Banking Relationships and Creditor Rights *

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Abstract

Do the legal rights of creditors influence whether firms borrow from arm's length or relationship lenders in a country? We examine this question by exploiting the staggered adoption of legal reforms that changed creditor rights. We find that as creditor rights strengthen, firms exhibit a greater propensity to switch to relationship lenders. Conversely, firms switch to arm's length lenders as creditors rights weaken. These results are consistent with the view that arm's length creditors have a bias towards excessive liquidation in environments with strong creditor rights. Hence as creditor rights strengthen, firms switch to relationship lenders as they are less likely to sub-optimally liquidate the firm when continuation is more efficient.

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1 Introduction

It is often believed that many commercial transactions in countries with weak institutions are based on relationships rather than formal contracts. A prominent example of this "relationships overcome contracting frictions" view expressed in Allen, Qian and Qian (2005) argues that despite poor legal protection, China has witnessed significant growth in its private sector because of informal financing built on trust (i.e., relationships). In the context of lending transactions, relationship lenders mitigate frictions that might otherwise prevent some firms from accessing external finance in countries with weak institutions by producing information that is reusable in subsequent interactions.[1]

The downside of using a relationship lender, however, is that proprietary information generated over the course of a relationship could "lock-in" the borrower and allow the relationship lender to extract information rents in good states (see, Sharpe (1990), Rajan (1992), Agarwal and Hauswald (2008), and Santos and Winton (2008)). As creditor rights matter less in good states and more in liquidation states, firms would prefer to borrow from arm's length lenders in environments with strong creditor rights and from relationship lenders in environments with weak creditor rights.

However, one must also account for the possibility that strong creditor rights increase the likelihood of excessive liquidation when continuation is more valuable to shareholders. When creditor rights are strong, financial distress often results in inefficient liquidation of a firm's investment. This view that creditor rights could be excessive and could lead to ex-post inefficiencies is explored in several recent papers. In Acharya and Subramanian (2009), the possibility of excessive liquidations results in firms innovating less and technologically advanced industries employing less leverage and growing more slowly than they otherwise

[1]See surveys by Boot (2000) and Srinivasan (2014). Agarwal and Hauswald (2008) show that public information on credit quality drives credit availability in arm's length lending and private information drives credit availability in relationship loans.

would. In Acharya, Amihud and Litov (2011), strong creditor rights increase the likelihood of inefficient liquidation and drive firms to make value-destroying diversifying acquisitions and to forego high-risk but profitable investments. In Vig (2013), strong creditor rights create a threat of premature liquidation and thereby reduce demand for secured debt from borrowers who value continuation.

Thus, two competing forces determine the equilibrium choice between relationship lenders and arm's length lenders. Strong creditor rights increase the willingness of arm's length lenders to provide credit to firms (the supply side) because of an improved value of collateral and higher recoveries in default. However, strong creditor rights also reduce the willingness of firms to borrow from arm's length lenders (the demand side) because they believe that these lenders have greater incentives to liquidate a firm even when continuation is more valuable.

Relationship lenders, on the contrary, will have to forego the rents they generate from repeated interactions with the firm if it is liquidated. As a consequence, they must make a trade-off between the immediate benefit of liquidating a firm and the stream of rents that accrue to them if the firm remains in business. The sub-optimal liquidation incentives of arm's length creditors imply firms are more likely to switch from them to relationship lenders as creditor rights strengthen.

The question explored in this paper is: How does firms' propensity to borrow from relationship lenders as opposed to arm's length lenders change *when institutions change*? Do firms switch from arm's length lenders to relationship lenders as creditor rights strengthen and vice versa?

Our empirical strategy is to focus on changes in creditor rights induced by the passage of legal reforms in various countries around the world at different points in time. Some of the legal reform events strengthen creditor rights while others weaken them. We examine both

sets of events and using an approach similar to difference-in-differences (DID), we test if changes in creditor rights affect the extent to which firms borrow from relationship lenders.

This approach permits us to exploit considerable inter-temporal variation in the passage of reforms. While the reforms in and of themselves may be an endogenous response of the legal system to economic and political changes, they are unlikely to be responding to the underlying changes in national economies that are also driving the propensity of firms to borrow from relationship lenders. Thus, it is reasonable to assume that the variation in creditor rights around the passage of legal reform is predetermined.

Our key result is that relationship lending increases significantly and consequently transaction loans are reduced in countries that strengthened their creditor rights. This finding is consistent with stronger creditor rights amplifying concerns about inefficient liquidation of borrowers by creditors. Mirroring these results, we find that relationship lending declines when creditor rights weaken. Our specifications that include borrower fixed effects show that this switching occurs even within firms: an increase in creditor rights results in firms increasing their reliance on relationship lenders, whereas a reduction in creditor rights leads to their depending more on arm's length lenders. These results are robust to various additional tests.

The paper contributes to the literature on the importance of institutions in the provision of private credit to firms. It is well known that the legal rights of creditors and the enforceability of contracts can affect the monitoring incentives of lenders and their ability to recontract when firms are in default.[2] Previous literature has largely focused on examining how creditor rights affect the amount of credit and the terms on which it is extended. For example, Djankov, McLeish and Shleifer (2007) find that improvements in creditor rights increase private credit in an economy. Qian and Strahan (2007) and Bae and Goyal (2009) show that loan contracts adjust to variations in legal rights and contract enforceability. Bae

[2]See, for example, La Porta, Lopez-de Silanes, Shleifer and Vishny (1997), Levine (1999) and Jappelli and Pagano (2002).

and Goyal (2009) show that banks make smaller loans, offer shorter maturities, and charge higher interest rate spreads in countries with poor contract enforceability. There is, however, a limited understanding of the channels through which changes in legal institutions affect the composition of lending. Do improvements in creditor rights affect the proportions of relationship lending and arm's length lending? We add to this literature by showing that creditor rights also determine the type of credit sought.

In a related paper, Bhue, Prabhala, and Tantri (2016) examine the effect of a legal reform in India in 2002 that empowers secured creditors to seize the collateral of defaulting firms on the use of relationship lending. They focus on a single country while we have a broader set of countries that undertook legal reforms at different points in time. The staggered nature of the reforms that we examine allows for a much richer set of predictions.

The rest of the paper is organized as follows. Section 2 describes our empirical strategy and the regression specifications underlying the tests. The section also describes our data sources and the procedure used to identify changes in creditor rights. Section 3 presents our main results. Section 4 contains additional robustness tests with different regression specifications, alternative definitions of relationship lending, changes to sample composition and with additional country-level control variables. Section 5 concludes the paper.

2 Empirical Strategy

2.1 Identifying Legal Reforms

We identify countries and associated event years where creditor rights either strengthened or weakened by examining within-country time-series changes in the creditor rights index constructed by Djankov, McLeish and Shleifer (2007).[3] The index, constructed as of January

[3]The index can be downloaded from http://scholar.harvard.edu/shleifer/publications. Acharya, Amihud and Litov (2011) use a similar strategy to examine the effect of creditor rights on risk taking.

of every year from 1978 to 2004 for a sample of 129 countries, is an aggregate of four kinds of power measures: (1) *restrictions on entering*, which measures whether restrictions must be observed when a borrower files for reorganization ($REORGREST$); (2) *no automatic stay*, which measures whether secured creditors are able to seize their collateral once a reorganization petition is approved ($NOAUTOSTAY$); (3) *secured creditors paid first*, which measures whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm or if third-party claims take priority ($SECUREDPRI$); and (4) *management does not stay*, which measures whether creditors or an administrator is responsible for running the business during reorganization, rather than the debtor ($CRDMANAGES$). Thus, the index varies from zero (weak creditor rights) to four (strong creditor rights).

We include legal reform that changed creditor rights in countries after 1994 since Dealscan has very few loans before 1994. We exclude countries that have fewer than 30 loan observations. Of the countries that meet our selection criteria, Japan and Russia had more than one reform event. Japan experienced a reduction in creditor rights in 2000 when the Corporate Reorganization Law prohibited the enforcement of collateral rights outside reorganization. A few years later in 2003, however, creditor rights increased in Japan with amendments in Civil Rehabilitation Law that improved enforcement of collateral rights. To cleanly identify the effect of the more recent event, we exclude the earlier event and observations on Japanese firms' borrowing before the year 2000. However, our results are not sensitive to including these observations in our sample. Russia also experienced two events - one in 1998 and the other in 2002. While Russia enacted bankruptcy law reforms in 1998, the effects were subverted and evidence suggests that regional politics affected judicial decisions and led to weak enforcement of the 1998 law. In 2002, Russia substantially amended its laws on insolvency which improved creditor rights. Evidence shows that enforcement of the law began only after Putin's federalism drive in 2004. We include the 2002 event for Russia but

drop the 1998 event. However, our results are robust to dropping Russia altogether from the sample.

