Creditor Rights, Enforcement and Costs of Loan Finance

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ABSTRACT

We examine if differences in legal protection affect interest rate spreads on syndicated loans to borrowers located in 30 countries. The results show that both creditor rights and property rights protection significantly affect costs of loan finance, after controlling for a host of factors including various macroeconomic indicators, and loan and borrower characteristics. The effects are economically large. Average loan spreads will decline by 53 basis points if a borrower moves from a country with weak protection of property rights to a country with strong protection of property rights, all else equal. A smaller decline in spreads of 39 basis points, nonetheless significant, is predicted if a borrower moves from a country with weak creditor rights to a country with strong creditor rights, all else equal. In countries with strong property rights protection, predicted loan maturities are longer and loan sizes are larger.

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1 Introduction

How large are the differences in costs of loan finance due to variation in laws and enforcement regimes? Existing loan pricing models typically explain differences in loan spreads within countries and focus on loan and borrower risk characteristics. Across countries, there is a rich variation in the legal rights of creditors and in the enforcement of contracts. Relatively little is known about the direct costs of being located in a country with weak laws and poor property rights protection.

Creditor rights and contract enforceability are important elements in loan contracting process since they affect a lender's incentives to monitor borrowers and their ability to recontract if credit quality declines subsequent to initial contracting. Declining credit quality results in lenders raising interest rates, demanding more collateral, shortening loan maturity, and further restricting future activities. This recontracting is costly when contracts are poorly enforced. Poor enforcement also lowers recovery rates and increases the time spent in repossessing collateral following default.

Thus, when banks lend to firms in countries with weak creditor rights and poor enforceability of contracts, loan spreads will be higher. Also, banks will shorten loan maturities and reduce loan sizes. What matters is the *local* legal tradition and enforceability of contract since most borrowers file for bankruptcy in their home country. The location of the lender matters less. The recent case of Asia Pulp and Power (APP), controlled by Indonesia's Widjaja family, illustrates the difficulty of recontracting in weak property rights environments. In 2003, the company owed almost US$14 billion to foreign banks, fund managers, and various credit agencies. The foreign banks that lent to APP found it hard to reschedule debt payments. The media reported that the Indonesian courts have not been very helpful in enforcing loan contracts and that the family had snubbed their foreign lenders, often not turning up for scheduled meetings to discuss debt repayments. Citing other examples from Indonesia, Bloomberg (April 28, 2003) states that "the lack of a credible legal infrastructure makes enforcing rights in Indonesia's courts almost impossible."

In this paper, we examine the effects of creditor rights and property rights protection on loan contracts with a sample of syndicated bank loans to firms in 30 countries during 1994-2003. Results show that loan spreads are significantly negatively related to creditor rights and property rights protection, after controlling for a host of factors suggested by the financial intermediation literature - including cross-country differences in sovereign risk rating, per capita GDP; non-price loan terms such as loan maturity and loan size; accounting variables that proxy for borrower credit quality, and annual dummies. While many of these factors matter for loan pricing, the differences in average loan spreads across countries with different legal protection are statistically significant and economically important.

Average spreads decline by about 53 basis points if a borrower moves from a country with the weakest protection of property rights in the sample to a country with the strongest protection of property rights, all else equal. Average spreads decline by about 39 basis points if a borrower moves from a country that scores the worst in creditor rights protection to a country that scores the best, all else equal.

The results are robust to alternative proxies for property rights index and to additional macroeconomic control variables. In a simultaneous equation framework that endogenizes loan maturity and loan size, we find that in countries with stronger protection of property rights, loan maturities are longer and loan sizes are larger.

These results imply that laws and their enforcement have substantial micro-level effects on borrower's cost of loan finance. Recent research has shown that secure property rights are associated with higher values of stock markets (La Porta et al., 1997); a higher number of listed firms (La Porta et al., 1997); higher valuation of listed firms relative to their assets (Claessens et al., 2002; La Porta et al., 2002b); greater use of external finance (La Porta et al., 1997, 1998, 2002a); and greater investments from external funds (Rajan and Zingales, 1998; Demirgüç-Kunt and Maksimovic, 1998).[1] More evidence is provided in Besley (1995);

[1]Cross-country research also attempts to establish the causality from financial development to country growth rates. Rajan and Zingales (1998) show that in countries with well-developed financial systems, industries with greater external financing requirements grow relatively faster. Demirgüç-Kunt and Maksimovic (1998, 1999) show that better investor protection increases the likelihood that a firm will make greater use of external financing and that it will be less constrained in making productive investments.

Mauro (1995); Levine (1999); Levine et al. (2000); Acemoglu et al. (2001). Results in this paper imply that loan contracting is an important channel for law and enforcement to affect external finance, investment and firm growth rates.

We focus on bank loans because it is important to have an understanding of the impact of legal protection on cross country differences in costs of loan finance. As Figure 1 shows, banks are important in allocating credit to private firms in countries around the world.[2] Miller and Puthenpurackal (2002) present related findings for a sample of Yankee bonds. They examine a sample of 260 Yankee bonds from issuers in 16 countries and find that investors require higher premiums for bonds issued by firms located in countries with poor investor protection. Similar implications are reached in Hail and Luez (2003) who show that legal institutions affect international differences in cost of capital, which they estimate from share prices and analysts forecasts.

The paper is related to other recent work that examines the effect of judicial efficiency on the amount of lending and the interest rate spreads. Laeven and Majnoni (2003) use aggregate country level data on interest rate spreads from banks' financial statements and examine the effect of judicial protection of property rights on the cost of bank credit. Jappelli et al. (2005) and Pinheiro and Cabral (1999) find that even within a country, regional variation in judicial efficiency affects the amount of lending and the terms at which loans are made. Desai et al. (2004) examine the determinants of capital structure of foreign affiliates of U.S. multinational firms and find that when affiliates operate in weak creditor rights countries, they borrow less externally. The implication is that external borrowing is more costly in environments in which creditor rights are weak.[3]

This paper is most related to a contemporaneous paper by Qian and Strahan (2005) who find that property rights have little impact on loan spreads, which they interpret as

[2]The figure plots data on the relative importance of different forms of external financing in 49 countries. Bond and equity issuance data are from Thomson Financial and the loan data are from the Loan Pricing Corporation.

[3]In another related paper, Esty (2002) examines how creditor rights protection and law enforcement affect the willingness of foreign banks to lend to domestic projects. Esty and Megginson (2003) examine how creditor rights protection and law enforcement affect the size and concentration of lending syndicates using a sample of internationally syndicated project loans.

evidence that "Coasian" bargaining can offset weak legal or institutional arrangements. In contrast, our results show a strong negative relation between property rights and loan pricing. The differences between these two papers possibly arise because of different sample selection criteria and property rights indices used by the two papers. Qian and Strahan focus on borrowers for which Loan Pricing Corporation (LPC) provides rating information while we match borrowers to Worldscope (by hand) and construct accounting variables to proxy for borrower risk characteristics.

We find that rating requirement substantially diminishes the usable sample. Most LPC borrowers are unrated. In our LPC-Worldscope matched sample, less than a quarter have rating information in the LPC database. The rating criterion for the broader sample of LPC borrowers leads to even more significant reduction in sample sizes. Rated firms are larger, more profitable and have more tangible assets. Contract enforceability is relatively less important for rated firms than it is for unrated firms.[4] In addition, the papers use different indicators for the quality of property rights protection. We compare different indicators of property rights in the robustness section of our paper and find that the relation between spreads and property rights protection is robust across a range of property rights protection measures.

The remainder of this paper is organized as follows. Section 2 presents our data and variables. Section 3 provides the descriptive statistics. Section 4 discusses the main empirical results. Section 5 presents results from robustness tests. Section 6 presents results from simultaneous equation system that endoegnizes loan spreads, loan maturities and loan sizes. Section 7 concludes the paper.

[4]When we re-estimate our regressions for rated firm sample, similar to Qian and Strahan, we too find that property rights protection has no effect on loan spreads. However, it is highly significant for unrated borrowers.

2 Data and variables

2.1 Description of the loan database

Bank loan data are from the Dealscan database compiled by the Loan Pricing Corporation. The database provides information on borrowers, lenders, pricing and non-price terms at loan origination but no information about subsequent repayment history. The initial sample includes all loan tranches in the LPC database from 1994 to 2003, where the borrower is from one of the 49 countries in the La Porta et al. (1998) database. We restrict the start of our sample period to 1994 because LPC's coverage of loans in the pre-1994 period is almost non-existent for countries other than the US; LPC's efforts in the early 1990s were primarily focused on the US loan market.

We take several steps to clean the data. Only loans by banks to corporate borrowers are included.[5] To ensure comparability across loan transactions, the sample is restricted to bank lines of credit and term loans in US$ and priced as spreads over London Interbank Offered Rate (LIBOR).[6] Loans with missing data on loan spreads, maturities, and tranche sizes are excluded.[7]

The LPC database does not have accounting information on borrower required to control for borrower risk characteristics. The loan transactions are therefore matched by hand to borrowing firms included in the Worldscope database. The matched sample consists of 8,766 loan tranches.[8] Almost 89 percent of these loan tranches are to the US firms.

