most logical explanation is that financial covenants force

lenders to perform intense ex-post monitoring of the borrower's financial reports which can lead to a reduction of the borrower's moral hazard and consequently of required risk premiums.[14]

Finally, we document that loan spreads are significantly related to several industry proxies. Most coefficients are positive since this variable is estimated omitting the financial institution and banking sector, which pays the lowest spreads and is used as benchmark for other sectors. All industry groups pay higher rates than do borrowers in the banking and finance sector, but corporate borrowers and telecommunications and media firms pay the highest premiums (80-87 bp, based on regression 3). There are two possible explanations for these results. The first is that most government and non-telecom utility projects are considered strategic priorities in many countries, particularly in emerging markets, so governments are probably more likely to guarantee loan payments for these projects.[15] The second explanation relates to the intrinsic volatility of cash flows in each sector. Infrastructure and utility projects generally have more predictable cash flows than do other sectors (particularly telecoms), while these other sectors are much less stable and are subject to more intense competition and a higher rate of innovation, all factors which cause lenders to demand higher risk premiums.

B. Regression analyses of loan size and leverage

Although the principal prediction of the VCH is that certification by a prestigious loan arranger will reduce the overall cost of a loan, it also predicts that reputable arrangers should be able to arrange larger loans than can other arrangers and that prestigious banks should allow loans to be syndicated for projects with greater leverage. Table IV presents the results of our estimation of both these predictions, and the results strongly support the VCH. Loan size is statistically and economically positively related to lead arranger market share, in all samples and according to all estimation models. Leverage is also significantly positively related to arranger prestige in all of the models employing average arranger market share as the prestige variable; the coefficient is positive but insignificant in the two multivariate

[14] We also include dummies for our six risk management contracts and the sponsor-dummy into the regressions. However, we find mainly insignificant coefficients for all these proxies for a sample of substantially reduced size and thus do not report these results here, although they are available upon request.

[15] Additionally, if a government agency is the borrower there is less conflict of interest when setting market prices for road tolls, electricity, water, and other projects compared to private sector sponsors. Government can gain popular support when calling private sponsors extortionists for charging high market prices but cannot do so when they themselves are sponsors. Our finding is also in line with the difference in yields of government versus corporate bonds where corporate bonds typically pay a higher yield or have a lower credit rating.

estimations using summed arranger market share. In sum, loans arranged by more prestigious banks are larger and more leveraged than loans arranged by banks with lower market shares.

Besides arranger prestige, loan size and leverage are both also significantly positively related to the country risk measure so, unsurprisingly, borrowers in lower risk countries are extended larger loans and can use higher leverage than can borrowers in riskier countries. Size is significantly positively related to loan maturity, according to all estimations and samples. Size is significantly positively related to the currency risk proxy, according to regression 2, for both average and summed arranger share estimations, suggesting that only the largest PF loans with currency mismatches will be syndicated. Size is significantly negatively related to the presence of financial covenants in a PF loan, according to two of the four multivariate regressions, implying that covenants are more likely to be included in smaller rather than larger loans. Loan size is significantly (positively) related to creditor rights in only one regression, and even then the coefficient is quite small. Likewise, size is significantly positively related to the presence of general covenants, but only in one of the four multivariate regressions. Finally, size is significantly (at the one percent level) positively related to the residual risk proxy for size but not for leverage. The effect is however low (the coefficient is almost zero). We must point out that the lead arranger coefficient remains unchanged comparing regressions 2 and 3 for size and 2 and 4 for leverage, suggesting the results are not biased. This is important for the interpretation of later regressions where, due to small sample size, we will not be able to use the residual risk proxies.

IV. Empirical tests of the direct versus indirect compensation hypotheses

We now examine how and by which parties banks are compensated for providing certification. We differentiate between the direct compensation and indirect compensation hypotheses by empirically examining the determinants of fees paid to arranging and non-arranging banks by project sponsors.

A. Lead arranger fee estimations

The DCH makes the straightforward prediction that top arrangers will be "paid" with higher fees—even if the overall cost of the loan is reduced by certification. The regression estimations results, presented in Table V, clearly support this hypothesis. The coefficient on lead arranger market share is economically and statistically significant in all estimations of arranger fee levels. Each one percentage point increase in arranger market share increases the arranging bank fee by 15.6-21.0 bp, using the average lead bank's market share, and by a nearly constant 8.5-8.6 bp using summed arranger share. The larger coefficients on the average arranger share variable versus the summed arranger share variable in the arranging bank fees estimations foreshadow an intriguing pattern observed in all the fee estimations in

Table V. Without exception, regressions using average lead arranger market share yield coefficient values that are larger and more significant than those generated using summed arranger share as a proxy for arranger prestige. This suggests that certification is provided by the lead arranging bank individually, rather than by the group of banks collectively arranging a loan. We thus concentrate our discussion henceforth on the regressions employing average rather than summed arranger share.

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

The level of arranging bank fees is significantly related to several other variables, besides lead arranger market share. As expected, arranging bank fees decrease with declining country risk; every one percentage point increase in the risk proxy (corresponding to lower political risk) reduces arranger fees by about 0.8 bp. Arranger fees are also significantly positively associated with project life (loan maturity) and the presence of financial covenants in the PF loan package. Each one month increase in loan term increases arranger fees by 0.11 bp, while the presence of financial covenants increases fees by 20-26 bp. Finally, arranger fees are positively related to the creditor rights index value, which suggests that arrangers charge *higher* fees to arrange loans to borrowers in countries with better creditor rights protection. To foreshadow, this variable will also be positively related to non-arranger fees and total upfront fees, providing yet more examples of the creditor rights index having an unexpected positive association with loan costs in our sample of PF loans.

B. Non-arranger and overall upfront fee estimations

Having documented that certification creates value, and that prestigious arranging banks are "paid" for providing this certification in the form of higher lead arranger fees, we now ask which party pays—the project sponsors, in the form of higher overall fees, or non-arranging banks that participate in the loan syndicate assembled by a prestigious arranger. The results in Table V clearly show that participating banks pay for certification in the form of lower non-arranger fees, and that, if anything, sponsors pay *lower* overall upfront fees for loans syndicated by prestigious arranging banks. Each one percentage point increase in average lead arranger market share is associated with a highly significant decline in non-arranger fees of from 5.3 to 8.5 bp, whereas the overall amount of upfront fees paid by project sponsors to the banks in the syndicate declines by 3.1 to 5.5 bp. Contracting with a highly prestigious bank to syndicate a PF loan thus creates value by reducing the amount of compensation (fees) other banks will demand to participate in the loan syndicate and by reducing the total amount of fees the project sponsors must pay to successfully obtain loan funding, as well as by reducing the spread charged on these loans.

Besides arranger market share, other explanatory variables have similar impacts on both the level of non-arranger and total upfront fees. Both sets of fees decline significantly when loans are arranged for

borrowers in less politically risky countries (the coefficient on country risk is negative for both sets of regressions), and both fees increase significantly with creditor rights and loan maturity. Currency risk is associated with increased fees—particularly non-arranger fees, which are between 10.2 and 14.4 bp higher when there is a mismatch of project and loan cash flow currencies. The relationship between fees and use of covenants is also similar for both non-arranger and total upfront fees. The presence of general covenants (covenants constraining operation of the project itself) increases fees by a highly significant 50.1 to 60.3 bp, while use of financial covenants in the loan package reduces both sets of fees by 18.2 to 20.3 bp and 11.5 to 12.6 bp for non-arranger and total fees, respectively. These results can be read as an indirect support to the monitoring role played by the leading bank of the syndicate: higher fees may be associated with financial covenants because the ex-post control of the borrower's financial performance is costly and this task is performed by the mandated lead arranger--which is one aspect of the certification it provides to other lenders.

Both sets of fees are also significantly positively associated with unexplained project risk, as measured by our residual risk proxy. Furthermore, lenders collect higher fees for projects in all non-financial industries. Finally, we should point out that the explanatory power, measured by pseudo-R^2, of the multivariate non-arranger and total upfront fee estimations are among the highest of any regressions we estimate. These regressions explain between 13.5 percent and 24.2 percent of the cross-sectional variation in non-arranger and total fees.