— Table 1 about here —

In panel A of Table 1, we present the six legal reform events that survive these selection criteria. Three of these events reflect an increase in creditor rights and the other three reflect a decline. The countries that strengthened creditor rights are Japan in 2003, Russia in 2002 and Spain in 2004. The three countries that weakened their creditor rights are Indonesia in 1998, Sweden in 1995 and Thailand in 1999. The control group consists of all non-reforming countries and countries that are not treated up until the event year. We provide a list of these countries along with the number of loan observations in panel B of Table 1. Therefore, some countries belong to both the treatment and control groups at different points in time.

Table 1 also provides a distribution of observation across both reforming and non-reforming countries. While a significant fraction of the sample loans comes from the U.S. which is one of the non-reforming countries, it does not bias our results. We confirm this by re-estimating the key tests without the U.S. firms. These results (reported later in Table 8) show that our findings are not sensitive to including or not including the U.S. in the control group.

2.2 Data

The loan data are collected from the Dealscan database compiled by the Loan Pricing Corporation (LPC). The sample period is from 1994 to 2009. The sample starts in 1994 as LPC's coverage of loans is scant in the pre-1994 period. We end the sample in 2009 as it corresponds to five years after the last legal reforms in our sample in 2004.

The analyses are performed at the tranche level. As indicated earlier, we exclude coun-

tries with fewer than 30 loans. Further, we exclude inter-bank loan transactions and loans with a missing facility, deal and lender information. To determine whether a loan is a relationship loan or an arm's length loan, we first identify lead lenders for each loan facility. For most loans, Dealscan identifies lead arrangers in a loan (the variable "Lead Arranger Credit" has a value of "Yes"). However, if no syndicate member is identified as a lead arranger, then we categorize lenders in any of the following 28 categories as lead banks: "Admin agent", "Agent", "Arranger", "Bookrunner", "Chief commissioned bank", "Co-agent", "Co-arranger", "Co-lead arranger", "Co-lead manager", "Co-lead underwriter", "Coordinating arranger", "Facility agent", "Facility arranger", "Joint arranger", "Joint lead manager", "Lead arranger", "Lead bank", "Lead manager", "Lead participant", "Lead underwriter", "Managing agent", "Mandated arranger", "Senior arranger", "Senior co-arranger", "Senior co-lead manager", "Sole lender", "Structure arranger", and "Syndications agent". If none of the lenders for a given facility falls into these 28 categories, we estimate the proportion of lending by each bank in the syndicate and then take the bank with the largest share as the lead bank.

We allocate facility amounts to this list of lead banks. If the facility has only one lead bank, then the entire facility amount is allocated to this lead bank. When there are multiple lead banks, each bank is allocated an equal proportion of the facility. We then estimate the market share of each bank in a country in a given year and keep those banks that fall in the top 99^{th} percentile. This generates a list of 7,817 unique lead banks. We then match these banks with the SDC M&A database and identify their parents after they were acquired. Thus, lending relationships are traced back to banks that existed at one point but were eventually acquired.

To measure the strength of relationship lending and classify a loan as relationship-based or arm's length, we follow Bharath, Dahiya, Saunders, and Srinivasan (2011) and construct three alternative relationship measures. In particular, we search for all previous loans (over

the previous five years) of a particular borrower as recorded in the LPC database and note the identity of the lead banks in these prior loans. If at least one of the lead banks for a given loan had been a lead lender in the past five years, we classify that loan for firm i at time t as a relationship loan with the variable $\text{REL}^{Dum}_{5yr\ i,t}$ taking a value of one (and zero otherwise).

The other two measures of relationship strength are based on the fraction of lending by banks that have lent at least once before to the same borrower in the last five years. Thus, we define $\text{REL}^{Amt}_{5yr\ i,t}$ as the fraction of loans by the relationship lenders to the borrower in the last five years divided by total loans received by the borrower over the same time period. This variable captures the share of financing coming from relationship lenders in all financing raised by the company in the previous five years. The third measure of relationships ($REL^{Num}_{5yr\ i,t}$) is based on the number of loans made by a particular bank to the borrower as a fraction of the total number of loans received by that borrower in the last five years. To examine if our results are sensitive to our choice of the five-year window, we re-estimate all three relationship measures by going back only three years and measuring relationships over this shorter time period.

2.2.1 Borrower Characteristics

The borrower characteristics are obtained from the Worldscope database. We exclude financial services firms (SIC between 6000 and 7000) and only include those firms with positive (or non-missing) sales, assets, and market capitalization. We match Dealscan borrowers to Worldscope using an algorithm that matches firms and borrowers based on similarity of character strings in company names.[4] In a second step, we manually review this list to retain only those observations that are a close match. This leaves us with a sample of 27,419

[4]Prior to matching, we exclude bank borrowers.

unique tranche level transactions over the period from 1994 to 2009. These transaction span 39 countries with 6,894 unique borrowers and with 57% of the loans classified as relationship loans.

With the matched sample, we construct firm-level variables using the financial statement data in Worldscope that we later use as controls in our analyses. Specifically, we control for logarithm of assets, tangibility, leverage, profitability, market-to-book ratio, and a dividend payer dummy. These variables are defined in Appendix Table 1.

— Table 2 about here —

Table 2 reports the mean values of the key borrower (in Panel A) and country characteristics (in Panel B) for the treatment and control firms separately depending on whether creditor rights strengthened ($IncCR$) or weakened ($DecCR$). The relationship strength based on the amount of loans by relationship lenders to borrowers in non-reforming countries averages between 46% and 48%. If excessive liquidation is a concern, then we expect borrowers to switch from arm's length lenders to relationship lenders in reforming countries where creditor rights strengthen. We expect the opposite for borrowers in countries where creditor rights weaken. Because we take sample averages, we expect the relationship strength of borrowers in countries strengthening creditor rights to be larger compared to those of borrowers in non-reforming countries. Likewise, we expect the average relationship strength in countries that have weakened creditor rights to be lower. Indeed, the results support these predictions. The average relationship strength of borrowers in countries with an increase in creditor rights is 0.64 versus 0.46 for borrowers in non-reforming countries. Also consistently, the average relationship strength of borrowers in countries that have weakened creditor rights is 0.33 versus 0.48 for borrowers in non-reforming countries. Both of these differences in means are statistically significant at the 1% level.

We find that borrowers are larger, less profitable, and have fewer tangible assets in countries that have strengthened creditor rights compared to borrowers in non-reforming countries. On the other hand, borrowers in countries that weakened creditor rights are smaller, more profitable, and have more tangible assets compared to control borrowers. We find no difference in leverage between treatment and control borrowers for countries that increased creditor rights. However, for countries that weakened creditor rights, leverage of treatment firms is significantly greater than that of control firms. The borrowers in treatment countries have smaller current ratio and fewer growth opportunities as measured by the market-to-book ratio. We account for these differences by explicitly controlling for firm characteristics in our tests. Similarly, we control for time-varying country characteristics, specifically the S&P country rating and the log of GDP per capita in our specifications.

2.3 Primary Specification

We employ a DID approach as we want to compare changes in relationship lending amounts after the event in reforming countries (treatment group) and non-reforming countries (control group). Using loan-level observations, we test the following specification:

$$REL^{Amt}_{5yr\ ijcrt} = \alpha_0 + \beta IncCR \times Post + \gamma DecCR \times Post + \delta X_{it-1} + \eta Z_{ct-1} + \alpha_c + \kappa_{jt} + \omega_{rt} + \epsilon_{ijcrt} \quad (1)$$

where subscript i refers to the firm, j refers to the three-digit SIC industry, c refers to the country, r refers to the geographical region based on World Bank Classification and t refers to year. Here, *Post* is an indicator variable that takes a value of one for the years after the change in creditor rights and is otherwise zero. This variable captures the first difference in relationship lending around reforms that changed creditor rights. We compare

this *within-country* change in relationship lending in reforming countries to changes in other countries where there was no reform (second level of difference).

