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Abstract: We augment the LLSV creditor rights index with a new "restructuring index" that measures the incentives provided to creditors to grant concessions outside formal bankruptcy. We study the joint impact of the two indexes on a firm's leverage policy. We show that the two indexes have at most a statistically weak effect on the level of long-term debt. Instead, the two indexes affect the distribution of long-term debt into bank debt, public debt and private placements. Bank debt increases when the values of both indexes are high. Public debt increases when the creditor rights index is high, but the restructuring index is low, and private placements increase when the restructuring index is high, but the creditor rights index is low. Smaller firms with fewer tangible assets borrow more from banks when both the creditor rights and restructuring indexes are high. When aggregated at the country level, these firm-level results suggest that bankruptcy law can influence the relative importance of credit and equity markets as sources of financing GDP growth.

Keywords: Bankruptcy Law, Debt Structure, Restructuring, Bank Debt, and Creditor Right.

JEL Code: G32, G33, G38

1. Introduction

The law and finance literature has yielded mixed results on the impact of bankruptcy laws on debt levels and firm risk. Many of these studies rely on the LLSV creditor rights index to measure the strength of rights given to secured creditors in a formal bankruptcy.[1] Since the LLSV index does not consider the incentives to creditors to pursue an out-of-court restructuring, it offers only limited scope in reconciling these mixed results. In this paper we create a new index called the "restructuring index," which consists of six conditions that measure incentives of creditors to restructure in a private workout. We use the "restructuring index" in combination with the LLSV creditor rights index to re-examine the impact of a comprehensive set of bankruptcy laws on firms' debt financing policies.

By tracing changes to bankruptcy laws that were adopted by a number of countries between 2001 and 2009, we show that the level of long-term debt is unaffected by bankruptcy law changes. We investigate whether it is instead, the debt structure, or the distribution of long-term debt into bank debt, public debt, and private debt that responds to bankruptcy law. With the help of informal numerical examples and a simple theoretical model, we develop testable hypotheses to predict the impact of a change in the two indexes on a firm's debt structure. Our empirical analysis confirms the testable hypotheses that emerge. When countries adopt pro-creditor bankruptcy laws, which are laws that strengthen the creditor rights index, and weaken the restructuring index, we find that public debt is favored over bank debt. Bank debt is favored when bankruptcy laws encourage efficient debt restructuring by strengthening the creditor rights and restructuring indexes simultaneously. Small firms with fewer tangible assets are encouraged to borrow from banks after the passage of such bankruptcy laws. When countries adopt anti-creditor bankruptcy laws, which are laws that strengthen the restructuring index, and weaken the creditor rights index, we find reductions in the levels of bank and public debt, and even high

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[1] The literature was pioneered by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) (LLSV). La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997,1998), Qian and Strahan (2007), Djankov, McLeish, and Shleifer (2007) (DMS), and Haselman, Pistor and Vig (2008) rely on the LLSV creditor rights index to conclude that the supply of debt increases when laws strengthen creditor rights. Acharya, Amihud and Litov (2011) and Vig (2013) find that firms reduce financial leverage in response to a higher threat of involuntary liquidation that results from strengthening creditor rights. Conflicting results have also emerged from studies on the effect of creditor rights on equity risk. Favara, Schroth and Valta (2012) show the ability of shareholders to extract rents from bondholders in a strategic default reduces equity risk. Acharya, Amihud and Litov (2011), however, find that stronger creditor rights cause firms to pursue risk-reducing strategies such as diversifying acquisitions.

quality firms with tangible assets are forced to issue private debt. We explore whether these changes in firm-level debt structure have economy-wide ramifications. Our results indicate that countries that adopted pro-restructuring laws were able to strengthen the role of the banking sector as a source of financing. Countries that adopted pro-creditor laws were able to reduce their reliance on the banking sector, and countries that adopted anti-creditor laws could have strengthened their banking sector by steering lower quality firms away from bank debt and into private placements. Our results are consistent with the predictions of Hackbarth, Hennessy and Leland (2007) (HHL), who show that the value of mixed debt firms that are financed partially by negotiable bank debt is higher than the value of firms financed solely by non-negotiable debt.

Collateral and covenants can act as substitutes for bankruptcy law (Davydenko and Franks, 2008; Hasselman, Pistor and Vig, 2008; Qi, Roth and Wald, 2009). We ensure that there are no changes in laws related to collateral or covenants surrounding the change to the bankruptcy law. We are therefore reasonably assured that any changes in the level and structure of debt financing between the pre- and post-event periods are due to changes in bankruptcy law. If residual effects remain, our results understate the true impact of bankruptcy law.

The rest of the paper is organized as follows: In Section 2 we develop a simple model to postulate testable hypotheses about the effect of bankruptcy reforms on the supply of, and the demand for, bank, public and private debt. Section 3 contains descriptions of the data at the country and firm levels. Section 4 discusses the econometric issues associated with empirical tests of the hypotheses. Section 5 has results from tests of the hypotheses on the effect of bankruptcy laws on debt structure. Section 6 has evidence on the economic impact of bankruptcy reforms. Section 7 has evidence on the effect of bankruptcy reforms on the aggregate banking sector, and Section 8 has our conclusions.

2. Theory and Hypotheses

We consider a firm with assets consisting of cash, C, and assets in place with a stochastic value A. The firm is financed with a mix of debt, with a face value of F, and equity. Debt consists of a mix of 'bank' debt, 'public' debt and 'private' debt. 'Bank' debt, 'public' debt and 'private' debt loosely refer to senior secured lenders, senior unsecured debt and subordinated unsecured debt, respectively. The characterization of the three debt types is based on existing

literature. Bank debt tends to be senior and collateralized (Carey, Post and Sharpe, 1998), and is held by relatively sophisticated and well informed investors, who are more amenable to private renegotiation (Gilson, John and Lang, 1990). Public debt tends to be widely held, so public debt holders have incentives to hold out if their consent to restructure has very little impact on the final outcome. These debt holders therefore prefer liquidation to renegotiation, a fact confirmed by empirical evidence (Gilson, John and Lang, 1990). Privately placed debt is held by fewer investors and is characterized by extensive bond covenants that require credit monitoring (Kwan and Carleton, 2004). Private debt is more amenable to renegotiation. Moreover, because their junior status in the priority of claims means they bear most of the deadweight costs of a prolonged liquidation in bankruptcy, they prefer renegotiation over liquidation. These differences in their cash flow claims, control provisions, and willingness to renegotiate lead to differences among issuers of these debt types. Rauh and Sufi (2010) and Denis and Mihov (2003) show that high quality firms are financed through public debt, medium quality firms are financed through bank debt, and low quality firms are financed through a mix of bank debt and private placements.

