

# Creditor Rights, Enforcement, and Bank Loans

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## ABSTRACT

We examine whether differences in legal protection affect the size, maturity, and interest rate spread on loans to borrowers in 48 countries. Results show that banks respond to poor enforceability of contracts by reducing loan amounts, shortening loan maturities, and increasing loan spreads. These effects are both statistically significant and economically large. While stronger creditor rights reduce spreads, they do not seem to matter for loan size and maturity. Overall, we show that variation in enforceability of contracts matters a great deal more to how loans are structured and how they are priced.

*JEL classification:* D23, G21, G32, K42

*Keywords:* property rights, creditor rights, law, enforcement, investor protection, loan amounts, maturity, loan spreads, syndicate structure

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The extent to which property rights are protected in a country is an important consideration in determining what loans are offered to firms, how these loans are structured, and how they are priced. Property rights protection affects a lender's incentives to monitor and its ability to recontract. Declining credit quality often results in lenders raising interest rates, demanding more collateral, shortening loan maturity, and further restricting future activities. This recontracting is costly when property rights are poorly enforced. Poor enforcement lowers recovery rates and increases the time spent in repossessing collateral following default.<sup>1</sup>

In addition to enforcement, the legal rights that lenders have in reorganization and liquidation procedures are also important. Differences in creditor rights matter to loan contracting because laws determine who controls the insolvency process and who has rights to the property of a bankrupt firm. How do differences in creditor rights and contract enforceability affect the amount banks lend to firms, the maturity of the loans they make, and the interest rate spreads they charge? Are laws and enforcement equally important to the loan contracting process? Bhattacharya and Daouk (2002, 2005) argue that it is the enforcement, not the existence, of laws that matters. Qian and Strahan (2007) suggest that it is creditor rights, not the protection of property rights, that matter.

The recent case of Asia Pulp and Paper (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 difficult to reschedule debt payments. The media reported that the Indonesian courts had 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) stated that "the lack of a credible legal infrastructure makes enforcing rights in Indonesia's courts almost impossible." Indonesia scores high on creditor rights but low on property rights protection.

This paper examines the effects of creditor rights and property rights protection on loan contracts. Banks are expected to charge higher interest rate spreads when they lend to firms operating in countries with weak creditor rights and poor enforcement. However, as risks increase, instead of increasing interest rates, banks ration some borrowers (Stiglitz and Weiss (1981)). Thus, loan amounts shrink as legal risks increase. Loan ma-

turities also respond to higher legal risks. Diamond (2004) suggests that in legal systems with expensive or ineffective contract enforcement, more short-term debt will be issued. Short-maturity debt allows lenders to review their lending decisions more frequently and to restrict borrower flexibility to increase the riskiness of assets. We examine all three aspects of loan contracting – loan size, loan maturity, and loan spreads. In relating these loan variables to law and enforcement measures, we control for other factors that are likely to affect loan contracting, including loan syndicate structure and composition, agency participation in loans, loan purpose and type, priority structure, borrower risk characteristics, country sovereign risk, measures of financial and economic development, borrower industry, and year and country effects. Our results are based on a fairly large sample of loans (over 63,000 loans worth US\$13 trillion) to firms in 48 countries during 1994 to 2003.

Results show that better enforceability of contracts increases loan size, lengthens loan maturity, and reduces loan spreads. These effects are both statistically significant and economically large. The average loan amount will increase by about \$57 million if a borrower moves from a country in the sample with the weakest protection of property rights to a country with the strongest protection of property rights, all else equal. Similarly, the average loan maturity will increase by 2.5 years and the average loan spread will decline by 67 basis points in moving from a country with the weakest protection of property rights to the strongest protection of property rights.

Loan spreads also respond to variation in creditor rights. A smaller but significant decline in spreads of 41 basis points is predicted if a borrower moves from a country that scores the worst on creditor rights to a country that scores the best, all else equal. The effect of creditor rights on loan size and maturity is weak, often statistically insignificant.

Finally, we examine loans offered to firms around the time of East Asian financial crisis of 1997 to 1998. Aggregate loan volumes dropped substantially in the affected countries during the financial crisis that started some time in July 1997 and lasted at least until the third quarter of 1998. We find that banks further responded by significantly reducing loan maturities and increasing loan spreads to borrowers in East Asian countries during the crisis period. Importantly, we find that the increase in loan spreads during the crisis is relatively larger for firms in countries with poor enforceability of contracts and

weak creditor rights. These results further imply that laws and their enforcement have substantial micro-level effects on borrowers' cost of loan finance.

This study is broadly related to previous work that examines the effect of property rights on external financing, investment, and firm growth rates.<sup>2</sup> Legal institutions have also been shown to affect costs of external financing. Hail and Luez (2006) examine how legal institutions affect the cost of equity (estimated from share prices and analysts' forecasts). Miller and Puthenpurackal (2002) examine how investor protection affects premiums on Yankee bonds.

In other related work, Laeven and Majnoni (2005) examine the effect of judicial protection of property rights on country-level interest rate spreads. Jappelli, Pagano and Bianco (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, Foley, and Hines (2004) examine the determinants of capital structures of foreign affiliates of U.S. multinational firms and find that when affiliates operate in weak creditor rights countries, they borrow less externally. More closely related are papers that examine how creditor rights affect syndicate structures and syndicate compositions. 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. Esty (2006) examines how creditor rights protection and law enforcement affect the willingness of foreign banks to lend to domestic projects. Gatti et al. (2007) test for arranger certification in project finance loans and examine the effect of arranger prestige on loan features.

In a recent paper, Qian and Strahan (2007) focus on creditor rights and find that stronger legal rights result in loans with longer maturities and lower spreads. Instead, we examine both creditor rights and enforceability of contracts and show that it is the enforceability, not merely the existence of rights, that matters to loan contracting. We use time-varying measures of creditor rights and property rights and are able to control for unobservable country heterogeneity using country effects.<sup>3</sup> The results show that controlling for these country effects is important. In addition, we show that poor enforceability of contracts results in smaller and more concentrated syndicates, suggesting that monitoring and recontracting issues are relatively more important when property rights are poorly

protected. Overall, the results in this paper and those in previous studies substantially enhance our understanding of how laws and enforcement affect loan contracts.

The remainder of this paper is organized as follows. Section I describes the loan data and the various loan samples considered in the study. It also discusses measures of creditor rights and property rights protection. Section II provides a discussion of factors that affect international bank lending contracts. Section III presents the descriptive statistics on loan and borrower characteristics. Section IV presents our main empirical results and Section V discusses robustness issues. Section VI examines loan contracts around the time of the East Asian crisis of 1997 to 1998. Section VII concludes the paper.

## I. Data

### *A. Description of the Loan Database*

Information on bank loans is from the Dealscan database compiled by the Loan Pricing Corporation (LPC). We begin by including 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. The sample starts in 1994 since LPC's coverage of loans in the pre-1994 period is almost nonexistent for countries other than the U.S.; LPC's attention in the early 1990s was primarily focused on the U.S. loan market.

We analyze these loan transactions by using minimum restrictions other than requiring non-missing loan spreads, maturities, and loan sizes.<sup>4</sup> This results in a sample of 63,158 loan tranches to about 22,000 borrowers from 48 countries over the 1994 to 2003 period.<sup>5</sup> These loans aggregate to approximately US\$13 trillion in constant dollars.

We also examine two subsets of this sample. The first subset includes loans matched to the Worldscope database. Worldscope has accounting information required for constructing measures of borrower risk characteristics. The matching is done based on firm names in the two databases and much of it is done manually. The Worldscope matched sample consists of 17,791 loans to 4,407 borrowers in 38 countries. The total loan amounts are equal to about US\$5 trillion in constant dollars.<sup>6</sup>

The second subset includes only US\$ loans, which are priced as spreads over the London Interbank Offered Rate (LIBOR). This is done to ensure comparability in terms of currency and benchmark used for pricing loans. This sample is 12,271 loans to 3,283 borrowers in 37 countries. The total loan amount is equal to about US\$ 4 trillion in constant dollars.<sup>7</sup>

Appendix Table I provides the number of loans and the aggregate loan amounts for both U.S. borrowers and non-U.S. borrowers across these different samples. Almost 70% of these loan tranches are to U.S. firms. We therefore analyze non-U.S. borrowers separately. Appendix Table II gives a breakdown on the number of loans, median loan spread, loan size and loan maturity, and borrower characteristics by country. These borrower characteristics are defined in Appendix Table III.

### *B. 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 V reports results from tests that consider alternative measures of property rights.

The three indices measure the extent to which a country's legal system 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. The corruption index ranges from zero to six while the repudiation of contracts and the risk of expropriation indices range from zero to ten. Higher values indicate better ratings, that is, 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 lower levels of government in the form 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. We examine how loan spreads respond to these three indices separately in Table V below but, for the most part, the three indices are combined into an additive index of property rights protection (see Morck, Yeung, and Yu (2000)).

### *C. Measuring Creditor Rights*

Lenders care about recovery rates in the event of a default. 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, McLiesh, and Shleifer (2007) 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 a reorganization petition is

approved, in other words, whether the court imposes an “automatic stay” on assets. The second measure is whether restrictions such as creditor consent must be observed when a borrower files for reorganization, as opposed to debtors seeking unilateral protection from creditors’ claims by filing for rehabilitation. The third measure is whether 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 is responsible for running the business during reorganization, rather than having the debtor continue to run the business. Djankov, McLiesh, and Shleifer add a value of one to the index for each of the powers that a country’s law and regulations provide to secured lenders. These scores are aggregated into a creditor rights index, which varies from zero (poor creditor rights) to four (strong creditor rights). They find that laws change slowly as there is a high degree of persistence in the creditor rights index with differences persisting over a 25-year period.<sup>8</sup>

## II. Factors Affecting Lending Contracts Across Countries

Variation in laws and enforcement affects borrower incentives to expropriate and to increase the riskiness of assets. In turn, such variation affects default probabilities, recoveries in default, and hence a lender’s incentives to monitor and its ability to recontract. These differences in legal risk across countries will sometimes deter lending. At other times, loans will be for smaller amounts, or will have shorter maturities or higher spreads. In countries with weak rights and poor enforcement, relatively higher quality borrowers will qualify for bank loans; in other countries, there will be greater variation in borrower quality. The types of industries to which banks lend might also differ across countries. This suggests that banks respond to differences in legal risk in many different ways. In this section, we discuss several mechanisms that the previous literature has identified as important in addressing legal risks and suggest control variables that are used later in the analysis.

*Syndicate structure:* Esty and Megginson (2003) argue that legal risks affect syndicate size and concentration.<sup>9</sup> Smaller and more concentrated syndicates have better monitor-



ing incentives and greater recontracting abilities. Concentrated lending aligns incentives required to provide monitoring by an informed lender when information asymmetries are large (Sufi (2007)). This implies that syndicates will be smaller and more concentrated in countries with weak creditor rights and poor enforcement. On the other hand, if the objective of banks is to structure syndicates to deter strategic defaults, higher legal risks will result in larger and less concentrated syndicates (see Esty and Megginson (2003), Qian and Strahan (2007)). The syndicate size is the number of banks lending in a syndicate. The syndicate concentration is a Herfindahl index calculated using each syndicate member's share in the loan. We also use an alternative measure of concentration, which is the share of the largest lender in a loan syndicate.

*Foreign lenders in syndicates:* Esty (2006) argues that legal risks affect syndicate composition. According to Esty, creditor rights and legal enforcement issues are more important to foreign banks than they are to local banks. The literature, however, is divided on this issue. Some commentators argue that host governments are less likely to expropriate from their own banks. If this is true, then foreign lenders might deliberately bring in local lenders as syndicate members. Others argue that syndicates composed of foreign lenders provide a stronger deterrent against expropriation.

The effect of foreign participation on spreads is similarly unclear. Esty (2006) argues that foreign participation will increase spreads if foreign lenders receive additional compensation for providing greater deterrence against sovereign intervention. On the other hand, foreign banks might prefer to ration credit than to increase loan spreads (to avoid adverse selection problems as in Stiglitz and Weiss (1981)). Another possibility is that foreign bank participation is associated with greater competitive pressures during the bidding process, which leads to lower spreads.

*Agency participation:* Lenders can mitigate legal risks by co-lending with multilateral or bilateral agencies such as the International Finance Corporation (IFC), country development banks, central banks, and western Export-Import banks. According to Esty and Megginson (2003), agency lenders help deter strategic defaults, resolve complicated legal issues, and protect contractual agreements from sovereign influence. Thus, we predict that when agency lenders are a part of loan syndicates, loan amounts are larger, loan maturities are longer, and spreads are smaller. Involvement of agency lenders, on the other hand, might also indicate that these loans have high ex-ante risk. Our agency

participation indicator variable equals one if one or more of these agencies participate in the syndicate, and zero otherwise.