Taken together, the results in this section support the predictions of the DCH. Lead arranger fees are significantly positively associated with arranger prestige—showing that top arranging banks are compensated for providing certification through higher direct payments—whereas non-arranger fees are significantly negatively related to lead arranger market share, showing that banks participating in loan syndicates accept lower fees when a prestigious arranger syndicates the loan. Overall upfront fees are lower when a prestigious banker syndicates a loan than when lesser banks are arrangers. The evidence shows that not only are the top arrangers able to fund projects at a lesser cost (in terms of both spread and total fees) than less prestigious ones but they are also able to exploit their reputation by keeping a higher portion of these fees as a compensation for providing certification. Put differently, the data indicate that the banks participating in a PF loan syndicate pay for certification, rather than the project sponsors.

V. Robustness checks

In order to test the robustness of our results, we investigate whether our findings hold for different regions, different time periods—before versus after the Asian crisis—and for different project

sizes. We already indirectly control for some of these factors in our basic analysis of Table IV. For example, regional effects are to some extent captured by our country risk and creditor rights proxies that are related to the project's home country. Similarly, country risk as a time-varying proxy captures the effects of the Asian crisis on the political and economic situation of the project's home country. Nevertheless, a more direct analysis of these three factors provides additional, valuable insights into the robustness of our key results.

A. Regional differences

To investigate whether regional differences exist or not, we classify the loans according to the region where the project is located—into developing and developed countries categories and into three macro-regions (Asia, North America and Western Europe). The regression results (available upon request) show that the lead arranger coefficient is consistently negative in the loan spread regressions across regions, and statistically significant for all regions except Western Europe. The lead arranger coefficient is also consistently positive and statistically significant in all the loan size regressions, but is only statistically significant (positive) in one of the leverage regressions—likely due to small sample sizes. Lead arranger market share has the same sign in all the fees regressions (positive for arranger fees, negative for non-arranger and overall upfront fees) as observed previously, but the coefficients are larger and more significant for the developing country and Asian sub-samples. These findings, in particular, support our basic thesis that lead arranger certification is most valuable, and expensive, for PF loans extended to borrowers in less western, less developed, and less financially transparent economies.

The control variables generally have the same regression coefficients and significance levels observed previously. Increasing country risk increases loan spreads everywhere except Western Europe (where the coefficient is insignificantly positive), and has a similar though less consistently significant effect on all three types of fees. Once again currency risk has the expected positive (but generally insignificant) impact on fees, size and leverage in all regions, but is significantly associated with *reduced* spreads everywhere except North America—where currency risk has a significant positive coefficient--and Western Europe, where the coefficient is insignificantly positive. In these regions, the liquid hard currencies (US dollar, euro, or UK pound) are the home currencies and demanding a loan in another currency thus leads to higher spreads.

Finally, the creditor rights variable again shows mixed results. As logic and prior research suggests should occur, creditor rights are significantly negatively related to spread in developed countries, implying that increased creditor protection reduces loan cost. However, increasing creditor protection seems to *increase* spreads for Asian borrowers (the coefficient is significantly positive), which is a very important result since almost half of all PF loans are extended to projects in Asia. There are two possible

explanations for this result. First, loans might be extended only to the most creditworthy projects in Asian countries where creditor rights protection is weak. Since demand for external capital funding is greatest in high-growth Asian economies, many more projects will pass a hurdle rate and actually be funded there than elsewhere. Second, project finance contracting technology may be especially effective at overcoming poor de jure creditor rights protection in Asian economies, especially since borrowers there have high and continuing demand for external capital. This ongoing need could transform a rational, single-period choice to default into a repeated game where creditors can penalize returning players who defaulted earlier, increasing the effectiveness of PF contracting.

B. Temporal effects: The impact of the East Asian financial crisis

Global PF investment had been growing steadily through the late 1990s, but the East Asian financial crisis of 1997-98 and the subsequent Russian crisis in 1998 led to a sharp drop in sponsor interest (Esty, 2002). Those events may have also caused PF lenders, and particularly lead arrangers, to change their attitude to PF loan pricing and compensation. To test this, we break the sample into three time periods--a pre-crisis period from 1991 to 1997, a crisis period from 1998 to 1999 which covers the Asian and Russian crises, and a post-crisis period from 2000 to 2005. The results, presented in Table VI, offer striking support for the proposition that arranger certification is indeed driving our loan pricing and fee compensation results. The spread regressions reveal that lead arranger market share is only significantly negatively related to loan spread during the post-crisis period, which is precisely when potential lenders should most highly value arranger certification that all project risks have been revealed.

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

The fee regression results also generally support this certification story—and the DCH regarding how arrangers are paid for providing certification—since the coefficients on the lead arranger market share variable are only significantly negatively related to non-arranger and overall upfront fees in the post-crisis period, when the need for certification is presumably greatest. The arranger fee regressions are less consistent, in that the lead arranger share coefficient is significantly positive only during the periods before and during the crises, rather than afterwards. Even here, however, the fact that lead arranger share is so strongly positively related to fees during the crisis—when an arranger with a market share one percentage point above the mean increased arranger fees by 74.4 bp—is consistent with valuable certification being provided and paid for during a time of extreme stress.

C. Size effects

Our final robustness test involves examining whether loan size impacts loan pricing, size, leverage or fees. To do this, we split the sample based on median loan size ($59.55 million) into two

groups: small loans and large loans, and results are presented in Table VII. Finally, size differences in loan values can be important in interpreting our results. Lead arranger coefficients in the spread regressions remain negative, again supporting the VCH. The arranger prestige coefficient is larger (and significantly positive) for large loans, but is twice as large (0.74 versus 0.37, both significant) for small as for large loans in the leverage regressions. The most dramatic impacts of splitting the sample based on size are observed in the fee regressions. The lead arranger market share coefficients are only significant for small loans in all three fee estimations: prestigious arrangers increase arranger fees and reduce non-arranger and overall upfront fees only for loans smaller than the sample median. These are precisely the loans that are most likely to require independent certification by lead arrangers, since participating banks are more likely to perform some or all of their own due diligence the larger a loan being considered.

****** Insert Table VII about here ******

VI. Summary and Conclusions

Using a sample of 4,122 project finance loans, worth $769 billion, arranged between 1991 and 2005, we examine certification by lead arrangers of project finance loans. These are ideal because project finance vehicle companies are stand-alone entities, created for a single purpose, so all valuation impacts will be contained in the project financing package. We propose three hypotheses regarding the role of certification by lead arrangers: First, the valuable certification hypothesis predicts that certification by prestigious arrangers will create economic value in that larger, more highly leveraged loans can be arranged at a lower cost by more prestigious arranger. Second, the direct compensation hypothesis argues that top arrangers will be "paid" with higher fees, even if the overall cost of the loan is reduced by certification. Third, the competing indirect compensation hypothesis implies that a top arranger will *not* be paid higher fees, but will instead be compensated through increased market share.

Our findings strongly support the valuable certification and the direct compensation hypotheses. Loan spreads are significantly lower for credits arranged by prestigious banks, and this is robust to various alternative specifications. Prestigious arrangers also successfully syndicate larger and more highly leveraged PF loans than do less prestigious banks, and overall fees are no higher than—and by some estimates are significantly lower than—loans arranged by banks with lower arranger market shares. Top banks are compensated for providing certification with higher upfront arranger fees, but this is offset by the lower non-arranger fees accepted by banks participating in loan syndicates organized by these prestigious arrangers. This evidence shows that participating banks, rather than PF sponsors, “pay” for the certification that top arrangers provide.

We also present the first comprehensive, large sample analysis of PF financial packages and find that: (1) loans for projects in countries with lower political and economic risks have lower spreads: (2) loans with currency risk have economically and statistically significantly lower spreads and are much larger, suggesting that only the largest and best loans with currency mismatches between project and loan cash flows can be funded; (3) longer term loans are larger and have higher fees, but insignificantly different spreads; (4) general, project-related covenants have an impact similar to that found for collateral in our own and other loan pricing studies—they allow riskier loans to be funded with higher spreads and higher fees—but financial covenants in the loan packages themselves reduce spreads and fees; and (5) spreads and fees differ across industries and loans, but are clearly larger for projects in the telecommunications and utility sectors than in banking and finance. Finally, the level of creditor rights protection offered by project host countries has a small and variable impact on PF loan pricing and fees, perhaps indicating that project finance contracting techniques can partially overcome poor *de jure* and *de facto* creditor rights enforcement.