In our model, there are two dates, t= 0, and t=1. At date t=0, the firm is in distress as its value = C+A is less than F, the face value of debt outstanding. Depending on the bankruptcy code, the firm has three choices: i) immediate liquidation: if the firm is liquidated, we assume its assets in place become worthless and its liquidation value = C, or, ii) control of the firm passes into the hands of bondholders and is liquidated at t=1: if the bankruptcy code does not encourage re-organization, the firm is operated inefficiently by bondholders reducing the value of assets in place by a factor of α, such that the firm is only worth C+αA at t=1, or, iii) debt is re-organized, allowing shareholders the possibility of paying off debt at t=1 by investing an amount I, in a risk-free project which will generate a return of R at t=1. To ensure the project has a positive NPV, the project's return R > r, the cost of capital for the firm. Firm value at t=1 after the investment is made is:

$$(C+A)(1+r)+I(1+R) \tag{1}$$

The firm is liquidated at t=1. We now examine the willingness of each category of debt to contribute toward the investment required.

4

Case (i(a)): Firm has only bank debt outstanding with a face value of B.

We first consider two trivial cases : i) C>B, or the cash on hand is greater than the outstanding value of bank debt: Since bondholders are paid off in full, they will not support continuation of the firm. Liquidation is an inefficient outcome however since the firm foregoes the positive NPV project. ii) C<B, but C+αA>B: The firm passes into the bank's hands, and after paying themselves off in full, is liquidated by the bank at t=1. The firm fails to invest in the positive NPV project at t=0.

We continue to assume that the firm has only bank debt outstanding, but we now let firm values be such that: C< C+αA< B: At t=0, shareholders can threaten to liquidate the firm and return an amount C less than the face value of outstanding bank debt unless the bank agrees to a restructuring. Restructuring will require the bank to contribute an amount b toward the investment I that is required to invest in the positive NPV project. Since the value of the firm at t=1 given by equation (1) after the investment is undertaken is greater than B, the face value of outstanding debt, banks will agree to restructure if the following condition is satisfied:

$$\frac{B}{(1+r)} - b > C+\alpha A \tag{2}$$

Solving equation (2) for b yields: $b < \frac{B}{(1+r)} - C-\alpha A$. The remaining amount ($I$-b) has to be contributed by shareholders, which they will if the following participation condition is satisfied:

$$\frac{(C+A)*(1+r)+I*(1+R)-B}{(1+r)} - (I\text{-}b) > 0 \tag{3}$$

Simplifying condition (3) shows that it is satisfied as long as R>r, or, if the project has a positive NPV. The outcome is pareto-optimal ex-ante since firm value is higher after the restructuring, than in liquidation: the bank and shareholders are better off after the restructuring than were the firm to be liquidated, or to pass into the hands of bondholders. Whether restructuring actually occurs rests on the bankruptcy code; a debtor-friendly code is more amenable to restructuring than is a creditor-friendly code.

Case (i(b)): Bankruptcy code encourages restructuring, but permits deviations from absolute priority when the firm is being liquidated.

The bankruptcy code can permit violations of absolute priority rules when debt is restructured, such as when debtor-in-possession financing is elevated above banks in absolute

priority. We incorporate this possibility by assuming that banks will recover only a fraction $\rho < 1$ of their debt outstanding at t=1. The participation condition for banks, equation (2) now becomes:

$$b < \frac{\rho B}{(1+r)} - C - \alpha A \qquad (4)$$

If the right hand side of the inequality is less than zero, banks will refuse to restructure their debt, opting to take over the bankrupt firm. Not surprisingly, the greater the deviation from APR (lower values of ρ), the more likely it is that the participation condition is violated. It follows that the bankruptcy code has to satisfy two conditions for banks to restructure: a) the code has to encourage out-of-court restructuring, and b) it has to preserve the absolute priority of secured lenders in the event the firm is liquidated. We refer to a bankruptcy code that satisfies these two conditions as a pro-restructuring bankruptcy law. Such a law encourage banks to lend satisfying firms' demand for negotiable bank debt. The first testable hypothesis that emerges from this discussion is:

HA: Pro-restructuring bankruptcy laws lead to an increase in bank debt.

2B: The firm has public debt and bank debt outstanding

We now consider the incentives of public debtholders to restructure in the presence of senior bank lenders. As in the previous case, we consider two possible scenarios:

Case (ii): Firm is financed with bank debt with face value B, public debt with a face value P, and firm and debt values are such that $C < B < C + \alpha A$.

Bankruptcy code determines whether creditors seize control. If the code is creditor friendly, then banks have an incentive to seize control of the bankrupt firm at t=0, and liquidate the firm at t=1, since the value of the firm at t=1 is $C + \alpha A$ which is enough to repay bank debt. Banks will refuse to contribute toward restructuring, preferring instead to seize control of the firm. Since public debtholders receive nothing if the firm is liquidated at t=0, they agree to the banks' demand for control of the firm.

Case (ii(b)): Firm is financed with bank and public debt and $C < C + \alpha A < B$.