*Borrower risk characteristics:* Heterogeneity in borrower risk would also affect the structure of lending contracts. Differences in (a) firm size, (b) profitability, (c) leverage, (d) the collateral value of assets, and (e) growth opportunities could have important effects on contracting costs.<sup>10</sup>

- (a) *Firm size:* Larger firms are typically more diversified, mature, and better known and they have lower default risk. They have also been around longer, which means that they have probably acquired a reputation in the debt markets. This suggests that large firms should have fewer contracting problems. Firm size is measured as the natural log of total assets in constant US\$.
- (b) *Profitability:* Profitable firms have lower default risk and less severe moral hazard problems. Incentives to expropriate assets and to increase the risk of doing business are greater when firms are less profitable. Thus, profitable firms are expected to have lower contracting costs. Profitability is measured by the ratio of operating income over assets.
- (c) *Leverage:* Levered firms have greater agency costs of debt since they are more likely to underinvest when a disproportional amount of benefits accrues to the lenders (Myers (1977)). Highly leveraged firms have greater incentives to increase the riskiness of assets. However, higher leverage could also proxy for the fact that the firm has acquired a reputation in the debt markets, which reduces contracting problems. Leverage is measured by the ratio of total debt to book assets.
- (d) *Tangibility:* Tangible assets are easier to collateralize and they suffer a smaller loss of value when firms go into distress. Thus, tangibility reduces the costs of financial distress. In addition, tangibility makes it difficult for shareholders to substitute high risk assets for low risk ones. This reduces agency costs of debt. The low information asymmetry associated with tangible assets makes it easier for lenders to monitor borrowers. Higher tangibility therefore implies lower contracting costs. Tangibility is measured by the ratio of fixed assets to total assets.

(e) *Growth*: Growth firms lose more of their value when they go into distress. Several agency theories predict that contracting costs are higher for growth firms. For example, the underinvestment problem is more severe for growth firms (see Myers (1977)). In addition, as growth options increase, asset substitution problems become severe. In high growth firms, it is easier for stockholders to increase project risk and it is harder for lenders to detect such changes. Adverse selection costs are greater in growth firms because managers find it more difficult to communicate credible information about growth opportunities to lenders than information about assets already in place. A countervailing argument is that growth firms have access to valuable projects that generate a stream of quasi-rents. Such firms are less likely to engage in risky investment strategies or to engage in other activities to expropriate creditors. Growth opportunities are measured as the ratio of market value of assets (assets less book equity plus market value of common equity) to book assets.

*Loan purpose and priority structure*: Lenders could mitigate risks by directing lending to specific purposes. In countries with weak protection of property rights, lenders might prefer to loan for the purposes of investment in physical assets, which constrains a firm's ability to change the risk of its assets. In countries with stronger protection, lenders might make loans for acquisitions or to provide a general line of credit as a backup for commercial paper facility.<sup>11</sup> In addition, in high legal risk environments, lenders might lend on a secured basis or require that bank loans be senior to other debt.

*Industry*: Lenders could also change the mix of industries to which they lend in different countries. Variation in creditor rights and enforceability of contracts will affect whether industries that face greater product market competition or those with mostly intangible assets receive bank loans. We therefore include 75 industry dummies (based on two-digit SIC codes). In addition, we explicitly examine loan amounts, maturities, and spreads to financial borrowers since international banks could address poor creditor rights in the target country by channeling funds through local financial institutions.

*Sovereign risk rating*: Sovereign risk ratings, a measure of country risk, affect ratings assigned to borrowers from that country. 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 about country risk not contained in other macro-level variables. The ratings

data are obtained from Standard and Poor's and are converted to a numerical score with higher numbers reflecting worse ratings. We use the log transformation of the sovereign credit rating variable in the regression specification.

*Level of economic development:* Bank lending will also be affected by differences in the degree of economic development. The political stability of a country is often a function of its GDP per capita. Importantly, La Porta et al. (1998) argue that laws and their enforcement vary as a function of GDP per capita. 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. In Section V, we examine other macroeconomic variables that might affect lending in a country.

### III. Summary Statistics

Table I presents summary statistics of the property rights index, creditor rights, loan terms, syndicate structure, loan purpose, and borrower characteristics. We first compute median values of the variables for each country in the sample and then provide summary statistics of these medians. While we present these statistics for the sample of 17,791 loans to Worldscope matched borrowers, the inferences about how these characteristics vary as a function of creditor rights and enforceability across countries are qualitatively similar for the other two samples.

Table I about here

The median of the median country loan spread is about 83 basis points. The mean is 105.3 and the standard deviation is 69.5, suggesting large variation in the median loan spread across countries. The median of the median loan maturity is about 3.5 years with substantial cross-country variation. The median of the median loan size is about US\$100 million.<sup>12</sup> A median of 4% of loans are secured. Most loans are classified as senior debt. Only a small fraction of loans include agency lenders in their syndicates.

The median of the median syndicate size is eight lenders. Syndicate size varies substantially across countries. The 10<sup>th</sup> percentile is four banks while the 90<sup>th</sup> percentile is

15.5 banks. Foreign banks constitute a majority of these syndicates. The median syndicate has six foreign lenders. As a fraction of the overall syndicate size, foreign banks represent a median of 78% of the overall syndicate. Foreign banks provide the largest share of the median loans. The median syndicate is dispersed with the biggest lender contributing a median of 14.3% of the loan tranche. The Herfindahl index is about 12%. Thus, most lending is by large and dispersed syndicates.

About 44% of loans are for working capital or general corporate purposes. The second most frequent purpose is refinancing (about 20%). About 12% of the loans are for the purposes of acquisitions/recapitalization. There are fewer loans for capital expenditures, for financing assets, or for commercial paper backup.

The borrowers in the collection of Worldscope matched LPC firms are large. The median of the median asset value is about \$3.3 billion (in constant US\$). The median of the median leverage ratio is 0.32. Borrowers are profitable (the median of the median profitability is 0.06). The median tangibility ratio is 0.39 and the median market-to-book assets ratio is 1.1.

Tables II and III examine how loan terms, syndicate structure, loan purpose, and borrower characteristics vary as a function of property rights and creditor rights. The property rights index is an aggregation of three indices, namely, corruption, risk of contract repudiation, and risk of expropriation. The creditors rights index is from Djankov, McLiesh, and Shleifer (2007). Before presenting these results in a table, we plot the median loan size, the median loan maturity, and the median loan spread against the property rights index and creditor rights. Figures 1(a) and 1(b) plot the median loan sizes. Figures 1(c) and 1(d) plot the median loan maturities and Figures 1(e) and 1(f) plot the median loan spreads. These plots show that loan spreads decline as laws and enforcement improve. Loan size increases as property rights strengthen but decline with improvements in creditor rights. The median loan maturities are flat when plotted against property rights and they increase when creditor rights are stronger.

Figure 1 about here

Table II presents the median values of loan and firm characteristics in countries grouped according to the strength of the protection of property rights. Countries with weak protection of property rights are in the bottom one-third of the property rights index.

Countries with medium protection are in the middle one-third and countries with strong protection are in the top one-third of the property rights index. Although the descriptive statistics show that creditor rights vary directly with property rights, the correlation between the two indices is only about 0.25.

Table II about here

Loan spreads are lower in countries with strong property rights protection. They are about 150 basis points for countries in the bottom one-third in terms of property rights protection, declining to 75 basis points for countries in the middle one-third and to about 49 basis points for countries in the top one-third. Median loan maturity and loan size also differ across countries with different enforcement regimes. Compared to loan maturities in countries with weak and medium property rights, loan maturities are a year longer in countries with strong property rights protection. Loan size also increases slightly where property rights are stronger. Lenders more frequently lend on a secured basis in countries with weak property rights protection. Participation of agency lenders is greater in countries that have weak property rights, consistent with the argument that co-lending with agency lenders is more valuable when legal risks are high.

Syndicate size is smaller and syndicates are more concentrated in countries with weak property rights. Furthermore, foreign bank participation in syndicates is highest in countries with weak protection of property rights although this relation is not monotonic. Syndicates in strong property rights countries also have more foreign participation. Countries in the middle have less foreign lenders. Loans to firms in weak property rights countries are more often for the purpose of capital expenditures or for financing specific investments. Fewer loans in such countries are for the purposes of acquisition or for recapitalization.

Although firm size is larger in countries with strong enforceability of contracts, other borrower characteristics suggest that banks lend to relatively higher quality firms in countries with poor enforcement of contracts. Borrowers in weak property rights countries have higher profitability, more tangible assets, and higher market-to-book ratios compared to borrowers in countries with strong protection of property rights.

Table III presents the descriptive statistics of loan and borrower characteristics for countries classified by creditor rights. Loan spreads are higher and loan maturities are longer in countries with weak creditor rights. Median loan size, however, declines in coun-

tries with strong creditor rights. A higher fraction of loans are secured and more loans have agency lenders in their syndicates in countries with weak creditor rights. The syndicate structure does not seem to share any clear pattern with creditor rights. Syndicate size is larger and less concentrated in countries with medium creditor rights. The borrowers in weak creditor rights countries have higher asset tangibility, higher profitability, and higher market-to-book ratios. Other differences are less dramatic.

Table III about here

## IV. Results

The summary statistics presented in the previous section show significant differences in loan and borrower characteristics across countries. The important question is whether the variation in creditor rights and property rights protection causes differences in loan quantities, loan maturities, and loan spreads, other things being equal. To show that contract enforceability and creditor rights matter in lending contracts, it is important to control for borrower risk characteristics, priority structure, syndicate composition and structure, loan purpose, country risk measures, industry effects, time-period effects, and country effects. We begin with a discussion of the econometric issues and then present our key results.

### *A. Estimation Method*

If there are unobservable common country components, loans in a given country cannot be treated as independent observations. The residuals are correlated and OLS standard errors may be biased. In this case, it is important to adjust standard errors to account for correlations within a cluster (see Petersen (2007)).

Random effects estimates using generalized least squares (GLS) are more efficient than pooled OLS estimates.<sup>13</sup> Random effects assume that country effects are uncorrelated with the regressors. Fixed effects allow country effects to be correlated with the regressors. We examine this assumption by fitting both models – fixed effects and random effects – and then compare their estimates. Appendix Table IV reports estimates for

the loan spread regressions for the sample of all loans (the estimates for the loan quantity and the loan maturity regressions and those from other samples yield qualitatively similar conclusions). For comparison, we also report estimates from pooled OLS with White standard errors and pooled OLS with clustered standard errors in columns (1) and (2) respectively. These estimates show that White standard errors are greatly understated compared to standard errors clustered by country. Columns (3) and (4) report the fixed effects and the random effects estimates with standard errors adjusted for clustering by country. A comparison of the coefficient estimates from the two methods suggests that they differ significantly. A Hausman test rejects the hypothesis that the estimated coefficients from the random effects are equal to those from the fixed effects. However, an issue with the fixed effects is that the country-level variables such as the property rights index and the creditor rights index show relatively little within-country variation and significantly larger between-country variation. Specifically, the between-country standard deviation in the property rights index (the creditor rights index) is 3.1 (1.2), while the within-country standard deviation in the property rights index (the creditor rights index) is 0.8 (0.1). The fixed effects therefore soak up some of the explanatory power of these slowly changing variables (Beck (2001), Zhou (2001)).<sup>14</sup> It is reassuring, however, that the coefficient estimates on the property rights index are of consistent sign and significance across these methods. Less robustness is observed for the effect of creditor rights on loan contracts.

### *B. Random Effects Estimates*

Table IV presents the coefficient estimates from the random effects regression of loan size, loan maturity, and loan spreads. As described in Section I, we examine three different loan samples. Columns (1) to (3) present results for the sample of all loans. Columns (4) to (6) examine loans to borrowers matched to firms in Worldscope. Finally, columns (7) to (9) examine a subset of these loans denominated in US\$ and priced as spreads over LIBOR.

