

Creditor Rights and Bank Lending: The Role of Country Size

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Abstract

We revisit the effect of creditor rights on bank lending. Using global data on syndicated loans, we first replicate the baseline results of Qian and Strahan (2007) and Bae and Goyal (2009), especially concerning the negative effect of stronger creditor rights on loan spreads. We find that this effect disappears once we include a single country characteristic: country size, which positively affects loan spreads and overshadows the effect of other relevant explanatory variables on loan spreads. This effect works largely via ethnic fractionalization and within-country heterogeneity in economic preferences, which create country risk.

Keywords: Creditor rights; Bank credit; Loan spreads; Country size; Ethnic fractionalization; Economic preferences

JEL classification: G20; G21; G41; Z13

Laws and regulations on creditor rights are among the most important set of restrictions in the banking system in general and in credit relationships in particular. These include restrictions on loan reorganization, creditor ability to seize collateral, prioritization of payouts to secured creditors after liquidation, and retaining administration of the property pending the resolution of reorganization (Djankov, McLiesh, and Shleifer, 2007). The measurement of creditor rights in the mid-2000s has had a significant impact on the finance literature. Qian and Strahan (2007) and Bae and Goyal (2009) show that creditor rights in the borrowers' countries affect corporate bank lending (predominantly loan pricing) directly or in tandem with country institutional environments. Subsequent studies focused on the effects of creditor rights on several aspects of the real economy (e.g., Houston, Lin, and Ma, 2010; Acharya, Amihud, and Litov, 2011; Mann, 2018).¹

In this study, we revisit the effect of creditor rights on bank lending, predominantly the negative effect on loan pricing (spreads), which is the first clear-cut effect identified in the literature. The key theoretical argument backing this effect is that stronger creditor rights ease loan supply concerns and yield a rightward shift in the loan supply curve, corresponding to a higher equilibrium loan amount and a lower equilibrium lending rate. Using global syndicated loan data from 1994 to 2003 (the same period as previous studies) for more than 70 countries, we first replicate the negative effect of creditor rights on corporate loan spreads using the identification approach of previous literature. We next show that using a simple country fixed effect makes the relation disappear. On this issue, the literature highlights that the very small number of within-country changes in creditor rights (five in this sample) absorbs the effect of the larger cross-sectional variation. However, we also find mixed results when concentrating on the five events (countries) with a change in creditor rights; and inferior (insignificant) results when introducing continent fixed effects or country weights to capture the large heterogeneity in the number of loan facilities by country-year, and when extending the sample to recent years.

This analysis and its findings trigger an interest into whether it is in fact creditor rights that affect corporate loan pricing or other confounding country-specific characteristics (representing a source of omitted-variable bias). After using almost all known country characteristics reflecting

¹ The two Journal of Finance papers have 2,400 citations approximately. Other papers only in the top-10 finance journals with the phrase "creditor rights" on their titles add another 5,000 citations. Beyond these journals and specific title phrases, the literature is vast.

economics, politics, societies, etc., we identify that the most important confounding effect in the relation between creditor rights and loan characteristics (predominantly loan spread but also amount and maturity) comes from country size.

Specifically, a country's land area (natural logarithm of square kilometers) is the key characteristic that, when introduced into the baseline empirical model (and keeping the number of observations constant), renders the relation between creditor rights and bank lending statistically insignificant. The coefficient on country size is positive and highly statistically significant, implying that firms in larger countries pay higher loan spreads. In fact, the economic effect of country size dominates all country-specific (time-invariant or time-varying) explanatory variables, even though the literature has never used country size to explain loan pricing in the global syndicated loans market. The effect of country size remains almost intact when using an instrumental variable (IV) method (among other robustness tests), with land suitability for agriculture as the IV (for which we make a strong case for the relevance and the exclusion conditions).

We delve deeper into the relation between country size and loan spreads by showing the strong propensity of large countries to have weaker creditor rights and, most important, by resorting to an established literature on the role of country size in economic development (e.g., Alesina, Spolaore, and Wacziarg, 2005). Our main finding is that large country size implies considerable ethnic fractionalization and associated heterogeneity in deep-rooted individual preferences for economic risk-taking and trust. We demonstrate this point with information on economic preferences for risk-taking and trust, which we calculate for subnational regions worldwide with data from a large global survey on 80,000 individuals from 76 countries (Falk et al., 2018). We then hand-match the location of firms' headquarters to these subnational regions, and we show that the effect of country size on loan spreads is significantly larger in more ethnically fractionalized countries but smaller in countries that have a culture for economic risk-taking and trust.

Overall, our findings make two contributions to the extant literature. First, we show that the established finding that creditor rights affect bank lending is not robust, with the confounding effect stemming from country size, which captures risk-related aspects of bank lending. Second, we show that the key mechanisms driving the effect of country size are (i) ethnic fractionalization, which

amplifies the effect of country size and is priced as risk in syndicated loan markets; and (ii) economic preferences for risk-taking and trust.

I. Replication of the Effect of Creditor Rights on Bank Lending

A. Data and Empirical Model

Our first goal is to replicate the results of existing studies on the effect of creditor rights on bank lending (Qian and Strahan, 2007; Bae and Goyal, 2009). A consistent finding in this literature is that creditor rights have a negative effect on loan pricing (loan spreads over the risk-free rate), which is also the dependent variable in most studies using syndicated loan data (e.g., Ivashina, 2009; Delis, Hasan, and Ongena, 2020). Moreover, loan pricing should contain the key information content of stronger creditor rights. Thus, we concentrate on loan spreads and analyze other variables (e.g., loan maturity and syndicate structure) in the appendix.

We use syndicated loans from DealScan from 1994 to 2003 (the same years as previous studies). Syndicated loans are originated by a group of banks (the lead lenders and the participant banks) that co-finance a single borrower (usually a large firm). The data report loan facilities, repeated for different lenders (especially the lead lenders, but also some participant lenders).² We next match these data with the creditor rights index of Djankov, McLiesh, and Shleifer (2007). This matching process yields a maximum of 84,360 observations, corresponding to 47,156 unique loan facilities, given to 18,022 firms (headquartered in 72 countries) by 3,165 banks.

The creditor rights index takes values from 0 to 4, with higher values reflecting stronger creditor rights (for a full reflection of what the index measures, see appendix table A1). We provide a global map in figure 1. During our sample period, there are only five countries with a change in their index: Indonesia (from 3 to 2 in 1999), Israel (from 4 to 3 in 1997), Japan (from 3 to 2 in 2001), Russia (from 2 to 1 in 2001 and from 1 to 2 in 2002), and Thailand (from 3 to 2 in 2000). From these changes, the Indonesian, Thai, and Russian ones are directly related with the Asian / Russian Financial Crisis (Japan was less affected), and the change in Israel coincides with the abolition of most foreign exchange supervision procedures.

² Thus, for one loan facility we can observe multiple observations for each of the reported lenders.

We estimate the following empirical model:

$$\text{Spread}_{lbft} = b' + b_1 CR_{ct} + b_2 C_{lbft} + u_{lbft}. \quad (1)$$

In equation 1, we observe the spread over the risk-free rate of loan facility l in year t by bank b to firm f , which is headquartered in country c . CR is the country-year index of creditor rights, C is the vector of control variables that have different dimensions, and u is the disturbance.

For the estimation method, we strictly follow the literature (Qian and Strahan, 2007; Bae and Goyal, 2009). Recognizing the few changes in creditor rights, the literature does not mainly use country fixed effects and resorts mostly to OLS estimates or GLS estimates with random effects. We also use the same set of control variables; however, a key development in our setting is that we experiment with more than 200 control variables varying by country or country-year. The main source of these variables is the QoG database (Teorell et al., 2023). We list the variables and sources in appendix table A2.