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Table I: Descriptive Statistics for the Project Finance Loan Sample, 1991 - 2005

Each loan tranche is considered as a separate observation. For a definition of the variables see Table A.1. The lower number of observations for the 5- and 7-year lead arranger market shares are caused by the fact that league tables only start in 1987 and thus no 5- and 7-year market shares can be calculated for loans signed in 1991 and in 1991 to 1993, respectively.

Panel A: Descriptive statistics for the full sample

	percentage of total sample	mean	median	standard deviation	minimum	maximum	number of observations
loan tranche characteristics							
tranche size ($m real)		188.98	79.45	498.38	0.38	21,587.40	4,067
spread (in bp over base-rate)		169.18	140.00	131.18	-295.00	1,400.00	2,635
total upfront fee (in bp)		69.43	60.00	57.06	0.00	750.00	1,452
arranger upfront fee (in bp)		19.84	0.00	42.10	0.00	350.00	1,221
non-arranger upfront fee (in bp)		59.18	50.00	50.70	0.00	750.00	1,219
maturity (in months)		104.71	84.00	80.76	2.00	2,352.00	3,557
tranche rating		12.25	13.00	4.30	1.00	25.00	236
year of loan signing		2,000.02	2,000.00	3.53	1,991.00	2,005.00	4,122
number of lenders		7.48	5.00	7.87	1.00	62.00	4,122
number of arrangers		2.49	1.00	2.69	1.00	26.00	2,475
number of lead arranger		2.13	1.00	2.30	1.00	36.00	4,122
market share of lead arrangers - average across all lead arrangers							
in prior year		0.82	0.40	1.27	0.00	18.11	4,122
average across prior 3 years		0.71	0.36	1.02	0.00	8.36	4,122
average across prior 5 years		0.62	0.27	0.92	0.00	11.79	4,099
average across prior 7 years		0.55	0.22	0.84	0.00	9.18	3,979
market share of lead arrangers - sum of all lead arrangers							
in prior year		1.73	0.60	2.98	0.00	38.92	4,122
average across prior 3 years		1.50	0.48	2.59	0.00	33.93	4,122
average across prior 5 years		1.31	0.40	2.22	0.00	23.25	4,099
average across prior 7 years		1.16	0.34	1.94	0.00	18.25	3,979
project characteristics							
country risk		76.53	80.65	17.47	24.32	100.00	4,100
creditor rights		2.10	2.00	1.02	0.00	4.00	4,028
leverage (debt-to-equity ratio)		3.41	2.59	2.56	0.11	14.71	187
projects with currency risk	47.06						4,122
projects with general covenants	3.93						4,122
projects with financial covenants	15.87						4,122
projects with risk management contracts							472
construction contract	15.47						
EPC construction contract	32.84						
off-take contract	22.88						
supply contract	18.64						
equipment contract	18.22						
O&M contract	11.02						
number of contracts		1.19	1.00	1.32	0.00	5.00	472
sponsors are SPV counter-parties	19.49						4,122
projects in major industry group							4,122
Banks & Financial Services	1.63						
Corporate	58.20						
Government	3.30						
Media & Communication	3.66						
Utilities	19.87						
Unknown Industry	13.34						
projects in developing countries	40.39						4,122
loans signed around Asian crisis							4,122
prior to Asian crisis	29.11						
during Asian crisis	15.04						
after Asian crisis	55.85						

Panel B: Geographic distribution of project finance loans

Region	Country	number of tranches	Real tranche size in US$m			Year of loan signing			fraction of global PF volumne
			total	mean	median	minimum	median	maximum	
Africa		*54*	*8,711.1*	*161.3*	*132.5*	*1997*	*2003.5*	*2005*	*1.1%*
	Egypt	16	3,246.9	202.9	161.8	2000	2004	2005	0.4%
Asia		*2,036*	*317,374.7*	*159.6*	*62.4*	*1991*	*1998*	*2005*	*41.3%*
	Taiwan	262	55,916.3	231.1	64.0	1994	1999	2005	7.3%
	Australia	253	38,939.0	155.1	75.1	1994	2001	2005	5.1%
	China	254	38,370.7	151.7	46.8	1991	1997	2005	5.0%
	Indonesia	242	32,022.1	133.4	58.2	1993	1997	2005	4.2%
	Hong Kong	150	31,330.5	208.9	103.4	1991	1996	2004	4.1%
	Malaysia	119	22,961.2	203.2	95.3	1992	1999	2005	3.0%
	Thailand	127	21,347.5	175.0	79.0	1992	1997	2005	2.8%
	South Korea	189	21,222.5	114.7	52.1	1992	2003	2005	2.8%
	India	72	15,516.7	218.5	103.6	1993	1998	2003	2.0%
	Japan	51	10,061.8	201.2	49.7	1999	2004	2005	1.3%
	Philippines	113	9,935.5	89.5	52.3	1993	1999	2004	1.3%
	Singapore	74	8,882.0	123.4	81.2	1993	1998	2005	1.2%
	Vietnam	53	2,996.9	56.5	35.0	1993	1998	2005	0.4%
	New Zealand	18	2,518.2	139.9	67.8	1995	1999	2004	0.3%
Eastern Europe		*256*	*52,542.1*	*206.9*	*55.2*	*1995*	*2004*	*2005*	*6.8%*
	Romania	17	22,072.1	1,379.5	11.8	2002	2004	2005	2.9%
	Russia	68	11,082.8	163.0	53.2	1995	2004	2005	1.4%
	Poland	23	4,813.3	218.8	135.8	1996	2001	2005	0.6%
	Hungary	27	4,046.0	149.9	59.3	1995	2002	2005	0.5%
	Azerbaijan	17	2,572.6	151.3	123.6	2003	2004	2005	0.3%
Latin America		*227*	*42,132.9*	*185.6*	*115.0*	*1992*	*2002*	*2005*	*5.5%*
	Mexico	56	12,563.7	224.4	126.8	1998	2003	2005	1.6%
	Brazil	46	8,898.5	193.4	106.1	1997	2002.5	2005	1.2%
	Chile	30	4,393.8	146.5	83.5	1992	2002	2005	0.6%
	Bermuda	12	2,930.7	244.2	169.1	1993	1998.5	2001	0.4%
	Argentina	19	2,727.8	143.6	109.5	1995	1998	2002	0.4%
	Venezuela	13	2,578.8	198.4	163.9	1993	1997	2004	0.3%
Middle East & Turkey		*207*	*68,942.3*	*338.0*	*176.6*	*1992*	*2003*	*2005*	*9.0%*
	Saudi Arabia	27	17,981.0	666.0	502.7	1995	1997	2005	2.3%
	Qatar	30	14,517.7	483.9	324.0	1996	2004	2005	1.9%
	UAE	23	12,020.4	546.4	456.0	1999	2004	2005	1.6%
	Turkey	51	7,654.8	150.1	97.8	1992	2001	2005	1.0%
	Oman	28	6,873.9	264.4	204.5	1996	2004	2005	0.9%
	Bahrain	19	4,679.2	246.3	216.3	1997	2004	2005	0.6%
North America		*739*	*146,780.4*	*198.6*	*96.3*	*1991*	*2000*	*2005*	*19.1%*
	USA	700	136,595.2	195.1	94.2	1991	2000	2005	17.8%
	Canada	39	10,185.1	261.2	117.4	1991	2000	2005	1.3%
Western Europe		*588*	*130,380.1*	*222.9*	*97.8*	*1991*	*2003*	*2005*	*17.0%*
	United Kingdom	193	51,236.6	265.5	144.7	1991	2002	2005	6.7%
	Spain	189	28,252.9	150.3	72.1	1993	2004	2005	3.7%
	Italy	75	25,205.5	336.1	48.1	1993	2005	2005	3.3%
	Germany	22	4,816.2	218.9	88.1	1993	2002	2005	0.6%
	France	7	3,851.0	550.1	135.9	1997	2002	2005	0.5%
	Netherlands	20	3,726.7	186.3	162.1	1994	2002	2004	0.5%
Unknown		15	1,719.1	114.6	77.8	1993	1995	1996	0.2%
Global		**4,122**	**768,582.7**	**189.0**	**79.5**	**1991**	**2000**	**2005**	**100.0%**