We, therefore, define two indicator variables to identify countries that have seen a change in creditor rights–one for an increase in creditor rights ($IncCR$) and the other for a decrease in creditor rights ($DecCR$). The coefficient on the interaction terms $IncCR \times Post$ and $DecCR \times Post$ captures the treatment effect. The year and country fixed effects are given respectively by α_t and α_c. To address concerns that changes in creditor rights may be correlated in a systematic manner with firm or country characteristics which may explain relationship lending, we include control variables. Borrower-specific control variables are specified in $X_{i,t-1}$. These include logarithm of real assets (in USD), tangibility, leverage, profitability, market-to-book ratio, and a dividend payer dummy. Macroeconomic variables are specified in Z_{ct-1}. These include an annual country rating by S&P (on a scale of 1 to 22 where 1 is equivalent to D and 22 is equivalent to AAA) and the log of gross domestic product (GDP) per capita. To ensure our inclusion of control variables does not bias our estimates, we lag the control variables by a year. Including control variables helps explain some of the residual variation in the outcome variable and improves the efficiency of our estimates. Thus, we present specification both with and without borrower and country-level controls.

OLS estimation in a cross-country setting may be biased if unobservable common country components exist as the loans in a given country cannot be treated as independent observations. The residuals are correlated and OLS standard errors may be biased. Thus, it is important to report clustered standard errors to account for correlations within a cluster (see Petersen (2009) and Bertrand and Mullainathan (2003)). Hence, for all of our analyses standard errors are clustered at the country level to capture correlation among loans within a country.

A similar research design has been used in several previous studies, most notably in Bertrand and Mullainathan (2003). The multiple pre- and post-interventions alleviate many concerns that may otherwise threaten validity. The methodology is best illustrated by way of an example. Suppose two countries, P and Q, are undergoing legal reforms at time *t=1* and *t=2* respectively. Consider *t=0* as the starting period of our sample. For the time period between *t=1* and *t=2*, country Q serves as the control group for legal reform; after that it serves as the treated group. Therefore, countries in the sample belong to both the treatment and control groups at different points in time. This specification is robust to the fact that one of the groups might not be treated at all, or that the other group was treated before 1994, which is our sample's start date.

Our central identifying assumption is that changes in creditor rights are not driven by unobserved factors that may also be driving the decision to obtain relationship loans as opposed to arm's length loans. We conduct a host of robustness tests to alleviate endogeneity and reverse causality concerns.

3 Results

3.1 Creditor Rights and Relationship Lending

3.1.1 Graphical Representation

We begin by plotting coefficient estimates from a fully saturated model that tests if changes in creditor rights affect relationship lending for firms that borrowed both before and after the creditor rights reform. The staggered nature of these changes permits us to identify the effect of legal reforms within this sample. Specifically, we estimate the following fully saturated model using OLS and plot the estimated coefficients along with a 95% confidence interval around this estimate.

$$REL^{Amt}_{5yr\ ijcrt} = \alpha + \sum_{k=2}^{4} \beta_{-k} Before^{-k}_{ct} + \sum_{k=0}^{4} \beta_k After^{k}_{ct} + \delta X_{it-1} + \eta Z_{ct-1} + \alpha_i + \kappa_{jt} + \omega_{rt} + \epsilon_{ijcrt} \tag{2}$$

where subscript i refers to the firm, j refers to the three-digit SIC industry, c refers to the country, r refers to the geographical region based on World Bank Classification and t refers to year. $Before^{-k}_{ct}$ ($After^{k}_{ct}$) is a dummy variable that takes a value one if the year is "k" years before (after) the change in creditor rights and zero otherwise. Since we have few firm year observations more than four years before the first legal change, and more than four years after the last legal change, we have one dummy variable each for multiple years at the two endpoints. That is, $Before^{-4}_{i,t}$ equals one if the year is four or more years before the passage of legal reforms, and $After^{4}_{ct}$ equals one if it is four or more years after the change in creditor rights.

The model is fully saturated with the year immediately before the passage of legal reform as the excluded category. Therefore, the coefficients on $Before^{-k}_{ct}$ ($After^{k}_{ct}$) compare the level of the dependent variable k years before (after) with that in the year immediately before the change in creditor rights. We stop at $After^{4}_{i,t}$ because the difference remains for at most five years, and most of our effects manifest within these five years. Figure 1 shows a significant increase in relationship lending following the strengthening of creditor rights in a country.

— Figure 1 about here —

We demonstrate the effect of a *decrease in creditor rights* on relationship lending in Figure 2. To generate this figure, we once again estimate Equation 2 using OLS and plot the estimated coefficients $\beta_{\pm k}$ for the period from four years before to four years after the passage of legal reforms that weakened creditor rights (excluding the year immediately before). The figure shows that, on average, relationship loans decline for firms operating in countries that

weakened their creditor rights (after differencing out a sample of otherwise similar control firms).

— Figure 2 about here —

We also address another concern with DID analysis which is that serial correlation could bias standard errors leading to over-rejection of the null hypothesis of no effect (Bertrand, Duflo and Mullainathan (2004)). We implement a nonparametric permutation test for β_k=0. In this test, we randomize the assignment of legal reform years across all countries in our final sample and test the validity of our results.

We begin by assigning three country-year pairs at random from our sample of 39 countries over a 16-year period to construct a sample of improved creditor rights with randomized treatments. We then similarly assign three country-year pairs at random to construct a sample of reduced creditor rights with randomized treatment. We repeat this procedure 5,000 times to obtain 5,000 randomized samples in each case. In each of the samples, we estimate the following equation and save the relevant coefficients.

$$REL^{Amt}_{5yr\ ijcrt} = \alpha + \sum_{k=2}^{4} \beta_{-k} Before^{-k}_{ct} + \sum_{k=0}^{4} \beta_k After^{k}_{ct} + \delta X_{it-1} + \eta Z_{ct-1} + \alpha_c + \gamma_t + \epsilon_{ijcrt} \quad (3)$$

We then define G(β_k) to be the empirical cumulative distribution function of these estimated placebo effects. The statistic G(β_k) gives a p-value for the hypothesis that $\beta_k = 0$. Figure 3 provides the results of the permutation test by plotting the empirical distribution of placebo effects G for increased creditor rights.

— Figure 3 about here —

Similarly, in Figure 4, we plot the empirical distribution of placebo effects G for decreased

creditor rights. This figure shows that the coefficients for increases and decreases in creditor rights in our placebo sample do not lie at the tails of the placebo distribution.

— Figure 4 about here —

Thus, the effect that we observe in subsequent analyses cannot be attributed to a random assignment of events to a country-year pair. As the test does not make parametric assumptions about the underlying error structure, the over-rejection bias of the t-test is of no concern here (see Chetty, Looney, and Kroft (2009) for details).

3.1.2 Multivariate Analysis

Our main results are reported in Table 3. The table presents estimates of Equation 1 from four different specifications. The specification in column (1) does not include time-varying firm and country characteristics but controls for country- and year-fixed effects. In column (2), we additionally control for time-varying firm and country characteristics. The firm-level controls include the log of assets, leverage, profitability, tangibility, a dividend payer dummy, and the market-to-book ratio. The country variables include the country S&P rating and the log of GDP per capita. Column (3) additionally controls for time-varying industry characteristics by including industry $\times$ year fixed effects. Finally, in column (4), we additionally control for time-varying regional characteristics by including region $\times$ year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa.

The results are consistent across all four specifications and indicate that the coefficient on $IncCR \times Post$ is positive and significant while that on $DecCR \times Post$ is negative and

significant. This shows that following a legal reform that strengthens creditor rights, relationship lending increases significantly. By contrast, a reform that weakens creditor rights results in lower relationship lending.