B. Replications and Extensions

Table 1 reports summary statistics for our main variables using the full sample (summary statistics for the smaller sample using unique loans, for example, or the smaller number of countries in Bae and Goyal are similar). The mean (median) loan spread equals 163.8 bps (135 bps), the equivalent maturity is 52 months (same median), and each loan has on average 11 lenders (the median is 8). We observe large cross-country variation in these variables, along with significant variation in the mix of spreads and fees that contributes to total loan pricing.

[Insert Table 1 here]

Table 2 reports the baseline estimation results, which generally predict a negative effect of creditor rights on loan spreads (we cluster standard errors by country). We begin in column 1 with all available observations (repeated loans for all available syndicate lenders), which to the best of our understanding is the baseline regression in Bae and Goyal (2009). We also use an almost identical set of controls and fixed effects (our findings are not sensitive to small changes).³ We find that a one-point (one standard deviation) increase in creditor rights decreases loan spreads by an

³ Bae and Goyal (2009) use variables reflecting institutional quality in their baseline regressions. We also use several such variables (appendix table A2) and our key findings remain unaffected.

economically substantial 16.5 (30) bps. In column 2, we report the equivalent results by using 47,170 observations on unique loans (we drop the loan duplicates), and the coefficient on creditor rights becomes even more potent. In column 3, we restrict our analysis to the same set of countries in previous studies and find no sensitivity in the coefficient on creditor rights. In column 4, we add firm-level control variables that imply a substantial drop in the available loans (consistent with Qian and Strahan and other studies using global syndicated loans data). The value on our key estimate drops to -14.8 basis points but remains statistically significant at 1%.

[Insert Table 2 here]

These baseline results hold in a large battery of additional tests (available on request): including bank fixed effects (or even bank \times year fixed effects), controlling for loan fees (fewer countries and a bit weaker results), using a different mix of loan-level controls (to buffer any role for a bad-controls problem), etc. In an important extension, we also collect data until 2017 and re-estimate our baseline specifications. We find that the coefficient on creditor rights remains negative but becomes statistically insignificant in some of our specifications (see appendix table A3). This is the first wrinkle in the robustness of the effect of creditor rights on loan spreads.

In column 5, we fail to replicate the baseline results when including a dummy variable for loans to firms headquartered in the United States, which is the country with by far the largest representation in our sample. The coefficient on creditor rights becomes statistically insignificant, but the coefficient on the U.S. dummy indicates that loans to U.S. firms have significantly higher loan spreads. The same picture emerges in unreported regressions excluding the U.S. firms from the sample or when including continent fixed effects. This is also the essence of Berg, Saunders, and Steffen (2016) and Berg, Saunders, Steffen, and Streitz (2017), who note important differences in the pricing of syndicated loans between the U.S. and Europe because of the different use of loan fees. This is an important first indication that time-invariant country characteristics can confound the relation between creditor rights and loan spreads.

Naturally, the next specification is one with country fixed effects, which previous studies do not use due to concerns regarding the limited number of changes in the creditor rights index. This concern is valid because with country fixed effects we discard the cross-country variation of creditor rights; this variation is by far larger than the within-country variation (changes occur in

the five countries listed earlier, and there is strong indication that some might be endogenous to banking crises). Still, the fact that the within estimator on creditor rights for these countries turns positive and highly statistically significant (column 6) is interesting and thus we dig deeper into it.

In column 7, we use data (4,134 observations) from only the five countries with creditor rights changes. Surprisingly, we observe a reinstatement of the negative and statistically significant coefficient on creditor rights, and with an extremely large coefficient (-85 bps). Going deeper into that sample, we first show in column 8 that this negative coefficient does not originate in the East Asian countries (Indonesia, Japan, and Thailand) and mainly comes from Russia (predominantly) and Israel (column 9). For Russia in particular, this process might be driven more by the transition to a market economy during our sample period and less by changes in creditor rights (which last only for a year and then change bank to their previous value).

Previous studies find robust results also for loan maturity as the outcome variable.⁴ Symmetrically with our results in table 2, we show in appendix table A4 the results on loan maturity. We find a similar picture in our baseline estimates, with creditor rights significantly increasing loan maturity (replicating previous studies). Once we control for a U.S. dummy (or exclude the U.S. firms or include a continent fixed effect), the statistical significance disappears. Again, results change sign with a country fixed effect in column 6, whereas loan maturity does not significantly respond to creditor rights in specifications 7 to 9 (symmetrically using the analysis of the same specifications of table 2).

Overall, our findings in this section show that unobserved country heterogeneity might drive the negative coefficient of creditor rights in columns 1 to 4 of table 2. In what follows, we experiment with hundreds of time-invariant or time-varying country characteristics, aiming to identify the sources of such heterogeneity.

II. The Role of Country Size and Its Determinants

Following the results of table 2 and the possibility of omitted-variable bias driving the inferences on creditor rights, we first include in equation 1, one by one as explanatory variables, hundreds of

⁴ Previous studies also agree that results for loan amount are less significant. In untabulated results, we also draw a similar picture.

additional time-varying or time-invariant country characteristics from several databases. We choose these variables on an informed (rather than on an *ad hoc*) basis, using information from previous studies on the determinants of loan spreads. We provide information on all these variables in appendix table A2. Specifically, we control for more than 200 variables reflecting economic development, institutional quality, constitutional characteristics, political and economic stability, demographics, economic openness (trade, exchange rates, etc.), geography, financial development, financial regulation, financial risk, culture, history, etc.

For some of these variables, observation availability is more limited. To avoid making claims based on sample selection, we always replicate the baseline result in column 2 of table 2 (negative effect of creditor rights on loan spreads) on that smaller sample and then use the additional explanatory variable. We find that with most of the additional explanatory variables, the coefficient on creditor rights retains its negative and significant coefficient. Notably, this is the case with variables capturing institutions and countries' legal origin. These are variables that in the literature are important determinants of creditor rights (Djankov, McLiesh, and Shleifer, 2007). For a few variables, the coefficient drops to marginally significant or marginally insignificant levels, but this is more often the result of smaller samples due to data availability on the additional control. The one class of variables rendering the coefficient on creditor rights statistically insignificant reflects country size.

A. Controlling for Country Size

In table 3, we replicate the results of table 2 but with country size as an additional explanatory variable. We use land area (natural logarithm of square kilometers) as our main measure because this is the “most exogenous” variable and the one with the widest availability. Other variables in the related literature (e.g., population size and density) might be endogenous to economic history, culture, economic policy, etc. (e.g., Alesina, Spolaore, and Wacziarg, 2005).

[Insert Table 3 here]

In the first four specifications of table 3, we find that the coefficient estimates on creditor rights become completely insignificant (p -values equal to 0.46 or larger) for the exact same number of observations as in table 2. In contrast, the coefficient on country size enters with a positive and

highly significant coefficient, showing that firms in larger countries pay higher loan spreads. According to specification 2, loans to firms in countries that are larger by one percentage point (one standard deviation) have spreads that are 8.7 basis points (32.7 basis points) higher. Obviously, this estimate is very strong economically and, besides eliminating the significant estimate on creditor rights, shows that all studies using global syndicated loan data should use country size as an explanatory variable (we are unaware of such studies).