[5]This excludes loans to entities other than corporations (such as financial institutions, sovereigns, insurance companies, investment companies and funds) and loans by lenders other than banks. Also, private placements (both Rule 144A and Non-Rule 144A), bilateral deals, club deals, and public underwriting transactions are excluded.

[6]The Dealscan database includes a variable called "Base Rate and Margin" which includes information on whether the loan is priced as spread over LIBOR or if some other benchmark is used. Overall, about 86 percent of sample loans are priced as spreads over LIBOR. The percentage of LIBOR-based loans as a fraction of all loans exceeds 80 percent for most countries. Results are robust to including non-LIBOR loans.

[7]The missing loan maturity in the database can sometimes be estimated by taking the difference between loan origination date and loan maturity date. We make this estimation whenever possible.

[8]Matched LPC borrowers are almost twice as large as a typical Worldscope firm. They also are significantly more profitable compared to a typical Worldscope firm. Strahan (1999) reaches similar conclusions for US borrowers in LPC.

In much of the analysis, we focus on loans to non-US borrowers. Results are robust to including US borrowers. The final non-US loans sample consists of 927 loan tranches to borrowers in 30 countries during 1994-2003.[9] Appendix 1 provides a breakdown on the number of loans, number of borrowers, median loan spreads, loan sizes and loan maturities by country. Appendix 2 provides a list of top 20 lenders to non-US borrowers ranked by aggregate amount of loans in millions of constant US$ terms.

2.2 Measuring property rights protection

To measure the extent to which a country respects private property rights, we rely on three country risk variables that measure corruption, the risk of expropriation of private property, and the risk that contracts may be repudiated. Section 5 reports tests which consider alternative measures of property rights.

The three indices measure the extent to which a country's legal systems and institutions enforce all contracts, including government contracts. The primary series are obtained from the International Country Risk Guide (ICRG). The annual values obtained from ICRG are means calculated from all 12 monthly values for each variable. Corruption index ranges from 0 to 6 while the repudiation of contracts and risk of expropriation are scales ranging from 0 to 10. Higher values indicate better ratings, i.e. less risk. The corruption index is rescaled so that the range for each index is between zero and ten with low values indicating less respect for private property. ICRG descriptions are as follows:

Corruption: According to ICRG, the corruption index is "an assessment of corruption within the political system. Such corruption is a threat to foreign investment for several reasons: it distorts the economic and financial environment and it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability." Lower scores indicate that "high government officials are likely to demand special payments" and that illegal payments are generally expected throughout

[9]Borrowers occasionally enter into more than one loan tranche on the same date. Instead of aggregating multiple tranches into a single loan deal, we use tranches as the unit of analysis. Results are robust to the random exclusion of all except one tranche in a deal.

lower levels of government in the forms of bribes "connected with import or export licenses, exchange controls, tax assessment, police protection, or loans."

Risk of repudiation: This indicator "addresses the possibility that foreign businesses contractors and consultants face the risk of a modification in a contract taking the form of repudiation, postponement, or scaling down, due to an income drop, budget cutbacks, and indigenization priorities." Lower scores signify a greater likelihood that a country will modify or repudiate a contract with a foreign business.

Risk of expropriation of private investment: This variable measures the risk of "outright confiscation and forced nationalization" of property. Lower ratings imply that expropriation of private foreign investment is a likely event.

While ICRG continues to report data on corruption until 2003, the annual series for the other two indices are not available beyond 1997. We therefore construct the property rights index by keeping the risk of contract repudiation and risk of expropriation constant in the post-1997 period. This allows us to use as much time-variation in the index as possible. In later analysis, we combine these three indexes into an additive index of property rights protection (see Morck et al. (2000)).

2.3 Measuring Creditor Rights

Lenders care about recovery rates in the event of a default. The recovery rates, the ability to repossess collateral and to reorganize debtors, depend largely on the legal rights that creditors have in reorganization and liquidation procedures. Bankruptcy laws define who controls the insolvency process and who has rights to the property of a bankrupt firm and with what priority.

Djankov et al. (2006) measure legal rights of creditors against defaulting debtors in different jurisdictions by constructing a "creditor rights" index. The index is constructed as of January of every year between 1978 and 2003 for a sample of 129 countries. It measures four powers of secured lenders in bankruptcy. The first measure is whether

secured creditors are able to seize their collateral once reorganization petition is approved. In other words, there is no 'automatic stay' on assets imposed by the court. The second measure is whether there are restrictions such as creditor consent when a borrower files for reorganization, as opposed to debtors seeking unilateral protection from creditors' claims by filing for rehabilitation. The third is if secured creditors are paid first out of the proceeds of liquidating a bankrupt firm or if third-party claims take priority. The final measure is whether creditors or an administrator are responsible for running the business during reorganization, rather than having the debtor continue to run the business. Djankov, McLeish, and Shleifer add a value of one to the index if a country's law and regulations provide each of these powers to secured lenders. These scores are aggregated into a creditor rights index which varies from 0 (poor creditor rights) to 4 (strong creditor rights). They find that laws change slowly as there is a high degree of persistence in creditor rights index with differences persisting over the 25-year period.[10]

3 Descriptive Statistics

Panel A of Table 1 presents descriptive statistics for property rights index, creditor rights, and loan and borrower characteristics. We first compute the median values of the variables for each of our sample countries and then provide summary statistics. Median of median country loan spread is about 61 basis points. Median of median loan maturity is about 5 years and median of median loan size is about US$ 145 million. The borrowers in LPC that matched to Worldscope and large firms; the median of median asset value is about $2.5 billion (in constant US$). Median of median leverage ratio is 0.33. Borrowers are profitable (the median of median profitability is 0.07). The median tangibility ratio is 0.45 and the median market-to-book assets ratio is 1.2.

[10]La Porta et al. (1998) measure of creditor rights is available for a single cross-section of countries (year 1995). The two are highly correlated but Djankov, McLeish, and Shleifer improves on the La Porta, Lopez-de Silanes, Shleifer, and Vishny measure by coding insolvency procedures differently and by providing a time series of this variable.

To understand difference in loan and borrower characteristics by property rights protection, we divide the sample countries into three groups. The property rights index we use for this classification is an aggregation of the three indices – corruption, risk of contract repudiation, and risk of expropriation. Countries with weak protection of property rights are in the bottom-third of property rights index. Countries with medium protection are in the middle-third and countries with strong protection are in the top-third of the property rights index.

Panel B presents median values of loan and borrower characteristics for borrowers in these three groups of countries. As predicted, loan spreads are higher in countries with poor property rights protection. They are about 170 basis points for countries in the bottom third in terms of property rights protection, declining to 71 basis points for countries in the middle third and to 50 basis points for countries in the top third.

Non-price loan characteristics also differ across countries with different enforcement regimes. Compared to loan maturities for countries with weak property rights, original loan maturities are a year longer for countries with medium property rights protection and two years longer for countries with strong property rights protection.

Both the loan size and borrower size are larger in countries with strong enforceability of contracts. However, in countries with medium protection, the loans sizes are actually smaller. This perhaps reflect that only large borrowers have access to syndicated loan markets in countries with weak property rights protection. Other firm characteristics are also suggestive of this view. Borrowers in weak property rights countries have higher profitability and greater tangibility of assets compared to that of borrowers in countries with strong protection of property rights.

Panel C provides descriptive statistics for loan and borrower characteristics for countries classified by creditor rights. Loan spreads are higher and loan maturities longer in countries that provide the weakest creditor rights. The borrowers in weak creditor rights countries have higher asset tangibility. Other differences are less dramatic.

Table 2 presents the correlation coefficients (and associated p-values) between the loan variables, legal rights and protection variables, and borrower characteristics. Loan spreads are negatively related to both the property rights index and the creditor rights index. Spreads are smaller for larger loans. As expected, firm characteristic variables are strongly related to loan spreads. Larger and more profitable firms have smaller spreads. Firms with high market to book ratios have also smaller spreads. Firms with high leverage and tangible assets have higher spreads.

4 Regression results

The results reported in Table 1 show significant differences in loan spreads across countries grouped by creditor rights and contract enforceability. Another view of these finding is provided in Figures 2A and 2B. Figures 2A plots median loan spreads against property rights while Figure 2B plots median loan spreads against creditor rights index. Both figures convey the same message – loan spreads decline as laws and enforcement get stronger.

It is, however, important to control for differences in macroeconomic variables, differences in borrower risk characteristics, and differences in the non-price terms of loans, which all could potentially affect spreads. This section presents results from panel data estimations that control for a host of factors that are likely to affect spreads. The question is if variation in creditor rights and property rights protection can explain differences in loan spreads, other things being equal.