Table II: League Table for Lead Arrangers in Project Finance Loans Signed between January 1, 1987 and December 31, 2005

This table is obtained from Dealscan's predefined league table for all project finance loan tranches which includes all deals and assigns full credit to all lenders. Here we report only the top 33 banks that were active as lead arrangers in the global project finance loan market between 1987 and 2005. The total tranche amount represents the size of the tranche which the bank has arranged. In case of multiple lead arrangers, the full tranche amount is allocated to both banks.

rank	lead arranger	Value $US millions	number of loan tranches	Annual market shares (in %)																	
				1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1	ABN AMRO Bank NV	49,806	218	0.0	0.0	0.0	0.2	0.0	2.2	4.7	2.6	1.2	2.3	3.5	5.0	3.8	1.7	1.7	1.3	1.4	2.1
2	BNP Paribas SA	47,182	189	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	4.8	6.3	2.8	4.0
3	Citibank	46,789	142	31.4	4.8	19.1	1.2	2.4	4.5	0.8	1.2	4.6	3.3	0.9	3.6	1.6	2.5	8.1	8.4	0.0	0.0
4	Le Credit Lyonnais SA	38,693	122	0.0	0.0	0.0	17.5	0.0	8.1	2.5	2.9	3.6	0.3	1.9	1.6	1.4	2.3	1.5	1.0	1.4	0.4
5	Societe Generale	33,598	112	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.4	0.1	0.8	1.1	1.9	1.4	7.1	7.2	3.8	1.1	0.4
6	Royal Bank of Scotland Plc	33,530	122	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.0	2.2	0.2	0.0	1.1	0.6	1.9	2.4
7	Gulf International Bank BSC	27,100	47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.2	0.5	0.0	0.0	0.1	0.0	2.1	1.3
8	European Bank Recons & Developt	27,038	79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.1	0.6	0.4	0.4
9	SG Corporate & Investment Bank	25,916	79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.1
10	BNP Paribas	25,057	38	0.0	0.0	0.0	15.9	0.0	4.1	2.3	2.1	3.3	0.3	1.6	0.6	0.6	0.1	0.0	0.0	0.0	0.0
11	Calyon Corporate & Investmt Bank	25,048	92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
12	Sumitomo Mitsui Banking Corp	23,179	77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.5	1.5	1.8	3.6
13	Chiao Tung Bank	22,632	37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	1.4	0.1	0.4	0.0	10.4	0.5	0.6	0.2	0.1
14	Chase Manhattan Bank	22,541	86	8.9	7.9	8.2	2.5	8.4	6.4	0.7	0.8	1.9	1.1	3.3	1.9	0.5	1.3	0.0	0.0	0.0	0.0
15	Barclays Bank Plc	22,327	74	3.1	0.0	0.0	1.2	3.8	6.2	0.4	2.4	3.2	0.3	1.4	1.8	0.0	1.3	0.3	2.9	0.1	0.5
16	ANZ Investment Bank	21,857	145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.0	1.8	1.4	3.6	2.1	0.9	1.5	1.6	0.7
17	HSBC	21,821	79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.3	3.8	2.3
18	Industrial Bank of Japan Ltd	21,798	69	0.0	0.0	0.0	1.1	0.0	2.2	4.1	2.1	4.1	2.7	2.1	0.9	0.9	0.0	1.8	1.0	0.0	0.0
19	Bank of Taiwan	21,768	62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.4	4.2	9.3	1.4	1.1	0.5	0.0
20	National Westminster Bank Plc	21,628	24	4.5	0.0	0.0	18.1	3.6	4.4	0.1	0.0	0.0	1.3	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	Banco Bilbao Vizcaya Argentaria	21,378	120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.1	2.3	1.4	1.2
22	WestLB AG	19,527	66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.1	0.8	1.5	2.1	1.3
23	Credit Suisse First Boston	19,291	62	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.7	2.6	4.0	2.4	3.4	2.7	0.0	0.0
24	Banque Indosuez	19,282	12	0.0	0.0	0.0	17.3	0.0	0.0	2.3	0.8	1.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	Internatl Commerci Bank of China	17,889	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	1.1	1.5	9.4	0.6	0.6	0.5	0.3
26	Midland Bank Plc	17,145	13	0.0	0.0	0.0	15.9	0.0	0.0	0.0	1.4	0.0	0.1	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
27	Standard Chartered Bank	16,979	62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.2	0.0	0.6	0.5	0.3	0.4	1.2
28	Deutsche Bank AG	16,381	64	0.0	0.0	0.0	0.5	1.3	0.6	1.3	1.4	0.5	0.4	1.1	2.2	0.2	0.4	0.8	0.8	2.2	0.4
29	Citigroup	16,100	39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.1	1.7
30	Bank of America	15,981	68	3.7	3.0	0.0	0.3	0.0	0.0	0.5	2.1	0.8	0.1	1.3	1.8	1.6	2.6	0.4	2.0	0.1	0.0
31	Fuji Bank Ltd	15,789	59	0.0	3.4	4.4	0.2	1.6	2.0	6.4	0.0	3.9	1.9	0.4	1.0	2.3	0.5	0.2	0.9	0.0	0.0
32	Union Bank of Switzerland	15,482	67	11.7	7.2	3.6	0.7	4.0	7.7	2.3	2.2	3.8	0.2	1.4	1.5	0.3	0.0	0.0	0.0	0.0	0.0
33	Sumitomo Bank	14,683	69	0.0	0.0	5.2	0.0	3.8	1.0	2.3	2.8	0.6	0.9	1.8	1.7	1.2	0.8	0.1	0.0	0.0	0.0
Sum of annual market shares for banks listed, %				**63.3**	**26.2**	**40.5**	**92.6**	**28.8**	**49.4**	**33.2**	**33.0**	**34.1**	**20.7**	**30.9**	**36.7**	**30.5**	**57.2**	**41.7**	**43.0**	**26.4**	**28.7**

Table III: Test for Differences in Project Finance Characteristics for Different Levels of Lead Arranger Market Share

This table reports statistics for project finance characteristics which are separated into quartiles based on the lead arranger market share. Since several tranches can have the same lead arranger market share, the number of observations is slightly different across the different quartiles. The analyses use all observations with non-missing values for the lead arranger market share and the respective dependent variable. Standard deviations are reported in the column 'std dev' and number of observations in the column 'obs'. The Wilcoxon test is a non-parametric test which assesses the difference in means between the current quartile and the next quartile quartile of the dependent variable based on a one-sided probability. ***, **, * indicate that normality or equality of means can be rejected at the 1%, 5%, and 10% significance level, respectively. For a definition of the variables see Table A.1.