Since firm value in the hands of banks is not large enough to pay off their debt in full, banks and public debtholders have incentives to restructure the firm by contributing toward the

positive NPV project.   Suppose the value of the firm at t=1 after restructuring in equation (1) is not adequate to fully pay off banks and public debtholders. Since shareholders do not receive anything after the restructuring, they will refuse to contribute towards the required investment, I. Banks are willing to contribute an amount that satisfies their participation constraint (equation (2)), namely, that, $b < \frac{B}{(1+r)} - C$-αA . Public debtholders will have to contribute the remainder (I-b). Their payoff is:

$$\frac{(C+A)*(1+r)+I*(1+R)-B}{(1+r)} - \qquad (I\text{-}b) \qquad > \qquad 0$$

(5)

Substituting the maximum that banks are willing to contribute into the equation above shows that the payoff to public debtholders is non-negative only if:

$$R > \frac{(\alpha A+I)*(1+r)-I}{I}$$

(6)

The condition above is more likely to be satisfied at higher values of R. A firm in financial distress is unlikely to have a riskless project with such a large abnormal return.   Since lower values of R yield a negative payoff to public debtholders, they will refuse to restructure their debt. Their preferred outcome would be to seize control of the firm as soon as the following condition is satisfied:

$$C+\alpha A > B+ P \qquad\qquad (7)$$

Creditor-friendly bankruptcy codes that permit bondholders to seize control of the firm as soon as the condition above is satisfied encourage public debtholders to lend. The demand side also favors issuance of public debt when the bankruptcy code is creditor-friendly. A firm that has the capacity to issue additional debt would rather issue lower-priority public debt than additional senior bank debt which carries the risk of liquidation as soon as C, its liquidation value at t=0, falls below B. The following testable hypothesis emerges:

HB: Pro-creditor bankruptcy laws lead to an increase in public debt.

Since public debtholders prefer to seize control of the firm than be forced to accept a negative payoff by restructuring, they will refuse to lend when bankruptcy laws force them to

restructure. We term such bankruptcy laws that force creditors to restructure as anti-creditor bankruptcy laws. The testable hypothesis that emerges when such anti-creditor bankruptcy laws are adopted is:

HC: Anti-creditor bankruptcy laws lead to a decrease in public debt.

2C: The firm has bank and private debt outstanding

The incentives of banks to lend when bankruptcy law prevents seizure of the firm depends on the statutes surrounding non-traded privately held debt.   Securities laws in the United States generally prohibit restructuring of publicly traded debt unless all creditors participate in the restructuring. The laws are less restrictive about privately held debt: the private placement exemption provided under Section 3(a)(9) of the Securities Act permits an issuer to offer a restructuring proposal to accredited investors without a general solicitation.[2] This exemption does not apply to a security exchanged under Chapter 11 of the U.S. Bankruptcy Code. Firms have an incentive to be pro-active, and re-negotiate their debt outside formal bankruptcy. We now consider how this flexibility in re-negotiating private debt affects banks' incentives.

Case (iii): Firm is financed with bank and *private* debt and $C< C+\alpha A< B$

The value of the firm in the control of creditors is not large enough to repay banks in full. Private debt holders and shareholders receive nothing whether the firm is liquidated, or it passes into the control of creditors. Shareholders offer to continue to operate the firm if creditors are willing to contribute an amount, *I* toward a risk-free investment project with a guaranteed return of R one-period later. If there are no laws prohibiting them from doing so, private creditors will offer to contribute the entire investment without the participation of banks. Their participation constraint is:

$$\frac{(C+A)*(1+r)+I*(1+R)-B}{(1+r)} - I > 0 \tag{8}$$

The constraint in equation (8) may be restated as:

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[2] *See, e.g.*, SEC Division of Corporation Finance, Compliance and Disclosure Interpretations: Securities Act Sections (Nov 26, 2008) available at: http://www.sec.gov/divisions/corpfin/guidance/sasinterp.htm.

$$\frac{I(R-r)}{(1+r)} > \frac{B}{(1+r)} - C - A \tag{9}$$

Equation (9) is satisfied if the required investment is high, and is accompanied by a high return, R. Private lenders have the incentive to restructure in this manner since they face the prospect of writing off their entire investment if bank lenders decide to take control of the firm and liquidate at t=1. Debt restructuring occurs without the participation of banks, even though it is the banks that stand to benefit when firm value at t=1 increases after the investment in the positive NPV project. The testable hypothesis that emerges from this discussion is:

HD: Anti-creditor bankruptcy laws lead to an increase in the use of bank debt only if the firm has private debt outstanding.

Anti-creditor bankruptcy laws discourage banks from lending when the firm has no pre-existing private debt. The only source of debt financing left for such a firm is to issue new private debt when anti-creditor bankruptcy laws are adopted by the country. The last testable hypothesis follows from this discussion:

HE: For firms with no private debt outstanding, anti-creditor bankruptcy laws lead to an increase in the use of private debt.

In Appendix A, we illustrate the logic underlying hypotheses *HA* through *HE* using numerical examples. The numerical examples confirm that changes to bankruptcy laws affect the distribution of long-term debt into bank debt, public debt and private debt. There are no predictions that emerge about the impact of a change in bankruptcy laws on the level of long-term debt: the level of long-term debt may be unaffected by bankruptcy reforms if firms adjust their demand to the debt type whose supply is least affected by the particular bankruptcy legislation enacted.

3. Data

3.1. Bankruptcy law changes

We rely primarily on a website called estandardsforum.org to identify countries that undertook changes to their bankruptcy laws during the nine year period from 2001-2009.[3] We supplement this information with ABI/INFORM and Lexis/Nexis using the following search terms: "changes in bankruptcy law," "bankruptcy law reforms," and "changes to creditor rights." This extensive search produced several countries that undertook major reforms, mostly in the Eurozone. European Union countries were encouraged to reform their bankruptcy laws to conform to principles laid out in a 2002 report titled "Restructuring, Bankruptcy and Fresh Start." Even so, there is substantial variation in the types of reforms adopted by these countries. Other countries in the sample, especially those in Latin America and Asia, were motivated to make changes after suffering financial crises in the 80s and 90s. More recent reformers have been rapidly developing countries such as China, Brazil, and Russia.

The full list of countries that changed their bankruptcy laws during this period are as follows: United Kingdom, Greece, France, Italy, Spain, Netherlands, Portugal, Finland, Ireland, Belgium, Russia, China, Brazil, Vietnam, New Zealand, and Slovakia. The last three countries are dropped from the sample since there are too few publicly traded firms in these countries. We also drop Ireland and Belgium, which undertook reforms in 2001 and 2009 respectively. We cannot perform a pre- versus post- change analysis of debt policy for these countries since our database begins in 2001 and ends in 2009. For this same reason, we ignored the most recent law changes undertaken by United Kingdom and Russia and only retained changes undertaken by these two countries in earlier years. The United States also changed its bankruptcy laws in 2007, but we do not include it in the sample. Since firms in the United States have a longer history with Chapter 11-style restructuring than firms in other countries, the large number of publicly traded firms in the United States will dominate the sample and skew the results.