In specification 5, which includes the United States dummy, the estimate on creditor rights is statistically insignificant; the one on the U.S. dummy loses its statistical significance, and country size remains positive and highly significant. Again, this finding shows the importance of country size even in explaining the estimate on the U.S. dummy, which encompasses information for a large part of the sample. Including country fixed effects in specification 6 is the same specification as the equivalent of table 2 because the time-invariant country variables drop out (the coefficient on creditor rights turns positive). Even when including a continent fixed effect, the coefficient on country size remains statistically significant (and the one on creditor rights remains statistically insignificant). Controlling for country size also eliminates the previously significant result of specification 7 for the five countries with creditor rights changes, whereas again country size is positive and significant even for this significantly smaller sample. The same picture emerges in specifications 8 and 9, separating countries with changes in creditor rights into the East Asian ones versus Israel and Russia, respectively.⁵

We also dig deeper into omitted-variable bias affecting the coefficient on country size: the possibility that country size is itself correlated with unobserved country characteristics that also correlate with loan pricing. To limit this possibility, we resort to an IV approach (two-stage least squares, or 2SLS) inspired by the economic historians' literature on the formation of international borders. In that literature, we note the important role of geographical barriers and land productivity in the emergence of state unification, as well as the associated creation of large or small countries (e.g., Fernández-Villaverde, Koyama, Lin, and Sng, 2023; references therein). A key argument is that more productive and arable lands that are "protected" by mountainous ranges (and thus less susceptible to foreign attacks) more easily develop into states. In our data, measures of land

⁵ In appendix table A5, we show that using the period 1994 to 2017 does not affect our inferences.

productivity satisfy this relevance condition in being negatively and significantly correlated with contemporary country size.⁶

We obtain the specific measure of land productivity from Ramankutty, Foley, Norman, and McSweeney (2002). This variable is exogenous to human intervention in agricultural conditions because it represents the fraction of each grid cell globally that is suitable for agriculture, based on the temperature and soil conditions of each grid cell. Essentially, this measure reflects prehistoric conditions in land suitability for agriculture and, in that sense, is predetermined and considerably more apt for the satisfaction of the exclusion condition. The exclusion condition suggests that prehistoric land suitability for agriculture is uncorrelated with loan spreads in the 1990s and early 2000s, but it is strongly and negatively correlated with country size ($Loan\ spread \perp Land\ suitability | Land\ area$). In other words, we posit that land suitability for agriculture is as good as randomly assigned when we are thinking about its impact on contemporary loan spreads.⁷

We report the results in appendix table A6. The first-stage results, along with the under-identification and weak identification tests, show that the relevance condition is valid. The second-stage results show that the effect of country size remains positive and statistically significant, while the coefficient on creditor rights turns positive and remains statistically insignificant. The economic

⁶ Fernández-Villaverde, Koyama, Lin, and Sng (2023) mostly explain differences in country size in Eurasia and the associated emergence of large China versus the smaller European countries. Even though it is beyond our aims to explain country size fully in our IV model (the IV needs to be correlated with and not causally affect country size), we do note that controlling for other determinants of country size (other geographical characteristics in table A2) does not affect our findings.

⁷ We dig further into the validity of the exclusion condition. First, we replicate the specifications of table 3 with land suitability as a control variable (to identify if land suitability directly correlates with loan spreads). The estimate on land suitability in the first specification is -0.208, with standard error 6.37 and thus highly insignificant (t -statistic -0.03, p -value 0.97). Second, we scan the literature on the direct effects of prehistoric land suitability on contemporary economic outcomes to close any back doors (effects of prehistoric land suitability on loan spread via other contemporary economic outcomes). The only directly relevant study is Galor and Özak (2016), who note that the preindustrial expansion of suitable crops for cultivation in the course of the Columbian Exchange affect contemporary time preferences (and thus potentially risk-related preferences). Even though this study considers the Columbian Exchange and not the prehistoric agricultural endowment, we consider including Galor-Özak's long-term orientation (variable from Hofstede, 2001) as a control in our IV model. This variable is statistically insignificant in both stages of the 2SLS, signifying no such back door. Third, to examine the importance of any other back doors statistically, we use the approach in Conley, Hansen, and Rossi (2012), who show how, instead of assuming the instrument is completely valid, to construct a range of plausible invalidity values and produce a range of reasonable estimates that go with those values. We specify the most restrictive case in which country size is exogenous. The range of coefficients provided are again very close to the baseline (coefficient estimate from 7.87 to 8.61, with creditor rights still encompassing the value of 0 and thus being statistically insignificant). Assuming other values for endogenous country size does not yield statistically insignificant results (e.g., extreme values between -10 and 10 produce a range of estimates between 4.4 and 12.1).

impact of country size remains very similar to that in table 3, even though we lose three countries (due to data availability on the IV). For example, if we specifically estimate the OLS specification 1 of table 3 for the 69 countries of specification 1 of table A6, the coefficient on country size equals 7.648. The difference between 7.648 and 7.700 in specification 1 of table A6 is statistically insignificant according to the Durbin-Wu-Hausman test, implying against inconsistency of the OLS model.

Overall, this section highlights that simply controlling for country size in the loan spread specifications eliminates the baseline finding that stronger creditor rights make loan spreads more competitive. In the following section, we aim to answer why.

B. Why Controlling for Country Size Eliminates the Effect of Creditor Rights

We begin with the simple observation of a negative correlation between country size and creditor rights (figure 1). For example, except for Australia, the 10 largest countries have creditor rights equal to 2 or lower (Russia: 2, Canada: 1, China: 2, United States: 1, Brazil: 1, India: 2, Argentina: 1, Kazakhstan: 2, Algeria: 1). The unconditional correlation (obtained from a simple regression) of creditor rights on country size equals -0.131 (p -value: 0.003). The simple correlation between the two variables equals -0.55.

[Insert Figure 1 here]

This strong correlation points to two interrelated issues regarding the interplay between creditor rights and country size in corporate loan pricing. First, and related to the analysis of section I, absent a control for country size, the effect of creditor rights might simply capture more loans in larger countries. Reproducing the results of table 2 with a sampling weight calculated as the inverse of the number of loans by country and year shows that the effect of creditor rights becomes statistically insignificant (column 1 of table A5). When adding country size to that regression (specification 2 of table A5), we still find an insignificant effect for creditor rights, whereas country size retains its positive and significant effect on loan spreads.

Second, related, and most important, the effect of country size might capture countries' preferences toward economic risk-taking. This would also imply that low creditor rights are an endogenous decision of large countries due to their specific characteristics. In an inclusive

discussion, Alesina, Spolaore, and Wacziarg (2005) suggest that large country size has two important drawbacks for economic outcomes: (i) large administrative and congestion costs and (ii) population heterogeneity. Controlling for administrative costs (e.g., government expenditures to GDP; expenditures for health, education, institutional quality, etc.) does not affect our inferences. In contrast, we find that population heterogeneity (ethnic fractionalization and different subnational economic preferences) largely explains the impact of country size on loan spreads.

Specifically, in specification 1 of table 4, we introduce the interaction term between country size and ethnic fractionalization. Ethnic fractionalization measures the probability that two randomly selected individuals from a given country belong in different ethnic groups (thorough definition in appendix table A1).⁸ We find that the interaction term is positive and statistically significant, implying that the positive effect of country size identified in the previous results is stronger for more ethnically fractionalized countries. The economic relevance of the result is more apparent in figure 2a, which shows the marginal effect of country size across the distribution of ethnic fractionalization. The effect becomes statistically significant for values on ethnic fractionalization larger than 0.3. This finding is fully consistent with Alesina, Spolaore, and Wacziarg (2005), who note that fractionalized countries bear higher economic risks. We find that in the corporate loan market, banks price this risk to produce higher loan spreads.⁹

[Insert Table 4 & Figure 2 here]

Given this finding, we hypothesize that the pricing of risk in large countries will ease when the subnational populations have a culture of economic risk-taking and are more trusting. Our premise is that a culture of economic risk-taking and trust eases the risks associated with ethnic fractionalization in large countries and should lower spreads in corporate loan markets. To this end, we use data from Falk et al. (2018), who provide novel measures of economic preferences for risk-taking and trust. These data come from a survey including 80,000 people in 76 countries. The authors provide the micro data, which include the location of these people (subnational regions). We first aggregate the scores for economic risk-taking and trust across these subnational regions.