Since the sample loans are floating rate instruments, the costs of loan finance differ across borrowers only to the extent that spreads and fees charged on loans differ. Therefore, the dependent variable is the natural logarithm of all-in interest spread (which includes the spread over LIBOR plus any annual fee and other upfront fees prorated over the life of the loan).[11] As indicated earlier, our key variables of interest on the right hand side are the two indices of creditor rights and property rights. The control variables are described below.

[11]LPC does not provide spreads and fees separately so it is not possible to adjust fees in a more sophisticated way.

Sovereign risk rating: Sovereign risk ratings control for country risk which often influences loan pricing. Sovereign risk ratings affect ratings assigned to borrowers of the same nationality. According to Cantor and Packer (1997), rating agencies seldom assign a credit rating to a company that is higher than that of the borrower's home country. Existing research shows that sovereign ratings provide additional information not contained in other macro-variables. The ratings data are obtained from Standard and Poor and are converted to a numerical score with higher numbers reflecting worse ratings. We use the log transformation of sovereign credit rating variable in the regression specification.

GDP per capita: Differences in the degree of economic development are controlled for by the natural logarithm of GDP per capita. The GDP per capita also controls for the level of political stability. Laws and their enforcement might also vary as a function of GDP per capita. La Porta et al. (1998) argue that creditor rights are stronger in poorer countries while richer countries have a higher quality of law enforcement. The annual values of GDP per capita for countries in our sample are from the World Development Indicators database (obtained from the World Bank website). The values for Taiwan are from the Taiwan Economic Journal database.

Loan maturity and loan size: Non-price loan characteristics such as the loan maturity and loan size could also affect spreads. In this section, we treat loan maturity and loan size as pre-determined and examine how they affect spreads. Section 6 estimates a simultaneous equation system which endogenizes loan spreads, maturity and loan sizes.

Longer maturity loans exacerbate moral hazard problems and therefore loan spreads should be higher for longer maturity loans. The effect of loan size on spreads is ambiguous. On the one hand, larger loans should carry smaller spreads since larger loans are made by larger firms typically more transparent with greater access to capital markets. Fixed costs of making loans would also imply a negative coefficient on loan size. But, on the other hand, larger loans also significantly increase the leverage and default risk of the borrower.[12]

[12]Both loan size and firm size are converted to millions of year 2000 US$ using a deflator based on the Consumer Price Index (CPI) values for respective countries. Year 2000 is the base year. The data on CPI is from the World Development Indicators database except the values for Taiwan which are obtained from the Taiwan Economic Journal database.

Borrower risk characteristics: Observable heterogeneity in borrower risk is also explicitly considered in the analysis, It includes firm size, profitability, leverage, tangible-asset-to-total-asset ratio, and the market-to-book assets ratio. All of the explanatory variables are lagged so that they are at least in the information set of the lenders.

Firm size is included because asymmetric information problems are less severe in large firms than in small firms. Large firms are more likely to be followed by multiple analysts and are more visible. Firm size is measured as the natural log of total US $ assets in real terms. Size is a proxy for information related problems that firms face when they obtain financing. Larger firms have less information asymmetries as they are typically followed by multiple analysts.

Profitability is included since more profitable firms have lower default risk. Profitability also affects moral hazard problems and consequently loan spreads. Profitability is measured by the ratio of operating income over assets.

Leverage proxies for default risk and the severity of moral hazard problems (Myers, 1977). It is measured by the ratio of total debt to book assets.

Tangibility of assets, measured as the ratio of net property, plant and equipment to total assets, is included as firms with more tangible assets have less ability to shift wealth from creditors.

Market-to-book ratio is included as a proxy for growth opportunities. The market-to-book ratio is estimated as the ratio of market value of assets (assets less book equity plus market value of common equity) to book assets. Adverse selection costs are expected to be greater in growth firms because managers find it more difficult to communicate credible information about growth opportunities to lenders than they do information about assets already in place. A countervailing argument is that the market-to-book ratio proxies for profitability of a firm's operations and its ability to generate a stream of quasi-rents. Such firms are less likely to engage in risky investment strategies or engage in other activities to expropriate creditors. This suggests loan spreads should be smaller for firms with high market-to-book ratios.

It is common to use borrower ratings to control for borrower credit risk. However, many borrowers are not rated and LPC does not always report ratings. As indicated earlier, requiring a rating for the borrower at issuance substantially reduced the sample. We therefore focus on accounting proxies for credit quality. We have also analyzed a sample of loans for which LPC reported borrower credit ratings. These results show that in no case does the addition of rating dummy materially affects the coefficient on other variables in the regression. Moreover, the coefficient estimate of the rating dummy itself is never statistically significant.

Annual dummies: Annual year dummies are included to control for differences in spreads that reflect changing market conditions.

Random effects: To account for unobservable country-level differences, all regressions are estimated using country random effects. The random effects specification is strongly supported by Breusch and Pagan (1980) Lagrange multiplier test. The test rejects the null hypothesis that errors are independent within countries. The random effects specification uses both within and between country variation in firm characteristics to control for its effect on log spreads but does not treat firms in a given country as independent observations. Instead, it adjusts standard errors to reflect the cross-correlation between observations due to common country components.

Results are similar if we also correct for biases in standard errors due to multiple loans to some borrowers in the sample. Panel regression estimates that employ random effects at the borrower level are qualitatively identical. We also examined fixed effects model at both country level and borrower level and find similar results.

Table 3 presents the coefficient estimates from random effects regression models together with the z-statistics corrected for heteroscedasticity and the marginal effects. The marginal effect is the partial derivative of spread with respect to each covariate in log-log form.

Columns (1) to (3) include the three property rights indices separately – i.e. the corruption index, the risk of contract repudiation and risk of expropriation. Results show that loan spreads are higher in countries with higher levels of corruption and with greater risks

of expropriation. The coefficient estimate on the risk of contract repudiation is negative but statistically insignificant. In Column (4), the three indices are aggregated into an additive index of property rights (corresponding to the index used in Morck et al. (2000)). The coefficient on this property rights index variable is also negative and statistically significant at the one percent level. The marginal effects show that spreads decline by 1.5 percent for every one percent increase in property rights. Creditor rights index is also significantly negatively related to loan spreads. The marginal effects show that a one percent increase in creditor rights reduces yield spreads by about 0.3 percent.

Column (5) includes an interaction term between the additive index of property rights and the creditor rights index to examine the joint effects of rules and enforcement. The interaction term is negative and statistically significant at the ten percent level. Thus, having strong creditor rights in addition to strong property rights results in an additional reduction in spreads.

Sovereign credit rating positively affects loan spreads implying that borrowers pay higher loan spreads when the country itself has a poor credit rating. Loan maturity is positively related to loan spreads consistent with longer maturity loans being riskier and higher spreads being charged on long-term loans. The coefficient on loan size is negative and statistically significant at the one percent consistent with larger loans being made to better borrowers.

Borrower characteristic variables have the predicted sign. Both firm size and profitability are negatively related to spreads. More leveraged firms pay higher spreads, suggesting default risks are important. However, tangibility of assets and market-to-book ratios are not significantly related to loan spreads.

We also analyzed a larger sample with loans to US borrowers, which account for roughly 89 percent of LPC loans that matched to the Worldscope database and obtain qualitatively similar results.

Overall, the findings in Table 3 convey an important policy message. Bank lenders charge significantly higher interest rates when they lend to firms in countries with less secure property rights. Spreads are also higher when countries provide weak legal rights

to creditors. Comparing the marginal effects of enforcement and laws, enforcement has a much higher impact on variation in loan spreads compared to the existence of legal rights. Finally, some evidence exists that stricter enforcement together with strong laws has an additional effect on spreads.

The estimated coefficients from Column (4) suggest that, with all other variables set at their mean values, predicted loan spreads range between 107 basis points at the minimum value of property rights protection (Colombia in 1998) to 54 basis points at the maximum value of property rights protection (Finland, Germany, Netherlands and Norway in various years). Consistent with these findings, Miller and Puthenpurackal (2002) find similar evidence of an economically significant decline in bond spreads in the Yankee bond market. They show that moving from a country with relatively weak creditor protections and legal systems (Mexico) to a country that has relatively strong laws and enforcement (UK) reduces the annual yield spread of Yankee bonds by 58 basis points.

Focusing on the creditor rights index, the results in Column (4) of Table 3 show that predicted loan spreads range between 54 basis points when creditor rights are strongest to 93 basis points when creditor rights are weakest. Figure 3 plots the average predicted loan spreads over the entire range of property rights index values when all other variables in the regression in Column (4) are set at their mean values. Loan spreads decline substantially over the entire range of property rights index values. Similarly Figure 4 plots the average predicted loan spreads over the entire range of creditor rights index. The decline in loan spreads is evident here as well but the rate at which spreads decline with increase in creditor rights is smaller.

Table 4 examines the four components of creditor rights separately. The question is whether all of the laws are equally effective or are some laws more important than others. The four creditor rights indices include (1) restrictions on entering reorganization (2) absence of automatic stay on assets, (3) respect for the priority of secured creditor, and (4) mandatory removal of management in bankruptcy. Results in Table 4 show that restrictions on entering reorganization, respect for the priority of secured creditors, and

mandatory removal of management in bankruptcy matter (they are all significant at ten percent level). Absence of automatic stay on assets is not particularly important.