— Table 3 about here —

In terms of economic magnitudes, our baseline specification in column (1) suggests that the passage of legal reforms that strengthened creditor rights increased the amount of relationship loans by about 0.13 in the year of the reform relative to the year before. This represents a 27% (0.13/0.48) increase in relationship loans (since the sample average of relationship loans in the year before the reform is 48%). These results provide evidence that the creditor rights reforms have a sizeable and persistent effect on relationship lending. The passage of the legal reforms that weakened creditor rights also resulted in a substantial decline in relationship loan amounts. Column (1) suggests that they dropped by 0.21 following the reform compared with the year before relative to firms in countries with no reforms. This represents a 44% (0.21/0.48) decrease from the sample average of relationship loans before the passage of new laws.

We interpret these results as evidence that increases in creditor rights cause firms to switch to relationship lenders to avoid the excessive liquidation bias of arm's length lenders.

3.2 Matched Sample

The results so far show that firms switched to relationship lenders when creditor rights strengthened and to arm's length lenders when creditor rights weakened. The fact that we have many more observations in our control group than in the treatment group (as shown in Table 1) means that we have an unbalanced sample. While it is not clear how this biases our findings, we nevertheless address possible concerns by constructing a matched sample.

Thus, for each loan observation in a treated country, we find a control observation representing a loan taken out by a firm in one of the non-reforming country that is in the same geographic region as the treated country and has the closest GDP per capita. We further require that the control firm be in the same three-digit SIC industry as the treated firm and to have borrowed in the same year. In case of multiple matches, we select the firm that is closest in terms of asset tangibility (within 100% difference).

We use this matched sample to estimate Equation (3). The sample is substantially reduced because of the matching, but the results are highly similar to those we reported in Table 3. In column (1), we report estimates from a specification that includes country, industry × year, and region × year fixed effects. We find a positive and statistically significant coefficient on $IncCR \times Post$ suggesting that firms in countries that strengthened their creditor rights had a greater propensity to obtain loans from relationship lenders than a matched sample of firms in non-reforming countries operating in the same industry, located in the same region and borrowing in the same year. Consistently, the coefficient estimate on $DecCR \times Post$ is significantly negative suggesting that firms in countries that weakened their creditor rights had a lower propensity to obtain relationship loans. The effects are significant at the 10% level.

— Table 4 about here —

In column (2), we additionally include time-varying firm and country controls. As indicated earlier, these include the log of assets, leverage, profitability, tangibility, a dividend payer dummy, and the market-to-book ratio. The country variables include the country S&P rating and the log of GDP per capita. We lag all of the control variables by one period. These results show that the coefficient estimate on the interaction between $IncCR$ and $Post$ is positive but not significant at the conventional levels. By contrast, the coefficient estimate

on $DecCR \times Post$ is negative and highly significant. Overall, our findings from the matched sample are consistent with those reported earlier.

3.3 Within-borrower Changes in Relationship Lending

We can provide a sharper test by examining within firm changes in borrowing from relationship lenders to arm's length lenders or the other way around. This allows us to study the effect of changes in creditor rights on the individual firm's decision to switch from one type of lender to the other. More specifically, we estimate Equation 1 by additionally including borrower fixed effects.

— Table 5 about here —

We present the results in Table 5. Overall, the results are consistent with those reported earlier in Table 3. We once again find that changes in creditor rights resulted in within-firm changes in the choice of the type of lender in a direction that is consistent with our earlier findings. If anything, we find that the coefficient estimates are larger when borrower fixed effects are included.

4 Robustness

In this section, we present results from various additional tests to examine the robustness of our key findings.

4.1 Specification

By construction, our dependent variable is censored between [0,1]. We therefore report estimates from Tobit regressions in Table 6. Columns (1) and (2) report DID estimates of the

effects of changes in creditor rights on relationship lending. Results from these regressions yield similar conclusions and concur with our baseline results. They show that an increase in creditor rights leads to firms increasing their reliance on relationship loans, while a decrease in creditor rights reduces the propensity to borrow from relationship lenders.

— Table 6 about here —

4.2 Alternative Definitions

Next, we consider different definitions for our dependent variable and report estimates from regressions in Table 7. Based on Bharath, Dahiya, Saunders, and Srinivasan (2011), we consider six measures: (a) amount of loans borrowed from the same lender as a fraction of total loans borrowed in the past three or five years (Amt), (b) number of loans borrowed from the same lender as a fraction of the total number of loans taken out in the past three or five years (Num), and (c) a dummy variable which takes the value of one if the borrower had previously borrowed from the same lender in the past three or five years (Dum). The left panel (columns (1)-(3)) reports estimates of the effects of changes in creditor rights on relationship lending for a five-year relationship across different definitions while the right panel (columns (4)-(6)) reports estimates for a three year relationship. Results from these regressions yield similar conclusions with economic magnitudes of the estimates highly similar to our baseline results.

— Table 7 about here —

4.3 Excluding the U.S.

We further test whether the sample may be biased because of the inclusion of the U.S. in our sample by performing an additional robustness test on a subsample excluding the

U.S. We report estimates in Table 8. We find results that are qualitatively similar to those obtained with the full sample.

— Table 8 about here —

4.4 Further Sample Restrictions and Macro Variables

We re-estimate our baseline regression on various other samples and augment it with additional variables. We do this to address concerns about the long list of countries in the control group, countries with multiple events, the effect of the Asian financial crisis, and additional time-varying country variables that may be missing in our earlier specifications. We present these results in Table 9.

In column (1), we address the issue that many countries in the control group have fewer than 149 loan observations, which is the smallest number of loans in a reforming country. The concern is that including as controls many more countries with a few loan observations (even though these countries meeting our threshold of at least 30 loans) than countries with many loan observations somehow biases our results. Thus, in column (1) we restrict the control group to those countries with at least 149 observations and re-estimate the baseline specification with time-varying firm and country controls, country fixed effects, industry $\times$ year and region $\times$ year fixed effects.

In column (2), we examine the robustness of our findings by excluding all firms headquartered in Russia. The reason is that Russia has had many legal reforms, and we include only the most recent reform in 2002. In column (3), we additionally include observations on Japanese firms' borrowing before the year 2000, which is when a previous legal reform took place in Japan. Column (4) controls for the effects of the Asian financial crisis for firms located in Indonesia, Thailand, and Japan by adopting a borrower fixed effects specification and interacting the crisis dummy with the time dummies.

— Table 9 about here —

In panel B of Table 9, we test the sensitivity of our estimates to country-specific variables by including additional country-specific macroeconomic variables in the baseline regressions presented in Table 3. Three different macroeconomic variables are studied: (i) the ratio of the stock market-traded value to GDP, (ii) the ratio of credit extended to the private sector to GDP, and (iii) the consumer price index (CPI). In addition to time-varying firm and country characteristics, these specifications include country fixed effects, as well as industry $\times$ year and region $\times$ year fixed effects. Overall, our results are robust. All of the estimates presented in Table 9 yield qualitatively similar results to those reported earlier.

5 Conclusion

The role of strong relationships between lenders and borrowers has been actively researched in both the theoretical and the empirical literature. In this paper, we examine the channel through which laws affecting creditor rights determine the extent of relationship lending in a country. We examine the interaction between creditor rights and relationship lending by exploiting country-level variations in creditor rights induced by legal reforms. The results show that relationship lending increases significantly after increases in creditor rights. This is consistent with the view that stronger creditor rights reduce demand for loans from arm's length lenders because of the latter's greater liquidation bias. Firms switch to relationship lenders as creditor rights become stronger to avoid the possibility of excessive liquidation that comes with borrowing from arm's length lenders. We find that the presence of relationship lenders and the scale of relationship lending are both positively related to legal protection.

Overall, our results are consistent with strong legal protection increasing the threat of

excessive liquidation causing firms to switch to relationship lenders. While previous research has focused on the effect of creditor rights on the structure of loan contracts and the amount of credit, we show that creditor rights also determine the types of lenders used.