⁸ We use the variable in Fearon (2003), which has the widest coverage in our sample, but the results are similar when using the respective variable in Alesina et al. (2003).

⁹ In specifications 2 and 3, we replicate our baseline results for the sample observing ethnic fractionalization. First, we estimate the model without country size (creditor rights statistically significant) and then with country size (creditor rights insignificant and country size significant).

Then, using a labor-intensive approach, we hand-match the scores in the subnational regions with the firms' headquarters, substantially increasing the within-country variation (and thus heterogeneity) of risk-taking preferences and trust (we provide thorough definitions in table A1).

We hypothesize and empirically establish that the effect of country size on loan spreads is weaker for large countries that are also prone to a culture of higher risk-taking preferences or trust. We provide such evidence using specifications with the interaction terms *Country size* \times *Regional risk-taking* (specification 4) or *Country size* \times *Regional trust* (specification 7). In specifications 5 and 6, we again replicate our baseline results for the sample observing regional risk-taking / regional trust, without country size (creditor rights statistically significant) and with country size (predominantly to show that country size is statistically significant in this smaller sample).

We find that both interaction terms enter with statistically significant coefficients and signs consistent with our hypothesis. In column 4, the negative coefficient on the interaction term suggests that the positive effect of country size on loan spreads is moderated in countries that also have higher risk-taking preferences. This finding is consistent with the hypothesis that the economic risks of population heterogeneity are lower in countries with a risk-taking culture. Economically, figure 2b shows that the effect of country size is neutralized in regions in the upper third of risk-taking preferences. This is a more "economic" explanation of the relation between country size and loan pricing, in that we model economic preferences for risk-taking that are priced in the corporate loans market. In turn, a more "behavioral" explanation comes from the results of specification 7, where we also observe a moderating effect of country size due to trust. Taking marginal effects and displaying the results in figure 2c, we again find that the positive effect of country size is neutralized in regions in the upper quartile of trust.

III. Conclusions

This study advances the literature on the pricing of global corporate loans in two stages. We first replicate the baseline findings of previous studies on the effect of creditor rights on corporate bank lending. We show that simply controlling for country size (land area) in the same sample as in the extant literature and in more extended samples renders the (otherwise negative and significant)

effect of creditor rights on loan spreads (and on other lending characteristics) statistically insignificant. In contrast, the effect of country size is positive, as well as statistically and economically significant across a large battery of robustness tests. Thus, country size is an important confounding effect on the relation between creditor rights and bank lending.

We next trace (explain) the effect of country size in (using) relevant economic theories highlighting the important role of population heterogeneity in economic development. We find that the positive effect of country size on loan spreads is significant only above the 30th centile of ethnic fractionalization, which is a key factor against economic development in the related literature and is priced as risk in the corporate loans market. We show the role of this cultural risk by bringing new data on economic risk-taking preferences and trust for subnational regions. We find that the positive effect of country size is weaker in countries with a culture of high economic risk-taking preferences and countries with high trust in their subnational regions. Overall, our results provide evidence for the importance of country size and associated population heterogeneity in determining corporate loan spreads, as opposed to an established literature on creditor rights.

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Table 1. Summary statistics

The table reports summary statistics (number of observations, mean, standard deviation, minimum, and maximum) for the variables used in our empirical analysis. The variables are thoroughly defined in appendix table A1.

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Loan spread	84,360	167.13	120.75	1.50	631
Creditor rights	84,360	1.72	1.17	0	4
Financial borrower	84,360	0.17	0.38	0	1
Borrower's country rating	84,360	2.96	3.81	1	22
Borrower's country GDP	84,360	10.36	0.62	7.76	11.30
Facility amount	84,360	18.35	1.85	0.00	24.00
Maturity	84,360	50.93	35.58	0.00	480.00
Number of lenders	84,360	11.82	11.04	1.00	110.00
Collateral	84,360	0.40	0.49	0.00	1.00
Borrower's size	45,236	7.96	2.75	0.00	24.15
Borrower's EBIT	44,751	0.06	0.11	-5.89	1.70
Borrower's M/B	33,123	3.36	20.29	0.00	943.08
Borrower's asset tangibility	43,987	0.32	0.25	0.00	0.99
Borrower's country size	84,360	5.29	4.40	0.00	16.38
Borrower's country ethnic fract.	79,263	0.42	0.17	0.01	1.00
Borrower's regional risk-taking	59,078	0.11	0.26	-1.45	1.45
Borrower's regional trust	59,078	0.09	0.27	-2.31	1.12

Table 2. Replication of existing studies and beyond

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2003. The dependent variable is *Loan spread*. Definitions for all variables are in appendix table A1. Estimation method is OLS on the fixed effects model, with robust standard errors clustered by country. All specifications include loan type, loan purpose, and year fixed effects, while specification 6 also includes country fixed effects. All specifications use the full sample of available countries, except from specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6	7	8	9
Creditor rights	-16.45** (6.392)	-20.13*** (6.564)	-20.25*** (6.389)	-14.79*** (5.125)	-4.106 (5.382)	51.71*** (15.48)	-84.66** (22.01)	52.78 (26.23)	-36.10** (15.40)
Financial borrower	-29.73*** (6.325)	-24.98*** (4.764)	-25.10*** (5.007)	-7.276** (3.119)	-31.84*** (6.090)	-25.41*** (4.245)	-7.663 (13.21)	-20.84 (12.83)	-44.66 (9.499)
Borrower's country rating	5.656** (2.512)	5.939** (2.377)	3.813* (2.181)	4.542 (2.738)	7.099*** (2.369)	5.702*** (1.689)	17.71*** (2.396)	9.502* (2.679)	-12.78 (2.643)
Borrower's country GDP	27.36** (11.58)	32.17*** (11.44)	25.09* (13.80)	26.88* (15.13)	12.07 (12.12)	-94.49 (85.02)	69.01** (17.47)	6.065 (38.40)	-555.6** (23.87)
Facility amount	-11.51** (4.926)	-13.94** (5.907)	-14.50** (6.131)	-5.749 (4.692)	-11.43** (5.015)	-15.99*** (3.817)	-9.033** (3.110)	-10.55 (3.631)	-36.67** (2.359)
Maturity	-0.202*** (0.0546)	-0.262*** (0.0760)	-0.207*** (0.0715)	-0.280*** (0.0483)	-0.128** (0.0504)	-0.0559 (0.0413)	-0.259 (0.215)	0.0311 (0.0695)	-1.400** (0.101)
Number of lenders	-1.225*** (0.319)	-1.231** (0.514)	-1.156** (0.538)	-0.285 (0.364)	-0.766*** (0.242)	-0.254** (0.107)	0.477 (0.448)	0.326 (0.300)	1.681* (0.172)
Collateral	73.07*** (4.443)	73.60*** (4.149)	73.04*** (4.610)	80.02*** (4.173)	63.18*** (6.637)	57.58*** (8.324)	64.76*** (7.461)	55.11** (7.090)	29.55 (7.237)
Borrower's size				-8.084*** (1.743)					
Borrower's EBIT				-111.4*** (6.065)					
Borrower's M/B				0.0364 (0.0374)					
Borrower's asset tangibility				0.181 (3.773)					
Unites States dummy					67.90*** (9.595)				
Observations	84,360	47,170	44,751	15,306	84,360	84,358	4,134	3,427	703
Clusters	72	72	36	36	72	70	5	3	2
Adjusted R-squared	0.488	0.476	0.488	0.539	0.514	0.574	0.605	0.433	0.691