5 Robustness

5.1 Enforcement measures

This section examines if results hold when alternative measures of property rights indices are examined. The following alternatives are considered.

1. *Rule of law*: This is an index of the law and order tradition of the country and is scaled from 0 to 10 with higher scores for countries with more tradition for law and order. The rule-of-law "reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes." Higher scores indicate: "sound political institutions, a strong court system, and provisions for an orderly succession of power." Lower scores indicate "depending on physical force or illegal means to settle scores." Upon changes in government, new leaders may be less likely to accept the obligations of the previous regime. The annual values of this variable from 1994 to 2003 are obtained from International Country Risk Guide.

2. *Efficiency of the judicial system*: This is an assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency, International Country Risk (ICR). We obtained the measure from La Porta et al. (1998) which is an average from 1980 to 1993 and has a scale of 0 to 10, with lower scores implying lower efficiency levels.

3. *Property rights index from the Index of Economic Freedom*: This measure of property rights is from the Index of Economic Freedom compiled by the Heritage Foundation/Wall Street Journal since 1995. Qian and Strahan (2005) use this index as

their measure of property rights protection. The annual values are obtained from the Heritage Foundation website.

4. *Enforcement*: This is an index of the effectiveness of legal system in enforcing contracts. The variable is the average of the efficiency of the judicial system, rule of law, risk of expropriation and contract repudiation and is obtained from La Porta et al. (1998). [13] Higher values indicate better enforcement.

5. *Property rights index from Knack and Keefer (1995)*: Knack and Keefer constructed a 50-point "property rights index" by converting corruption, rule of law and bureaucratic quality to 10-point scales (by multiplying them with 5/3) and summing them with contract repudiation and expropriation risk. The individual series used in constructing the Knack and Keefer property rights index are obtained from the International Country Risk Guide.

Table 5 presents results from random effects estimations that use these alternative proxies for enforcement of contracts in place of property rights index described in Section 2. Column (1) reports results from including the rule of law variable as a proxy for property rights protection. Consistent with earlier results, the coefficient on rule of law is negative and statistically significant implying that loan spreads are lower when a country has a better law and order tradition. Column (2) employs the efficiency of judicial system as a measure of property rights protection. The coefficient is negative and significant at the ten percent level.[14]

In Column (3), we employ the property rights index from the Index of Economic Freedom compiled by the Heritage Foundation. Like Qian and Strahan (2005), this measure of property rights index is not significant. Finally, Columns (4) and (5) employ two additional measures of property rights protection. These two measures are derived from other

[13]Results are robust to updating rule of law, risk of expropriation and contract repudiation to annual values to 1997 we obtained from International Country Risk Guide.

[14]Jappelli et al. (2005) develop a model in which improvements in judicial efficiency reduce credit rationing and increase lending. However, the impact of improvements in judicial efficiency on interest rates is ambiguous, depending on banking competition and on the type of judicial reform.

indexes. For instance, "enforcement" is an average of the efficiency of the judicial system, rule of law, risk of expropriation, and risk of contract repudiation. Similarly, the Knack and Keefer (1995) index of property rights protection is an additive index of corruption, rule of law, bureaucratic quality, contract repudiation, and risk of expropriation. The results show that both of these measures of property rights index have negative and statistically significant coefficient estimates.[15]

5.2 Additional control variables

Table 6 includes additional country-specific macroeconomic variables to the baseline regressions presented in Table 3. Five different macroeconomic variables are studied: (i) contract enforcement time and contract enforcement cost, (ii) GDP growth volatility, (iii) liquid liabilities/GDP, (iv) stock market traded value/GDP, and (v) credit to private sector/GDP.

Contract enforcement time and contract enforcement costs are proxies for the efficiency of courts, which is the main institution enforcing the legal system. These variables report the number of days it takes to enforce a commercial contract and the costs (as a share of income) incurred in the enforcement process and are taken from the World Bank "Doing Business" database (Release 2004).

GDP growth volatility is estimated as the standard deviation of the annual growth rate in GDP. It measures the volatility of economic activity. Higher volatility induces greater economic uncertainty raising the costs of financial contracting. The liquid liabilities/GDP ratio measures financial depth of an economy. Stock market total value traded/GDP measures the activity or liquidity of stock markets. Finally, the ratio of credit provided by financial intermediaries to the private sector to GDP ratio measures the financial development of an economy and the importance of the banking sector. All of these macroeconomic

[15]To examine if the Asian financial crisis in the late 1990s affects the results, in untabulated results we re-examine the results after excluding Korea, Thailand, Indonesia, the Philippines, and Malaysia - the countries most severely hit by the currency crisis. Exclusion of these countries does not materially affect our results.

variables with the exception of GDP growth volatility are annual values and are obtained from the World Development Indicators database.

Results reported in Table 6 show that both the property rights protection and the creditor rights index continue to have negative and statistically significant coefficients even in the presence of these additional control variables. Table 6 also shows that longer enforcement time increases loan spreads while enforcement costs are not significant. GDP growth volatility has a positive and statistically significant coefficient and that liquid liabilities/GDP ratio has a negative coefficient. The signs on other additional macroeconomic variables are insignificant.

6 Structural Equation Estimates

To account for the possible simultaneity between loan spreads and other non-price loan terms, this section presents results from a simultaneous equation estimation that considers loan spreads, loan maturities and loan sizes as endogenous. The system of structural equations is estimated using three-stage least squares and it proceeds in three steps. In the first step, instrumental values for all endogenous variables are developed. These instrumental values are like predicted values from a regression of loan spreads, loan maturity, and loan sizes on all exogenous variables in the system. In the second step, consistent estimates of the covariance of the equation disturbances are obtained. In the third step, a generalized least squares (GLS) estimation is performed using the covariance matrix estimated in the previous step and with the predicted values of the instruments.

Table 7 presents GLS estimates from the system of equations that endogenizes loan spreads, loan maturities and loan sizes. All other variables are treated as exogenous, which are lagged one period. All equations include year dummies. The results from the loan spread equation, which includes log of maturity and log of loan size as endogenous variables, are presented in Column (1). Consistent with earlier results, coefficient estimates on both the property rights protection variable and creditor rights are negative and statistically

significant. Other variables have expected signs and significance except the log of GDP per capita which is positive and statistically significant. The loan spread equation does not include tangibility of assets and market-to-book ratio since Table 3 estimations show that these are not significant determinants of loan spreads.

Column (2) presents estimates of loan maturity regression. The dependent variable is log of loan maturity and exogenous variables include the property rights protection, creditor rights, firm size, leverage ratio, profitability, tangibility and market-to-book ratio. We expect legal protection variables to positively affect loan maturity. Firm size should affect loan maturities positively if larger firms have less contracting problems. The sign on the lagged leverage ratio is an empirical matter. Banks are expected to offer short maturity loans if higher leverage implies greater contracting problems. However, higher leverage could also proxy for the fact that the firm has acquired a reputation in debt markets, which reduces contracting problems. We expect profitable firms to have less contracting problems and consequently they should obtain longer maturity loans. Higher tangibility implies more collateral and lower contracting costs. Thus, loan maturity should increase when asset tangibility is higher. Finally, the sign on the market-to-book ratio is ambiguous. If market-to-book ratio is considered a proxy for growth opportunities, a negative sign is expected since contracting costs are severe in firms with more growth options. However, if the market-to-book asset ratio is considered a proxy for continued profitability and market power, a positive coefficient is expected since firms with a stream of quasi rents are unlikely to engage in excessive risk taking or strategically default on their debt obligations.

The coefficient on property rights protection in loan maturity regression is positive and statistically significant implying that loan maturities are longer when banks lend to firms in countries with strong property rights.[16] In weak property rights environments, shortening loan maturity allows banks to review their lending decisions more frequently and restrict borrower flexibility to expropriate creditors (Diamond, 1991, 1993). Creditor rights index

[16]Demirgüç-Kunt and Maksimovic (1999) also find that debt maturity is longer in countries with strong legal rules and strong enforcement.

is unrelated to loan maturities while other variables have predicted signs except firm size which is negatively related to loan maturity.

Column (3) presents estimates of loan size regression. The dependent variable is the log of loan size and the exogenous variables include the property rights protection, creditor rights, firm size, leverage ratio, profitability, tangibility and market-to-book ratio. The coefficient estimate on property rights protection is positive and statistically significant implying that loan sizes are larger when borrowers operate in countries with strong protection of property rights. The smaller loan sizes for loans in countries where contracts are poorly enforceable are consistent with lenders imposing quantity restrictions in response to uncertain legal environments. Other results suggest that larger firms borrow larger amounts while highly levered firms borrow smaller amounts. Loan sizes increase with tangibility of assets and the market-to-book ratio.