	lead arranger	lead arranger market share			dependent variable							
dependent variable	market share quartile	mean	median	std dev	mean	median	std dev	test for normality		Wilcoxon z-test		obs
Panel A: Average prior 3-year lead arranger market share (average across all lead arranger market shares)												
spread	very low	0.01	0.00	0.01	193.91	160.00	142.35	0.85	***	2.72	***	660
	moderately low	0.18	0.18	0.09	177.30	150.00	135.21	0.82	***	-4.21	***	670
	moderately high	0.62	0.59	0.19	148.72	127.50	107.04	0.80	***	-1.79	**	648
	very high	2.08	1.66	1.25	156.12	135.00	132.22	0.70	***			659
size	very low	0.01	0.00	0.01	130.75	53.37	292.72	0.36	***	-5.02	***	1,017
	moderately low	0.18	0.17	0.09	163.13	73.26	280.64	0.51	***	1.73	**	1,019
	moderately high	0.59	0.56	0.17	213.38	84.48	791.67	0.16	***	5.85	***	1,017
	very high	2.07	1.69	1.22	248.89	123.83	441.62	0.47	***			1,014
leverage	very low	0.05	0.00	0.07	3.59	2.41	3.33	0.74	***	-0.46		47
	moderately low	0.30	0.31	0.07	3.26	2.92	2.12	0.90	***	1.16		47
	moderately high	0.97	0.98	0.43	2.76	2.10	1.95	0.69	***	2.99	***	48
	very high	3.27	2.50	1.27	4.08	3.20	2.51	0.86	***			45
total upfront fee	very low	0.00	0.00	0.01	70.03	60.00	64.08	0.65	***	-1.35	*	364
	moderately low	0.15	0.14	0.08	75.18	65.00	61.78	0.80	***	-1.34	*	365
	moderately high	0.55	0.50	0.17	68.82	62.50	53.06	0.87	***	-1.28		365
	very high	1.80	1.39	1.06	63.59	50.00	47.18	0.91	***			358
non-arranger upfront fee	very low	0.00	0.00	0.01	65.80	55.00	58.58	0.67	***	0.86		305
	moderately low	0.14	0.12	0.08	64.38	55.00	55.49	0.84	***	-2.80	***	307
	moderately high	0.51	0.48	0.14	51.74	50.00	42.53	0.91	***	-0.96		303
	very high	1.69	1.27	1.01	54.72	50.00	42.80	0.94	***			304
arranger upfront fee	very low	0.01	0.00	0.01	9.38	0.00	30.31	0.35	***	-2.87	***	306
	moderately low	0.14	0.12	0.08	15.81	0.00	35.77	0.51	***	3.30	***	307
	moderately high	0.51	0.48	0.14	26.17	0.00	50.24	0.59	***	-1.31	*	303
	very high	1.69	1.27	1.01	28.11	0.00	46.49	0.67	***			305

Table III continued

dependent variable	lead arranger market share quartile	lead arranger market share			dependent variable							obs
		mean	median	std dev	mean	median	std dev	test for normality		Wilcoxon z-test		
Panel B: Average prior 3-year lead arranger market share (sum of all lead arranger market shares)												
spread	very low	0.01	0.00	0.02	196.50	162.50	143.35	0.85	***	2.04	**	660
	moderately low	0.27	0.25	0.14	183.22	150.00	136.90	0.81	***	-4.18	***	664
	moderately high	1.20	1.14	0.42	154.19	132.50	103.73	0.83	***	2.43	***	656
	very high	5.01	3.76	3.74	142.34	125.00	129.91	0.67	***			657
size	very low	0.01	0.00	0.02	127.32	52.96	290.50	0.36	***	-2.36	***	1,017
	moderately low	0.26	0.25	0.13	159.35	60.21	735.41	0.11	***	6.45	***	1,022
	moderately high	1.08	1.04	0.38	193.90	98.71	396.59	0.38	***	-6.68	***	1,013
	very high	4.61	3.50	3.54	275.68	132.89	444.57	0.53	***			1,015
leverage	very low	0.07	0.00	0.09	3.15	2.41	2.81	0.70	***	-1.43	*	47
	moderately low	0.44	0.39	0.15	3.77	2.96	2.67	0.86	***	1.51	*	47
	moderately high	1.61	1.56	0.55	2.92	2.08	2.13	0.76	***	2.08	**	47
	very high	4.30	4.07	1.33	3.82	2.91	2.53	0.84	***			46
total upfront fee	very low	0.01	0.00	0.01	69.13	60.00	63.82	0.64	***	0.92		364
	moderately low	0.24	0.22	0.14	71.40	65.00	56.97	0.82	***	1.18		363
	moderately high	1.12	1.01	0.43	66.75	55.00	51.77	0.88	***	0.66		364
	very high	5.52	3.85	4.61	70.47	60.00	55.10	0.86	***			361
non-arranger upfront fee	very low	0.01	0.00	0.01	65.05	55.00	58.48	0.66	***	0.13		305
	moderately low	0.24	0.22	0.14	63.48	60.00	48.55	0.89	***	-2.66	***	308
	moderately high	1.12	0.99	0.44	56.51	50.00	52.80	0.84	***	0.42		302
	very high	5.85	3.92	4.87	51.60	50.00	40.35	0.94	***			304
arranger upfront fee	very low	0.01	0.00	0.02	7.18	0.00	21.81	0.37	***	1.20		307
	moderately low	0.24	0.22	0.14	11.16	0.00	34.23	0.38	***	5.01	***	306
	moderately high	1.12	0.99	0.44	24.35	0.00	44.57	0.62	***	-3.99	***	303
	very high	5.84	3.92	4.86	36.83	8.00	54.22	0.71	***			305

Table IV: Regression Analysis of the Valuable Certification Hypothesis

The regressions for spread and size are estimated with OLS and adjusted R2 are reported as goodness-of-fit measures. The leverage regression is estimated as a tobit model with maximum likelihood and McKelvey-Zavoina pseudo R2 are reported as goodness-of-fit measures. ***, **, and * indicate that the coefficients are significantly different from zero at the 1%, 5% or 10% level, respectively. Regressions (1) and (2) use the maximum number of observations for which the regression variables are available. Regression (3) uses a common sample for which spread, fee, size and the independent variables are available. Regression (4) uses a common sample for which spread, size, leverage and the independent variables are available. For a definition of the variables see Table A.1. All available industry dummies are used except those for banks and financial services, which serve as the benchmark. Residual risk in the size and leverage regressions (3) is proxied by the residual from the spread regression (3).

dependent variable	**spread**						**log(size)**						**leverage**					
	(1)		(2)		(3)		(1)		(2)		(3)		(1)		(2)		(4)	
Panel A: 3-year prior lead arranger market share (average across all lead arrangers)																		
intercept	176.73	***	404.06	***	302.37	***	4.19	***	2.48	***	2.35	***	2.90	***	-1.19		-0.75	
lead arranger market share	-10.47	***	-9.16	***	-16.97	***	0.21	***	0.19	***	0.18	***	0.45	***	0.50	***	0.59	***
country risk			-2.59	***	-3.29	***			0.01	***	0.01	***			0.04	***	0.04	**
creditor rights			-11.69	***	13.92	***			-0.01		0.10	**			0.09		0.26	
cash flow risk (currency risk)			-44.81	***	-29.25	***			0.35	***	0.05				0.56		0.64	
project life (maturity)			-0.04		0.06				0.00	***	0.01	***			0.00		0.00	
operational risk dummies																		
general covenants			83.62	***	116.20	**			0.11		0.89				0.17		0.31	
financial covenants			-16.64	**	-19.31	**			-0.11	*	0.06				-0.32		-0.56	
industry risk dummies																		
corporate			24.92		80.48	***			0.38	**	0.13				-0.18		-0.36	
utilities			-0.17		67.25	***			0.36	*	-0.08				0.64		0.44	
media & telecommunication			47.90	*	87.05	***			0.81	***	0.76	**			-0.68		-1.07	
government			21.58		70.18	**			0.03		-0.19				1.81		1.11	
unknown			24.92		77.14	***			0.24		0.00							
residual risk											0.00	***					0.00	
adjusted / pseudo R^2	0.006		0.095		0.124		0.023		0.064		0.126		0.034		0.161		0.197	
number of observations	2635		2452		1084		4067		3414		1084		187		157		126	
Panel B: 3-year prior lead arranger market share (sum of all lead arrangers)																		
intercept	179.77	***	400.70	***	295.05	***	4.16	***	2.61	***	2.39	***	3.12	***	-0.82		-0.35	
lead arranger market share	-6.54	***	-5.95	***	-5.19	***	0.11	***	0.11	***	0.10	***	0.18	*	0.14		0.18	
country risk			-2.63	***	-3.40	***			0.01	***	0.02	***			0.04	**	0.04	**
creditor rights			-10.37	***	16.55	***			-0.03		0.07				0.07		0.22	
cash flow risk (currency risk)			-41.05	***	-23.27	***			0.29	***	-0.04				0.50		0.52	
project life (maturity)			-0.04		0.07				0.00	***	0.01	***			0.00		0.00	
operational risk dummies																		
general covenants			79.35	***	107.85	**			0.17		0.99	*			0.43		0.59	
financial covenants			-10.63		-12.74				-0.18	***	-0.08				-0.67		-0.89	
industry risk dummies																		
Corporate			28.02		84.10	***			0.32	*	0.04				-0.04		-0.21	
Utilities			5.67		69.29	***			0.26		-0.19				0.68		0.55	
media & telecommunication			50.00	**	87.69	***			0.77	***	0.72	**			-0.61		-0.95	
Government			25.23		74.42	**			-0.02		-0.29				1.84		1.25	
unknown			27.32		80.45	***			0.18		-0.06							
residual risk											0.00	***					0.00	
adjusted / pseudo R^2	0.018		0.103		0.127		0.044		0.083		0.163		0.034		0.140		0.116	
number of observations	2635		2452		1084		4067		3414		1084		187		157		126	