Table 3. The role of country size

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2003. The dependent variable is *Loan spread*. Definitions for all variables are in appendix table A1. Estimation method is OLS on the fixed-effects model, with robust standard errors clustered by country. All specifications include loan type, loan purpose, and year fixed effects, but specification 6 also includes country fixed effects. All specifications use the full sample of available countries, except specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6
Creditor rights	-3.321 (5.710)	-1.721 (6.536)	-3.257 (6.619)	-4.186 (5.603)	-2.088 (5.276)	51.71*** (15.48)
Country size	7.827*** (1.198)	8.689*** (1.241)	8.288*** (1.531)	5.559*** (1.408)	6.467** (2.724)	
Financial borrower	-29.05*** (5.082)	-23.99*** (4.009)	-23.81*** (4.122)	-9.462** (3.666)	-29.77*** (5.316)	-25.41*** (4.245)
Borrower's country rating	6.741*** (1.882)	7.761*** (1.699)	5.673*** (1.797)	5.093** (2.379)	6.963*** (1.925)	5.702*** (1.689)
Borrower's country GDP	21.41 (12.93)	25.73* (13.27)	11.03 (14.49)	10.19 (15.31)	18.09 (13.43)	-94.49 (85.02)
Facility amount	-12.26** (4.824)	-15.58*** (5.196)	-15.79*** (5.395)	-6.900* (4.042)	-12.11** (4.878)	-15.99*** (3.817)
Maturity	-0.0857* (0.0444)	-0.122*** (0.0277)	-0.108*** (0.0263)	-0.217*** (0.0549)	-0.0848* (0.0448)	-0.0559 (0.0413)
Number of lenders	-0.614*** (0.190)	-0.734*** (0.275)	-0.747** (0.300)	-0.0282 (0.238)	-0.590*** (0.180)	-0.254** (0.107)
Collateral	61.25*** (7.280)	65.80*** (4.664)	67.21*** (4.025)	74.99*** (3.515)	60.49*** (7.753)	57.58*** (8.324)
Borrower's size				-7.147*** (1.346)		
Borrower's EBIT				-114.0*** (6.507)		
Borrower's M/B				0.0370 (0.0378)		
Borrower's asset tangibility				-3.292 (2.940)		
Unites States dummy				19.32 (23.89)		
Observations	84,360	47,170	44,751	15,306	84,360	84,358
Clusters	72	72	36	36	72	70
Adjusted R-squared	0.525	0.505	0.506	0.547	0.526	0.574

Table 4. Why controlling for country size eliminates the effect of creditor rights

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2003. The dependent variable is *Loan spread*. Definitions for all variables are in appendix table A1. Estimation method is OLS on the fixed-effects model, with robust standard errors clustered by country. All specifications include loan type, loan purpose, and year fixed effects, but specification 6 also includes country fixed effects. All specifications use the full sample of available countries, except specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6	7
Creditor rights	4.434 (4.828)	-11.34** (5.503)	0.910 (5.690)	1.780 (4.542)	-7.149 (4.440)	4.522 (4.472)	1.284 (4.364)
Country size	-0.628 (4.404)		7.700*** (1.202)	7.177*** (0.864)		7.673*** (1.031)	7.193*** (0.919)
Ethnic fract.	-5.770 (31.52)						
Country size × Ethnic fract.	19.97** (9.949)						
Regional risk-taking				34.15 (22.95)			
Country size × Regional risk-taking				-4.312** (2.064)			
Regional trust							53.10** (20.32)
Country size × Regional trust							-5.601*** (1.884)
Observations	79,262	79,262	79,262	59,076	59,076	59,076	59,076
Clusters	70	70	70	44	44	44	44
Adjusted R-squared	0.529	0.485	0.522	0.582	0.552	0.580	0.583

Figure 1. Creditor rights by country

The map reports country averages of creditor rights during the period 1994-2003. The index of creditor rights takes values from 0 to 4, with darker colors denoting more stringent creditor rights.

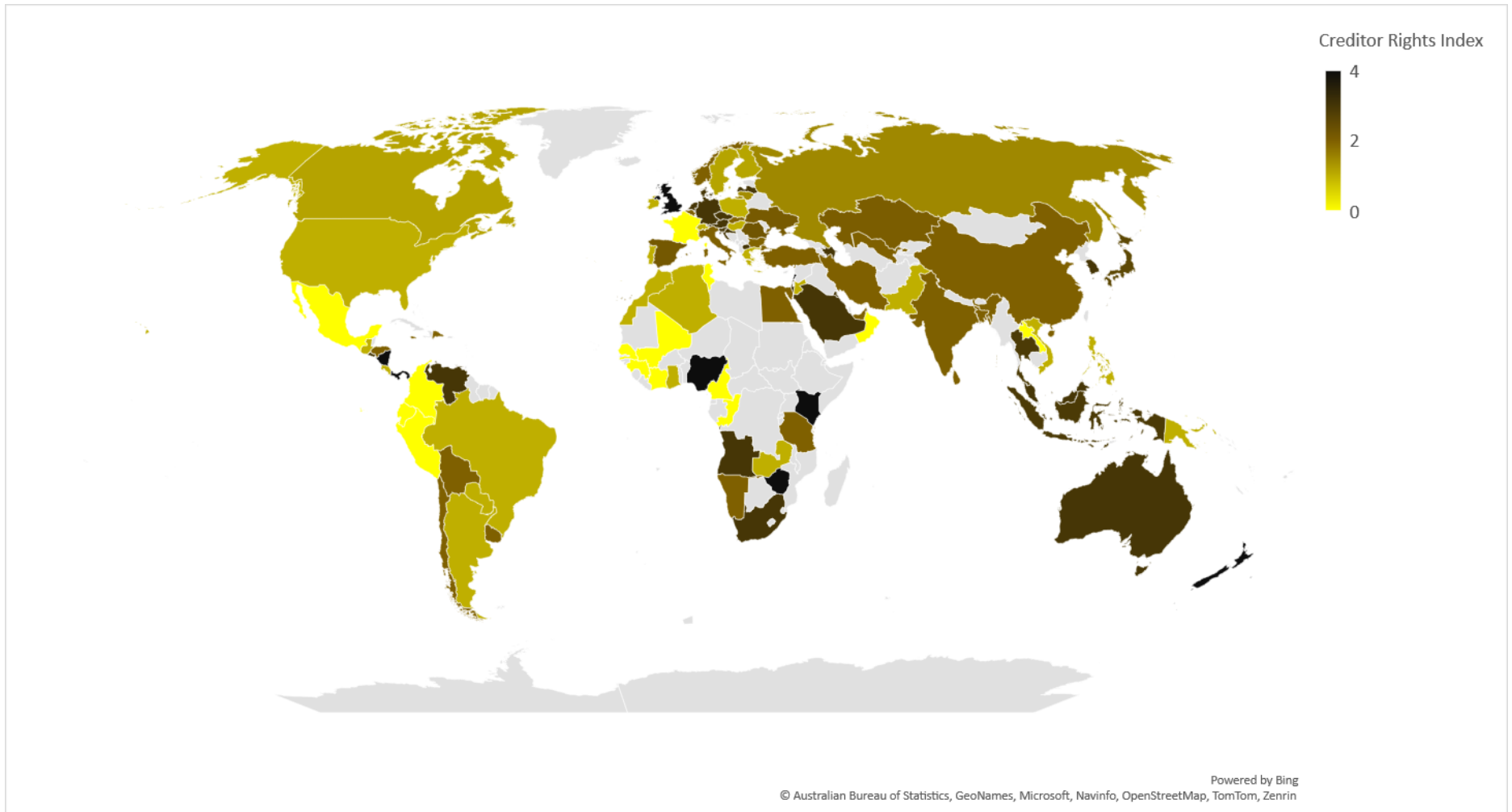
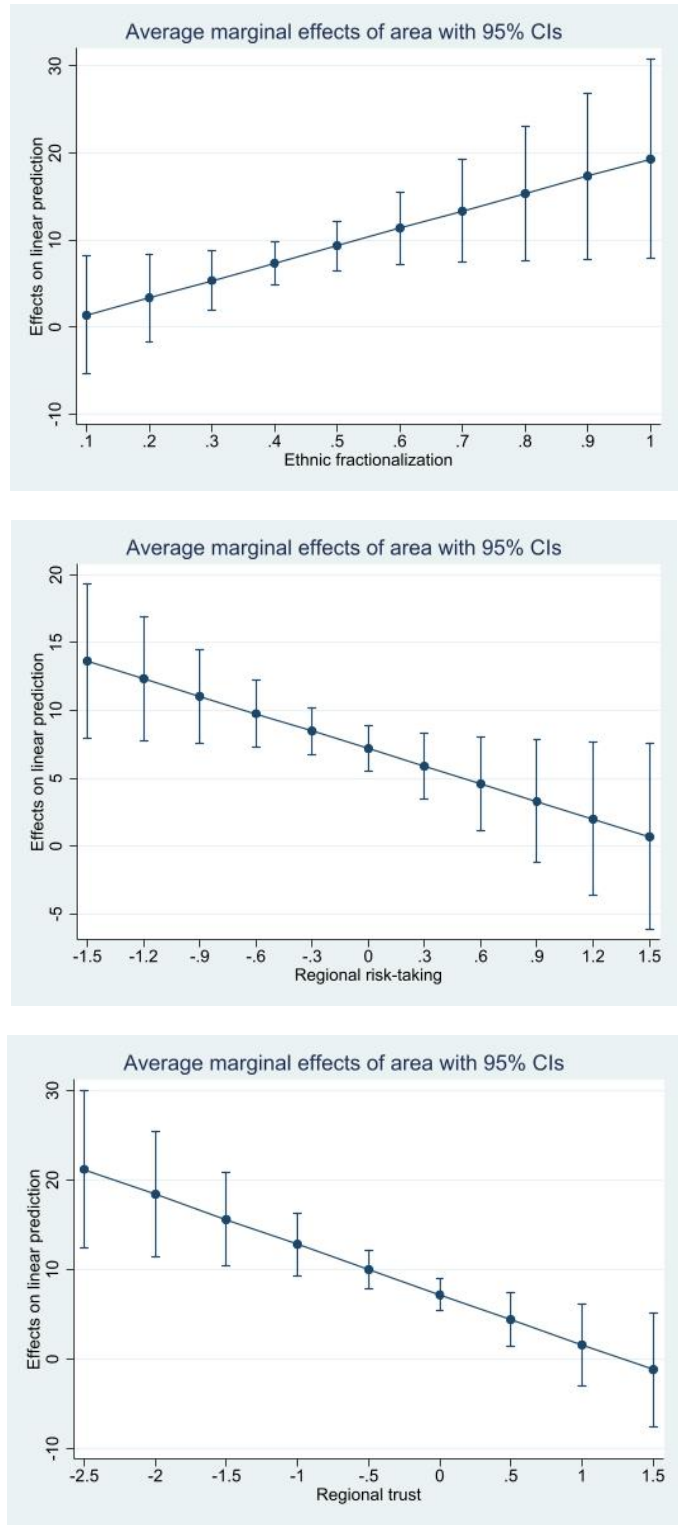