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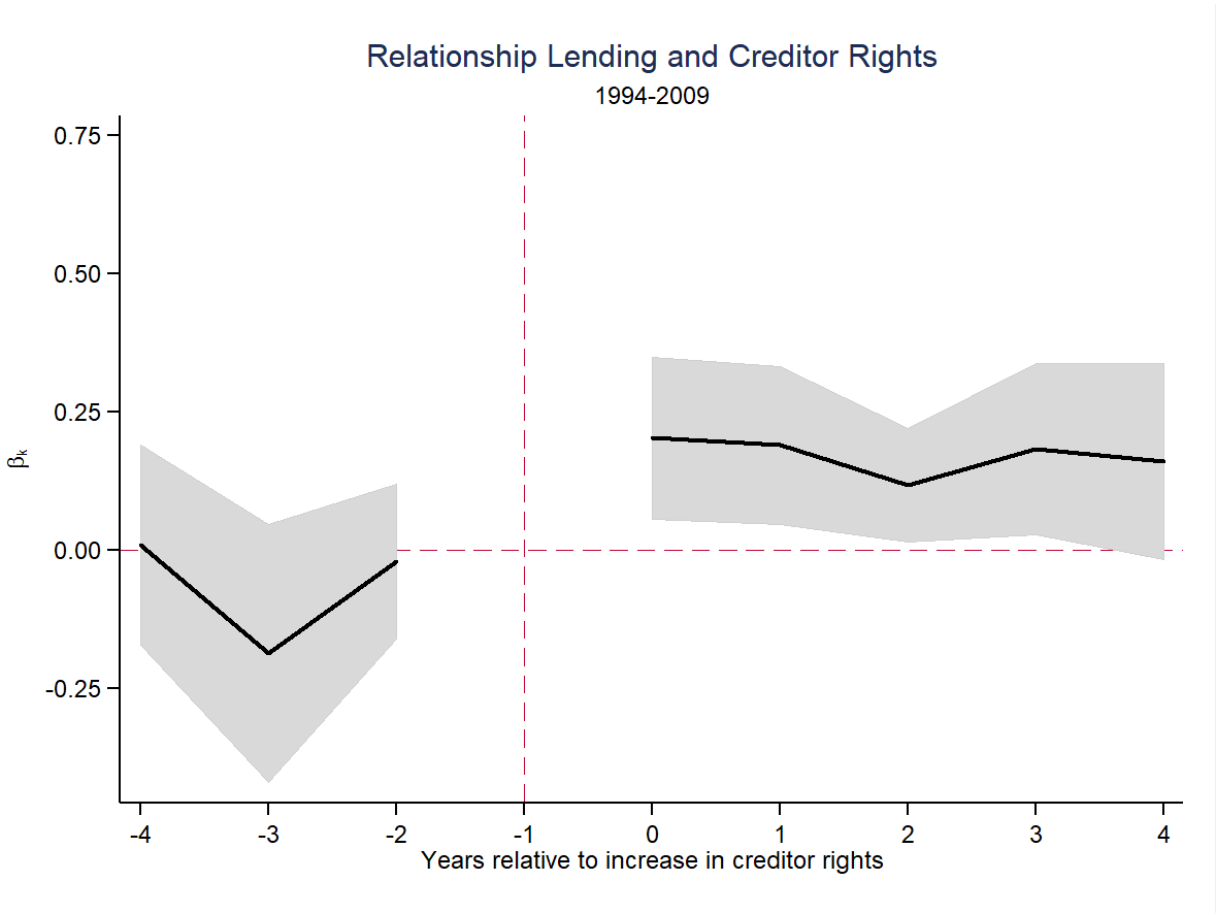

Figure 1: Relationship lending around increases in creditor rights

The above figure plots the changes in relationship lending amounts around the passage of laws strengthening creditor rights. The figure shows how borrower firms respond to the passage of legal reforms. We estimate Equation 2 in an OLS framework as in column 4, Table 5 and plot the estimated coefficients for β_{ct}^{k} along with 95% confidence intervals around this difference. The model is fully saturated with the year immediately before the law change as the excluded category. Therefore, the coefficients on $Before_{ct}^{-k}$ ($After_{ct}^{k}$) compares the change in the dependent variable for each borrower, k years before (after) with that in the year immediately before the change in creditor rights.

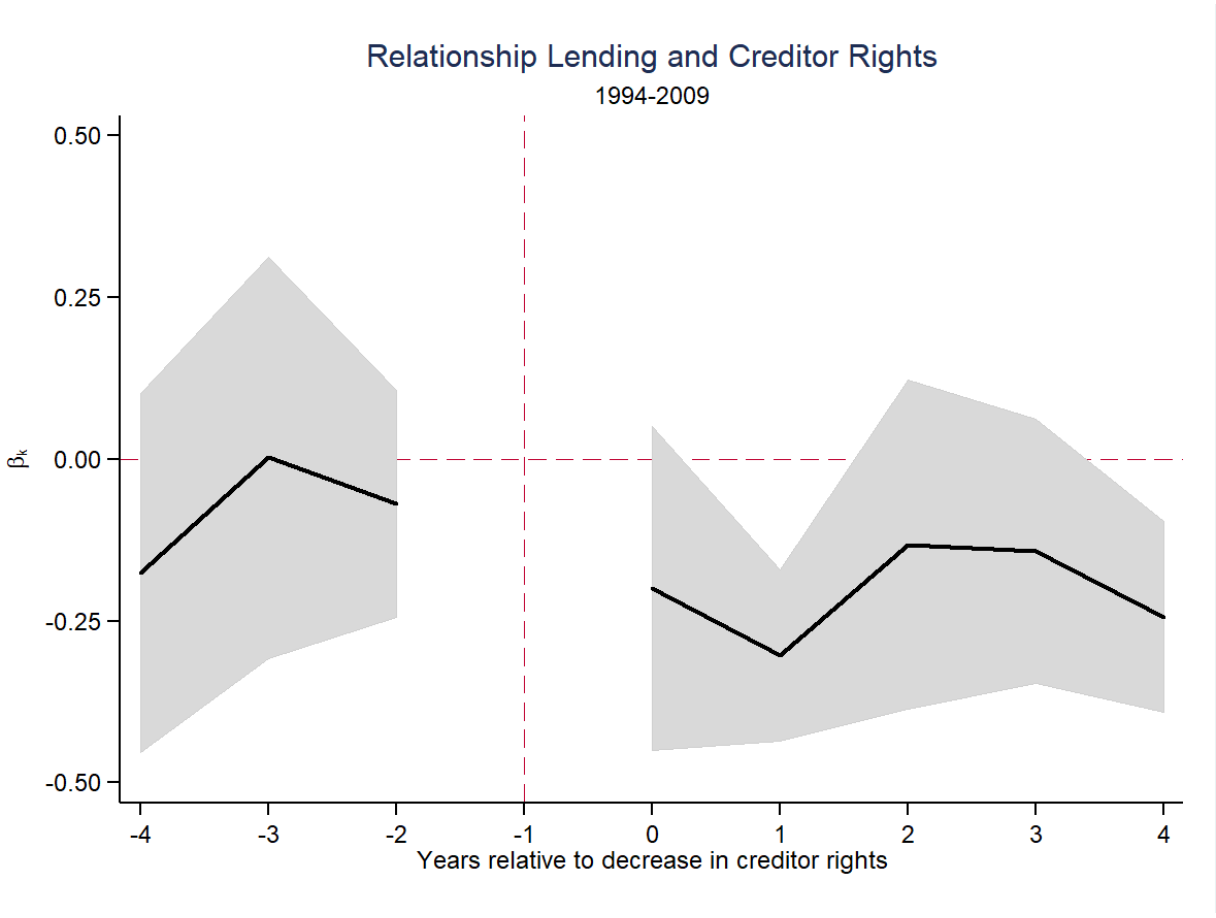

Figure 2: Relationship lending around decreases in creditor rights

The above figure plots the changes in mean relationship lending amounts around the passage of laws weakening creditor rights. The figure shows how borrower firms respond to the passage of legal reforms. We estimate Equation 2 in an OLS framework as in column 4 of Table 5 and plot the estimated coefficients for β_{ct}^{k} along with 95% confidence intervals around this difference. The model is fully saturated with the year immediately before the law change as the excluded category. Therefore, the coefficients on $Before_{ct}^{-k}$ ($After_{ct}^{k}$) compares the change in the dependent variable for each borrower, k years before (after) with that in the year immediately before the change in creditor rights.