We summarize the most pertinent changes to bankruptcy law undertaken by each country in the sample in Appendix B. Details regarding changes for each country are in an online

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[3] The now defunct web page is http://www.eStandardsforum.org.

appendix. Based on these law changes, we construct the values of the creditor rights and restructuring indexes for each country.

3.2. Creditor rights and restructuring indexes

We create a modified version of the Djankov, McLeish and Shleifer (2007, DMS) creditor rights index. The creditor rights index takes a value 1(0) if bankruptcy reform imposes (does not impose) each of the following six conditions: i) only creditors are permitted to file for bankruptcy; ii) allows collateral to be seized when the loan is in the form of a pledge or a mortgage; iii) the court or a court appointed administrator is left in control of the bankrupt firm; iv) secured creditors are elevated in absolute priority over all other claimants, including pre-insolvency lenders and estate, tax, and labor claimants; v) there is no automatic stay after the firm is admitted to bankruptcy; and vi) secured creditors are permitted to opt out of restructuring negotiations inside bankruptcy.

We allow the index to take a fractional value when a condition in the bankruptcy code does not exactly match the wording in (i)-(vi) above. For instance, when management is allowed to run the firm's operations under the supervision of a court appointed administrator, we assigned a value of 1/2 to condition (iii) above. In this case, the bankruptcy court maintains oversight over management and is allowed to continue to operate the firm. The six conditions in the creditor rights index are enforceable to varying degrees by courts. Eberhart, Moore and Roenfeldt (1990) and Franks and Torous (1989,1994) show that APR is violated by bankruptcy judges in the United States. Ultimately, whether the enforceability of the conditions in the creditor rights index affects financing policy is an empirical matter. To the extent we find a relationship between the creditor rights index and financing policy, our results likely understate the strength of the relationship between the two.

We create a new index, a "restructuring index," to capture the incentives given by bankruptcy law to creditors to restructure their debt in a private workout. The additional index helps to distinguish between rights to creditors after the firm is admitted to bankruptcy court and rights to creditors in a private workout outside bankruptcy. Six conditions comprise the index, of which four go into effect in the pre-bankruptcy phase, and two apply in a formal bankruptcy. We include the two conditions nonetheless since they have ramifications for the success of a

11

private workout. These conditions are: i) a separate procedure in the bankruptcy code for pre-bankruptcy restructuring; ii) automatic stay imposed when the company is admitted to pre-bankruptcy restructuring; iii) pre-bankruptcy restructuring negotiations need not be made public; iv) cram down of restructuring agreement reached in pre-insolvency; v) payments made prior to bankruptcy filing are not subject to clawback; and vi) debtor-in-possession (DIP) financing in a formal bankruptcy gets super-priority status over secured creditors.

A separate procedure in the bankruptcy code for pre-bankruptcy restructuring allows firms and creditors to speed up resolution of financial distress (Tashjian, Lease and McConnell, 1996). The automatic stay condition in this index is different from the automatic stay condition included in the creditor rights index. The former goes into effect in the pre-bankruptcy phase, while the latter takes effect after the firm enters formal bankruptcy proceedings. The third condition about privacy for pre-bankruptcy negotiations is crucial, as suppliers and other trade creditors may be alarmed at the prospect of financial distress if pre-insolvency negotiations were to be made public (Hertzel, Officer, Li and Cornaggia, 2009). Cram down discourages the holdout problem described in Gilson, John and Lang (1990), thereby increasing the likelihood of success of an out-of-court restructuring. When bankruptcy law permits clawback, any agreements that firms reach with their creditors in pre-bankruptcy negotiations can be overturned if the firm ends up in formal bankruptcy. Thus, a bankruptcy code that permits both pre-bankruptcy restructuring and clawback may hurt the success of restructuring. DIP financing goes into effect after the firm declares bankruptcy but can affect creditors' incentives ex-ante to renegotiate outside bankruptcy. Granting super-priority to DIP financing effectively impairs the claims of senior lenders, by, for instance, weakening the collateral rights of secured creditors (Dahiya, John, Puri and Ramirez, 2003). By threatening to alter liquidation rights of lenders in formal bankruptcy, firms can encourage banks and public debtors to enter into restructuring negotiations (James, 1995).[4] As with the creditor rights index, the conditions in the restructuring

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[4] Dispersed public debt holders are drawn into these bargaining talks by the prospect of bank participation in them (James, 1995, 1996). Hege and Mella-Barral (2005) model the process by which laws governing proceedings in formal bankruptcy translate to ex-ante decisions made by debtors and creditors. Through a process of backward induction, they show that even dispersed creditors can be persuaded to make coupon concessions in private workouts in exchange for guaranteed liquidation rights.

index are enforceable to varying degrees. The explanatory power of these indexes for long-term debt financing is an empirical issue.

Spamann (2010) criticizes LLSV's anti-director rights index (ADRI) as being inconsistent in its classification of rules that have ambiguous interpretation. We are careful to exclude ambiguous reforms in the construction of our indexes. One such example is reforms to increase the speed and efficiency of bankruptcy proceedings. Measures to do so include setting up specialized courts to deal with complex bankruptcy issues, and detailed specifications of the method of sale and disposal of assets in a liquidation. We take care to exclude such conditions since they could have an ambiguous effect on creditor rights or on the incentives to restructure. Being mindful of collinearity between the two indexes, we ensure that if a condition weakens creditor rights in formal bankruptcy it is not double-counted by including its orthogonal equivalent in the restructuring index.

Details on the construction of the two indexes following the change in bankruptcy law in each country in our sample are in Table 1. The values of the two indexes under the current law and the DMS index and the restructuring index implied by the old law are reported in Table 2. The DMS index has four of the six conditions in common with the creditor rights index in this paper. The four conditions in common are: creditor consent required for bankruptcy filing; secured creditors can seize collateral; secured creditors elevated to highest priority in APR; and court in control of bankrupt firm. The two additional conditions in our index are: (i) court grants an automatic stay and ii) secured creditors are exempt from participating in restructuring negotiations. The DMS index appears to combine automatic stay with the ability of secured creditors to seize collateral. We separate the two in our creditor rights index because bankruptcy law can impose an automatic stay on unsecured creditors while permitting mortgage debt holders and other secured creditors to seize collateral.