Figure 2. Marginal effects of country size by ethnic fractionalization

The figure reports marginal effects of country size at different levels of ethnic fractionalization (figure 2a), regional risk-taking (figure 2b), and regional trust (figure 2c). All variables are defined in appendix table A1, and summary statistics are reported in table 1.



Online Appendix

This online appendix reports: (i) explicit variable definitions; (ii) information for all the country controls in our empirical analysis; (iii) robustness tests using the period 1994-2017; (iv) robustness tests using loan maturity as the outcome variable; and (v) robustness tests on the effect of country size on loan spreads.

Table A1. Variable definitions and sources

Variable	Definition and source
Panel A. Loan-level data	
Loan spread	The all-in-spread-drawn (in basis points-bps), defined as the sum of the spread over LIBOR plus any facility fee. Source: DealScan.
All-in-undrawn	The commitment and facility fees. Source: DealScan.
Facility amount	Natural logarithm of the syndicated loan facility amount (in USD). Source: DealScan.
Maturity	The number of months for which a syndicated loan is granted. Source: DealScan.
Number of lenders	The number of banks participating in a syndicating loan. Source: DealScan.
Collateral	Dummy variable equal to 1 for collateralized loans and 0 otherwise. Source: DealScan.
Performance dummy	Dummy equal to 1 if the loan has performance pricing provisions and 0 otherwise. Source: DealScan.
Loan purpose	A series of dummy variables indicating loan purpose (e.g., corporate purpose, debt repay, etc.). Source: DealScan.
Loan type	A series of dummy variables indicating loan type (e.g., bridge loan, revolver/line \geq 1 year, term loan, etc.). Source: DealScan.
Panel B. Firm-year data	
Borrower's size	Natural logarithm of the borrowing firm's total assets (in USD). Source: Compustat.
Borrower's M/B	Borrowing firm's market-to-book ratio. Source: Compustat.
Borrower's EBIT	Borrowing firm's earnings before interest and taxes (EBIT) to total assets. Source: Compustat.
Borrower's leverage	Borrowing firm's book value of debt to total assets. Source: Compustat.
Borrower's asset tangibility	Borrowing firm's property, plant, and equipment book value to total assets. Source: Compustat.
Financial borrower	Dummy variable equal to 1 for financial firms and 0 otherwise. Source: Compustat.
Panel D. Bank-year data	
Lender's leverage	Lender's book value of debt to total assets. Source: Compustat.
Lender's nonperforming assets	Lender's non-performing assets to total assets. Source: Compustat.
Lender's size	Natural logarithm of the lender's total assets (in €). Source: Compustat.
Lender's EBIT	Lender's earnings before interest and taxes (EBIT) to total assets. Source: Compustat.
Panel E. Country-level data	
Borrower's country creditor rights	Borrower's country creditor rights. According to Djankov, McLiesh, and Shleifer (2007): "The creditor rights index measures four powers of secured lenders in bankruptcy. First, whether there are restrictions, such as creditor consent, when a debtor files for reorganization. Second, whether secured creditors are able to seize their collateral after the petition for reorganization is approved, in other words whether there is no 'automatic stay' or 'asset freeze' imposed by the court. Third, whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm. Finally, whether an administrator, and not management, is responsible for running the business during the reorganization. A value of 1 is added to the index when a country's laws and regulations provide each of these powers to secured lenders. The creditor rights index aggregates the scores and varies between 0 (poor creditor rights) and 4 (strong creditor rights)."

Borrower's country size	The natural logarithm of the borrower's country size (in squared kilometers). Source: WDI.
Borrower's country GDP	The natural logarithm of the borrower's country real GDP per capita. Source: WDI.
Borrower's country rating	Numerical credit rating of the borrower's country. Source: Standard & Poor's.
Borrower's country ethnic fract.	Restricting attention to groups that were at least 1% of a country's population in the 1990s, Fearon identifies 822 ethnic and "ethnoreligious" groups in 160 countries. This variable reflects the probability that two randomly selected people from a given country belong to different groups. The variable thus ranges from 0 (perfectly homogeneous) to 1 (highly fragmented). The values are assumed constant for all years. Source: Fearon (2003).
Borrower's regional risk-taking	We collect data about individuals' preferences for risk-taking from the dataset of Falk et al. (2018). We aggregate these data by subnational region and then hand-match the borrowers' headquarters to these regions. Risk-taking is the weighted average of a lottery choice sequence using the staircase method (weight equals 0.473) and a self-assessment of willingness to take risks in general (weight equals 0.527).
Borrower's region trust	We collect data of individuals' trust from the dataset of Falk et al. (2018). We aggregate these data by subnational region and then hand-match the borrowers' headquarters to these regions. Trust is a self-assessment of people having only the best intentions.
Borrower's country land suitability for agriculture	Average probability within a region that a particular grid cell will be cultivated as computed by Ramankutty et al. (2002).
Additional controls	All variables reported in appendix table A2.