Table IV about here
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The dependent variables are the natural log of the loan tranche amount (in columns labeled “Size”), the natural log of the loan maturity (in columns labeled “Maturity”) and



the natural log of all-in interest spreads (in columns labeled “Spread”). The interest rate spreads are spreads over LIBOR or a similar benchmark (including any annual fee and other upfront fees prorated over the life of the loan).<sup>15</sup>

The key variables of interest on the right-hand side are the two indices of creditor rights and property rights. The regressions include the agency participation indicator, the financial borrower indicator, the term loan indicator, the loan purpose indicators, the natural log of the sovereign credit rating, the natural log of GDP per capita, firm size, profitability, leverage, tangibility, and the market-to-book assets ratio. The spread regressions additionally include syndicate composition, other nonprice loan terms such as the log of maturity, the log of loan size, and the security and seniority indicators. The explanatory variables are lagged so that they are at least in the information set of the lenders. All of the regressions include annual year dummies to control for differences in loan quantities, maturities, and spreads that reflect changing market conditions. Regressions in columns (4) to (9) additionally include industry dummies.

The results show that loan amounts increase, maturities lengthen, and spreads decline with improvements in property rights. The smaller loan sizes in countries where contracts are poorly enforced suggest that lenders impose size restrictions in response to uncertain legal environments. The smaller loan maturities in countries where contracts are poorly enforced suggest that banks shorten loan maturity to review their lending decisions more frequently and restrict flexibility of borrowers to expropriate creditors (Diamond (1991, 1993)).<sup>16</sup> The higher loan spreads in countries where contracts are poorly enforced suggest that lenders require additional compensation when there is greater contract enforceability risk. The coefficients on creditor rights in the loan spread regressions are negative and statistically significant, suggesting that loan spreads also respond to creditor rights. Loan size and loan maturity do not show consistent relations with creditor rights.

Agency participation increases loan sizes, results in longer maturities and lowers loan spreads. Loans to financial borrowers are smaller, have shorter maturities, and lower spreads compared to those for nonfinancial borrowers. Term loans are smaller, have longer maturities, and higher spreads. Loans for acquisition purposes have higher spreads while loans backing up commercial paper facilities have lower spreads. The effect of the sovereign credit rating on loan size is not robust but what is clear is that worse ratings

result in shorter loan maturities and higher loan spreads, suggesting that the sovereign credit rating matters to loan maturity and loan spreads in a country.

Several borrower characteristic variables have the predicted signs. Larger firms borrow larger amounts while highly levered firms borrow smaller amounts. Loan size increases with tangibility of assets and the market-to-book ratio. Loan maturity increases with profitability but declines with tangibility and the market-to-book ratio. Both firm size and profitability are negatively related to spreads. More leveraged firms pay higher spreads, suggesting that default risks are important. However, tangibility of assets and market-to-book ratios are not significantly related to loan spreads.

We find the effects of the syndicate structure and composition to be sensitive to the sample under consideration. In the sample that includes all loans, loans with larger syndicates and loans with greater foreign participation have lower spreads. Some of these effects reverse when the smaller samples are considered. We experiment with replacing syndicate size with the share of the biggest lender and with the Herfindahl index of syndicate concentration. We also experiment with alternative measures of foreign lender participation based on the dollar share of foreign banks in a syndicate. The conclusions from these results are unchanged.

The loan spread regressions include loan maturity and loan size as pre-determined variables. Results are similar if predicted loan sizes and predicted loan maturities are used instead. 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, consistent with larger loans being made to better borrowers. Secured loans have higher spreads while senior loans have lower spreads.

In summary, the results regarding the effect of property rights protection indicate that banks charge smaller spreads, offer longer maturities, and increase loan sizes when borrowers are operating in countries with stronger protection of property rights. The estimated coefficients from column (7) suggest that, with all other variables set at their mean values, the predicted loan size increases from \$84 million at the minimum value of property rights protection to about \$137 million at the maximum value of property rights protection. Loan maturities increase from 1.7 years at the minimum value of property rights index to 4.2 years at the maximum value of property rights protection. Finally, spreads decline from 118 basis points at the minimum value of property rights protection

(Colombia in 1998) to 51 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.

Focusing on the creditor rights index, the results in column (9) of Table IV show that predicted loan spreads range from 55 basis points when creditor rights are strongest to 96 basis points when creditor rights are weakest, all else equal.

Figures 2(a) and 2(b) plot the average predicted loan size against the property rights index and the creditor rights index, respectively (with all other variables in column (7) of Table IV set at their means). Figures 2(c) and 2(d) plot the average predicted loan maturity against the property rights index and the creditor rights index, respectively (with all other variables in column (8) of Table IV set at their means). Finally, 2(e) and 2(f) plot the average predicted loan spreads against the property rights index and the creditor rights index when all other variables in column (9) of Table IV are set at their mean values. Loan spreads decline substantially over the entire range of property rights index values. Loan spreads also decline over the entire range of creditor rights values but the drop is less dramatic.

Figure 2 about here

Table V provides additional evidence on the components of property rights and creditor rights that matter more for loan contracts. We present only the loan spread regressions to save space. Loan size and loan maturity regressions yield similar conclusions.

Table V about here

Columns (1) to (3) of Table V examine the three property rights indices, that is, the corruption index, the risk of contract repudiation, and the risk of expropriation, separately. Results show that loan spreads are lower in countries with higher levels of corruption, greater risks of expropriation, and higher risk of contract repudiation.

Column (4) 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 1% level. Thus, having strong creditor rights in addition to strong property rights results in an additional reduction in spreads.

Columns (5) to (8) examine the four components of creditor rights separately. The question is whether all of the laws are equally effective or whether some laws are 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 the secured creditor, and (4) mandatory removal of management in bankruptcy. Results show that all four components result in smaller spreads.

## V. Robustness

### A. *Enforcement Measures*

This section examines whether our 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 zero to ten with higher scores for countries with stronger traditions for law and order. The rule of law index “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 the 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 obtain the measure from La Porta et al. (1998). The measure is an average from 1980 to 1993 and has a scale of zero to ten, 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 Foun-

dition/Wall Street Journal since 1995. The annual values are obtained from the Heritage Foundation’s website.

4. *Enforcement*: This is an index of the effectiveness of legal systems in enforcing contracts. The variable is the average of the efficiency of the judicial system, the rule of law, and the risk of expropriation and contract repudiation and it is obtained from La Porta et al. (1998).<sup>17</sup> Higher values indicate better enforcement.
5. *Property rights index from Knack and Keefer (1995)*: Knack and Keefer construct a 50-point “property rights index” by converting corruption, rule of law, and bureaucratic quality indices to 10-point scales (by multiplying them by 5/3) and summing them with contract repudiation and expropriation risk. The individual series used in constructing the Knack and Keefer (1995) property rights index are obtained from the International Country Risk Guide.
6. *Contract enforcement time and contract enforcement cost*: 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’s “Doing Business” database (Release 2004).

Table VI presents results from country random effects estimations that use these alternative proxies for enforcement of contracts in place of the property rights index described in Section I. We report results from regressions relating loan spreads to these alternative proxies for property rights. Results from the loan size and loan maturity regressions yield similar conclusions.

Table VI about here

Column (1) of Table VI reports results from including the rule of law variable as a proxy for property rights protection. Consistent with earlier results, the coefficient on the rule of law is negative and statistically significant, implying that loan spreads are lower when a country has a stronger law and order tradition. Column (2) employs the efficiency of the judicial system as a measure of property rights protection. The coefficient is negative and significant at the 1% level.<sup>18</sup> In column (3), we employ the property rights

index from the Index of Economic Freedom compiled by the Heritage Foundation. This measure of property rights is not statistically significant.

Columns (4) and (5) employ two additional measures of property rights protection. These two measures are derived from other indices. 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 the corruption, rule of law, bureaucratic quality, contract repudiation, and risk of expropriation indices. The results show that both of these measures of property rights indices have negative and statistically significant coefficient estimates.

Finally, column (6) presents results that include both enforcement time and enforcement costs as inverse measures of property rights protection. Higher values of these measures reflect poor enforcement of property rights. We predict that both of these variables will have a positive coefficient in the loan spreads regression. The results show that, indeed, a longer enforcement time and higher enforcement costs both increase loan spreads.

### *B. Additional Control Variables*

Table VII includes additional country-specific macroeconomic variables in the baseline regressions presented in Table IV. Four different macroeconomic variables are studied: (i) GDP growth volatility, (ii) liquid liabilities/GDP, (iii) stock market traded value/GDP, and (iv) credit to private sector/GDP.

Table VII about here

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 the financial depth of an economy. Stock market traded value/GDP measures the activity or liquidity of stock markets. Finally, the ratio of credit provided by financial intermediaries to the private sector to GDP measures the financial development of an economy and the importance of the banking sector. All of these

macroeconomic variables with the exception of GDP growth volatility are annual values and are obtained from the World Development Indicators database. We only report results from loan spreads in the table. Including additional macroeconomic variables in the loan size and loan maturity regressions does not affect any of our previous conclusions.

Results reported in Table VII show that both the property rights protection index and the creditor rights index continue to have negative and statistically significant coefficients even in the presence of these additional control variables. Table VII shows that GDP growth volatility has a positive and statistically significant coefficient, the liquid liabilities/GDP ratio has a negative coefficient, and the stock market traded value/GDP has a positive coefficient. The coefficient estimate on the credit to private sector ratio is statistically insignificant.

## **VI. Lending around the Period of the Asian Financial Crisis**

How did bank loan contracts respond to the East Asian financial crisis of 1997 to 1998? The crisis can be considered relatively exogenous (at least from the perspective of any single firm). While the crisis did not materially change the property rights and creditor rights indices for any of the affected countries during that short period, it did significantly reduce expected rates of return on investments. Johnson et al. (2000) and Lemmon and Lins (2003) argue that, during the crisis, as the expected rate of return on investment fell, the incentives for controlling shareholders to expropriate from other stakeholders increased. Thus, when growth prospects declined, the legal rights of lenders and contract enforceability became relatively more important. To paraphrase Johnson et al. (2000), institutions matter a great deal more during times of crisis.

If creditor rights and enforcement of contracts affect bank lending, one would expect that, during periods of crisis, firms operating in countries with weak creditor rights and poor enforcement will face relatively deeper cuts in loan volumes, more severe reduction in loan maturities, and a larger increase in loan spreads. We test these predictions in Table VIII below.

The East Asian financial crisis began in July 1997 with the initial devaluation of the Thai Baht. Although the endpoint of the crisis is debatable, many observers believe that it ended in August 1998 (see, for example, Johnson et al. (2000), Mitton (2002), Lemmon and Lins (2003)). Most stock markets had begun to recover by this time. Thus, we define the period between July 1, 1997 and August 31, 1998 to be the crisis period. None of our results are affected if we use January 1999 or April 1999 as alternative ending points. The eight East Asian countries affected by the crisis were (1) Indonesia, (2) Malaysia, (3) the Philippines, (4) South Korea, (5) Thailand, (6) Hong Kong, (7) Singapore, and (8) Taiwan. Mitton (2002) considers five countries from this list and excludes Hong Kong, Singapore, and Taiwan. None of our results depend on including or excluding these three countries. Unreported results show that the effects are actually stronger if we exclude Hong Kong, Singapore, and Taiwan from the list of affected countries.

The empirical strategy is to include additional interaction terms (a) between the crisis period and the East Asian region indicator and (b) between the crisis period and property rights and creditor rights indices to the baseline regressions reported in columns (7) to (9) of Table IV. If banks cut back on lending to firms in East Asian countries during the 1997 to 1998 crisis, the interaction terms between the East Asian region indicator and the crisis period should be negative in the loan size regressions (reported in columns (1) and (2) of Table VIII). If property rights matter, banks would lend relatively more to firms in countries with better enforcement during crisis periods relative to firms in other countries with weaker protection of property rights. Thus, in the loan size regression, the interaction term between property rights and the crisis period and that between creditor rights and the crisis period should be positive. The results in Table VIII provide weak evidence that loan volumes responded to variations in creditor rights and property rights during the crisis periods.

Table VIII about here

Columns (3) and (4) present results from the random effects estimations of loan maturity. We find that loan maturities significantly declined for East Asian borrowers during the 1997 to 1998 crisis period. The coefficients on the interaction between property rights and the crisis and that between creditor rights and the crisis are both positive, as predicted, although neither is significant.



Columns (5) and (6) present results from the loan spreads regressions with the additional interaction terms. As the crisis unfolded, credit risks increased and banks responded by increasing loan spreads. The interaction term between the East Asian region indicator and the crisis indicator variable is positive and statistically significant at the 1% level in both specifications. The coefficient on the interaction between property rights and the crisis is significantly negative suggesting that, during crisis periods, loans to firms in countries with strong property rights enforcement have relatively lower spreads compared to firms in countries with weak property rights enforcement. The coefficient on the interaction between creditor rights and the crisis period is also negative and significant at the 5% level, suggesting that spreads are lower in countries with stronger creditor rights compared to those that have weaker creditor rights.