In summary, the simultaneous equation results indicate that banks charge smaller spreads, offer longer maturity loans and increase loan sizes when borrowers are operating in countries with stronger protection of property rights.

7 Conclusion

Some countries provide stronger creditor rights and better protection of property rights than do other countries. The rights that lenders have are likely to be better enforced in countries with stronger protection of property rights. Do differences in laws and the extent to which they are enforced affect costs of loan finance? We examine this question by using data on syndicated corporate loans to borrowers in 30 countries during 1994-2003.

The negative relation between loan spreads and the strength of property rights protection supports the view that property rights protection allows more efficient contracting and that bank lenders charge lower spreads on loans to borrowers in countries where property rights protection is strong.

The results show that differences in creditor rights and property rights protection translate into substantial differences in loan pricing between firms and their lenders. Variations in property rights protection have a much larger impact on loan spreads than do variation in creditor rights.

The significant effect of creditor rights and property rights index is evident even after controlling for variation in country level sovereign risk rating and firm-level borrower risk characteristics. These results are consistent with banks facing significantly greater recontracting risk when they are lending to firms in countries with poor protection of property rights. In response, banks charge higher loan spreads. We also find that when property rights are weak, lenders mitigate expropriation risk by shortening loan maturity and reducing loan sizes.

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Figure 1: Relative Importance of different forms of financing for 49 countries