The median creditor rights index and the median restructuring index under the new law are 3.0 and 2.0, respectively, in Table 2. Three distinct groups of countries are identifiable in the table. In the first group, which consists of Finland, Netherlands, Portugal, and Spain, the creditor rights index is much higher than the restructuring index. This is the "pro-creditor" group. In a second group that consists of Greece, France, Brazil, and Russia, the opposite is true: the restructuring index is above its median, while the creditor rights index is below it. This is the

"anti-creditor" group. For a third and final group that consists of United Kingdom, China, and Italy, neither index dominates. Both indexes are either above the median, or are below the median. We call this the "pro-restructuring" group. The classification into the three groups is for descriptive purposes only, as the empirical tests rely on the changes in the values of the indexes.

3.3. Country characteristics

We examine country characteristics to investigate whether there are systematic differences in the legal and cultural environment among the three groups of countries. Stulz and Williamson (2003) find that simple proxies for culture such as religion and language are able to explain differences in investor rights across countries. In particular, they find these proxies are good at explaining creditor rights, with creditor rights being strongest in countries in which the main religion is Protestantism. Demirguc-Kunt and Detragiache (1998) find that financial liberalization is more likely to lead to banking crises when the rule of law is weak. LLSV find that legal origins are important in explaining investor protection. They find that common law countries protect investors better than civil law countries. Rajan and Zingales (1995) find that the strength of the banking institutions in the country affects the supply of debt, while firms in countries with stronger banking institutions rely more on bank debt.

We obtained data on legal origin and religion from Stulz and Williamson (2003) for all countries, except China; data for China was obtained from the latest edition of the CIA Factbook. We obtained the rule of law indicator from the World Bank. The rule of law is a statistical compilation of survey responses of enterprises, citizens, and experts on the quality of governance. The indicator is measured in units ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. We use the ratio of bank non-performing loans to total gross loans obtained from the World Bank as a proxy for the strength of the banking industry. Demirguc-Kunt and Maksmiovic (1998) argue that if investment opportunities in an economy are correlated, the growth rate of the economy should partially explain growth rates of individual firms. Since the demand for credit should be related to firm growth, which in turn is related to macro-economic conditions, we examine GDP growth rates, data on which are obtained from the World Development Indicators database maintained by the World Bank.

14

We report these country-wide characteristics in Table 3 for the year in which the new bankruptcy law was enacted. Catholicism is the main religion in six of the eleven countries in our sample. United Kingdom is a common law country; all other countries follow a system of civil law. The pro-creditor countries had the largest credit markets, as indicated by the highest average ratio (120.43%) of domestic credit extended to the private sector. Equity markets are relatively weaker, on average representing only 78.3% of GDP. The credit markets in these countries appear to be supported by a strong legal and institutional framework; the average rule of law index (1.46) is the highest for this group of countries, which is matched by good performance in the banking sector (average bank non-performing loans of 1.18%). However, these countries were experiencing the weakest GDP growth among the three groups of countries.

The pro-restructuring group of countries experienced rapid GDP growth (average of 5.89%) in the year prior to enactment of bankruptcy reforms. The legal and institutional framework in these countries appears to be inadequate to support this rapid rate of growth. The banking sector was the weakest among the three groups of countries, with the highest ratio of non-performing loans to total gross loans (average of 4.67%) and an average bank capital to assets ratio of only 6.67%. Equity markets appear to have supplied much of the financing for the growth in GDP as indicated by the highest ratio of market capitalization of equity to GDP for this group (average of 118.43%).

The anti-creditor group of countries have the exact opposite set of characteristics as the pro-creditor group. These countries are characterized by weak governance, with even negative values for the rule of law index in the cases of Brazil and Russia. They have weak credit markets, with the lowest average ratio of credit to the private sector (60.46%). Tests of differences in the average characteristics across the three groups of countries are reported in Panel B of Table 3. The traditional F-test for differences is reported in the first column. The tests show that credit to the private sector, the proportion of bank-nonperforming loans, and the rule of law index are different across the three groups at the 5% level of significance. Unemployment rate and domestic credit to private sector are significantly different at the 10% level. The samples used in these F-tests are not completely independent of each other, as they are correlated in time and by geographical region. Rather than re-do the F-tests by explicitly modeling the correlations, we use a bootstrap technique to acquire robust p-values. We select at

random as many firms as there are in each reform category. Thus, for instance, there are 1779 firms in the pro-restructuring group. We therefore draw 1779 firms with replacement at random from the entire sample. For this "pseudo pro-restructuring group" we calculate the average characteristic. We repeat this procedure 1000 times, thus creating a series of average characteristics for the "pseudo pro-restructuring" samples. We repeat the same process by selecting 326 firms and 902 firms to constitute the "pseudo pro-creditor" and the "pseudo anti-creditor" categories, respectively. F-tests for differences in characteristics among these pseudo samples are presented in the second column of Panel B of Table 3. None of the p-values for the pseudo samples are statistically significant at the 5% level, suggesting that p-values from the F-tests on the original sample are not due to random chance.

Table 3 shows that the choice of bankruptcy reforms was predicated on credit and market conditions prevalent in the country in the pre-reform period. Consistent with LLSV and Rajan and Zingales (1995), countries with strong governance (rule of law) have larger and healthier credit markets (higher proportion of domestic credit to private sector and a small proportion of non-performing loans), and relatively weaker equity markets. These countries seem to reinforce their strong credit markets by adopting bankruptcy reforms that further strengthen creditor rights. Countries with the weakest governance (rule of law) and the smallest credit market (smallest proportion of domestic credit to private sector) adopted anti-creditor reforms that further weakened creditor rights. Countries in the pro-restructuring group were experiencing rapid growth, which appears to have been financed primarily by equity (highest proportion of market capitalization of equity market). These countries had relatively weaker credit markets.