Table V: Regression Analysis of the Direct Compensation and Indirect Compensation Hypotheses

The fee regressions are estimated as a tobit model with maximum likelihood and McKelvey-Zavoina pseudo R^2 are reported as goodness-of-fit measures. ***, **, and * indicate that the coefficients are significantly different from zero at the 1%, 5% or 10% level, respectively. Regressions (1) and (2) use the maximum number of observations for which the regression variables are available. Regression (3) uses a common sample for which spread, fee, size and the independent variables are available. For a definition of the variables see Table A.1. All available industry dummies are used except those for banks and financial services, which serve as the benchmark. Residual risk is proxied by the residual from the spread regression (3) in Table 4.

dependent variable	arranger upfront fee			non-arranger upfront fee			total upfront fee		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
independent variable									
Panel A: 3-year prior lead arranger market share (average across all lead arrangers)									
intercept	-74.64 ***	-80.21 *	-81.42 *	62.37 ***	92.96 ***	75.46 ***	72.58 ***	104.87 ***	86.94 ***
lead arranger market share	20.95 ***	15.63 ***	16.48 ***	-8.45 ***	-7.20 ***	-5.34 ***	-5.51 ***	-4.91 ***	-3.09 *
country risk		-0.77 **	-0.83 **		-1.24 ***	-1.05 ***		-1.08 **	-1.21 ***
creditor rights		8.84 *	11.28 **		11.40 ***	9.03 ***		7.94 ***	12.04 ***
cash flow risk (currency risk)		3.18	-0.96		10.23 ***	14.37 ***		3.33	7.92 **
project life (maturity)		0.11 *	0.11 *		0.05 **	0.05 **		0.05 *	0.08 ***
operational risk dummies									
general covenants		79.08	72.94		60.32 ***	52.35 **		55.85 ***	50.08 **
financial covenants		20.07 *	26.05 **		-20.32 ***	-18.15 ***		-11.48 ***	-12.59 ***
industry risk dummies									
corporate		31.13	28.11		24.44 **	29.73 ***		24.10 **	32.76 ***
utilities		40.34	38.84		26.64 **	30.73 ***		30.41 ***	39.76 ***
media & telecommunication		62.86 *	57.00		22.69 *	29.74 **		24.18 *	38.93 ***
government		-15.18	-13.54		28.99 *	36.85 **		35.52 **	30.95 **
unknown		-2.86	-12.05		24.10 **	30.72 ***		21.40 *	27.00 **
residual risk			-0.03			0.13 ***			0.17 ***
adjusted / pseudo R^2	0.037	0.090	0.076	0.026	0.242	0.223	0.009	0.135	0.213
# observations	1221	1178	1084	1219	1176	1084	1452	1387	1084
Panel B: 3-year prior lead arranger market share (sum of all lead arrangers)									
intercept	-77.47 ***	-78.11 *	-70.87	59.21 ***	89.55 ***	72.77 ***	68.95 ***	102.21 ***	85.14 ***
lead arranger market share	8.59 ***	8.49 ***	8.55 ***	-0.98 **	-1.89 ***	-1.51 ***	0.12	-0.55	-0.19
country risk		-0.50	-0.58		-1.28 ***	-1.08 ***		-1.09 ***	-1.21 ***
creditor rights		3.23	6.07		12.56 ***	9.86 ***		8.47 ***	12.37 ***
cash flow risk (currency risk)		-8.20	-11.75		12.72 ***	16.37 ***		4.32	8.58 **
project life (maturity)		0.08	0.09		0.05 **	0.05 **		0.04 *	0.07 ***
operational risk dummies									
general covenants		79.87	82.13		56.64 ***	49.63 **		55.99 ***	48.90 **
financial covenants		4.08	11.12		-17.74 ***	-16.35 ***		-10.90 **	-12.52 ***
industry risk dummies									
corporate		28.92	18.02		25.48 **	30.57 ***		24.24 **	32.71 ***
utilities		34.47	26.13		26.84 **	31.64 ***		28.98 **	38.84 ***
media & telecommunication		67.48 *	54.30		22.35 *	29.70 **		23.80 *	38.48 ***
government		-6.48	-23.43		29.67 *	37.96 ***		35.10 **	30.98 **
unknown		-0.92	-17.84		25.07 **	31.42 ***		21.82 *	27.16 **
residual risk			0.00			0.13 ***			0.17 ***
adjusted / pseudo R^2	0.043	0.089	0.108	0.002	0.246	0.224	0.000	0.131	0.215
# observations	1221	1178	1084	1219	1176	1084	1452	1387	1084

Table VI: The effect of loan size differences on pricing, size, leverage, and fees

See notes to Table 4. We split the sample into two parts. One containing small loans with a below median real size of less than $ 79.45 million, the other containing the larger-than-median loans. Each regression uses the maximum number of observations for which the regression variables are available

dependent variable	spread		log(size)		leverage	
tranche size	large	small	large	small	large	small
independent variable						
Panel A: 3-year prior lead arranger market share (average across all lead						
intercept	470.33 ***	415.68 ***	4.44 ***	2.96 ***	0.31	-1.05
lead arranger market share	-7.85 ***	-8.27 *	0.06 ***	0.04	0.37 **	0.74 ***
country risk	-1.78 ***	-3.15 ***	0.01 ***	0.00 **	0.02	0.05 **
creditor rights	-6.80 **	-17.46 ***	0.00	-0.03	0.20	-0.13
cash flow risk (currency risk)	-30.39 ***	-54.09 ***	0.14 ***	0.25 ***	0.02	0.65
project life (maturity)	0.00	-0.04	0.00 ***	0.00	0.00	0.00
operational risk dummies						
general covenants	60.14 ***	130.73 ***	-0.06	-0.25 **	-0.16	0.74
financial covenants	1.83	-37.27 ***	0.00	-0.13 **	-0.91	0.82
industry risk dummies						
corporate	-147.41 ***	90.80 ***	0.14	-0.04	0.54	-1.08
utilities	-157.38 ***	50.13 *	0.21	-0.15	0.71	0.65
media & telecommunication	-113.79 ***	106.69 ***	0.18	0.11	0.47	-1.44
government	-159.62 ***	96.06 ***	0.01	-0.09	2.05	
unknown	-132.93 ***	75.87 ***	0.03	0.00		
adjusted / pseudo R^2	0.075	0.126	0.040	0.021	0.108	0.309
number of observations	1256	1196	1681	1733	86	71
Panel B: 3-year prior lead arranger market share (sum of all lead						
intercept	467.25 ***	415.19 ***	4.48 ***	2.97 ***	-0.30	1.23
lead arranger market share	-4.47 ***	-7.25 ***	0.04 ***	0.03 ***	0.05	0.36 **
country risk	-1.84 ***	-3.16 ***	0.01 ***	0.00 **	0.03	0.03
creditor rights	-5.59 *	-16.35 ***	-0.01	-0.03	0.27	-0.45
cash flow risk (currency risk)	-26.72 ***	-51.92 ***	0.11 **	0.25 ***	0.36	0.01
project life (maturity)	0.00	-0.04	0.00 ***	0.00	0.00	0.00
operational risk dummies						
general covenants	56.79 ***	125.93 ***	-0.04	-0.24 *	0.17	0.77
financial covenants	6.92	-31.42 ***	-0.04	-0.14 **	-1.28 *	0.54
industry risk dummies						
corporate	-141.63 ***	91.12 ***	0.11	-0.04	0.66	-1.39
utilities	-149.79 ***	54.22 *	0.16	-0.17	0.84	0.31
media & telecommunication	-110.17 ***	107.43 ***	0.16	0.10	0.57	-2.03 *
government	-152.09 ***	95.96 ***	-0.02	-0.09	1.95	
unknown	-127.61 ***	75.45 ***	0.00	-0.01		
adjusted / pseudo R^2	0.083	0.133	0.051	0.024	0.110	0.309
number of observations	1256	1196	1681	1733	86	71