As Figure 3(a) shows, the median loan spreads to firms in East Asian countries increased sharply around the beginning of the crisis period and declined at the end of the crisis period. Figure 3(b) shows that the median spreads to Latin American countries increased around the end of 1998 and declined sharply by the beginning of 1999. Median spreads to firms in Europe (shown in Figure 3(c)) exhibit no such trend. Figures 4(a), 4(b), and 4(c) show aggregate loan volumes. These figures show that loan volumes fell dramatically during the early part of the crisis and then recovered as the crisis receded.

Figures 3 and 4 about here

In addition, we test whether incentive problems are more severe in firms with fewer tangible assets. In unreported regressions, we find that an interaction term between tangibility and the crisis dummy is significantly negative in the spread regressions. This suggests that greater tangibility of assets lowered loan spreads for borrowers in East Asian countries during the crisis period.

In summary, these results indicate the response of loan contracts to variations in creditor rights and contract enforceability is significantly higher during financial crises when monitoring and recontracting costs are of particular importance to lenders.

## VII. Conclusion

Some countries provide stronger creditor rights and better protection of property rights than do other countries. Do differences in laws and contract enforcement affect loan quantities, loan maturities, and the costs of loan financing? We examine this question with a large sample of loans to borrowers in 48 countries during the 1994 to 2003 period.

The results support the view that property rights protection results in more efficient contracting. Banks lend more, offer longer maturities, and charge lower spreads on loans to borrowers in countries where property rights are well protected. We find that creditor rights matter only for loan spreads. Differences in creditor rights are not systematically related to loan size and loan maturity. Even for spreads, the effects of creditor rights are weaker than the effect that differences in enforcement have on spreads.

In a further experiment, we examine loans to firms in East Asian countries during the financial crisis of 1997 to 1998. The crisis increased monitoring and recontracting costs for lenders. Banks responded by shortening loan maturities and increasing spreads. The increase in spreads during the crisis period is particularly pronounced for borrowers in countries that have weak creditor rights and poor contract enforceability.

## References

- Acemoglu, Daron, Simon Johnson, and James A. Robinson, 2001, The colonial origins of comparative development: An empirical investigation, *American Economic Review* 91, 1369-1401.
- Baltagi, Badi H., 2001, *Econometric Analysis of Panel Data* (Wiley and Sons, UK).
- Beck, Nathaniel, 2001, Time-series cross-section data: What have we learned in the past few years? *Annual Review of Political Science* 4, 271-293.
- Besley, Timothy, 1995, Property rights and investment incentives: Theory and evidence from Ghana, *Journal of Political Economy* 103, 903-937.
- Bhattacharya, Utpal, and Hazem Daouk, 2002, The world price of insider trading, *Journal of Finance* 57, 75-108.
- Bhattacharya, Utpal, and Hazem Daouk, 2005, When no law is better than a good law, Working paper, Indiana University and Cornell University.
- Cantor, Richard, and Frank Packer, 1997, Differences of opinion and selection bias in the credit rating industry, *Journal of Banking and Finance* 21, 1395-1417.
- Claessens, Stijn, Simeon Djankov, Joseph Fan, and Larry Lang, 2002, Disentangling the incentive and entrenchment effects of large shareholdings, *Journal of Finance* 57, 2741-2771.
- Demirgüç-Kunt, Asli and Vojislav Maksimovic, 1998, Law, finance, and firm growth, *Journal of Finance* 53, 2107-2137.
- Demirgüç-Kunt, Asli and Vojislav Maksimovic, 1999, Institutions, Financial markets, and Firm debt maturity, *Journal of Financial Economics* 54, 295-336.
- Desai, Mihir A., C. Fritz Foley, and James R. Hines, 2004, A multinational perspective on capital structure choice and internal capital markets, *Journal of Finance* 59, 2451-2488.
- Diamond, Douglas W., 1991, Debt maturity and liquidity risk, *Quarterly Journal of Economics* 106, 709-737.

- Diamond, Douglas W., 1993, Seniority and maturity of debt contracts, *Journal of Financial Economics* 33, 341-368.
- Diamond, Douglas W., 2004, Committing to commit: Short-term debt when enforcement is costly, *Journal of Finance* 59, 1447-1480.
- Djankov, Simeon, Caralee McLiesh, and Andrei Shleifer, 2007, Private credit in 129 countries, *Journal of Financial Economics* 84, 299-329.
- Esty, Benjamin C., 2001, Structuring loan syndicates: A case study of the Hong Kong Disneyland project loan, *Journal of Applied Corporate Finance* 13, 3-23.
- Esty, Benjamin C., 2004, Why study large projects? An introduction to research on project finance, *European Financial Management* 10, 213-224.
- Esty, Benjamin C., 2006, When do foreign banks finance domestic investment? New evidence on the importance of legal and financial systems, Working paper, Harvard Business School.
- Esty, Benjamin C., and William L. Megginson, 2003, Creditor rights, enforcement, and debt ownership structure: Evidence from the global syndicate loan market, *Journal of Financial and Quantitative Analysis* 38, 37-59.
- Gatti, Stefano, Stefanie Kleimeier, William L. Megginson, and Alessandro Steffanoni, 2007, Arranger certification in project finance, Working paper, Bocconi University, Maastricht University, University of Oklahoma, and Interbanca.
- Hail, Luzi, and Christian Luez, 2006, International differences in cost of capital: Do legal institutions and securities regulation matter? *Journal of Accounting Research* 44, 485-531.
- Hsiao, Cheng, 2003, *Analysis of Panel Data* (Cambridge University Press, Cambridge).
- Jappelli, Tullio, Marco Pagano, and Magda Bianco, 2005, Courts and banks: Effects of judicial enforcement on credit markets, *Journal of Money, Credit and Banking* 37, 223-244.
- Johnson, Simon, Peter Boone, Alasdair Breach, and Eric Friedman, 2000, Corporate governance in the Asian financial crisis, *Journal of Financial Economics* 58, 141-186.

- Knack, Stephen, and Philip Keefer, 1995, Institutions and economic performance: Cross country tests using alternative institutional measures, *Economics and Politics* 7, 207-227.
- La Porta, Rafael, Florencio Lopez-de Silanes, Andrei Shleifer, and Robert W. Vishny, 1997, Legal determinants of external finance, *Journal of Finance* 52, 1131-1155.
- La Porta, Rafael, Florencio Lopez-de Silanes, Andrei Shleifer, and Robert W. Vishny, 1998, Law and nance, *Journal of Political Economy* 106, 1113-1150.
- La Porta, Rafael, Florencio Lopez-de Silanes, Andrei Shleifer, and Robert W. Vishny, 2002a, Investor protection and corporate governance, *Journal of Financial Economics* 58, 3-27.
- La Porta, Rafael, Florencio Lopez-de Silanes, Andrei Shleifer, and Robert W. Vishny, 2002b, Investor protection and corporate valuation, *Journal of Finance* 57, 1147-1170.
- Laeven, Luc, and Giovanni Majnoni, 2005, Does judicial efficiency lower the cost of credit? *Journal of Banking and Finance* 29, 1791-1812.
- Lemmon, Michael L., and Karl V. Lins, 2003, Ownership structure, corporate governance, and firm value: Evidence from the East Asian financial crisis, *Journal of Finance* 58, 1445-1468.
- Levine, Ross, 1999, Law, finance and economic growth, *Journal of Financial Intermediation* 8, 8-35.
- Levine, Ross, Thorsten Beck, and Norman Loyaza, 2000, Financial intermediation and growth: Causality and causes, *Journal of Monetary Economics* 46, 31-77.
- Mauro, Paolo, 1995, Corruption and growth, *Quarterly Journal of Economics* 110, 681-712.
- Miller, Darius P., and John J. Puthenpurackal, 2002, The costs, wealth effects, and determinants of international capital raising: Evidence from public Yankee bonds, *Journal of Financial Intermediation* 11, 455-485.
- Mitton, Todd, 2002, A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis, *Journal of Financial Economics* 64, 215-241.

- Morck, Randall, Bernard Yeung, and Wayne Yu, 2000, The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics* 58, 215-260.
- Myers, Stewart C., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.
- Petersen, Mitchell A., 2007, Estimating standard errors in finance panel data sets: Comparing approaches, *Review of Financial Studies* forthcoming.
- Pinheiro, Armando Castelar, and Célia Cabral, 1999, Credit markets in Brazil: The role of judicial enforcement and other institutions, Working Paper R-368, BID.
- Plümper, Thomas and Vera E. Troeger, 2007, Efficient estimation of time-invariant and rarely changing variables in finite sample panel analysis with unit fixed effects, *Political Analysis* 15, 124-139.
- Qian, Jun, and Philip E. Strahan, 2007, How law and institutions shape financial contracts: The case of bank loans, *Journal of Finance* 62, 2803-2834.
- Rajan, Raghuram, and Luigi Zingales, 1998, Financial dependence and growth, *American Economic Review* 88, 559-586.
- Stiglitz, Joseph E., and Andrew Weiss, 1981, Credit rationing in markets with imperfect information, *American Economic Review* 71, 393-410.
- Strahan, Philip E., 1999, Borrower risk and the price and nonprice terms of bank loans, Working paper, Federal Reserve Bank of New York.
- Sufi, Amir, 2007, Information asymmetry and financing arrangements: Evidence from syndicated loans, *Journal of Finance* 62, 629-668.
- Woolridge, Jeffrey M., 2002, *Econometric Analysis of Cross Section and Panel Data* (MIT Press, Cambridge Massachusetts).
- Zhou, X., 2001, Understanding the determinants of managerial ownership and the link between ownership and performance: comment, *Journal of Financial Economics* 62, 559-571.

## Notes

<sup>1</sup>The *local* legal tradition and enforceability of contracts is what matters in loan contracting. The location of the lender matters less. Most borrowers file for bankruptcy in their home country.

<sup>2</sup>This 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)). More evidence is provided by Besley (1995), Mauro (1995), Levine (1999), Levine, Beck, and Loyaza (2000), and Acemoglu, Johnson, and Robinson (2001).

<sup>3</sup>Pooled OLS estimates are likely to be biased and inefficient in the presence of unobservable country effects (see Woolridge (2002)).

<sup>4</sup>The missing loan maturity can sometimes be estimated by taking the difference between the loan origination date and the loan maturity date. We make this estimation whenever possible.

<sup>5</sup>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.

<sup>6</sup>We compare the matched LPC borrowers to typical Worldscope firms in their countries. The matched 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 U.S. borrowers in LPC.

<sup>7</sup>The Dealscan database includes a variable called “Base Rate and Margin,” which includes information on whether the loan is priced as the spread over LIBOR or if some other benchmark is used. Overall, about 86% of sample loans are priced as spreads over LIBOR. The percentage of LIBOR-based loans as a fraction of all loans exceeds 80% for most countries (including countries in Asia).

<sup>8</sup>La Porta et al.'s (1998) measure of creditor rights is available for a single cross-section of countries (year 1995). The La Porta et al. (1998) and the Djankov, McLiesh, and Shleifer (2007) measures are highly correlated. However, Djankov, McLiesh, and Shleifer (2007) improves on the La Porta et al. measure by coding insolvency procedures differently and by providing a time series of this variable.

<sup>9</sup>Most lending in the sample is in the form of syndicated bank loans. Syndicated loans are made by a group of banks that jointly extend a loan to a specific borrower. Esty (2001) provides a detailed description of the syndication process.

<sup>10</sup>Previous research uses 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 also analyze a sample of loans for which LPC reported borrower credit ratings. These results show that in no case does the addition of a rating dummy materially affect the coefficients on other variables in the regression. Moreover, the coefficient estimate of the rating dummy itself is never statistically significant.

<sup>11</sup>Esty and Megginson (2003) and Esty (2006) examine project finance loans. Project companies are mostly private, stand-alone entities. They extensively use high leverage and primarily operate natural resources and infrastructure projects. In the Worldscope matched samples, very few loans are project finance loans. We classify these loans together with other loans. Keeping them as a separate category or including them together with loans for the purpose of financing investment in assets has no appreciable effect on any of our findings. Esty (2004) calls for more research on project finance transactions.

<sup>12</sup>Both loan size and firm size are converted to year 2000 dollars using a deflator based on the Consumer Price Index (CPI) values for respective countries. The data on CPI are from the World Development Indicators database except for the values for Taiwan, which are obtained from the Taiwan Economic Journal database.