Table A2. List of additional country control variables

The table provides a list of more than 100 time-varying or time-invariant country-specific control variables we use in additional regressions. In many respects, we use more than one variable (i.e., from a different source) for the same country-year characteristic (e.g., corruption). Abbreviation of sources: ICRG: International Country Risk Guide; FH: Freedom House; WB: World Bank (either World Development Indicators or Quality of Governance indices); HF: Heritage Foundation; SWIID: Standardized World Income Inequality Database; GFDD: Global Financial Development Database; BMR: Boix, Miller & Rosato (2022); BR: Bjørnskov & Rode (2020); EG: Elkins & Ginsburg (2021); GEA: Global Educational Attainment; POLCON: Political Constraint Index; PWT: Penn World Tables; and WID: World Inequality Database. Many of the variables below are percentage of GDP. The abbreviation SV denotes several variables from that database.

Variable	Source	Variable	Source
Corruption (SV)	ICRG, FH, WB, HF, V-Dem	Bank accounts (per 1,000 people)	GFDD
Rule of law (SV)	ICRG, FH, WB, HF	Bank branches (per 1,000 people)	GFDD
Government quality (SV)	ICRG, FH, WB	Corporate bonds to total bonds	GFDD
Democracy (SV)	Polity IV, V-Dem, FH	Private credit by banks	GFDD
Constitutional characteristics (SV)	Polity IV, V-Dem, BMR, BR, EG, POLCON, Wig et al. (2015)	Domestic credit to private sector	GFDD
Fractionalization variables (SV)	Alesina et al. (2003)	Outstanding public debt to securities	GFDD
Contestation and inclusiveness (SV)	Coppedge et al. (2008)	Syndicated loan issuance volume	Own calculations
Central bank independence (SV)	Garriga (2016)	Syndicated loan average maturity	Own calculations
Population size	WB	Bank net interest margin	GFDD
Population density	WB	Bank lending-deposit spread	GFDD
Population growth	WB	Bank return on assets	GFDD
Urban population	WB	Bank cost-to-income ratio	GFDD
Political terror	U.S. state department	Foreign bank ownership	Claessens & Van Horen (2014)
Armed forces	WB	Bank Z-score	GFDD
Military expenditure	WB	Bank nonperforming loans ratio	GFDD
Average schooling (years)	Barro and Lee (2013)	Banking industry H-statistic	GFDD
Average schooling (male and female)	Barro and Lee (2013)	Bank Lerner index	Delis et al. (2016), GFDD
Government education expenditure	UNESCO	Boone indicator	Delis et al. (2016), GFDD
Age dependency (% of labor)	WB	Remittance inflows	GFDD
Agriculture value added	WB	Banking crisis dummy	GFDD
Birth rate (per 1,000 people)	WB	Consumer price index	GFDD
CO2 emissions	WB	Capital services	PWT
Death rate (per 1,00 people)	WB	Human capital	PWT
DEC alternative conversion factor	WB	Capital stringency	Barth et al. (2013)
External balance on goods & services	WB	Bank activity restrictions	Barth et al. (2013)
Electric power consumption	WB	Official bank supervisory powers	Barth et al. (2013)
Various employment ratios (SV)	WB, IMF	Bank private monitoring	Barth et al. (2013)
Consumption expenditure	WB, PWT	Bank external governance	Barth et al. (2013)
Foreign direct investment inflows	WB	Bank deposit insurance	Barth et al. (2013)
Fertility rate	WB	Bank entry requirements	Barth et al. (2013)
Forest area	WB	Corporate tax rates	WB, OECD, Tax foundation
Economic inequality data	SWIID, WID	Business freedom	HF
Lending interest rate	WB	Labor freedom	HF
Deposit interest rate	WB	Trade freedom	HF
Arable land	WB	Investment freedom	HF
Life expectancy at birth	WB	Financial freedom	HF
Infant mortality	WB	Tax burden	HF
Settler mortality	Acemoglu et al. (2001)	Government spending	HF, WB
Official exchange rate	WB	Fiscal health	HF
Country size	WB	Fiscal deficit	WB
Longitude	G-Econ project	Fiscal debt	WB
Terrain roughness	G-Econ project	Monetary freedom	HF
Country alliances (SV)	ATOP	Economic globalization	Dreher (2006)

Ecological footprint (SV)	Global Footprint Netw.	Educational attainment (SV)	GEA
Agricultural data (SV)	FAO	Trade variables (SV)	Gleditsch (2002), WB, PWT
Oil and gas prices & production (SV)	Ross & Mahdavi (2015)	Total factor productivity	PWT
Female empowerment	V-Dem	Exchange rates	PWT
Colonial origin and regime type (SV)	Wahman et al. (2013)	Religion (SV)	LaPorta et al. (1999)
Population diversity (SV)	Ashraf and Galor (2013)	Agricultural origins (SV)	Galor and Ozak (2016)
Culture (SV)	Hofstede (2001), Schwartz (2004)	Economic preferences (SV)	Falk et al. (2018)

Table A3. Baseline results for the period 1994-2017

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2017. The dependent variable is *Loan spread*. Definitions for all variables are in appendix table A1. Estimation method is OLS on the fixed-effects model, with robust standard errors clustered by country. All specifications include loan type, loan purpose, and year fixed effects, but specification 6 also includes country fixed effects. All specifications use the full sample of available countries, except specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6
Creditor rights	-8.522 (5.879)	-14.02** (6.617)	-13.99* (7.001)	-9.939* (5.087)	1.079 (4.145)	23.55 (23.33)
Financial borrower	-30.86*** (6.510)	-30.72*** (9.232)	-31.58*** (10.89)	-14.67*** (3.943)	-32.41*** (6.848)	-24.30*** (4.737)
Borrower's country rating	3.377* (1.993)	3.811 (2.374)	2.098 (3.003)	0.951 (2.911)	4.035** (1.917)	8.644*** (2.713)
Borrower's country GDP	18.55 (11.49)	26.64** (13.36)	28.12 (18.08)	11.84 (12.28)	6.128 (12.23)	64.07 (44.49)
Facility amount	-15.83*** (5.317)	-14.78* (8.007)	-15.10* (8.503)	-7.919 (5.976)	-15.25*** (5.330)	-19.70*** (4.027)
Maturity	-0.0861* (0.0518)	-0.158*** (0.0451)	-0.133** (0.0530)	-0.122*** (0.0329)	-0.0421 (0.0460)	-0.00748 (0.0479)
Number of lenders	-1.694*** (0.200)	-2.116*** (0.496)	-2.088*** (0.554)	-0.974*** (0.269)	-1.368*** (0.196)	-0.880*** (0.198)
Collateral	56.95*** (3.188)	56.28*** (3.327)	56.35*** (3.526)	64.89*** (4.313)	54.06*** (2.359)	49.77*** (2.537)
Borrower's size				-7.208*** (2.341)		
Borrower's EBIT				-136.4*** (7.596)		
Borrower's M/B				0.00658 (0.0367)		
Borrower's asset tangibility				-2.375 (5.594)		
Unites States dummy					48.89*** (7.776)	
Observations	377,611	143,137	133,656	43,008	377,611	377,610
Clusters	92	92	36	36	92	91
Adjusted R-squared	0.529	0.480	0.489	0.508	0.541	0.573