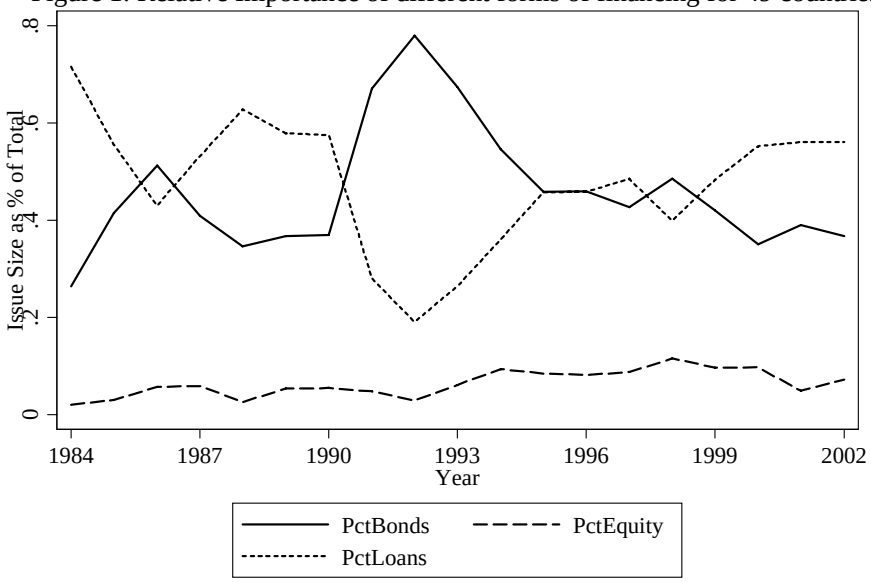

Figure 2A: Property Rights Index versus Loan Spread

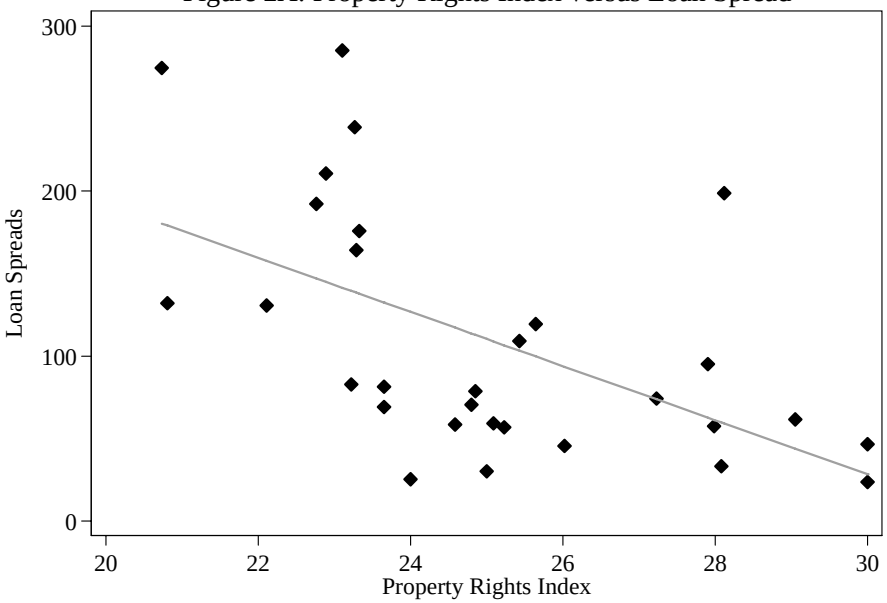

Figure 2B: Creditor Rights versus Loan Spread

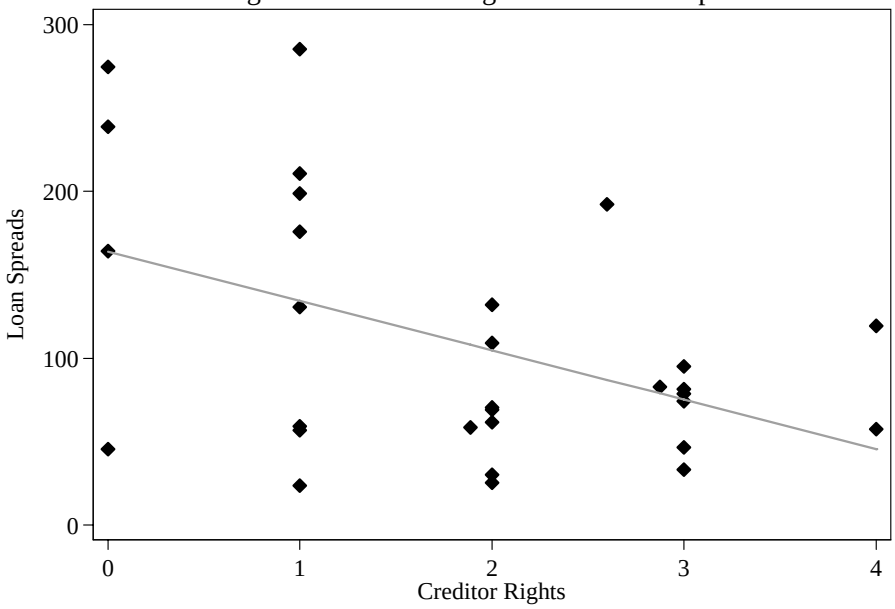

Figure 3: Predicted Loan Spreads and Property Rights Protection

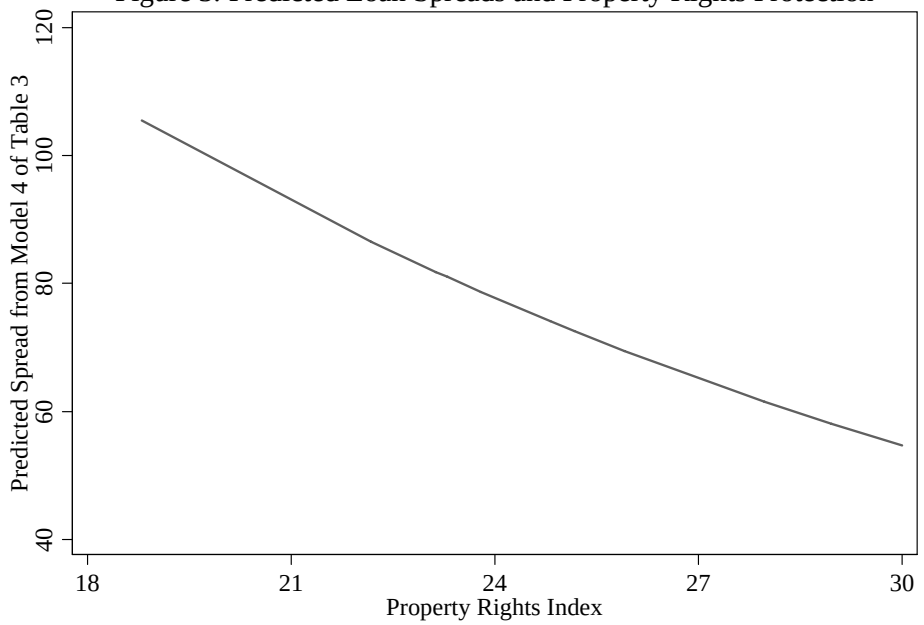

Figure 4: Predicted Loan Spreads and Creditor Rights

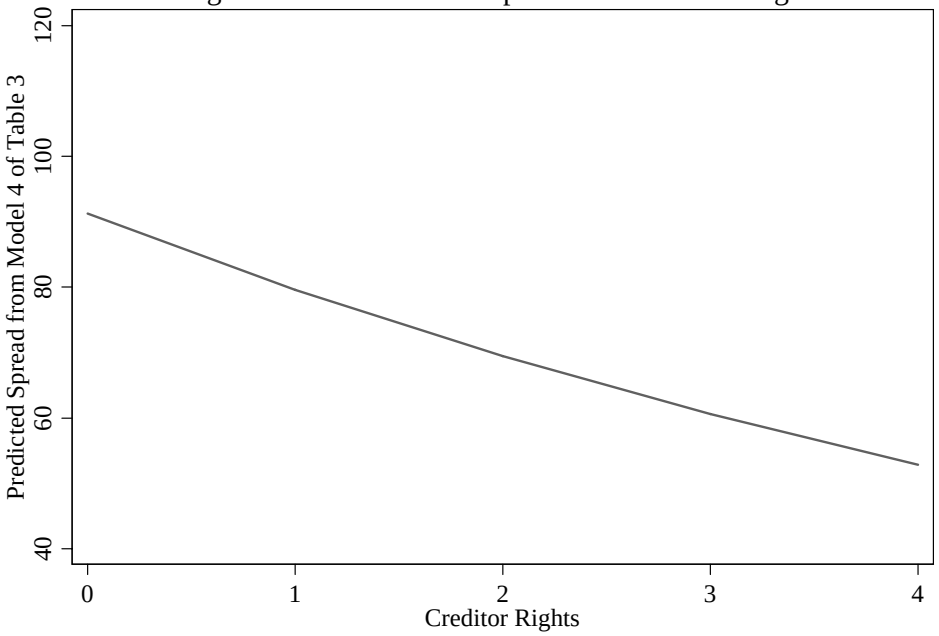

Table1
Summary statistics

Panel A presents descriptive statistics for number of loan tranches, property rights index, creditor rights, non-price loan terms and borrowers characteristics. The sample includes 944 syndicated corporate loan tranches during 1994-2003 to borrowers located in 30 countries. Panels B and C provides the median values for countries classified based on property rights index and creditors rights respectively. Countries with weak property rights are those whose property rights index is in the bottom on-third. The countries with medium property rights are in the middle one-third, and countries with strong protection are in top one-third of property rights index. Classifications based on creditor rights index are similarly defined. The property rights index is an additive index consisting of annual series reflecting corruption, risk of expropriation, and risk of contract repudiation in various countries. The series are obtained from International Country Risk Guide. Higher values indicate better protection of property rights. The creditor rights index varies from 0 to 4 with higher values indicating better creditor rights. TDA is defined as the ratio of total debt to book value of assets. Profit measures profitability and is defined as the ratio of operating income to total assets. Tang is defined as the ratio of net property, plant and equipment to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets.

	# of loans	Property rights	Creditor rights	Median loan spread (in basis points)	Median loan maturity (in years)	Median loan size (in millions US$)	Median Assets (million of constant US$)	Median TDA	Median Profit	Median Tang	Median Market-to-book assets ratio
Panel A: Summary statistics											
Mean		25.0	1.9	97.5	4.2	222	5,933	0.33	0.08	0.45	1.31
25th percentile		23.0	1.0	42.5	3.0	84	1,162	0.28	0.06	0.35	1.15
Median		24.6	2.0	61.3	5.0	145	2,493	0.33	0.07	0.45	1.20
75th percentile		27.5	3.0	145.0	5.0	272	5,233	0.36	0.10	0.57	1.41
Panel B: By degree of property rights											
Weak	32	23.0	1.0	170.0	3.0	116	2,408	0.32	0.09	0.58	1.20
Medium	42	24.0	2.0	71.0	4.0	68	1,267	0.35	0.06	0.47	1.20
Strong	124	28.3	3.0	50.0	5.0	292	2,897	0.32	0.07	0.41	1.25
Panel C: By degree of creditor rights											
Weak	71	25.2	1.0	137.5	4.0	150	2,275	0.32	0.08	0.57	1.18
Medium	43	25.7	3.0	55.0	5.0	89	2,678	0.37	0.06	0.44	1.15
Strong	124	28.2	4.0	50.0	4.5	384	1,686	0.26	0.09	0.35	1.63

Table 2
Correlation of variables

The table presents country level correlation coefficients between the log loan spread, log loan maturity, log loan size, property rights, creditor rights, and firm characteristic variables. The associated p-values are in parentheses.

	Log (spread)	Log (loan maturity)	Log (loan size)	Property rights	Creditor rights	Log (assets)	Leverage	Profit-ability	Tangibility	Market to book ratio
Log(spread)	1.000									
Log(loan maturity)	-0.040 (0.23)	1.000								
Log(loan size)	-0.413 (0.00)	-0.040 (0.22)	1.000							
Property rights	-0.385 (0.00)	0.152 (0.00)	0.323 (0.00)	1.000						
Creditor rights	-0.359 (0.00)	0.037 (0.26)	0.061 (0.06)	0.308 (0.00)	1.000					
Log(assets)	-0.457 (0.00)	-0.138 (0.00)	0.487 (0.00)	0.086 (0.01)	0.018 (0.58)	1.000				
Leverage	0.130 (0.00)	0.070 (0.03)	-0.230 (0.00)	-0.067 (0.04)	-0.007 (0.82)	0.071 (0.03)	1.000			
Profitability	-0.018 (0.57)	0.032 (0.33)	0.069 (0.04)	-0.019 (0.57)	-0.171 (0.60)	-0.151 (0.00)	-0.165 (0.00)	1.000		
Tangibility	0.168 (0.00)	0.114 (0.00)	-0.033 (0.32)	-0.161 (0.00)	-0.216 (0.00)	0.026 (0.42)	0.139 (0.00)	0.042 (0.20)	1.000	
Market to book ratio	-0.162 (0.00)	-0.004 (0.91)	0.219 (0.00)	0.109 (0.00)	0.116 (0.00)	-0.095 (0.00)	-0.228 (0.00)	0.429 (0.00)	-0.224 (0.00)	1.000

Table 3
Property Rights Protection and Loan Spreads

The table presents random effect estimates of the log of loan spreads on property rights index, creditor rights, log of sovereign credit rating, log of per capita GDP, loan characteristics, and borrower characteristics. The sample includes loans to borrowers of 30 countries during 1994-2003. Tangibility is defined as the ratio of net property, plant and equipment to total assets. Profitability is defined as the ratio of operating income to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets. Numbers in parentheses are z-statistics corrected for clustering at the country level. ***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

	(1)	(2)	(3)	(4)	(5)
Corruption (A)	-0.066 (-3.0)*** [-0.442]				
Risk of contract repudiation (B)		-0.045 (-0.7) [-0.427]			
Risk of expropriation (C)			-0.453 (-2.8)*** [-4.519]		
Property rights (Sum of indexes A, B, and C)				-0.058 (-3.1)*** [-1.526]	-0.050 (-2.5)*** [-1.322]
Creditor rights	-0.139 (-2.6)*** [-0.282]	-0.139 (-2.8)*** [-0.283]	-0.161 (-3.0)*** [-0.328]	-0.136 (-2.6)*** [-0.277]	
Property rights X Creditor rights					-0.004 (-1.8)* [-0.216]
Log (Sovereign credit rating)	0.117 (1.6) [0.15]	0.145 (2.0)** [0.186]	0.114 (1.5) [0.147]	0.105 (1.4) [0.134]	0.102 (1.3) [0.131]
Log(GDP per capita)	-0.064 (-0.9) [-0.58]	-0.087 (-1.4) [-0.789]	-0.094 (-1.4) [-0.85]	-0.054 (-0.7) [-0.492]	-0.067 (-0.9) [-0.609]
Log(Loan maturity)	0.059 (2.1)** [0.07]	0.053 (1.9)* [0.063]	0.060 (2.1)** [0.071]	0.060 (2.1)** [0.071]	0.060 (2.1)** [0.072]
Log(Loan size)	-0.056 (-2.6)*** [-0.282]	-0.054 (-2.5)** [-0.269]	-0.055 (-2.6)*** [-0.275]	-0.057 (-2.7)*** [-0.287]	-0.057 (-2.7)*** [-0.286]

	(1)	(2)	(3)	(4)	(5)
Log(Assets)	-0.216 (-11.9)*** [-1.687]	-0.218 (-11.9)*** [-1.704]	-0.216 (-11.9)*** [-1.684]	-0.214 (-11.8)*** [-1.673]	-0.214 (-11.7)*** [-1.67]
Profitability	-0.833 (-2.7)*** [-0.035]	-0.838 (-2.7)*** [-0.035]	-0.806 (-2.6)*** [-0.034]	-0.836 (-2.7)*** [-0.035]	-0.847 (-2.7)*** [-0.036]
Total debt/assets ratio	0.377 (3.3)*** [0.130]	0.391 (3.4)*** [0.135]	0.394 (3.4)*** [0.136]	0.379 (3.3)*** [0.131]	0.377 (3.3)*** [0.130]
Tangibility	-0.097 (-1.0) [-0.045]	-0.071 (-0.7) [-0.032]	-0.078 (-0.8) [-0.036]	-0.095 (-1.0) [-0.043]	-0.098 (-1.0) [-0.045]
Market-to-book assets ratio	-0.013 (-0.8) [-0.021]	-0.013 (-0.8) [-0.021]	-0.016 (-1.0) [-0.025]	-0.013 (-0.8) [-0.020]	-0.012 (-0.8) [-0.020]
Constant	7.056 (10.7)***	7.684 (9.8)***	11.341 (6.9)***	8.036 (10.9)***	7.892 (10.5)***
Year dummies	Yes	Yes	Yes	Yes	Yes
R^2	0.470	0.492	0.480	0.488	0.477
Observations	927	927	927	927	927