3.4. Firm-level data

We obtained data on publicly traded companies from two sources, Orbis, a subset of the Bureau Van Dijk suite of databases, and Worldscope. Our subscription to Orbis gave us access to financial data on companies from 2001 to 2009. The data is detailed in that it breaks down long-term debt into bank debt, debentures/unsecured debt, privately placed debt, and non-interest bearing long-term liabilities. It is not clear from the information provided by Orbis as to what constitutes non-interest bearing liabilities, so we do not include it in the analysis. Orbis reports all financial data in dollars and in a variety of local currencies, but we use dollar denominated

numbers. Worldscope has data over a longer time period from 1990 to 2010, but it does not have the detailed breakdown of long term debt into its components. We use data on Worldscope to test hypotheses on long-term debt ratios and data from Orbis to test hypotheses on the structure of debt. We calculate debt ratios as the ratio of the level of any category of long term debt to total assets. In results not reported in the paper, we repeat the analysis by calculating debt ratios with the sum of total debt and market value of equity in the denominator. The power of our empirical tests is lower when debt ratios are calculated with the market value of equity since equity values of firms in emerging economies are more volatile than the value of total assets during this time period. Total assets is not entirely free of bias, either. Firms that suffer extended periods of losses have negative book values of equity, which can lead to implausibly high leverage ratios that exceed 100%. To avoid contamination of our results with these unprofitable firms, we eliminate firms that had negative book values at any point during the 10-year sample period.

A second consideration in calculating leverage ratios is the treatment of missing variables. Of the different treatments reviewed by Goyal and Frank (2007), we chose the simplest approach of omitting missing variables from the analysis. Four different long-term leverage ratios, each with total assets in the denominator, are calculated for each country: 1) long term interest bearing debt; 2) long-term bank loans; 3) debentures and convertible debt; and 4) privately placed debt. We eliminated utilities and financial firms (2-digit SIC code = 40, 41 ,42, 44, 45, 47, 48, 49, 60, 61, 62, 63, 64, 65, and 67) from the sample since these two industries are subject to government regulations and cannot change their capital structure at will.

Table 4 has details on the sample of firms within each country. The largest number of publicly listed firms is 3340 firms in Spain. The smallest number of publicly listed firms is 51 in Portugal. We also report other salient characteristics on the industry affiliation and the mean and median size calculated both in terms of total assets and market value of equity. When measured by total assets, firms in Portugal are the largest. When measured by market value of equity, firms in France are the largest. The smallest in terms of total assets and market value of equity are China and Greece, respectively. Brazil has the largest concentration of firms in one industry group, with 72% of the eligible sample coming from the manufacturing industry. The United

Kingdom had the broadest industry affiliation with sizable proportions in each of the four industry categories, namely, agriculture and mining, manufacturing, retail, and services.

We identify the number of publicly listed firms in each country that have been in continuous existence over the more recent sample period covered by Orbis, namely, between 2001 and 2009. The economic impact of the new bankruptcy law is captured by the response of these established firms. Identifying these firms presents a challenge since Orbis does not consistently report market values of equity. We therefore rely on net income and retain only those firms with non-missing net income in every year between 2001 and 2009. Table 4 reports the numbers of firms in each country with a continuous history. Russia and Spain have the fewest firms—less than 3% of the sample—while China has 1056 firms, the highest number of firms with a continuous history.

Using the longer sample from Worldscope, we plot in Figure 1 the long-term debt ratios for the years between 1990 and 2010. The figure shows that long term leverage ratios are the highest for the pro-creditor group and are the lowest for the pro-restructuring group. We test whether the annual long-term debt ratio has remained constant over two sample periods, 1990 to 2009 and 2000 to 2009. We present results of Chi-square tests in Panel B of Figure 1. The results show that the neutral group experienced a statistically significant increase in long-term debt levels. The other two groups of countries did not experience a significant change in their leverage ratios.

In Figure 2 we present time series of the various categories of debt calculated over the shorter sample from Orbis. The graphs show that bank debt was the most popular form of debt financing in every group, accounting for over 10% of total debt financing in the pro-creditor group. HHL and Andersen and Sundaresan (1996) model public debt as the alternative to bank debt even though Figure 2 shows that in each of the three groups of companies, public debt is the least preferred form of debt, accounting for as little as 0.5% of total debt. There are some noticeable trends across the three debt categories. The use of bank debt increased over time in the pro-restructuring group, while its use decreased in the anti-creditor group. The latter group seems to have turned to private debt to cover the shortfall in bank debt. The pro-creditor countries show a non-monotonic rise in the use of both bank and private debt.

4. Empirical Analysis

We estimate OLS regressions to test the impact of the two bankruptcy indexes on the level of long-term debt. The regressions have to control for firm characteristics that independently affect a firm's debt capacity. We include firm size, profitability, the ratio of tangible assets to total assets, Altman's Z-score, and ownership concentration, as firm-specific controls. Barclay, Smith and Morellec (2006) show that firms with more growth opportunities are less likely to be funded by debt. Rajan and Zingales (1995) find that this negative relation between growth opportunities and leverage extends to G7 countries. Fama and French (2002) find that profitability and leverage are negatively related, confirming the pecking order theory of capital structure. Other explanations have also been proposed for this negative relation between profitability and leverage (Hennessy and Whited, 2005). Benmelech, Garmaise and Moskowitz (2005) show that asset redeployability enables firms to borrow more and at longer maturities. Acharya, John and Sundaram (2008) show that higher liquidation values mitigate the impact of a change in bankruptcy law. Stulz (1990) showed that bank borrowing is higher when equity ownership is concentrated among a few shareholders and that these shareholders are willing to subject the firm to greater monitoring by bank lenders.

All firms in every country with valid long-term debt data on Worldscope are pooled and OLS regressions are estimated with the change in the level of long-term debt as the dependent variable. If a leverage ratio is missing for a firm in a given year, we omit the firm from the analysis for that year, but include it in years in which it has valid data. Goyal and Frank (2007) argue that excluding missing data from the analysis can bias the results if missing data is related to the process being studied. In our case, we are less concerned with this bias because we want to draw out the impact of bankruptcy law changes on these small, possibly financially constrained firms.

The OLS regressions with country fixed effects take the form:

$$\Delta D_{ik} = \alpha_k + \beta X_{ik} + \theta_C * \Delta C_k + \theta_R * \Delta R_k + \theta_{CR} * \Delta C_k * \Delta R_k + \varepsilon_\iota \tag{10}$$

where ΔD_{ik} is the change in the average level of long-term debt from the pre-event to the post-event period for firm i. The event is the year in which the new bankruptcy law went into effect in country k. The pre-event period is the three years (two years in the case of Russia, China, and Greece) before the year of implementation of the new law, and the post-event period is the year

19

of and the two years following implementation of the new law. For Italy, which implemented changes in two phases, we use 2006 (the year in which the second phase went into effect) as the event year. α_k are firm fixed effects. ΔC is the change in the index between the post-event period and the DMS index in the pre-event period. ΔR is the change in the restructuring index between the post- and pre-event periods. ϵ is a random component assumed to be mean zero and homoscedastic. The interactive term $\Delta C * \Delta R$ is included to accommodate laws that encourage efficient restructuring. The θ coefficients in equation (10) should capture the incremental effect of each type of bankruptcy law; θ_C captures the effect of pro-creditor laws, θ_R captures the effect of anti-creditor laws, and θ_{CR} captures the effect of pro-restructuring laws.