<sup>13</sup>Standard errors produced by GLS are unbiased only when the country effect is permanent. If the country effect decays over time, standard errors are no longer unbiased and it is still important to estimate clustered standard errors. Thus, we report random effects estimates with robust standard errors adjusted for clustering by country. We also



estimate standard errors clustered by both country and year. The standard errors clustered by country and year are almost identical to the standard errors clustered by country alone. Mitch Petersen provides the Stata code for implementing two-way clustering of standard errors on his website: [http://www.kellogg.northwestern.edu/faculty/petersen/htm/papers/se/se\\_programming.htm](http://www.kellogg.northwestern.edu/faculty/petersen/htm/papers/se/se_programming.htm).

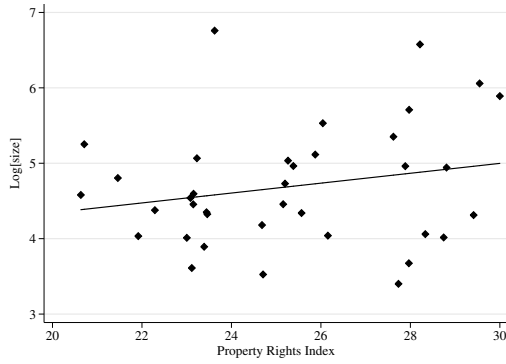
<sup>14</sup>See Baltagi (2001), Woolridge (2002), Hsiao (2003), and Plümer and Troeger for a discussion of issues with fixed effects estimations.

<sup>15</sup>LPC does not provide spreads and fees separately so it is not possible to adjust for fees in a more sophisticated way.

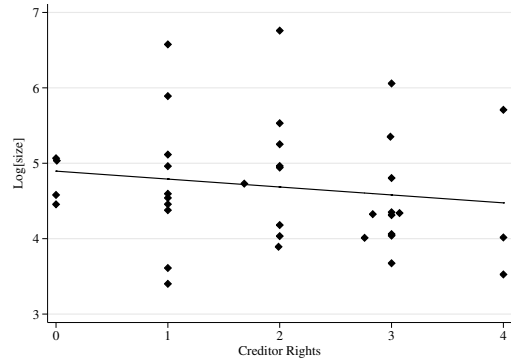
<sup>16</sup>Demirgüç-Kunt and Maksimovic (1999) also show that debt maturities are longer in countries with strong laws and strong enforcement.

<sup>17</sup>Results are robust to updating the rule of law, risk of expropriation, and contract repudiation indices to annual values to 1997 that we obtained from the International Country Risk Guide.

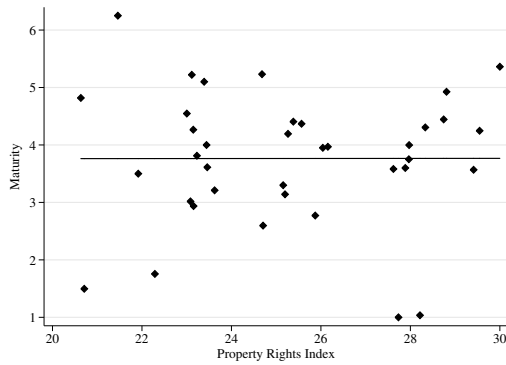
<sup>18</sup>Jappelli, Pagano, and Bianco (2005) develop a model in which improvements in judicial efficiency reduce credit rationing and increase lending. However, the impact of improvements in judicial efficiency on interest rates is ambiguous, depending on banking competition and on the type of judicial reform.



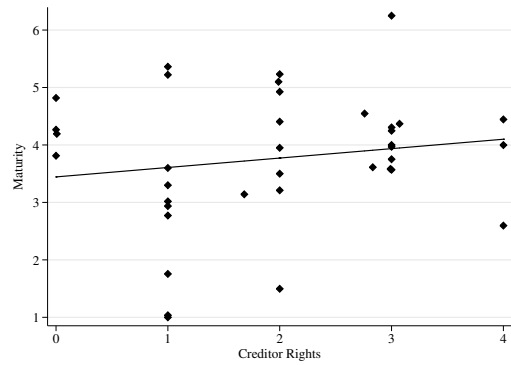
(a) Loan size and property rights



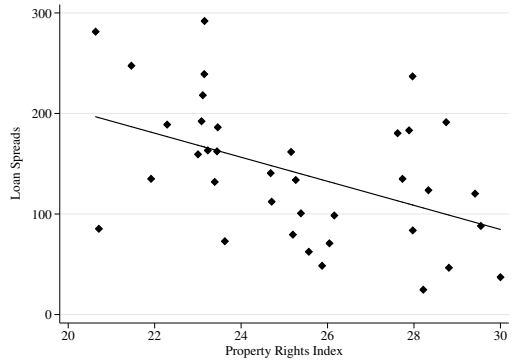
(b) Loan size and creditor rights



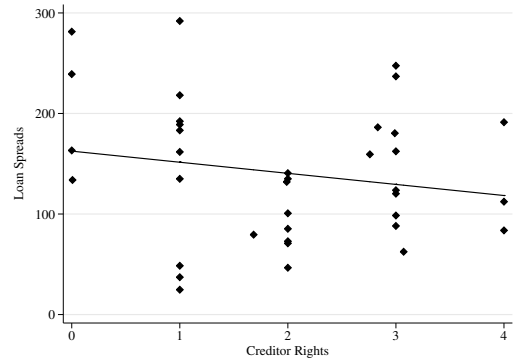
(c) Loan maturity and property rights



(d) Loan maturity and creditor rights

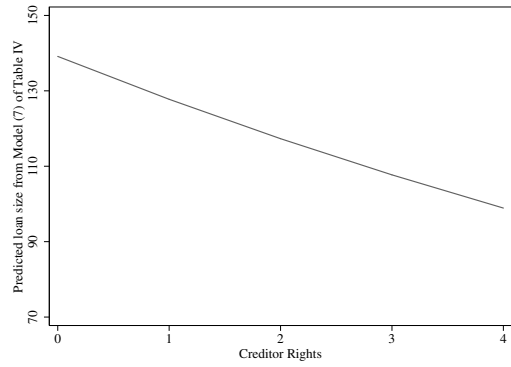
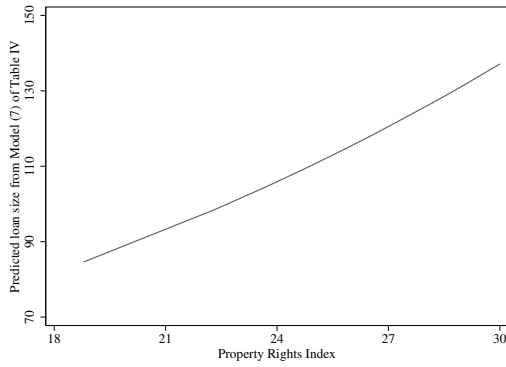


(e) Loan spreads and property rights

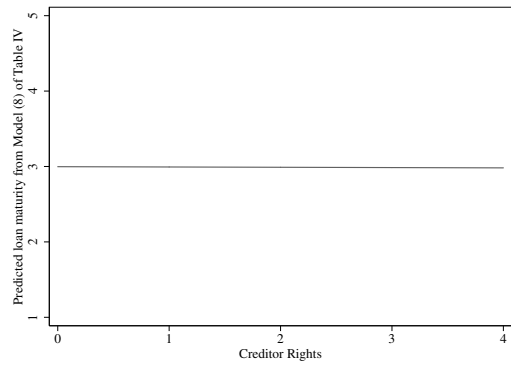
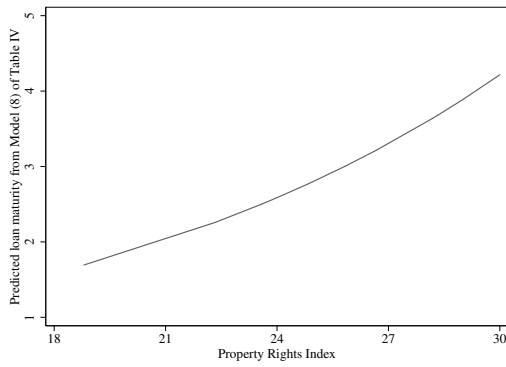


(f) Loan spreads and creditor rights

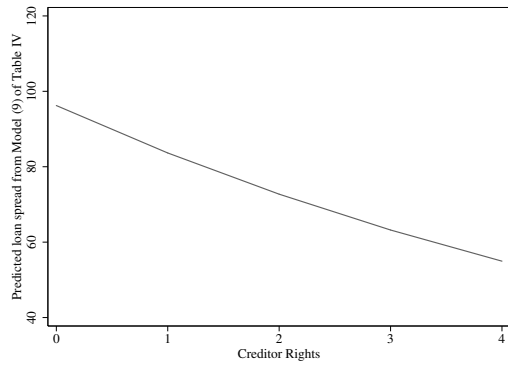
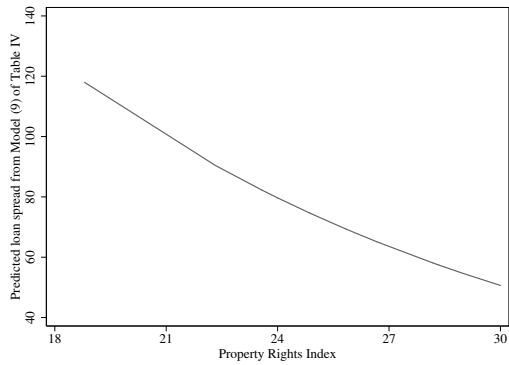
**Figure 1.** Prediction and scatter plots of median loan size, median loan maturity, and median loan spread in relation to property rights and creditor rights.



(a) Predicted loan size versus property rights (b) Predicted loan size versus creditor rights

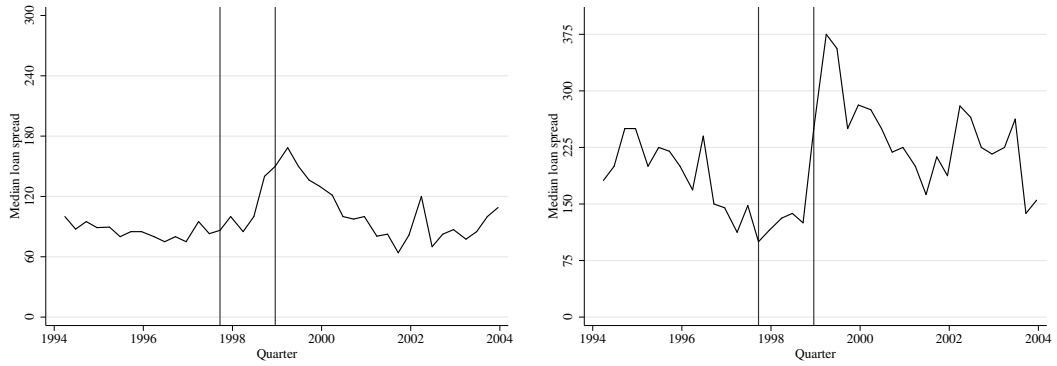


(c) Predicted maturity versus property rights (d) Predicted maturity versus creditor rights



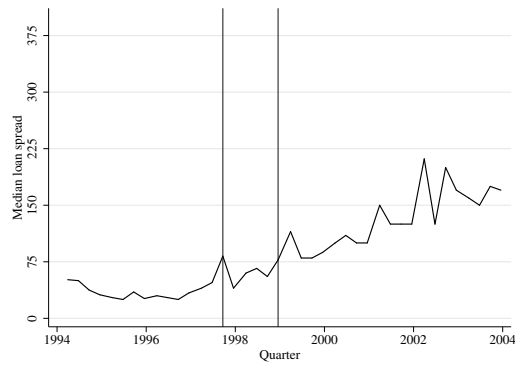
(e) Predicted spreads versus property rights (f) Predicted spreads versus creditor rights

**Figure 2.** Predicted loan size, loan maturity, and loan spreads from models (7) to (9) of Table IV at various values of property rights and creditor rights (all other variables are held at their respective means).