Table VI continued

dependent variable	arranger upfront fee		non-arranger upfront fee		total upfront fee	
tranche size	large	small	large	small	large	small
independent variable						
Panel A: 3-year prior lead arranger market share (average across all lead						
intercept	-10.41	-100.89 *	19.91	128.37 ***	72.86	125.1***
lead arranger market share	3.85	21.72 ***	-3.81	-12.94 ***	-2.75	-9.33***
country risk	-1.00 **	-0.18	-0.85 ***	-1.63 ***	-1.05 ***	-1.21***
creditor rights	11.23 **	-6.77	11.12 ***	12.24 ***	8.74 ***	6.40***
cash flow risk (currency risk)	14.12	-0.95	19.06 ***	4.09	2.30	4.02
project life (maturity)	0.02	-0.05	0.03	0.10 ***	0.04	0.03
operational risk dummies						
general covenants	57.76		53.08 **		33.26 **	82.16***
financial covenants	14.76	25.31	-11.11 *	-29.04 ***	-6.88	-14.97***
industry risk dummies						
corporate	14.23	33.26	61.29 **	18.70 *	54.25 *	16.12
utilities	27.02	36.52	60.95 **	27.09 **	61.67 **	23.51*
media & telecommunication	29.38	32.82	48.69	40.02 **	49.21	31.17**
government	-41.27	30.11	58.87	26.34 *	71.80 **	24.16
unknown	-6.92	-12.24	70.98 **	12.89	57.28 *	10.20
adjusted / pseudo R^2	0.073	0.079	0.170	0.406	0.111	0.203
number of observations	557	621	555	621	680	698
Panel B: 3-year prior lead arranger market share (sum of all lead						
intercept	-6.37	-85.02	18.11	121.47 ***	71.40 **	118.2***
lead arranger market share	5.28 ***	13.14 ***	-1.23 *	-3.99 ***	-0.62	-1.19
country risk	-0.85 *	0.14	-0.89 ***	-1.68 ***	-1.07 ***	-1.20***
creditor rights	8.53	-15.52 *	11.69 ***	14.75 ***	9.08 ***	7.71***
cash flow risk (currency risk)	4.62	-16.24	20.86 ***	8.02 **	3.11	5.95
project life (maturity)	0.01	-0.07	0.03	0.09 ***	0.04	0.01
operational risk dummies						
general covenants	62.04	-7.66	51.34 **	-22.73 ***	32.72 **	85.25***
financial covenants	5.80	27.44	-9.61	19.61 *	-6.11	-13.62**
industry risk dummies						
corporate	3.12		63.56 **		55.23 *	16.37
utilities	11.18	25.94	63.18 **	26.14 **	62.19 **	21.12*
media & telecommunication	27.24	29.07	49.34	41.30 **	49.72	31.84**
government	-55.70	26.64	61.84 *	25.95 *	72.71 **	22.74
unknown	-14.28	-16.39	72.61 ***	14.63	58.01 *	11.25
adjusted / pseudo R^2	0.079	0.108	0.176	0.410	0.113	0.190
number of observations	557	621	555	621	680	698

Table VII: Impact of the Asian Crisis on the loan pricing, size, leverage and fees

See notes to Table 4. Each regression uses the maximum number of observations for which the regression variables are available. Leverage data is only available as off 1998.

dependent variable	spread			log(size)			leverage		
period	pre-crisis	crisis	post-crisis	pre-crisis	crisis	post-crisis	pre-crisis	crisis	post-crisis
independent variable									
Panel A: 3-year prior lead arranger market share (average across all lead arrangers)									
intercept	352.76 ***	627.09 ***	315.72 ***	1.46 ***	1.54 ***	2.55 ***	0.01	-0.63	
lead arranger market share	0.70	10.86	-18.84 ***	0.16 ***	0.19 **	0.17 ***	-0.18	0.58 ***	
country risk	-2.76 ***	-3.65 ***	-2.43 ***	0.01 ***	0.02 ***	0.01 ***	0.04 *	0.04	
creditor rights	4.83	-21.28 **	-16.09 ***	0.05	0.02	-0.03	-0.20	0.25	
cash flow risk (currency risk)	-28.01 ***	-64.97 ***	-51.93 ***	-0.08	0.60 ***	0.49 ***	1.28 *	0.13	
project life (maturity)	0.19 **	-0.23	-0.04	0.01 ***	0.01 ***	0.00 ***	0.01	0.00	
operational risk dummies									
general covenants	43.93 *	154.42 ***	80.13 ***	0.23	0.29	-0.25	-1.13	2.15	
financial covenants	-8.44	-44.41	-15.63 *	0.10	-0.03	-0.08	1.68	-1.03	
industry risk dummies									
corporate	13.77	-87.33	118.14 ***	0.64 ***	0.22	0.24	-0.51	-0.18	
utilities	-2.03	-116.12	89.68 *	0.71 ***	0.04	0.15	-0.85	1.28	
media & telecommunication	23.38	-68.97	167.42 ***	0.98 ***	0.33	0.65	-0.71	-2.11	
government	-25.04	-96.01	125.62 ***	0.74 **	-0.67	-0.13	-0.10	5.09 **	
unknown	6.58	-93.62	131.94 ***	0.56 **	0.25	-0.06			
adjusted / pseudo R^2	0.054	0.167	0.115	0.174	0.132	0.045	0.145	0.406	
number of observations	824	382	1246	1035	470	1909	74	83	
Panel B: 3-year prior lead arranger market share (sum of all lead arrangers)									
intercept	345.95 ***	641.80 ***	304.69 ***	1.70 ***	1.52 ***	2.68 ***	-0.13	-0.24	
lead arranger market share	-1.53	-3.92	-9.94 ***	0.10 ***	0.16 ***	0.10 ***	-0.12	0.09	
country risk	-2.67 ***	-3.73 ***	-2.46 ***	0.01 ***	0.02 ***	0.01 ***	0.04 *	0.03	
creditor rights	4.64	-21.06 **	-13.93 ***	0.01	-0.03	-0.04	-0.16	0.29	
cash flow risk (currency risk)	-26.71 ***	-63.37 ***	-42.59 ***	-0.17 *	0.59 ***	0.44 ***	1.34 *	0.11	
project life (maturity)	0.20 ***	-0.24	-0.04	0.01 ***	0.01 ***	0.00 ***	0.01	0.00	
operational risk dummies									
general covenants	42.45 *	160.45 ***	71.90 ***	0.20	0.29	-0.19	-1.20	3.76	
financial covenants	-9.32	-50.48	-5.47	0.11	-0.04	-0.15 **	1.76 *	-1.83	
industry risk dummies									
corporate	14.03	-86.59	125.68 ***	0.63 ***	0.16	0.12	-0.50	0.31	
utilities	1.23	-110.76	99.96 **	0.65 ***	-0.08	-0.01	-0.84	1.55 *	
media & telecommunication	24.54	-63.24	169.54 ***	0.96 ***	0.23	0.55	-0.67	-2.31	
government	-21.54	-85.92	130.48 ***	0.58 *	-0.65	-0.21	-0.08	4.80 **	
unknown	6.61	-93.83	137.74 ***	0.56 **	0.15	-0.17			
adjusted / pseudo R^2	0.056	0.166	0.131	0.198	0.154	0.061	0.153	0.379	
number of observations	824	382	1246	1035	470	1909	74	83	