Table A4. Baseline results for loan maturity

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2003. The dependent variable is *Maturity*. Definitions for all variables are in appendix table A1. Estimation method is OLS on the fixed effects model, with robust standard errors clustered by country. All specifications include loan type, loan purpose, and year fixed effects, but specification 6 also includes country fixed effects. All specifications use the full sample of available countries, except specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6	7	8	9
Creditor rights	1.568** (0.760)	2.112* (1.094)	2.086* (1.074)	1.092** (0.530)	-0.0993 (0.655)	-10.32** (4.398)	1.105 (8.311)	-37.07 (12.86)	-7.204 (2.026)
Financial borrower	-9.059*** (1.024)	-8.093*** (0.621)	-7.684*** (0.442)	-4.953*** (0.498)	-8.686*** (1.002)	-8.511*** (0.945)	-10.87** (3.103)	-9.126 (3.549)	-7.851 (1.269)
Borrower's country rating	-0.841** (0.339)	-0.863** (0.380)	-1.034** (0.383)	-1.294*** (0.324)	-1.028*** (0.321)	-0.0997 (0.487)	-1.887 (0.931)	-2.794 (0.992)	0.200 (0.490)
Borrower's country GDP	-5.319** (2.520)	-4.424 (2.729)	-6.209** (2.813)	-8.340*** (2.509)	-3.218 (2.619)	7.201 (20.32)	-7.526 (5.190)	-7.778 (7.340)	61.79* (5.512)
Facility amount	1.239** (0.552)	1.663*** (0.507)	1.732*** (0.513)	1.020* (0.544)	1.214** (0.560)	1.194* (0.689)	0.621 (0.671)	0.737 (0.875)	10.83** (0.243)
Number of lenders	0.124*** (0.0441)	0.167*** (0.0422)	0.159*** (0.0438)	0.124*** (0.0406)	0.0617 (0.0434)	0.0536 (0.0373)	0.320* (0.145)	0.446** (0.0703)	-0.299 (0.147)
Collateral	2.273** (1.082)	0.694 (0.754)	1.098 (0.784)	1.830** (0.753)	3.574*** (1.269)	4.324*** (1.627)	4.595 (2.698)	5.532 (3.242)	1.640 (1.380)
Borrower's size				0.756** (0.303)					
Borrower's EBIT				7.176*** (0.932)					
Borrower's M/B				-0.00473 (0.00697)					
Borrower's asset tangibility				1.516 (1.529)					
Unites States dummy					-9.087*** (1.876)				
Observations	84,905	47,580	45,157	15,435	84,905	84,903	4,137	3,429	704
Clusters	72	72	36	36	72	70	5	3	2
Adjusted R-squared	0.447	0.459	0.480	0.498	0.452	0.476	0.480	0.493	0.613

Table A5. The role of country size for 1994 to 2017

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2017. The dependent variable is *Loan spread*. Definitions for all variables are in appendix table A1. Estimation method is OLS on the fixed effects model, with robust standard errors clustered by country. All specifications include loan type, loan purpose, and year fixed effects, but specification 6 also includes country fixed effects. All specifications use the full sample of available countries, except specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5	6
Creditor rights	0.453 (4.084)	1.275 (4.681)	2.399 (5.102)	-0.316 (4.439)	2.194 (3.986)	23.55 (23.33)
Country size	5.088*** (0.672)	7.194*** (1.267)	7.981*** (1.823)	4.692*** (1.221)	3.847*** (0.796)	
Financial borrower	-30.81*** (6.187)	-29.59*** (8.396)	-30.14*** (9.668)	-16.88*** (5.296)	-31.46*** (6.378)	-24.30*** (4.737)
Borrower's country rating	4.404** (1.706)	5.572*** (1.730)	3.574 (2.250)	1.940 (2.670)	4.423** (1.718)	8.644*** (2.713)
Borrower's country GDP	16.26 (10.14)	21.15* (11.07)	11.04 (16.71)	4.226 (12.63)	11.73 (11.18)	64.07 (44.49)
Facility amount	-15.64*** (5.222)	-15.49** (7.418)	-15.72* (7.812)	-8.403 (5.503)	-15.45*** (5.256)	-19.70*** (4.027)
Maturity	-0.0118 (0.0522)	-0.0599*** (0.0219)	-0.0519** (0.0241)	-0.0869** (0.0410)	-0.0119 (0.0522)	-0.00748 (0.0479)
Number of lenders	-1.316*** (0.186)	-1.750*** (0.312)	-1.750*** (0.336)	-0.852*** (0.203)	-1.274*** (0.185)	-0.880*** (0.198)
Collateral	54.00*** (2.388)	54.22*** (1.989)	55.04*** (2.182)	61.96*** (2.423)	53.54*** (2.306)	49.77*** (2.537)
Borrower's size				-6.393*** (1.928)		
Borrower's EBIT				-139.5*** (8.163)		
Borrower's M/B				0.0163 (0.0341)		
Borrower's asset tangibility				-5.527 (6.190)		
Unites States dummy				20.01** (8.359)		
Observations	377,611	143,137	133,656	43,008	377,611	377,610
Clusters	92	92	36	36	92	91
Adjusted R-squared	0.544	0.499	0.506	0.515	0.545	0.573

Table A6. IV results with country size as endogenous

The table reports coefficient estimates and standard errors (in parentheses) from estimations of equation 1. The sample period is 1994-2003. The dependent variable is *Loan spread*. Definitions for all variables are in appendix table A1. Estimation method is 2SLS on the fixed effects model, with robust standard errors clustered by country. We first report the main second-stage results and then the first-stage results on the IV. All specifications include the control variables in the first five columns of table 3, as well as loan type, loan purpose, and year fixed effects. All specifications use the full sample of available countries, except specifications 3 and 4, which use the same countries as in Bae and Goyal (2009). The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5
Creditor rights	1.058 (6.585)	4.297 (8.721)	3.229 (9.405)	2.166 (8.384)	2.722 (5.026)
Country size	7.700*** (2.287)	10.10*** (2.806)	10.13*** (3.401)	7.232** (3.180)	6.978** (3.475)
Controls as in table 3	Yes	Yes	Yes	Yes	Yes
First stage					
Land suitability for agriculture	-2.855*** (0.758)	-2.990*** (0.788)	-2.909*** (0.856)	-2.619*** (0.824)	-2.013*** (0.639)
Underidentification test (P-value)	6.66 0.010	6.22 0.013	4.53 0.033	4.40 0.036	5.66 0.017
Weak identification test (Critical value 10%)	3.1e+04 16.38	1.9e+04 16.38	2.2e+04 16.38	6,424 16.38	3.0e+04 16.38
Observations	78,617	45,817	43,721	14,867	78,617
Clusters	69	69	35	35	69
Uncentered R-squared	0.347	0.327	0.315	0.354	0.348

Table A5. Weighted regressions

The table replicates specification 1 of table 2 and specification 1 of table 3 using a sampling weight, which is the inverse of the number of loans by country and year. The lower part of the table also reports the number of observations, number of clusters, and the adjusted R-squared. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	1	2
Creditor rights	-3.768 (5.055)	-1.589 (4.957)
Country size		6.817*** (1.652)
Financial borrower	-28.76*** (9.613)	-26.56*** (8.982)
Borrower's country rating	9.428*** (1.468)	9.086*** (1.487)
Borrower's country GDP	12.57 (10.99)	12.39 (12.26)
Facility amount	-6.477*** (2.100)	-7.212*** (2.094)
Maturity	-0.124 (0.100)	-0.0561 (0.0904)
Number of lenders	-1.816*** (0.280)	-1.601*** (0.257)
Collateral	41.31*** (9.449)	32.89*** (9.669)
Observations	84,360	84,360
Clusters	72	72
Adjusted R-squared	0.377	0.404

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