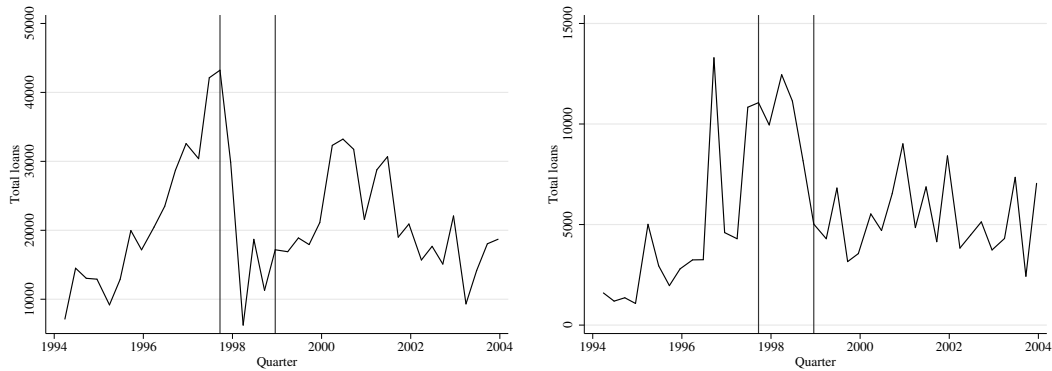
(a) East Asia

(b) Latin America



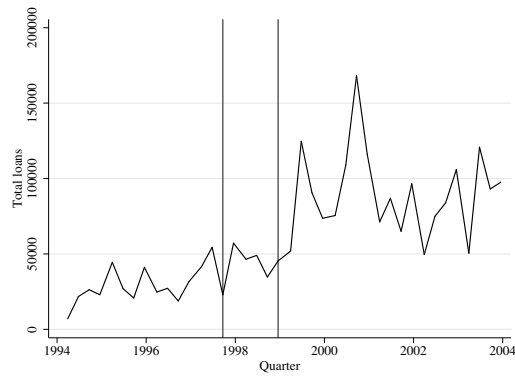
(c) Europe

**Figure 3.** Plot of median loan spreads estimated at the quarterly frequency for East Asia, Latin America, and Europe. The crisis period is indicated by two vertical lines and spans from 1997-III to 1998-III. The sample includes all loans from the Loan Pricing Corporation database during the 1994 to 2003 period. East Asia includes Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Thailand, and Taiwan. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela, and Ecuador. Europe includes Belgium, Denmark, France, Germany, Italy, Netherlands, Ireland, Finland, Spain, Sweden, Switzerland, the U.K., Norway, Austria, Greece, and Portugal.



(a) East Asia

(b) Latin America



(c) Europe

**Figure 4.** Plot of aggregate loan amounts estimated at the quarterly frequency for East Asia, Latin America, and Europe. The crisis period is indicated by two vertical lines and spans from 1997-III to 1998-III. The sample includes all loans from the Loan Pricing Corporation database during the 1994 to 2003 period. East Asia includes Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Thailand, and Taiwan. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela, and Ecuador. Europe includes Belgium, Denmark, France, Germany, Italy, Netherlands, Ireland, Finland, Spain, Sweden, Switzerland, the U.K., Norway, Austria, Greece, and Portugal.

**Table I**  
**Summary Statistics for Loan Transactions**

This table presents summary statistics for a sample of 17,791 loan tranches to firms matched to the Worldscope database in 38 countries. The sample period is 1994 to 2003. Summary statistics are presented for the median loan and borrower characteristics at the country level (except for the indicator variables). The variables are defined in Appendix Table III.

	<i>Mean</i>	<i>SD</i>	Distribution		
			10 <sup>th</sup>	50 <sup>th</sup>	90 <sup>th</sup>
<i>Enforcement and creditor rights</i>					
Median property rights index	25.39	2.63	21.92	25.07	28.72
Median creditor rights index	1.92	1.17	0.00	2.00	3.00
<i>Loan characteristics</i>					
Median loan spread (basis points)	105.30	69.52	35.00	82.50	247.50
Median loan maturity (years)	3.62	1.40	1.00	3.50	5.00
Median loan size (\$ millions)	161	172	30	100	343
Secured loans (%)	10.05	12.59	0.00	4.14	29.70
Senior loans (%)	73.95	34.26	15.75	93.75	100.00
Agency loans (%)	4.31	8.51	0.00	0.49	12.12
<i>Syndicate structure</i>					
Median syndicate size (# lenders)	9.47	4.24	4.00	8.00	15.50
Share of biggest lender (%)	15.52	8.09	6.50	14.29	27.63
Syndicate concentration-Herfindahl (%)	13.34	7.59	4.76	11.52	25.00
Median # of foreign banks	6.24	4.28	1.00	6.00	13.00
Median foreign banks as % of total	64.64	28.17	25.00	77.78	94.12
% loan kept by foreign banks	60.97	28.59	22.22	69.57	91.67
<i>Loan purpose indicators</i>					
Working capital/corporate purposes	0.44	0.24			
Capital expenditure/asset financing	0.05	0.08			
Refinancing	0.20	0.12			
Acquisitions/recapitalization	0.12	0.16			
Backup line	0.02	0.03			
Other	0.17	0.21			
<i>Firm characteristics</i>					
Median total assets (\$ millions)	12,822	29,391	824	3,308	37,190
Median profitability	0.06	0.03	0.01	0.06	0.11
Median leverage	0.33	0.09	0.21	0.32	0.46
Median tangibility	0.37	0.21	0.02	0.39	0.66
Median market-to-book ratio	1.17	0.22	0.97	1.14	1.39

**Table II**  
**Loan and Borrower Characteristics by Property Rights**

This table presents medians of median loan and borrower characteristics (except for indicator variables where it presents medians of averages) for countries classified based on the property rights index, an additive index consisting of annual series reflecting corruption, risk of expropriation, and risk of contract repudiation in various countries. Weak property rights countries are in the bottom one-third, medium property rights countries are in the middle one-third, and strong property rights countries are in top one-third of the property rights index. The sample consists of 17,791 loans to borrowers with Worldscope data. The sample is from 1994 to 2003 and covers 38 countries. The medians for U.S. loans are presented separately. The variables are defined in Appendix Table III.

	Property Rights			U.S.	Total
	Weak	Medium	Strong		
<i>Enforcement and creditor rights</i>					
Median property rights index	23.03	25.00	28.33	26.67	25.07
Median creditor rights index	1.00	2.00	3.00	1.00	2.00
<i>Loan characteristics</i>					
Median loan spread (basis points)	150.00	75.00	49.25	175.00	82.50
Median loan maturity (years)	3.50	3.50	4.54	3.00	3.50
Median loan size (\$ millions)	95	102	109	103	100
Secured loans indicator (%)	9.09	6.25	2.53	49.65	4.14
Senior loans indicator (%)	100.00	85.71	95.61	97.18	93.75
Agency loans indicator (%)	6.16	0.35	0.00	0.05	0.49
<i>Syndicate structure</i>					
Median syndicate size (# lenders)	7.00	10.00	11.00	7.00	8.00
Share of biggest lender (%)	17.94	14.29	9.09	16.67	14.29
Syndicate concentration-Herfindahl (%)	14.29	10.50	8.78	14.29	11.52
Median # of foreign banks	5.50	6.00	8.50	2.00	6.00
Median foreign banks as % of total	85.19	57.89	76.39	25.00	77.78
% loan kept by foreign banks	85.71	50.82	65.38	22.22	69.57
<i>Loan purpose indicators</i>					
Working capital/corporate purposes	0.49	0.39	0.46	0.39	0.44
Capital expenditure/asset financing	0.08	0.07	0.02	0.02	0.05
Refinancing	0.20	0.20	0.19	0.24	0.20
Acquisitions/recapitalization	0.03	0.13	0.17	0.21	0.12
Backup line	0.01	0.01	0.03	0.11	0.02
Other	0.19	0.21	0.13	0.02	0.17
<i>Firm characteristics</i>					
Median total assets (\$ millions)	2,408	3,309	5,391	663	3,309
Median profitability	0.09	0.05	0.05	0.08	0.06
Median leverage	0.30	0.36	0.33	0.31	0.32
Median tangibility	0.54	0.39	0.32	0.26	0.39
Median market-to-book ratio	1.23	1.15	1.09	1.37	1.14

**Table III**  
**Loan and Borrower Characteristics by Creditor Rights**

This table presents medians of median loan and borrower characteristics (except for indicator variables where it presents medians of averages) for countries classified based on the strength of creditor rights. The creditor rights index varies from zero (poor creditor rights) to four (strong creditor rights) Djankov, McLiesh, and Shleifer (2007). Weak creditor rights countries are countries with creditor rights index of one or less, medium creditor rights countries are countries with creditor rights index between one and three, and strong creditor rights countries are countries with creditor rights index of three or higher. The sample consists of 17,791 loans to borrowers with Worldscope data. The sample is from 1994 to 2003 and covers 38 countries. The medians for U.S. loans are presented separately. The variables are defined in Appendix Table III.

	Creditor Rights			U.S.	Total
	Weak	Medium	Strong		
<i>Enforcement and creditor rights</i>					
Median property rights index	24.38	24.50	28.19	26.67	25.07
Median creditor rights index	1.00	2.00	3.00	1.00	2.00
<i>Loan characteristics</i>					
Median loan spread (basis points)	143.75	75.00	60.00	175.00	82.50
Median loan maturity (years)	3.00	3.75	4.92	3.00	3.50
Median loan size (\$ millions)	136	105	61	103	100
Secured loan indicator (%)	7.10	2.67	3.44	49.65	4.14
Senior loan indicator (%)	95.95	80.60	88.71	97.18	93.75
Agency loan indicator (%)	5.20	0.46	0.00	0.05	0.49
<i>Syndicate structure</i>					
Median syndicate size (# lenders)	8.00	10.50	8.00	7.00	8.00
Share of biggest lender (%)	14.29	12.33	15.19	16.67	14.29
Syndicate concentration-Herfindahl (%)	12.50	9.66	11.20	14.29	11.52
Median # of foreign banks	6.00	5.50	4.00	2.00	6.00
Median foreign banks as % of total	84.62	55.65	75.00	25.00	77.78
% loan kept by foreign banks	82.23	48.12	61.20	22.22	69.57
<i>Loan purpose indicators</i>					
Working capital/corporate purposes	0.48	0.41	0.44	0.39	0.44
Capital expenditure/asset financing	0.05	0.07	0.03	0.02	0.05
Refinancing	0.18	0.20	0.20	0.24	0.20
Acquisitions/recapitalization	0.14	0.10	0.10	0.21	0.12
Backup line	0.02	0.01	0.02	0.11	0.02
Other	0.12	0.20	0.21	0.02	0.17
<i>Firm characteristics</i>					
Median total assets (\$ mill.)	2,554	2,891	5,463	663	3,309
Median profitability	0.07	0.05	0.05	0.08	0.06
Median leverage	0.32	0.36	0.28	0.31	0.32
Median tangibility	0.49	0.41	0.35	0.26	0.39
Median market-to-book ratio	1.24	1.10	1.08	1.37	1.14



**Table IV: Loan Size, Maturity and Spread Regressions**

This table reports coefficient estimates from country random effects regressions relating loan size, loan maturity, and loan spread to property rights and creditor rights in the country of the borrower. The regressions control for agency lender participation, industry fixed effects, loan type, loan purpose indicators, borrower risk characteristics, log of sovereign rating, log of GDP per capita, non-price loan terms, and year effects. Three different samples are considered. The sample period is 1994 to 2003. The variables are defined in Appendix Table III. Numbers in parentheses are robust standard errors adjusted for clustering at the country level. \*, \*\*, and \*\*\* mean significant at the 10%, 5%, and 1% level, respectively.