Table 4
Creditor Rights and Loan Spreads

The table presents random effect estimates of the log of loan spreads on property rights index, creditor rights, log of sovereign credit rating, log of per capita GDP, loan characteristics, and borrower characteristics. The sample includes loans to borrowers of 30 countries during 1994-2003. Tangibility is defined as the ratio of net property, plant and equipment to total assets. Profitability is defined as the ratio of operating income to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets. Numbers in parentheses are z-statistics corrected for clustering at the country level. ***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

	(1)	(2)	(3)	(4)
Property rights	-0.060 (-3.1)*** [-1.563]	-0.060 (-3.1)*** [-1.571]	-0.053 (-2.8)*** [-1.395]	-0.060 (-3.1)*** [-1.567]
Components of creditor rights				
Restrictions on entering	-0.311 (-1.9)* [-0.096]			
No automatic stay		0.035 (0.2) [0.015]		
Secured creditor			-0.301 (-1.9)** [-0.248]	
Management doest not stay.				-0.250 (-1.6)* [-0.109]
Log (Sovereign credit rating)	0.115 (1.5) [0.148]	0.118 (1.6) [0.151]	0.111 (1.5) [0.143]	0.110 (1.4) [0.141]
Log(GDP per capita)	-0.079 (-1.0) [-0.721]	-0.084 (-1.1) [-0.762]	-0.075 (-1.1) [-0.685]	-0.051 (-0.6) [-0.464]
Log(Loan maturity)	0.062 (2.2)** [0.073]	0.061 (2.2)** [0.073]	0.059 (2.1)** [0.071]	0.061 (2.2)** [0.072]
Log(Loan size)	-0.054 (-2.5)*** [-0.271]	-0.054 (-2.5)*** [-0.270]	-0.054 (-2.5)** [-0.269]	-0.055 (-2.6)*** [-0.278]

	(1)	(2)	(3)	(4)
Log(Assets)	-0.215 (-11.8)*** [-1.677]	-0.214 (-11.8)*** [-1.674]	-0.217 (-11.9)*** [-1.693]	-0.213 (-11.7)*** [-1.667]
Profitability	-0.866 (-2.8)*** [-0.037]	-0.864 (-2.8)*** [-0.037]	-0.848 (-2.7)*** [-0.036]	-0.849 (-2.7)*** [-0.036]
Total debt/assets ratio	0.367 (3.2)*** [0.127]	0.373 (3.3)*** [0.129]	0.382 (3.3)*** [0.132]	0.381 (3.3)*** [0.132]
Tangibility	-0.106 (-1.1) [-0.048]	-0.103 (-1.0) [-0.047]	-0.084 (-0.8) [-0.038]	-0.109 (-1.1) [-0.050]
Market-to-book assets ratio	-0.012 (-0.8) [-0.020]	-0.013 (-0.8) [-0.021]	-0.013 (-0.8) [-0.022]	-0.013 (-0.8) [-0.021]
Constant	8.100 (10.4)***	8.040 (10.3)***	8.047 (10.9)***	7.881 (10.3)***
Year dummies	Yes	Yes	Yes	Yes
R^2	0.484	0.439	0.469	0.470
Observations	927	927	927	927

Table 5
Alternative proxies for property rights

The table presents random effect estimations of loan spread on alternative proxies of property rights index, creditor rights, log of sovereign rating, log of GDP per capita, non-price loan terms, and borrower characteristics. The sample consists of loans to borrowers in 30 countries during 1994-2003. The dependent variable is the natural log of the loan spreads. Tangibility is defined as the ratio of net property, plant and equipment to total assets. Profitability is defined as the ratio of operating income to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets. Numbers in parentheses are z-statistics corrected for heteroskedasticity. ***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

	(1)	(2)	(3)	(4)	(5)
Rule of law	-0.102 (-2.3)**				
Efficiency of judicial system		-0.072 (-1.8)*			
Property rights (Index of economic freedom)			-0.003 (0.0)		
Enforcement				-0.183 (-4.4)***	
Property rights index (Knack and Keefer, 1995)					-0.047 (-3.8)***
Creditor rights	-0.111 (-2.1)**	-0.141 (-2.9)***	-0.150 (-2.7)***	-0.139 (-4.5)***	-0.117 (-2.3)**
Log(Sovereign credit rating)	0.066 (0.8)	0.122 (1.7)*	0.122 (1.6)	0.125 (1.9)**	0.046 (0.6)
Log(GDP per capita)	-0.060 (-0.9)	-0.034 (-0.4)	-0.117 (-1.7)*	0.177 (3.4)***	-0.011 (-0.1)
Log(Loan maturity)	0.055 (2.0)**	0.056 (2.0)**	0.054 (1.9)**	0.045 (1.5)	0.064 (2.3)**
Log(Loan size)	-0.052 (-2.4)**	-0.051 (-2.4)**	-0.054 (-2.5)***	-0.039 (-1.8)*	-0.058 (-2.7)***
Log(Assets)	-0.222 (-12.2)***	-0.224 (-12.3)***	-0.224 (-12.3)***	-0.245 (-13.3)***	-0.216 (-11.9)***
Profitability	-1.137 (-3.2)***	-1.150 (-3.3)***	-1.112 (-3.2)***	-0.953 (-2.5)**	-1.124 (-3.2)***
Total debt/assets ratio	0.454 (4.4)***	0.437 (4.2)***	0.449 (4.3)***	0.482 (4.4)***	0.445 (4.4)***

	(1)	(2)	(3)	(4)	(5)
Tangibility	-0.041 (-0.4)	-0.045 (-0.4)	-0.054 (-0.5)	-0.039 (-0.3)	-0.061 (-0.6)
Market-to-book assets ratio	-0.003 (-0.2)	-0.004 (-0.2)	-0.004 (-0.2)	-0.018 (-1.0)	-0.003 (-0.1)
Constant	7.901 (11.9)***	6.907 (10.9)***	7.144 (10.5)***	5.864 (13.2)***	8.193 (11.6)***
Year dummies	Yes	Yes	Yes	Yes	Yes
Overall R^2	0.488	0.502	0.468	0.554	0.506
Observations	926	926	914	871	926

Table 6
Robustness tests

The table presents random effects estimations of loan spreads with additional control variables including enforcement time and cost, GNP growth volatility, the liquid liabilities/GDP ratio, the stock market traded value/GDP ratio, and credit to private sector/ GDP ratio. The estimates control for random effects across countries and include year dummies. The explanatory variables are lagged one year. The sample consists of loans to borrowers in 30 countries during 1994-2003. The dependent variable is the natural log of the loan spreads. Independent variables include the property rights index, the creditor rights index, log of sovereign credit rating, log of per capita GDP, log of loan maturity, log of loan size and borrower characteristics. Tangibility is defined as the ratio of net property, plant and equipment to total assets. Profitability is defined as the ratio of operating income to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets. Numbers in parentheses are z-statistics corrected for heteroskedasticity. ***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

	(1)	(2)	(3)	(4)	(5)
Property rights	-0.061 (-3.2)***	-0.063 (-3.1)***	-0.103 (-4.7)***	-0.057 (-2.9)***	-0.053 (-2.9)***
Creditor rights	-0.173 (-3.7)***	-0.153 (-3.0)***	-0.176 (-2.5)**	-0.141 (-2.6)***	-0.154 (-3.2)***
Enforcement Time	0.313 (2.7)***				
Enforcement Cost	0.127 (1.0)				
GNP Growth volatility		0.006 (2.2)**			
Liquid liabilities/GDP			-0.003 (-2.1)**		
Stock market traded value/GDP				0.000 (0.1)	
Credit to private sector/GDP					0.000 (0.6)
Log(Sovereign credit rating)	0.027 (0.3)	0.053 (0.7)	0.125 (1.5)	0.113 (1.5)	0.190 (2.8)***
Log(GDP per capita)	0.070 (0.8)	0.007 (0.1)	0.108 (1.3)	-0.053 (-0.7)	-0.002 (-0.0)
Log(Loan maturity)	0.054 (1.8)*	0.064 (2.2)**	0.082 (2.5)**	0.061 (2.1)**	0.055 (1.9)*
Log(Loan size)	-0.053 (-2.2)**	-0.057 (-2.6)***	-0.087 (-3.6)***	-0.060 (-2.8)***	-0.060 (-2.7)***
Log(Assets)	-0.226 (-11.4)***	-0.231 (-12.1)***	-0.200 (-9.6)***	-0.218 (-11.8)***	-0.221 (-12.0)***
Profitability	-1.258 (-3.3)***	-1.263 (-3.4)***	-0.969 (-2.4)**	-1.235 (-3.5)***	-1.114 (-3.0)***