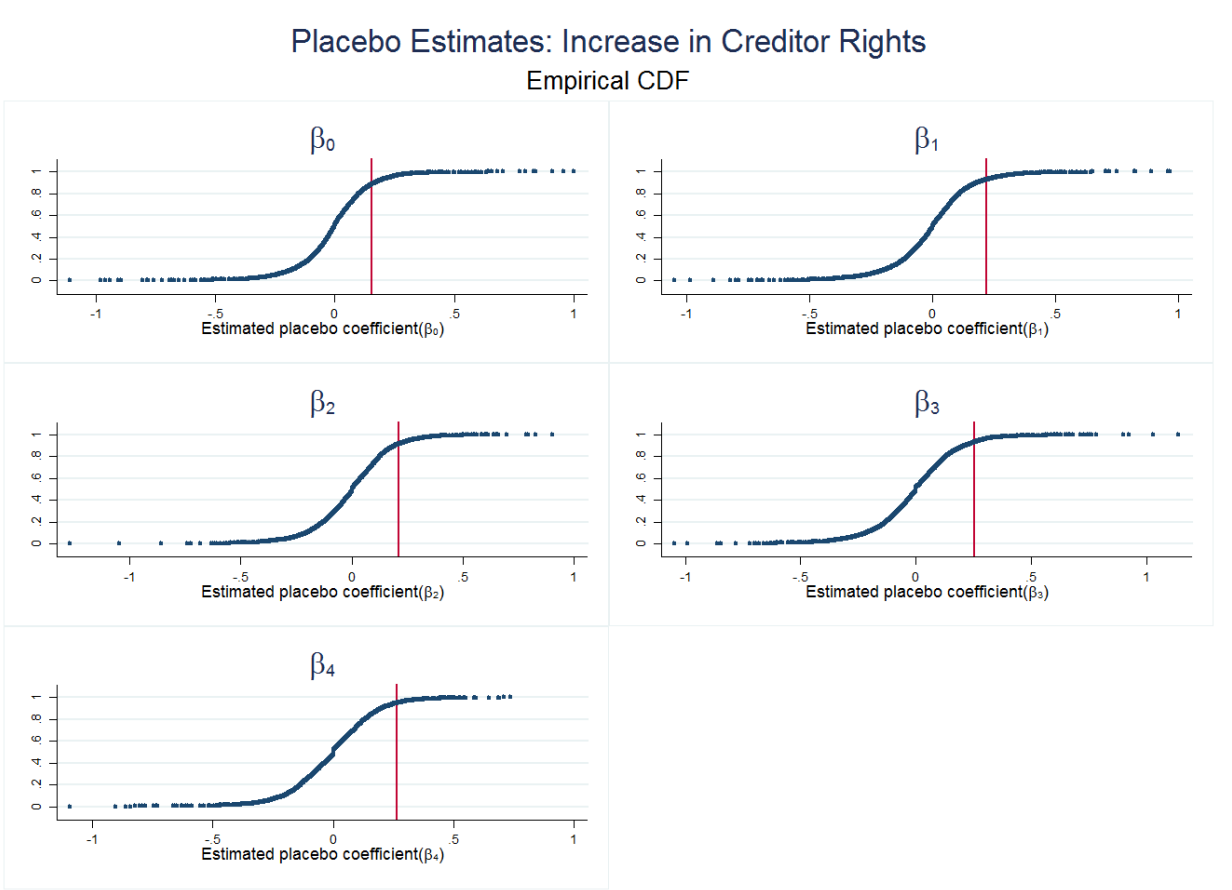

Figure 3: Distribution of Placebo Estimates: Relationship Loans and Increases in Creditor Rights

This figure plots the empirical distribution of placebo effects for relationship loans. The cumulative distribution function(CDF) is constructed from 5000 estimates of β_k (k=0,1,2,3,4) using the specification in Equation 3. No parametric smoothing is applied: the CDF is smooth because of the large number of points used to construct it. The vertical red line shows the treatment effect estimate.

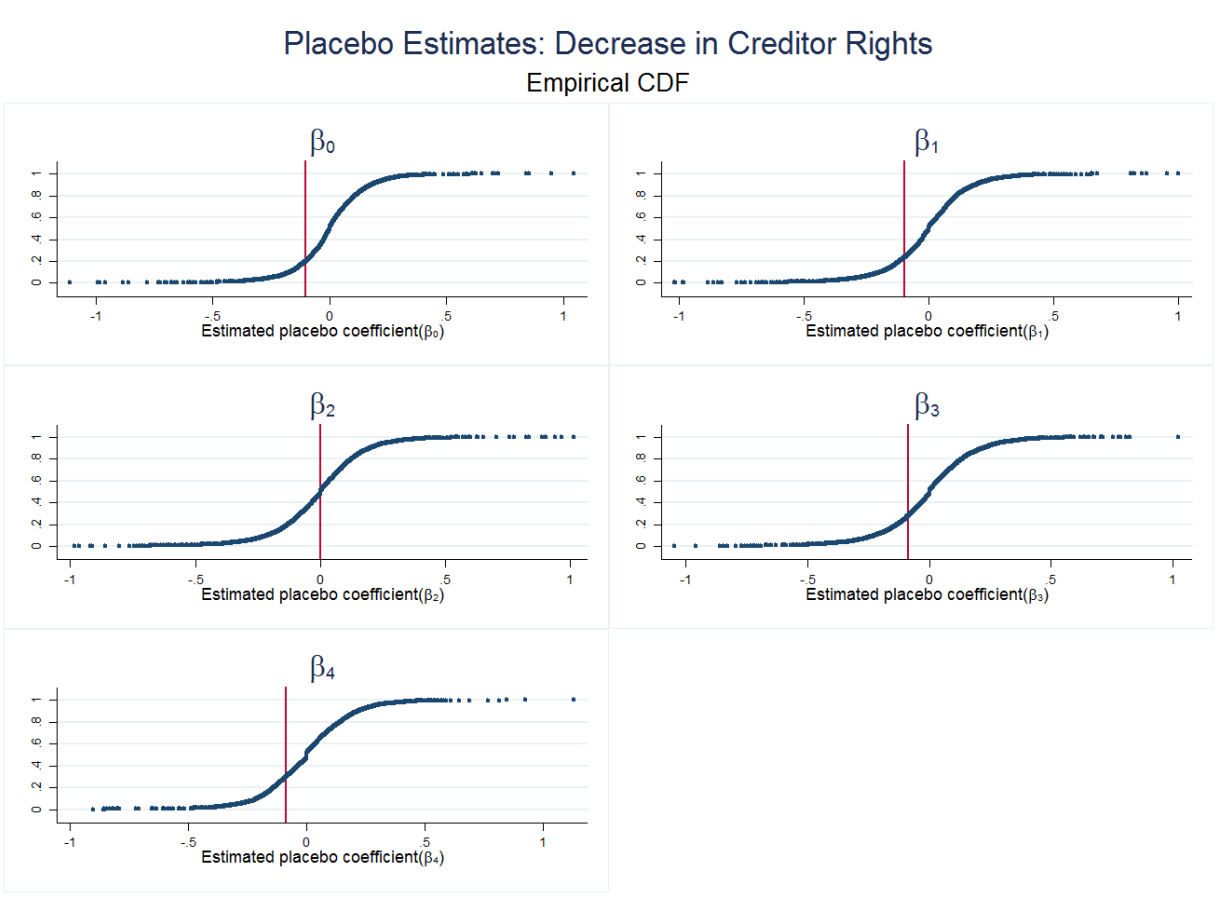

Figure 4: Distribution of Placebo Estimates: Relationship Loans and Decreases in Creditor Rights

This figure plots the empirical distribution of placebo effects for relationship loans. The CDF is constructed from 5,000 estimates of β_k (k=0,1,2,3,4) using the specification in Equation 3. No parametric smoothing is applied: the CDF is smooth because of the large number of points used to construct it. The vertical red line shows the treatment effect estimate.

Table 1: List of countries

This table provides the list of countries in our sample. Panel A reports countries reforming creditor rights while panel B reports other countries. We start with the list of countries in our sample that recorded a change in the creditor rights index as measured in Djankov, McLeish and Shleifer (2007). We retain those events that occurred during our sample period and have at least 30 observations. Japan and Russia underwent several reforms. We code treatment as the most recent change in our sample. The year in which the creditor rights index changed is indicated in the column titled "Year". The number of observations in our sample is indicated in the column titled "Obs.". *Increase* and *Decrease* denote reforms that increased and decreased creditor rights respectively. The column titled "Details" outlines changes in the components of the creditor rights index. $NOAUTOSTAY$ measures whether secured creditors are able to seize their collateral once a reorganization petition is approved. $SECUREDPRI$ measures whether secured creditors are paid first out of the proceedings of liquidating a bankrupt firm or if third-party claims take priority. $CRDMANAGES$ measures whether creditors or an administrator is responsible for running the business during reorganization, rather than the debtor.