The vector **X** in equation (10) is the set of firm-specific characteristics which includes: i) firm size, calculated as the natural logarithm of total assets; ii) profitability, calculated as the ratio of EBITDA to total assets; iii) the Altman Z-score, meant to capture the probability of bankruptcy of the firm; iv) the ratio of fixed assets to total assets, a measure of asset tangibility; and v) the concentration of equity ownership in the hands of the controlling shareholder. The first four variables are from the fiscal year ending in the event year. Ownership is from the last year of coverage in the Orbis database, which is almost always 2009. Orbis reports the level and identity of all block shareholders. We only include the level of ownership of the largest blockholder who is most likely to have the incentives to expend costs monitoring the manager. Even though the regression is estimated with multiple firms from the same country we do not include country fixed-effects: the changes in the creditor rights and restructuring indexes have unique values across the countries in the sample, serving in effect, as country fixed-effects.

4.1. Identification Issues

The estimates of θ in equation (10) are affected by a self-selection problem. We showed earlier in Table 3 that the cultural and legal environment of countries differed systematically across the three groups of countries. Countries appear to adopt a bankruptcy regime to accommodate their unique characteristics. The self-selection of a particular bankruptcy regime affects the estimate of β since the form of equation (10) that we are actually testing is:

$$\Delta D_{ik}|E = \alpha_k + \boldsymbol{\beta X_{ik}} + \theta_C * \Delta C_k + \theta_R * \Delta R_k + \theta_{CR} * \Delta C_k * \Delta R_k + \epsilon_i |E \qquad (11)$$

where E in equation (11) is the bankruptcy regime chosen. Since equation (11) applies to a self-selected sample, rather than to the population as a whole, OLS estimates from equation (10) are not consistent estimators of θ_C, θ_R and θ_{CR}.

We use an instrumental variables approach to tackle the endogeneity inherent in the bankruptcy regime chosen. Our choice of the instrumental variable is the number of internet connections in a country. McKinsey, the consulting company finds that internet maturity of a country measured by an index called 'e3', is correlated positively with net per capital GDP growth. They claim that the creation of a legal framework that promotes internet connectivity leads to the positive relation between internet growth and GDP growth.[5] Since updating bankruptcy laws falls within modernizing the legal framework, the change in internet connectivity is a potential instrument to capture the endogeneity in a country's choice of bankruptcy law. A good instrument has to satisfy the requirement that it is not correlated with changes in firm-level debt structure, the so-called exclusion condition (Roberts and Whited (2012)). Since it is difficult to conduct a formal test of the exclusion condition, qualitative arguments have to suffice. We believe it is unlikely that the number of internet users in a country is correlated with the choice of the level and type of debt chosen by a firm in that country.

Data on internet connectivity was obtained from the World Bank, which compiles annually, the number per 100 people who have used the internet in the prior 12 months. To check the relevance condition in Roberts and Whited (2012), we estimated the regression below:

$$\Delta C_{ik} = \delta_0 + \gamma * (\Delta \text{internet}) + \delta_1 Y_1 + v_i \qquad (12)$$

ΔC_i is the change in the creditor rights index from the pre- to the post-event period in country k, Δinternet is the change in the World Bank measure of internet users, Y_1 is an exogenous variable that, in addition, to the instrumental variable, affects the change in creditor rights. The coefficient γ in regression equation (12) should be non-zero for the relevance condition to be satisfied. We chose the World Bank rule of law index described in the previous section, as the Y_1 variable. The results from estimating equation (12) are in Table 5. T-statistics reported are calculated using standard errors clustered at the country level. The results confirm that the

[5] Rausus, M., Manyika, J., Hazan, E., Bughin, J., Chui, M., and Said, R., 2011, Internet matters: The Net's sweeping impact on growth, jobs, and prosperity, McKinsey Global Institute.

coefficient γ is positive and is statistically significant (t-statistic=2.81). The positive coefficient shows that greater internet connectivity encouraged countries to strengthen creditor rights. Stock, Wright and Yogo (2002) show that weak instruments can lead to coefficient bias. The adjusted R-square of 17.26% in Table 4 indicates that internet connectivity is a strong instrument that is unlikely to lead to biased coefficients. In addition, we run a formal test using the Cragg and Donald F-statistic. Low values of the F-statistic indicate a weak instrument. The F-statistic is reported at the bottom of Table 5. With a value of 1564.7, it is well above the benchmark of 10 required for a strong instrument.

4.2. Difference-in-difference (DID) estimation

There is an additional source of endogeneity in equation (11) that is not addressed by the instrumental variable. The restructuring index is also affected by endogeneity. We need an alternate method to control for the endogeneity in this index since the number of internet connections cannot be used as an instrumental variable for both indexes simultaneously. Our solution is a difference-in-difference methodology with a group of firms serving as a control sample. These firms satisfy the requirement of a control sample in that they were subject to the same economic climate that prompted a country to change its bankruptcy laws, but were unlikely to be affected by changes to the law. We choose state-owned enterprises (SOEs) as the control firms in the regressions. Brandt and Li (2003) show that expected government bailouts of state-owned enterprises (SOEs) in financial distress increase the supply of bank debt to SOEs. Moreover, Li, Yue and Zhao (2009) show that the effect of institutional development on capital structure decisions are weaker for SOEs. We expect macro-economic conditions prevalent in the country to have a bigger impact on the leverage choice of an SOE than changes to bankruptcy laws.[6]

Time trends in the structure of debt is an additional source of endogeneity in equation (11) that could have affected both sample and control firms. For instance, public debt markets

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[6] For instance, large quasi-government infrastructure companies in emerging markets issued high-yield debt after the recent financial crisis in the U.S.