Table VII continued

dependent variable	arranger upfront fee			non-arranger upfront fee			total upfront fee		
period	pre-crisis	crisis	post-crisis	pre-crisis	crisis	post-crisis	pre-crisis	crisis	post-crisis
independent variable									
Panel A: 3-year prior lead arranger market share (average across all lead arrangers)									
intercept	-204.56 ***	-150.21 *	-140.46 **	170.28 ***	57.26	32.71	190.5 ***	63.35	2.83
lead arranger market share	24.55 ***	74.40 ***	-6.31	-4.74	-13.23 *	-7.51 ***	1.90	1.22	-9.99 ***
country risk	0.00	-2.30 **	0.32	-2.06 ***	-1.70 ***	-0.86 ***	-1.97 ***	-1.21 **	-0.37 *
creditor rights	33.62 ***	34.54 *	-1.08	16.48 ***	21.25 ***	5.24 *	11.84 ***	5.60	6.56 **
cash flow risk (currency	8.80	61.33 *	48.84 ***	-7.31	30.81 ***	14.69 **	- ***	20.73 **	23.98 ***
project life (maturity)	0.24	0.35	-0.05	0.10 **	0.12	0.04	0.11 **	0.06	0.00
operational risk dummies									
general covenants			73.60		163.50 ***	44.13 *	73.68 ***	55.99 **	62.69 ***
financial covenants	-29.20	47.25	-15.64	-53.38 ***	-25.02	-12.06 **	- **	-7.76	-10.19 **
industry risk dummies									
corporate	-13.97	61.05	100.65 *	9.45	51.35	64.19 ***	6.41	56.56	80.85 ***
utilities	-33.73	37.01	108.43 *	0.31	50.74	74.98 ***	-2.14	69.47 *	89.85 ***
media &	-33.32	11.68	128.63 **	10.02	54.01	54.10 **	5.01	61.59	69.61 **
government	2.43		33.66	0.35	108.03 **	69.75 ***	34.43	83.86 *	70.04 **
unknown	-28.32		40.81	2.87	69.23 *	63.77 ***	1.67	79.02 **	67.07 **
adjusted / pseudo R^2	0.14	0.359	0.120	0.355	0.491	0.182	0.181	0.238	0.136
number of observations	564	160	454	564	160	452	616	238	524
Panel B: 3-year prior lead arranger market share (sum of all lead arrangers)									
intercept	-150.82 **	-76.89	-142.69 **	170.38 ***	39.23	23.28	191.7 ***	63.35	-4.63
lead arranger market share	9.23 ***	24.04 ***	3.75 **	-0.38	-3.26	-3.32 ***	0.61	3.27	-2.27 ***
country risk	-0.16	-2.75 **	0.45	-2.08 ***	-1.63 ***	-0.91 ***	-1.96 ***	-1.19 **	-0.40 *
creditor rights	27.65 ***	23.66	-2.45	16.63 ***	22.24 ***	7.29 ***	11.49 ***	4.87	8.05 ***
cash flow risk (currency	-1.97	29.82	39.90 ***	-7.20	34.80 ***	22.72 ***	- ***	19.35 **	27.73 ***
project life (maturity)	0.13	0.38	-0.05	0.09 *	0.12	0.03	0.11 **	0.06	0.00
operational risk dummies									
general covenants					158.87 ***	38.75	73.78 ***	55.73 **	62.89 ***
financial covenants	-22.62	45.43	-19.31 *	-51.46 ***	-25.45	-7.38	- **	-7.65	-6.70
industry risk dummies									
corporate	-17.35	71.09	86.63	10.15	56.64	70.77 ***	6.26	54.19	82.38 ***
utilities	-47.18	35.93	89.14	0.21	56.49	81.25 ***	-2.20	65.95 *	88.97 ***
media &	-34.27	44.47	131.39 **	10.86	55.92	54.01 **	4.65	58.15	70.21 **
government	2.75		17.06	1.46	103.82 **	76.61 ***	34.43	80.94 *	71.93 **
unknown	-27.61		32.05	3.11	78.04 **	71.35 ***	1.70	78.06 **	69.05 ***
adjusted / pseudo R^2	0.14	0.311	0.103	0.334	0.475	0.225	0.182	0.244	0.132
number of observations	564	160	454	564	160	452	616	238	524

Table A-1: Definitions of Variables

variable	description	source	variable type
spread	spread over the base rate in basis point	Dealscan	dependent variable
arranger upfront fee	maximum upfront fee in basis points among all types of arranger fees as reported ni Dealscan's tiered upfront fee field. These include arangement fee, co-arrangement fee or lead arrangement fee.	Dealscan	dependent variable
non-arranger upfront fee	maximum upfront fees in basis points among all types of non-arranger fees as reported in Dealscan's tiered upfront fee fields. These include participation fee, underwriting fee, management fee, lead management fee, front-end fee, etc.	Dealscan	dependent variable
total upfront fee	overall upfront fee as reported by Dealscan, missing values have been replaced from 'tiered upfront fee' field as far as possible.	Dealscan	dependent variable
size	Real size of the loan tranche converted into millions of 2005 US dollars. To facilitate the comparison of loan signed in different years, the loan size is converted into real values using the IFS's GDP deflator for the US.	Dealscan	dependent variable
leverage	debt-to-equity ratio of the project calculated as (loans+bonds)/equity	ProjectWare	dependent variable
lead arranger market share	The annual market share of each arranger is calculated as the individual lead arrangers amount in percent of the total amount of all lead arrangers. Based on the year of loan signing, 1-, 3-, 5-, and 7-year prior average market shares are calculated. For loan tranches with multiple lead arrangers, both the sum as well as the average of all individual lead arranger market shares is used.	Dealscan	control variable
country risk	Country risk score ranging from 0 for the country with the higest risk to 100 for the country with the lowest risk. The country risk score is based on political risk (25%), economic performance (25%), debt indicators (10%), default / rescheduled debt (10%), credit ratings (10%), bank finance access (5%), short term finance access (5%), capital markets access (5%). and forfaiting (5%). Weights of each component are given in parentheses.	Euromoney	control variable

Table A-1 continued

variable	description	source	variable type
creditor rights	An index aggregating creditor rights, following La Porta and others (1998), provided by Djankov, McLiesh and Shleifer. A score of one is assigned when each of the following rights of secured lenders are defined in laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze." Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers. Finally, if management does not retain administration of its property pending the resolution of the reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year from 1978 to 2003. As the creditor rights index is relatively stable over time, loans signed in 2004 and 2005 are assigned the creditor rights index for 2003.	Djankov, McLiesh, Shleifer "Private credit to 129 countries", available at http://www.andrei-shleifer.com/data.html	control variable
currency risk	Dummy equal to 1 for loans that are denominated in a currency different from the currency in the borrower's home country.	Dealscan	control variable
EPC construction contract	Operational risk management contract dummy. Dummy equal to 1 if EPC construction contract exists.	ProjectWare	control variable
off-take contract	Operational risk management contract dummy. Dummy equal to 1 if off-take contract exists.	ProjectWare	control variable
supply contract	Operational risk management contract dummy. Dummy equal to 1 if supply contract exists.	ProjectWare	control variable
equipment contract	Operational risk management contract dummy. Dummy equal to 1 if equipment contract exists.	ProjectWare	control variable
O&M contract	Operational risk management contract dummy. Dummy equal to 1 if O&M contract exists.	ProjectWare	control variable
sponsors as SPV counterparties	Dummy equal to 1 for projects where sponsors are counterparties in the special purpose vehicle company.	ProjectWare	control variable
maturity	life of the loan in months	Dealscan	control variable
general covenants dummy	Dummy equal to 1 for loans that have general covenants.	Dealscan	control variable
financial covenants dummy	Dummy equal to 1 for loans that have financial covenants.	Dealscan	control variable

Table A-1 continued

variable	description	source	variable type
broad industry group dummies	Dummies equal to 1 if loan finances project in a certain industry. For each of the following industry groups, a dummy is created: Corporate, government, media & telecommunication, utilities, unknown industry. The control group includes banks and financial services.	Dealscan	control variable
number of lenders	Number of banks in the syndicate. All roles are included here.	Dealscan	descriptive variable
number of arrangers	Number of arrangers	Dealscan	descriptive variable
number of lead arranger	Number of lead arrangers	Dealscan	descriptive variable
year	year in which loan is signed	Dealscan	descriptive variable
rating	Loan rating based on the S&P and Moody's bank loan rating at close. If missing, S&P and Moody's senior debt rating at close are used. If both rating are available, the average rating is calculated. The rating is converted as follows: AAA+=Aaa1=1, AAA=Aaa2=2, and so on until D=28.	Dealscan	descriptive variable