Panel A: Reforming Countries

Country	**Obs.**	**Year**	**Inc/Dec**	**Details**
Indonesia	182	1998	*Decrease*	ΔNOAUTOSTAY = -1
Japan	2,889	2003	*Increase*	ΔNOAUTOSTAY = +1
Russia	149	2002	*Increase*	ΔCRDMANAGES = +1
Spain	208	2004	*Increase*	ΔSECUREDPRI = +1
Sweden	176	1995	*Decrease*	ΔCRDMANAGES = -1
Thailand	284	1999	*Decrease*	ΔNOAUTOSTAY = -1
Total	3,888			

Panel B: Non-reforming Countries

Country	**Obs.**	**Country**	**Obs.**
Argentina	52	Korea (South)	370
Australia	852	Malaysia	268
Belgium	69	Mexico	166
Bermuda	56	Netherlands	303
Brazil	213	New Zealand	155
Canada	1,285	Norway	179
Chile	74	Philippines	124
China	150	Poland	43
Denmark	38	Saudi Arabia	32
Finland	124	Singapore	330
France	681	South Africa	45
Germany	437	Switzerland	154
Greece	88	Taiwan	1,162
Hong Kong	520	Turkey	66
India	426	USA	13,287
Ireland	91	United Kingdom	1,443
Italy	248		
Total			23,531

Table 2: Descriptive Statistics

This table reports key borrower and country characteristics for loans in our sample for the period from 1994 to 2009. We present the mean for the treatment, the control and the difference in means. Columns (1) through (3) present statistics for increases in creditor rights ($IncCR$) while the columns (4) through (6) present statistics for decreases ($DecCR$). Columns (3) and (6) report the difference in means for the treatment and control firms for the $IncCR$ and $DecCR$ samples respectively. Panel A presents the mean values for borrower-specific characteristics while panel B provides details on country characteristics. The variables are defined in Appendix Table 1. All ratios are winsorized at the 1% and 99% levels. *** indicates significance at the 1% level.

	$IncCR$			$DecCR$		
	Treatment	Control	Difference	Treatment	Control	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Borrower characteristics			
REL_{5yr}^{Amt}	0.64	0.46	0.18***	0.33	0.48	-0.15***
Assets(US$Mil.)	12852	6461	6391***	3176	7231	-4055***
Leverage	0.33	0.33	0.00	0.39	0.33	0.06***
Profitability	0.10	0.15	-0.05***	0.19	0.14	0.05***
Tangibility	0.33	0.38	-0.04***	0.42	0.37	0.04***
Current ratio	1.40	1.71	-0.31***	1.45	1.68	-0.23***
Market-to-book	1.22	1.69	-0.47***	1.46	1.64	-0.18***
			Panel B: Country characteristics			
Log(GDP per capita)	10.41	10.04	0.37***	8.80	10.11	-1.30***
S&P rating	3.59	2.22	1.37***	6.63	2.26	4.36***

Table 3: Relationship Lending and Creditor Rights

This table presents the estimates from difference-in-differences regression of changes in creditor rights on relationship lending for a sample of 39 countries from 1994 to 2009. The estimates are based on Equation 1. In column (1), we test its effect without controlling for firm and country characteristics but include country and year fixed effects. In column (2), we additionally control for firm and country characteristics. In column (3), we replace year fixed effects with interactive industry (three-digit SIC) × year fixed effects. In column (4), we control for both industry (three-digit SIC) × year fixed effects, and geographic region × year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa. All regressions include country fixed effects. Standard errors are clustered at the country level and reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% respectively.

	(1)	(2)	(3)	(4)
IncCR × Post	0.130***	0.173***	0.188***	0.089**
	(0.038)	(0.039)	(0.049)	(0.037)
DecCR × Post	-0.213***	-0.139***	-0.151***	-0.121***
	(0.063)	(0.047)	(0.045)	(0.039)
Controls	No	Yes	Yes	Yes
Country f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	No	No
Industry × year f.e.	No	No	Yes	Yes
Region × year f.e.	No	No	No	Yes
R^2	0.094	0.17	0.33	0.34
Observations	27,419	23,382	22,725	22,720

Table 4: Relationship Lending and Creditor Rights - Matched sample

We create a matched sample. In each year, we find a control country in the same geographic region with the closest GDP per capita to that of the treated firm's country. To create the control sample we drop the six countries that are treated because of changes in creditor rights in our sample period. In each year, for firms in the treated country, we match corresponding firms in the control country that are operating in the same three-digit SIC industry and borrowing in the same year. In the case of multiple matches, we select the firm that is closest in terms of tangibility of assets (but within 100% difference).

IncCR × *Post* (*DecCR*× *Post*) is an indicator representing countries passing legal reforms that increased (decreased) creditor rights. All regressions include country fixed effects, industry (three-digit SIC) × year fixed effects, and geographic region × year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa. In column (1), we test the effect of changes in creditor rights without any additional controls. In column (2), we control for firm and country characteristics. Standard errors are clustered at the country level and reported in parentheses. $*$,**, and *** indicate significance at 10%, 5%, and 1% respectively.

	(1)	(2)
IncCR × Post	0.095***	0.014
	(0.025)	(0.039)
DecCR × Post	-0.087*	-0.191***
	(0.049)	(0.061)
Controls	No	Yes
Country f.e.	Yes	Yes
Industry × year f.e.	Yes	Yes
Region × year f.e.	Yes	Yes
R^2	0.49	0.53
Observations	1,926	1,724

Table 5: Relationship Lending and Creditor Rights - Multiple borrowings

This table presents the estimates from difference-in-differences regression of changes in creditor rights on relationship lending for a sample of 39 countries from 1994 to 2009 for firms that borrowed multiple times, which allows us to include borrower fixed effects. The estimates in the columns are based on the following regression equation:

$$REL^{Amt}_{5yr\ ijcrt} = \alpha_0 + \beta IncCR \times Post + \gamma DecCR \times Post + \delta X_{it-1} + \eta Z_{ct-1} + \alpha_i + \alpha_t + \epsilon_{ijcrt}.$$

Here, subscripts i, c, and t refer to the firm, country, and year respectively. *IncCR* × *Post* (*DecCR*× *Post*) is an indicator representing countries passing legal reforms that increased (decreased) creditor rights. In column (1), we test its effect without any additional controls. In column (2), we control for firm and country characteristics. In column (3), we control for industry (three-digit SIC) × year fixed effects. In column (4), we control for industry (three-digit SIC) × year fixed effects, and geographic region*year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa. All regressions include borrower fixed effects. Standard errors are clustered at the country level and reported in parentheses. *,**, and *** indicate significance at 10%, 5%, and 1% respectively.

	(1)	(2)	(3)	(4)
IncCR × Post	0.198***	0.211***	0.236***	0.194***
	(0.036)	(0.034)	(0.035)	(0.058)
DecCR × Post	-0.223***	-0.155***	-0.203***	-0.163***
	(0.040)	(0.039)	(0.044)	(0.053)
Controls	No	Yes	Yes	Yes
Borrower f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	No	No
Industry × year f.e.	No	No	Yes	Yes
Region × year f.e.	No	No	No	Yes
R^2	0.53	0.55	0.66	0.67
Observations	25,387	21,505	20,806	20,798

Table 6: Relationship Lending and Creditor Rights - Tobit Specification

This table presents estimates from Tobit regressions of changes in creditor rights on relationship lending for a sample of 39 countries from 1994 to 2009. We estimate a Tobit specification based on the following regression equation:

$$REL^{Amt}_{5yr\ ijcrt} = \alpha_0 + \beta IncCR \times Post + \gamma DecCR \times Post + \delta X_{it-1} + \eta Z_{ct-1} + \alpha_c + \alpha_t + \epsilon_{ijcrt}.$$

Here, subscripts i, j, c, r, and t refer to the firm, industry, country, region, and year respectively. *IncCR*(*DecCR*) is an indicator representing countries passing legal reforms that increased (decreased) creditor rights. *Post* is an indicator that denotes the post-passage period. Standard errors are clustered at the country level and reported in parentheses. *,**, and *** indicate significance at 10%, 5%, and 1% respectively.