	All loans			Non-U.S. borrowers Matched to Worldwide			Non-U.S. borrowers Matched to Worldwide US\$ loans on LIBOR		
	Size (1)	Maturity (2)	Spread (3)	Size (4)	Maturity (5)	Spread (6)	Size (7)	Maturity (8)	Spread (9)
		# loans=63,160 # countries=48			# loans=5,422 # countries=37			# loans=1,851 # countries=36	
Property rights	0.025*** (0.008)	0.049*** (0.004)	-0.095*** (0.005)	0.020* (0.011)	0.059*** (0.007)	-0.037*** (0.012)	0.043** (0.017)	0.081*** (0.012)	-0.076*** (0.012)
Creditor rights	-0.011 (0.020)	-0.026 (0.023)	-0.052* (0.029)	0.011 (0.017)	-0.004 (0.010)	-0.058*** (0.015)	-0.085*** (0.027)	-0.001 (0.017)	-0.140*** (0.018)
Multilateral agency lender	0.360*** (0.038)	0.124*** (0.021)	-0.051** (0.024)	0.249*** (0.088)	0.025 (0.052)	-0.020 (0.057)	0.099 (0.089)	0.171** (0.069)	0.067 (0.061)
Financial borrower indicator	-0.235*** (0.021)	-0.105*** (0.012)	-0.328*** (0.017)	-0.645*** (0.146)	0.111 (0.077)	-0.089 (0.115)	0.331* (0.191)	0.197 (0.129)	-0.322** (0.144)
Term loan indicator	-0.324*** (0.014)	0.261*** (0.006)	0.214*** (0.006)	-0.110** (0.043)	0.136*** (0.028)	0.005 (0.031)	-0.244*** (0.061)	0.106** (0.044)	0.048 (0.041)
Purpose: capex	0.052* (0.030)	0.436*** (0.015)	-0.014 (0.013)	0.045 (0.078)	0.301*** (0.051)	-0.317*** (0.067)	-0.243** (0.109)	0.287*** (0.079)	-0.131** (0.061)
Purpose: refinancing	0.441*** (0.018)	0.206*** (0.008)	0.000 (0.008)	0.800*** (0.048)	0.026 (0.031)	0.001 (0.041)	0.498*** (0.071)	0.153*** (0.049)	-0.016 (0.047)

Table IV Continued

	All loans			Non-U.S. borrowers Matched to Worldwide			Non-U.S. borrowers Matched to Worldwide US\$ loans on LIBOR		
	Size (1)	Maturity (2)	Spread (3)	Size (4)	Maturity (5)	Spread (6)	Size (7)	Maturity (8)	Spread (9)
		# loans=63,160 # countries=48			# loans=5,422 # countries=37			# loans=1,854 # countries=36	
Purpose: acquisition	0.494*** (0.018)	0.395*** (0.008)	0.220*** (0.008)	0.813*** (0.070)	-0.182*** (0.045)	0.393*** (0.048)	0.447*** (0.116)	-0.123 (0.077)	0.252*** (0.071)
Purpose: backup line	1.980*** (0.024)	-0.652*** (0.011)	-0.540*** (0.013)	1.028*** (0.138)	-0.615*** (0.082)	-0.024 (0.090)	0.383* (0.228)	-0.495*** (0.116)	0.001 (0.136)
Purpose: other	-0.057*** (0.021)	-0.005 (0.013)	0.052*** (0.018)	-0.037 (0.046)	0.007 (0.029)	0.022 (0.057)	-0.299*** (0.073)	0.016 (0.049)	0.084 (0.052)
Log(Sovereign credit rating)	0.117*** (0.029)	-0.075*** (0.023)	0.170*** (0.030)	-0.094*** (0.033)	-0.148*** (0.022)	0.040 (0.030)	-0.441*** (0.052)	-0.185*** (0.036)	0.340*** (0.041)
Log(GDP per capita)	0.024 (0.028)	-0.233*** (0.029)	0.633*** (0.036)	0.045* (0.025)	-0.163*** (0.015)	-0.040* (0.022)	-0.117*** (0.032)	-0.165*** (0.023)	0.178*** (0.021)
Log(assets)				0.282*** (0.013)	-0.022*** (0.008)	0.004 (0.013)	0.331*** (0.021)	-0.041*** (0.014)	-0.178*** (0.015)
Profitability				-0.487** (0.243)	0.597*** (0.223)	-0.531** (0.207)	0.674 (0.429)	1.159*** (0.410)	-1.229*** (0.294)
Total debt/assets ratio				-1.004*** (0.116)	0.153** (0.068)	0.333*** (0.101)	-0.648*** (0.160)	0.461*** (0.108)	0.433*** (0.112)
Tangibility				-0.018 (0.098)	0.277*** (0.066)	0.115 (0.079)	-0.158 (0.161)	0.298** (0.116)	0.086 (0.112)

Table IV Continued

	All loans			Non-U.S. borrowers Matched to Worldwide			Non-U.S. borrowers Matched to Worldwide US\$ loans on LIBOR		
	Size (1)	Maturity (2)	Spread (3)	Size (4)	Maturity (5)	Spread (6)	Size (7)	Maturity (8)	Spread (9)
		# loans=63,160 # countries=48			# loans=5,422 # countries=37			# loans=1,854 # countries=36	
Market-to-book assets ratio				0.128*** (0.019)	-0.026** (0.012)	-0.030** (0.013)	0.091*** (0.028)	-0.054** (0.021)	-0.009 (0.016)
Log(loan size)			-0.173*** (0.003)			-0.160*** (0.018)			-0.071*** (0.020)
Log(loan maturity)			0.145*** (0.006)			0.376*** (0.027)			0.060** (0.025)
Log of syndicate size			-0.014*** (0.004)			-0.064*** (0.018)			0.041** (0.019)
Foreign banks number share			-0.085*** (0.015)			0.332*** (0.058)			-0.066 (0.054)
Secured loan indicator			0.342*** (0.006)			0.256*** (0.044)			0.121** (0.057)
Seniority indicator			0.013 (0.017)			-0.205*** (0.058)			-0.168*** (0.056)
Industry indicators				Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Constant</i>	3.495*** (0.293)	2.060*** (0.319)	1.690*** (0.392)	1.662*** (0.417)	1.209*** (0.257)	6.865*** (0.334)	2.935*** (0.553)	0.878** (0.370)	6.153*** (0.366)
<i>R</i> <sup>2</sup> – within	0.096	0.166	0.289	0.255	0.119	0.152	0.261	0.204	0.400
<i>R</i> <sup>2</sup> – between	0.283	0.012	0.025	0.617	0.115	0.585	0.779	0.146	0.756
<i>R</i> <sup>2</sup> – overall	0.093	0.161	0.235	0.413	0.168	0.177	0.482	0.261	0.570
<i>Observations</i>	63,130	63,140	63,111	4,988	4,988	4,984	1,627	1,627	1,625

**Table V: Loan Spreads and Components of Law and Enforcement Indices**

This table reports coefficient estimates from country random effects regressions on different indices of property rights and creditor rights. The regressions control for agency lender participation, industry fixed effects, loan type, loan purpose indicators, borrower risk characteristics, log of sovereign rating, log of GDP per capita, non-price loan terms, and year effects. The coefficient estimates on these variables are not reported to save space. The sample consists of 1,851 loans to borrowers in 36 countries during 1994 to 2003. Numbers in parentheses are robust standard errors adjusted for clustering at the country level. \*, \*\*, and \*\*\* mean significant at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Property rights				-0.065*** (0.012)	-0.089*** (0.012)	-0.071*** (0.012)	-0.065*** (0.012)	-0.079*** (0.012)
Corruption (A)	-0.063*** (0.014)							
Risk of contract repudiation (B)		-0.199*** (0.032)						
Risk of expropriation (C)			-0.209*** (0.077)					
Creditor rights	-0.144*** (0.018)	-0.128*** (0.018)	-0.142*** (0.018)					
Property rights × Creditor rights				-0.005*** (0.001)				
Restrictions on entering					-0.256*** (0.039)			
No automatic stay						-0.141*** (0.044)		
Secured creditor							-0.237*** (0.070)	-0.337*** (0.049)
Management does not stay								
Other variables as in (9) Table IV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Constant</i>	5.424*** (0.307)	5.984*** (0.370)	6.947*** (0.792)	5.567*** (0.376)	6.640*** (0.386)	5.553*** (0.387)	5.795*** (0.377)	5.730*** (0.366)
$\bar{R}^2$	0.564	0.569	0.559	0.568	0.563	0.555	0.556	0.566
<i>Observations</i>	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625

**Table VI**  
**Alternative Proxies for Property Rights**

This table reports coefficient estimates from country random effects regressions of loan spreads on creditor rights and alternative proxies of property rights. The alternative proxies considered are the (i) rule of law, (ii) efficiency of judicial system, (iii) index of economic freedom, (iv) enforcement, (v) property rights index from Knack and Keefer (1995), and (vi) enforcement time and enforcement cost. The regressions control for agency lender participation, industry fixed effects, loan type, loan purpose indicators, borrower risk characteristics, log of sovereign rating, log of GDP per capita, non-price loan terms, and year effects. The coefficient estimates on these controls are not reported to save space. The sample consists of 1,851 loans to borrowers in 36 countries during 1994 to 2003. Numbers in parentheses are robust standard errors adjusted for clustering at the country level. \*, \*\*, and \*\*\* mean significant at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Rule of law	-0.087*** (0.021)					
Eff. of judicial system		-0.068*** (0.012)				
Property rights ( <i>Economic Freedom</i> )			-0.003 (0.040)			
Enforcement				-0.179*** (0.031)		
Property rights ( <i>Knack-Keefer</i> )					-0.061*** (0.007)	
Enforcement time						0.357*** (0.052)
Enforcement cost						0.128** (0.054)
Creditor rights	-0.127*** (0.018)	-0.123*** (0.018)	-0.144*** (0.019)	-0.134*** (0.020)	-0.131*** (0.017)	-0.167*** (0.018)
Other variables as in (9) of Table IV	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
<i>Constant</i>	5.262*** (0.341)	4.706*** (0.278)	5.619*** (0.291)	5.106*** (0.324)	6.740*** (0.373)	1.736*** (0.483)
<i>R</i> <sup>2</sup> – Overall	0.563	0.566	0.567	0.577	0.580	0.603
<i>Observations</i>	1,625	1,625	1,590	1,464	1,625	1,332

**Table VII**  
**Additional Macroeconomic Controls**

This table presents coefficients from country random effects regressions of loan spreads on property rights index and creditor index with additional macroeconomic variables as controls. These are (i) GDP growth volatility, (ii) the liquid liabilities/GDP ratio, (iii) the stock market traded value/GDP ratio, and (iv) the credit to private sector/ GDP ratio. The regressions control for agency lender participation, industry fixed effects, loan type, loan purpose indicators, borrower risk characteristics, log of sovereign rating, log of GDP per capita, non-price loan terms, and year effects. The coefficient estimates on these controls are not reported to save space. The sample consists of 1,851 loans to borrowers in 36 countries during 1994 to 2003. Numbers in parentheses are robust standard errors adjusted for clustering at the country level. \*, \*\*, and \*\*\* mean significant at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Property rights	-0.080*** (0.013)	-0.102*** (0.015)	-0.078*** (0.012)	-0.076*** (0.014)
Creditor rights	-0.155*** (0.018)	-0.229*** (0.028)	-0.175*** (0.020)	-0.141*** (0.022)
GNP growth volatility	0.005*** (0.001)			
Liquid liabilities/GDP		-0.002*** (0.001)		
Stock market traded value/GDP			0.001*** (0.000)	
Credit to private sector				-0.000 (0.001)
Other variables as in (9) of Table IV	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
<i>Constant</i>	7.469*** (0.411)	7.429*** (0.450)	6.745*** (0.386)	6.805*** (0.414)
<i>R</i> <sup>2</sup> – Overall	0.579	0.608	0.577	0.576
<i>Observations</i>	1519	1328	1597	1583

**Table VIII**  
**Loan Sizes, Maturity and Spreads around the East Asian Crisis of 1997 to 1998**

This table reports coefficient estimates from country random effect regressions of loan sizes, loan maturities, and loan spreads on property rights, creditor rights, and the following interaction terms: (i) property rights  $\times$  East Asian crisis period indicator, (ii) creditor rights  $\times$  East Asian crisis period indicator, and (iii) East Asia region indicator  $\times$  crisis period indicator. The East Asian region indicator takes a value of one if the borrower is from one of the following countries: Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Thailand, and Taiwan; otherwise, it is set equal to zero. The crisis period indicator is one if the loan was offered during July 1, 1997 and August 31, 1998, the crisis period; otherwise, it is set equal to zero. The regressions control for agency lender participation, industry fixed effects, loan type, loan purpose indicators, borrower risk characteristics, log of sovereign rating, log of GDP per capita, non-price loan terms, and year effects. The coefficient estimates on these variables are not reported to save space. The sample consists of 1,851 loans to borrowers in 36 countries during 1994 to 2003. Numbers in parentheses are robust standard errors adjusted for clustering at the country level. \*, \*\*, and \*\*\* mean significant at the 10%, 5%, and 1% level, respectively.