	(1)	(2)	(3)	(4)	(5)
Total debt/assets ratio	0.428 (3.9)***	0.424 (4.0)***	0.576 (4.9)***	0.440 (4.3)***	0.454 (4.3)***
Tangibility	-0.074 (-0.7)	-0.041 (-0.4)	-0.104 (-0.9)	-0.074 (-0.7)	-0.062 (-0.6)
Market-to-book assets ratio	-0.003 (-0.2)	0.000 (0.0)	-0.106 (-3.1)***	-0.001 (-0.0)	-0.005 (-0.2)
Constant	5.237 (4.2)***	7.698 (9.6)***	8.326 (10.3)***	8.041 (10.7)***	7.387 (11.5)***
Year dummies	Yes	Yes	Yes	Yes	Yes
Overall R^2	0.551	0.536	0.475	0.489	0.508
Observations	844	863	704	907	896

Table 7
Simultaneous equation estimates of loan spreads, loan maturities, and loan sizes

The table presents estimates from a system of structural equations where the loan spread regression contains loan maturity and loan size as endogenous variables. The estimation is done via three-stage least squares. Log(Assets) is the natural logarithm of total assets in million of constant US$. Tangibility is defined as the ratio of net property, plant and equipment to total assets. Profitability is defined as the ratio of operating income to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets. All explanatory variables are lagged one period. The regressions include annual dummies. Numbers in parentheses are z-statistics corrected for heteroskedasticity. ***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

	Log(Spread)	Log(Maturity)	Log(Loan Size)
Property rights	-0.063 (-3.1)***	0.033 (3.3)***	0.134 (8.4)***
Creditor rights	-0.124 (-5.8)***	0.009 (0.5)	-0.042 (-1.4)
Log(Sovereign credit rating)	0.270 (3.4)***		
Log(per capita GDP)	0.164 (4.9)***		
Log(Maturity) – Instrumented	0.342 (1.5)		
Log(Loan size) – Instrumented	-0.061 (-0.6)		
Log(Assets)	-0.218 (-4.9)***	-0.087 (-5.8)***	0.501 (21.1)***
Total debt-to-assets ratio	0.317 (2.1)**	0.377 (2.8)***	-1.289 (-6.1)***
Profitability	-1.183 (-3.0)***	0.719 (1.9)*	-0.512 (-0.8)
Tangibility		0.362 (3.4)***	0.412 (2.4)**
Market-to-book assets ratio		-0.039 (-2.1)**	0.252 (8.5)***
Constant	5.639 (8.6)***	0.864 (2.8)***	-2.492 (-5.2)***
Year Dummies	Yes	Yes	Yes
Observations	927	927	927
χ^2	993.9***	126.5***	800.1***

Appendix 1

Loan and borrower characteristics by country

The table presents number of loan tranches, number of borrowers, and median loan and borrower characteristics by country of borrower. The sample includes 944 syndicated corporate loan tranches during 1994-2003 to 426 borrowers located in 30 countries. The property rights index is an additive index consisting of annual series reflecting corruption, risk of expropriation, and risk of contract repudiation in various countries. The series are obtained from International Country Risk Guide. Higher values indicate better protection of property rights. The creditor rights index varies from 0 to 4 with higher values indicating better creditor rights. TDA is defined as the ratio of total debt to book value of assets. Profit measures profitability and is defined as the ratio of operating income to total assets. Tang is defined as the ratio of net property, plant and equipment to total assets. The market-to-book assets ratio is defined as the market value of assets divided by the book value of assets.

Country	# of Loans	# of Firms	Property Rights Index	Creditor Rights	Median loan spread (in basis points)	Median loan maturity (in years)	Median loan size (in millions real US$)	Median Assets (million of real US$)	Median TDA	Median Profit	Median Tang	Median Market-to-book assets ratio
Argentina	20	7	22.3	1	193.8	3.0	97	852	0.35	0.11	0.85	1.14
Australia	23	8	28.2	1	55.0	5.0	272	2,329	0.34	0.08	0.48	1.16
Belgium	1	1	25.0	2	30.0	7.0	207	5,233	0.44	0.06	0.38	0.75
Brazil	31	17	23.0	1	275.0	3.0	112	4,487	0.32	0.11	0.47	0.96
Canada	131	50	29.0	1	200.0	4.0	200	1,053	0.35	0.07	0.58	1.25
Chile	26	7	25.7	2	75.0	5.0	186	3,775	0.33	0.05	0.69	1.15
Colombia	10	2	20.6	0	275.0	5.0	99	2,450	0.22	0.07	0.23	0.83
Finland	27	8	30.0	1	22.5	7.0	343	6,873	0.35	0.09	0.49	1.15
France	30	17	26.7	0	33.8	5.0	326	11,061	0.33	0.05	0.44	1.25
Germany	43	21	28.2	3	17.5	5.0	1,125	26,801	0.23	0.02	0.33	1.21
Greece	6	3	25.0	1	45.0	2.0	193	1,286	0.25	0.10	0.36	2.13
Hong Kong	42	26	25.0	4	125.0	3.0	50	614	0.28	0.06	0.35	1.14
India	86	40	24.0	4	60.0	5.0	33	799	0.36	0.08	0.45	1.20
Indonesia	10	7	23.0	4	152.5	5.0	143	1,162	0.53	0.11	0.59	1.48
Ireland	3	3	23.5	1	62.5	5.0	524	3,800	0.36	0.07	0.11	1.79
Israel	7	3	24.0	4	44.0	5.0	84	1,714	0.39	0.08	0.33	2.01
Italy	4	2	24.0	2	22.5	5.0	230	39,340	0.33	0.01	0.19	0.99
Japan	18	10	25.0	2	43.8	1.0	347	33,436	0.42	0.03	0.35	1.16
Malaysia	9	5	24.3	4	60.0	5.0	110	2,119	0.32	0.08	0.77	1.15
Mexico	71	24	23.0	0	125.0	3.0	148	2,775	0.30	0.11	0.57	1.16

Country	# of Loans	# of Firms	Property Rights Index	Creditor Rights	Median loan spread (in basis points)	Median loan maturity (in years)	Median loan size (in millions real US$)	Median Assets (million of real US$)	Median TDA	Median Profit	Median Tang	Median Market-to-book assets ratio
Netherlands	20	14	30.0	2	25.0	5.0	494	988	0.17	0.11	0.45	1.98
Norway	23	11	28.3	2	40.0	5.0	200	1,212	0.29	0.06	0.35	1.22
Pakistan	8	3	22.6	4	122.5	1.0	75	341	0.10	0.13	0.19	1.87
Peru	13	9	23.1	0	250.0	4.0	125	1,291	0.28	0.11	0.67	1.16
Philippines	32	8	23.0	0	175.0	5.0	58	2,718	0.48	0.06	0.73	1.29
South Korea	78	30	27.5	3	57.5	4.8	26	7,322	0.48	0.05	0.40	0.99
Taiwan	19	15	25.0	2	75.0	5.0	61	2,536	0.33	0.06	0.49	1.34
Thailand	24	17	23.7	3	73.5	3.3	81	613	0.46	0.07	0.52	1.41
Turkey	5	2	20.3	2	145.0	1.0	130	6,320	0.26	0.07	0.25	1.30
United Kingdom	124	56	28.2	4	42.5	5.0	599	2,685	0.24	0.10	0.35	1.71

Appendix 2

Top 20 banks by aggregated amount lent over the 1994-2003 period.

The table shows the top 20 lenders in the sample and the aggregated amount lent in millions of constant US$ during the period from 1994-2003. The sample is restricted to bank lines of credit and term loans to non-US borrowers that matched to Worldscope and non-missing spreads, maturities and loan size information. It excludes loans to entities other than corporations. It also excludes private placements, bilateral deals, club deals, and public underwriting transactions, non-US dollar denominated loans, and loans not priced as spreads over LIBOR.

Lender	Aggregated Loan Amounts (in millions real US$)
Citibank	12,479
Commerzbank AG	10,062
ABN Amro Bank NV	9,818
Royal Bank of Canada	8,815
Toronto Dominion Bank	8,753
Dresdner Bank AG	6,847
Societe Generale	6,784
Barclays Bank PLC	6,393
Deutsche Bank	6,373
Bank of Nova Scotia	6,355
Bayerische Landesbank GZ	6,105
Bank of America	6,101
Royal Bank of Scotland PLC	6,094
Wachovia Bank	5,905
BNP Paribas	5,904
Standard Chartered Bank	5,634
HSBC Banking Group	5,526
JP Morgan & Co	5,100
Credit Suisse First Boston	4,804
West LB	4,738