	(1)	(2)
IncCR × Post	0.495***	0.578***
	(0.096)	(0.093)
DecCR × Post	-1.038***	-0.687***
	(0.179)	(0.180)
Controls	No	Yes
Year FE	Yes	Yes
Country FE	Yes	Yes
R^2	0.094	0.165
Observations	27,419	23,382

Table 7: Relationship Lending and Creditor Rights - Alternative Definitions

This table presents the estimates from difference-in-differences regression of changes in creditor rights on relationship lending for a sample of 39 countries from 1994 to 2009. The following specification is estimated:

$$REL^{a}_{b\,ijcrt} = \alpha_0 + \beta IncCR \times Post + \gamma DecCR \times Post + \delta X_{it-1} + \eta Z_{ct-1} + \alpha_c + \kappa_{jt} + \omega_{rt} + \epsilon_{ijcrt}$$

where a represents one of three measures of relationship: (a) amount of loans borrowed from the same lender as a fraction of total loans borrowed in the past three or five years (Amt), (b) number of loans borrowed from the same lender as a fraction of the total number of loans borrowed in the past three or five years (Num), and (c) a dummy variable which takes the value of one if the borrower had previously borrowed from the same lender (Dum). The duration of relationship is represented by b, which could be three ($3yr$) or five years ($5yr$). Columns (1)-(3) report difference-in-differences estimates of the effects of changes in creditor rights on relationship lending for a five-year relationship duration across different definitions while columns (4)-(6) report difference-in-differences estimates of changes in creditor rights on relationship lending for a three-year relationship duration across different definitions. $IncCR \times Post$ ($DecCR \times Post$) is an indicator representing countries that passed legal reforms that increased (decreased) creditor rights. In all columns, we include country fixed effects, industry (three-digit SIC) × year fixed effects, and geographic region × year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa. Standard errors are clustered at the country level and reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

	Five years			*Three years*		
	REL^{Amt}_{5yr}	REL^{Num}_{5yr}	REL^{Dum}_{5yr}	REL^{Amt}_{3yr}	REL^{Num}_{3yr}	REL^{Dum}_{3yr}
	(1)	(2)	(3)	(4)	(5)	(6)
$IncCR \times$ Post	0.089**	0.080*	0.100**	0.092**	0.094**	0.104**
	(0.037)	(0.040)	(0.045)	(0.037)	(0.040)	(0.041)
$DecCR \times$ Post	-0.121***	-0.093**	-0.229***	-0.131***	-0.109**	-0.234***
	(0.039)	(0.043)	(0.064)	(0.047)	(0.051)	(0.075)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry × year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Region × year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.34	0.33	0.33	0.33	0.33	0.33
Observations	22,720	22,720	22,720	22,720	22,720	22,720

Table 8: Relationship Lending and Creditor Rights - Non-US Sample

This table presents the estimates from difference-in-differences regression of changes in creditor rights on relationship lending for a sample of 38 countries (excluding the U.S.) from 1994 to 2009. The estimates in the columns are based on Equation 1. *IncCR* × *Post* (*DecCR*× *Post*) is an indicator representing countries passing legal reforms that increased (decreased) creditor rights. In column (1), we test its effect without any additional controls. In column (2), we control for firm and country characteristics. In column (3), we control for industry (three-digit SIC) × year fixed effects. In column (4), we control for industry (three-digit SIC) × year fixed effects, and geographic region × year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa. All regressions include country fixed effects. Standard errors are clustered at the country level and reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level respectively.

	(1)	(2)	(3)	(4)
IncCR × Post	0.122***	0.128***	0.125***	0.066*
	(0.044)	(0.041)	(0.043)	(0.033)
DecCR × Post	-0.192***	-0.169***	-0.180***	-0.130***
	(0.063)	(0.054)	(0.050)	(0.046)
Controls	No	Yes	Yes	Yes
Country f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	No	No
Industry × year f.e.	No	No	Yes	Yes
Region × year f.e.	No	No	No	Yes
R^2	0.14	0.19	0.40	0.41
Observations	14,132	12,692	12,132	12,126

Table 9: Robustness

This table reports robustness of our estimates from difference-in-differences regression of changes in creditor rights on relationship lending. The sample consists of 39 countries from 1994 to 2009. In panel A, we test the robustness to several sample selection criteria. In column (1), we restrict the minimum observations for each country to 149. Column (2) excludes all firms headquartered in Russia. Column (3) includes observations on Japanese firms borrowing before the year 2000. Column (4) controls for the effects of Asian financial crisis for firms located in Indonesia, Thailand and Japan by adopting a borrower fixed effects approach and interacting the crisis dummy with time dummies to allow for differential trends. In panel B, we include additional macroeconomic variables as controls. These additional controls are (i) the ratio of stock market traded value to GDP, (ii) the ratio of credit extended to the private sector to GDP, and (iii) the consumer price index (CPI). The coefficient estimates on these controls are not reported to save space. In all columns, we control for industry (three-digit SIC) × year fixed effects and geographic region × year fixed effects. We use the World Bank Classification to assign each country to one of the seven regions: (1) East Asia & Pacific, (2) Europe & Central Asia, (3) Latin America & Caribbean, (4) Middle East & North Africa, (5) North America, (6) South Asia, and (7) Sub-Saharan Africa. All regressions include country fixed effects except for column (5). Standard errors are clustered at the country level and reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1% level respectively.

Panel A

	Obs.≥ 149	Excl. Russia	Incl. Japan	Crisis * year f.e
	(1)	(2)	(3)	(4)
IncCR × Post	0.080**	0.103**	0.122***	0.177*
	(0.037)	(0.040)	(0.036)	(0.103)
DecCR × Post	-0.124***	-0.117***	-0.152***	-0.168*
	(0.042)	(0.041)	(0.040)	(0.099)
Controls	Yes	Yes	Yes	Yes
Country f.e.	Yes	Yes	Yes	No
Borrower f.e.	No	No	No	Yes
Industry × year f.e.	Yes	Yes	Yes	Yes
Region × year f.e.	Yes	Yes	Yes	Yes
R^2	0.34	0.34	0.34	0.67
Observations	21,940	22,593	22,803	20,798

Panel B

	Baseline	Incl. equity traded	Incl. domestic credit	Incl. CPI
	(1)	(2)	(3)	(4)
IncCR × Post	0.089**	0.090**	0.078**	0.092***
	(0.037)	(0.043)	(0.032)	(0.032)
DecCR × Post	-0.121***	-0.139***	-0.170***	-0.054
	(0.039)	(0.040)	(0.052)	(0.061)
Controls	Yes	Yes	Yes	Yes
Country f.e.	Yes	Yes	Yes	Yes
Industry × year f.e.	Yes	Yes	Yes	Yes
Region × year f.e.	Yes	Yes	Yes	Yes
R^2	0.34	0.34	0.34	0.34
Observations	22,720	21,681	21,484	22,622

Appendix Table 1: Variable Definitions

Variable	Definition	Source
Borrower Characteristics		
Firm Size ($Log(Assets)$)	Natural log of the real book value of the assets of the borrower	Worldscope
Leverage ($Debt/Assets$)	Ratio of book value of total debt divided by the book value of assets	Worldscope
Profitability ($Profit$)	Ratio of EBITDA to sales	Worldscope
Tangibility ($Tang$)	Ratio of property, plant, and equipment (PPE) to total assets	Worldscope
Dividend Payer ($Dividend$)	A dummy variable that takes a value of one if common dividends, is positive and it is otherwise zero	Worldscope
Market/book ratio ($MKTBK$)	Ratio of (book value of assets - book value of equity + market value of equity) to book value of assets	Worldscope
Country Variables		
Stocks Traded/GDP	Value of shares traded is the total number of shares traded, both domestic and foreign, multiplied by their respective matching prices	World Bank
CPI	Consumer price index (2005 = 100) is computed using the Laspeyres formula, which compares the total basket of goods at the old and new prices	World Bank
Credit to Pvt. sector/GDP	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment	World Bank
GDP Per Capita	GDP per capita is gross domestic product divided by midyear population	World Bank