	<i>Size</i>		<i>Maturity</i>		<i>Spread</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Property rights	0.088*** (0.013)	0.089*** (0.013)	0.075*** (0.009)	0.076*** (0.009)	-0.095*** (0.009)	-0.100*** (0.009)
Creditor rights	-0.025 (0.023)	-0.023 (0.024)	-0.005 (0.017)	-0.008 (0.017)	-0.148*** (0.016)	-0.140*** (0.016)
East Asia $\times$ Crisis	-0.213 (0.130)	-0.082 (0.138)	-0.216** (0.108)	-0.234** (0.119)	0.419*** (0.083)	0.383*** (0.099)
Property rights $\times$ Crisis	0.003 (0.004)		0.003 (0.003)		-0.012*** (0.003)	
Creditor rights $\times$ Crisis		-0.037 (0.039)		0.030 (0.030)		-0.065** (0.026)
Other variables as in (7)-(9) of Table IV	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
<i>Constant</i>	-0.204 (0.361)	-0.219 (0.371)	-0.558* (0.314)	-0.562* (0.314)	8.850*** (0.245)	8.711*** (0.277)
<i>R</i> <sup>2</sup>	0.571	0.571	0.246	0.246	0.543	0.536
<i>Observations</i>	1,627	1,627	1,627	1,627	1,625	1,625

### Appendix Table I: Loan Sample

This table provides the number of loans and aggregate loan amounts for various samples considered in the analysis. The loan data are from the Dealscan database compiled by the Loan Pricing Corporation (LPC). The “All loans” sample includes loan tranches during 1994 to 2003 to borrowers in 48 countries for which LPC provides spreads, maturity, and loan size. The “Matched to Worldscope” sample includes borrowers that are matched to the Worldscope database. The “Worldscope US\$ loans based on Libor” sample includes US\$ loans that are priced as a spread over *Libor* to borrowers that are matched on Worldscope.

	Non-U.S. borrowers		U.S. borrowers		Total	
	N	Total amount (in bill.)	N	Total amount (in bill.)	N	Total amount (in bill.)
All loans	23,520	\$4,482	39,638	\$8,337	63,158	\$12,819
Matched to Worldscope	5,419	\$1,494	12,372	\$3,401	17,791	\$4,894
Worldscope US\$ loans based on <i>Libor</i>	1,851	\$540	10,870	\$3,364	12,721	\$3,904



**Appendix Table II: Loan and Borrower Characteristics by Country**

This table presents loan and borrower characteristics by country for the Worldscope matched sample by country. The sample period is 1994 to 2003. The variables are defined in Appendix Table III.

Country	Count			Median			Mean			Median		
	Num loans	Property rights	Creditor rights	Loan spread (b.p.)	Maturity (years)	Loan Amount (mill.)	Assets (mill.)	Leverage	Profit	Tang	Market to book assets	
Argentina	65	23.0	1	165.0	3.0	\$136	\$4,494	0.33	0.10	0.81	1.01	
Australia	1,255	28.2	3	95.0	3.0	\$104	\$90,562	0.23	0.01	0.01	1.08	
Austria	3	28.3	3	35.0	4.9	\$160	\$153,863	0.45	0.00	0.01	1.00	
Belgium	20	25.4	2	72.5	4.0	\$466	\$5,782	0.33	0.04	0.33	1.42	
Brazil	50	23.0	1	268.8	3.0	\$172	\$3,920	0.39	0.09	0.53	1.05	
Canada	260	28.7	1	150.0	3.0	\$313	\$1,365	0.34	0.06	0.48	1.20	
Chile	37	25.7	2	75.0	5.0	\$214	\$3,775	0.34	0.05	0.74	1.05	
Colombia	11	20.6	0	275.0	5.0	\$129	\$2,408	0.26	0.07	0.37	0.83	
Denmark	22	29.2	3	40.0	5.0	\$236	\$5,463	0.35	0.01	0.01	1.01	
Egypt	2	21.9	2	135.0	3.5	\$65	\$1,230	0.24	0.05	0.30	1.13	
Finland	47	30.0	1	30.0	5.0	\$555	\$3,744	0.42	0.06	0.51	1.05	
France	286	25.0	0	75.0	5.0	\$602	\$10,507	0.36	0.04	0.14	1.16	
Germany	197	27.0	3	48.5	3.0	\$994	\$37,191	0.40	0.00	0.21	1.03	
Greece	35	26.7	1	38.5	2.0	\$201	\$1,820	0.26	0.02	0.36	1.14	
Hong Kong	443	25.0	4	60.0	2.0	\$76	\$6,488	0.05	0.02	0.03	1.05	
India	187	24.0	2	77.0	5.0	\$100	\$1,410	0.37	0.07	0.42	1.07	
Indonesia	143	24.0	3	157.5	3.0	\$78	\$378	0.52	0.08	0.42	1.12	
Ireland	32	25.8	1	147.5	3.5	\$191	\$2,670	0.53	0.05	0.14	1.09	
Israel	14	24.8	3	44.5	5.0	\$99	\$3,309	0.43	0.09	0.58	1.26	
Italy	38	23.6	2	45.0	3.0	\$2,764	\$48,838	0.35	0.05	0.25	1.01	
Japan	325	25.1	1	65.0	2.0	\$299	\$6,859	0.44	0.04	0.35	1.08	
Malaysia	101	23.0	3	112.5	3.0	\$103	\$1,244	0.34	0.04	0.50	1.13	
Mexico	79	23.0	0	125.0	3.0	\$207	\$2,554	0.30	0.09	0.58	1.23	
Netherlands	62	30.0	3	35.0	5.0	\$858	\$5,319	0.30	0.07	0.28	1.37	

Appendix Table II Continued

Country	Count		Median				Mean				Median												
	Num loans	Property rights	Creditor rights	Loan spread (b.p.)	Maturity (years)	Loan Amount (mill.)	Assets (mill.)	Leverage	Profit	Tang	Market to book assets	Num loans	Property rights	Creditor rights	Loan spread (b.p.)	Maturity (years)	Loan Amount (mill.)	Assets (mill.)	Leverage	Profit	Tang	Market to book assets	
New Zealand	48	28.5	4	85.0	4.5	\$98	\$824	0.32	0.06	0.74	1.04												
Norway	65	28.3	2	30.0	5.0	\$197	\$2,008	0.36	0.02	0.19	0.98												
Pakistan	15	23.8	1	140.0	1.0	\$83	\$621	0.27	0.13	0.19	1.92												
Peru	16	23.1	0	256.3	4.0	\$119	\$1,017	0.29	0.11	0.61	1.22												
Philippines	146	23.0	1	150.0	5.0	\$59	\$2,162	0.39	0.05	0.59	1.17												
Portugal	7	28.3	1	25.0	1.0	\$851	\$10,872	0.43	0.06	0.40	1.55												
South Korea	420	25.8	3	61.5	3.0	\$85	\$10,885	0.38	0.03	0.36	0.98												
Switzerland	3	27.5	1	60.0	1.0	\$2,010	\$183	0.01	0.09	0.13	1.48												
Taiwan	267	25.0	2	80.0	5.0	\$100	\$1,481	0.35	0.03	0.48	1.12												
Thailand	166	23.2	3	100.0	4.0	\$75	\$852	0.50	0.04	0.41	1.11												
Turkey	24	20.3	2	85.0	1.0	\$175	\$6,292	0.28	0.08	0.04	0.95												
United Kingdom	524	28.2	4	60.0	5.0	\$695	\$2,287	0.29	0.07	0.25	1.39												
Venezuela	4	21.5	3	247.5	6.3	\$205	\$29,006	0.27	0.05	0.57	0.91												
Total: Non-U.S.	5,419	26.7	3	77.5	3.0	\$276	\$5,438	0.30	0.03	0.23	1.08												
United States	12,372	26.7	1	175.0	3.0	\$275	\$664	0.33	0.07	0.26	1.36												

**Appendix Table III**  
**Variable Definitions**

Variable	Definition
Property rights index	An index aggregating three indices, namely, corruption, risk of contract repudiation, and risk of expropriation. <i>Source:</i> International Country Risk Guide.
Creditor rights index	An index aggregating four powers of secured lenders in bankruptcy. (1) Secured creditors are able to seize their collateral once the reorganization petition is approved (no “automatic stay” imposed by courts). (2) There are restrictions, such as creditor consent, for a debtor to file for reorganization (restrictions on entering). (3) Secured creditors are paid first out of the proceeds of liquidation (secured creditor). (4) A creditor or an administrator is responsible for running the business (management does not stay). A value of one is added to the index for each of the powers that a country’s law and regulations provide to secured lenders. <i>Source:</i> Djankov, McLiesh, and Shleifer (2007).
Syndicate size	The number of banks lending in a syndicate.
Syndicate concentration	Herfindahl index based on each syndicate member’s share in the loan.
Share of biggest lender	Share of the largest lender in a loan syndicate.
Foreign banks number share	Fraction of foreign banks in a syndicate.
Multilateral agency lender	An indicator variable that equals one if one or more multilateral or bilateral agencies participate the syndicate, and zero otherwise. These agency lenders include International Finance Corporation (IFC), country development banks, central banks, and western Export-Import banks.
Firm size	Natural log of total assets in constant US\$.
Profitability	Operating income/total assets.
Leverage	Total debt/book assets.
Tangibility	Net property, plant, and equipment/total assets.
Market-to-book assets ratio	Market value of assets/book value of assets.
Sovereign risk ratings	Obtained from Standard and Poor’s and converted to a numerical score with higher numbers reflecting worse ratings.

**Appendix Table IV**  
**Loan Spreads Regressions – Pooled OLS, Fixed Effects, and Random Effects**

This table reports coefficients from pooled OLS with White standard errors (column (1)), pooled OLS with clustered standard errors (column (2)), country fixed effects (column (3)) and country random effects regressions (column (4)) relating loan spreads to the property rights index and the creditor rights index. The regressions control for agency lender participation, financial borrower indicator, loan type, loan purpose indicators, log of sovereign rating, log of GDP per capita, syndicate structure and composition, and non-price loan terms. Standard errors are reported in parentheses. The sample consists of 63,160 loans countries to borrowers in 48 countries during 1994 to 2003. \*, \*\*, and \*\*\* mean significant at the 10%, 5%, and 1% level, respectively.

	Pooled OLS-W	Pooled OLS-Cl.	Fixed Effects	Random Effects
	(1)	(2)	(3)	(4)
Property rights	-0.082*** (0.004)	-0.082*** (0.029)	-0.042*** (0.010)	-0.095*** (0.005)
Creditor rights	-0.101*** (0.005)	-0.101*** (0.034)	-0.009 (0.040)	-0.052* (0.029)
Lender: multi/bi-lateral agency	-0.077*** (0.026)	-0.077 (0.070)	-0.043* (0.024)	-0.051** (0.024)
Financial borrower indicator	-0.417*** (0.018)	-0.417*** (0.075)	-0.324*** (0.017)	-0.328*** (0.017)
Term loan indicator	0.209*** (0.007)	0.209*** (0.048)	0.202*** (0.006)	0.214*** (0.006)
Purpose: capex	-0.071*** (0.014)	-0.071 (0.077)	-0.030** (0.014)	-0.014 (0.013)
Purpose: refinancing	-0.001 (0.008)	-0.001 (0.044)	0.020** (0.009)	0.000 (0.008)
Purpose: acquisition	0.235*** (0.008)	0.235** (0.093)	0.235*** (0.008)	0.220*** (0.008)
Purpose: backup line	-0.499*** (0.014)	-0.499*** (0.088)	-0.546*** (0.013)	-0.540*** (0.013)
Purpose: other	0.031* (0.018)	0.031 (0.072)	0.041** (0.018)	0.052*** (0.018)
Log(Sovereign credit rating)	-0.136*** (0.011)	-0.136* (0.073)	0.172*** (0.032)	0.170*** (0.030)
Log(GDP per capita)	-0.041*** (0.009)	-0.041 (0.075)	1.942*** (0.232)	0.633*** (0.036)

Appendix Table IV continued

	Pooled OLS-W	Pooled OLS-Cl.	Fixed Effects	Random Effects
	(1)	(2)	(3)	(4)
Log of syndicate size	-0.018*** (0.004)	-0.018 (0.020)	-0.021*** (0.004)	-0.014*** (0.004)
Foreign banks number share	-0.125*** (0.014)	-0.125 (0.104)	-0.073*** (0.015)	-0.085*** (0.015)
Log(loan size)	-0.165*** (0.003)	-0.165*** (0.012)	-0.171*** (0.003)	-0.173*** (0.003)
Log(loan maturity)	0.113*** (0.005)	0.113** (0.045)	0.151*** (0.006)	0.145*** (0.006)
Secured loan indicator	0.385*** (0.007)	0.385*** (0.035)	0.351*** (0.007)	0.342*** (0.006)
Seniority indicator	0.166*** (0.015)	0.166* (0.096)	-0.062*** (0.022)	0.013 (0.017)
$R^2$ -Overall	0.332	0.332	0.062	0.235
<i>Observations</i>	63,111	63,111	63,111	63,111