22

were insignificant in Germany until the late 1990s.[7]   Firms would have been encouraged to issued public debt over time as investor awareness of the security grew. To control for these time trends we include placebo years. Our regressions include the change in each debt type for firms over a placebo period when their countries had not adopted the new bankruptcy law. To account for the placebo period on the right hand side of the regression, we include a dummy variable as in Bertrand and Mullainathan (2003). The final form of equation (11) estimated using two-stage least squares with the SOE and time-trend controls is:

$$\Delta C_k = \lambda_0 + \gamma * (\Delta \text{internet}) + \lambda_1 Y_1 + v_i \tag{13a}$$

$$\Delta D_{ikt} = \alpha_k + \boldsymbol{\beta X_{ik}} + \theta_C * \Delta C_k + \theta_R * \Delta R_k + \theta_{CR} * \Delta C_k * \Delta R_k + \delta_C * SOE_{ik} * \Delta C_k +$$

$$\delta_R * SOE_{ik} * \Delta R_k + \delta_{CR} * SOE_{ik} * \Delta C_k * \Delta R_k + \omega_C * TIME_k * \Delta C_k +$$

$$\omega_R * TIME_k * \Delta R_k + \omega_{CR} * TIME_k * \Delta C_k * \Delta R_k + \beta_C * SOE_{ik} * TIME_k * \Delta C_k +$$

$$\beta_R * SOE_{ik} * TIME_k * \Delta R_k + \beta_{CR} * SOE_{ik} * TIME_k * \Delta C_k * \Delta R_k + \varepsilon_i \tag{13b}$$

Equation (13a) is the first-stage regression, which instruments the change in the creditor rights index with the change in the number of internet connections. Equation (13b) is the second-stage regression with the control and time dummies: SOE_{ik} is a dummy variable that equals one if firm i in country k is not an SOE, and is 0 otherwise, and $TIME_k$ is a placebo dummy that takes a value one if the change in debt on the left hand side of the equation is around the event year when country k instituted bankruptcy reforms, and takes a value 0 if the change in debt is around a placebo event year in that same country. We identified SOEs using the 'Global Ultimate Owner' (GUO) field in the Orbis dataset. SOEs are firms for which the GUO is listed as 'state-owned', as a 'public enterprise', or as a 'foundation'. The placebo event is a year at least three years prior to, or at least three years after the new bankruptcy law went into effect, when there were no other changes to bankruptcy law in country k. The coefficients β_C, β_R, and β_{CR} capture the incremental effect of the creditor rights and restructuring indexes on a firm's total debt after controlling for endogenous variation in debt levels.   The coefficient β_C captures the incremental effect of pro-creditor reforms, the coefficient β_R captures the incremental effect of anti-creditor reforms, and the coefficient β_{CR} captures the effect of pro-restructuring reforms.

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[7] Luengnaruemitchai and Ong (2005) report that the introduction of the Euro in 1999 led to a doubling of corporate debt issuance in 1999 from the previous year.

The two-stage regression in equation (13) is estimated using the PROC SURVEYREG procedure in SAS with country as the clustering variable. As stated earlier, we do not include country fixed effects in the regression since the combination of the change in creditor rights index and the restructuring index is itself unique to each country making it unnecessary to include country fixed effects. Results from this estimation with the change in total long-term debt as the dependent variable are in Table 6. T-statistics are calculated using standard errors clustered by country. In the first two specifications, the independent variables include the SOE control dummy, the two bankruptcy indexes and **X,** the vector of firm-specific variables. The results show that the coefficients on the two bankruptcy indexes are uniformly insignificant, which is consistent with the joint implication that emerges from the hypotheses derived in Section 2. The hypotheses jointly predict that it is the debt structure rather than the level of total debt that responds to bankruptcy reforms. Table 6 shows that regression coefficients on two firm characteristics, namely, ownership concentration and Z-score are statistically significant, the former with a positive sign, and the latter with a negative sign. In regression (iv) we include an interactive variable "$\Delta R * pvt$" to test hypotheses *HD* and *HE*. 'pvt' is the ratio of private debt outstanding to total assets in the pre-reform period. The coefficient on this interactive variable captures the effect of private debt on the willingness of creditors to restructure when anti-creditor bankruptcy laws are adopted. The coefficient on this interactive variable is insignificant in every specification. In regressions (v) and (vi), we include the product of the two dummy variables interacted with each of the bankruptcy indexes. The statistical significance of the β coefficients indicate support, or lack of it, for hypotheses *HA* through *HE*. The results show that the β coefficients are uniformly insignificant.

5. Empirical Evidence on Debt Structure

For each firm in the sample, we calculate the pre-event to post-event change in the proportion of: i) bank loans; ii) public debt; and iii) private debt. We test hypotheses in section 2 about the impact of bankruptcy reforms on these debt categories by estimating the 2SLS regressions (equations (13a) and (13b)). For each category of debt, we estimate six different specifications. In the first four specifications, we include, in addition to the two bankruptcy

indexes, the indexes interacted with the SOE dummy. The coefficients on the SOE dummy interacted with the bankruptcy indexes are the diff-in-diff estimates. They indicate whether bankruptcy reforms had a larger impact on non-SOEs than on SOEs. In the last two specifications, we include the product of the SOE and the placebo dummy interacted with each of the bankruptcy indexes. The coefficients on these variables indicate whether bankruptcy reforms had a robust impact on non-SOEs after controlling for endogeneity in the selection of a bankruptcy regime, and for time trends in the relative usage of different types of debt.

Table 7 Panel A has results for bank debt. There is support for hypothesis *HA* in specifications (i) and (ii); the coefficients on SOE interacted with ΔR and interacted with ΔC * ΔR are positive and statistically significant. Higher values of the restructuring index encourage non-SOE firms to issue bank debt. When SOE interacted with ΔC, ΔR, and ΔC*ΔR are all included in regression (iii), none of the coefficients are statistically significant indicating that both anti-creditor laws and pro-restructuring laws lead to an increase in bank debt, with neither effect dominating the other. When the results are parsed further in specification (iv) with the inclusion of SOE interacted with the product of ΔR and 'pvt', it is only the coefficient on this variable that is positive and statistically significant. Specification (iv) shows support for hypothesis *HD* that anti-creditor reforms lead to an increase in bank debt when the firm has private debt outstanding. In the last two regression specifications (v and vi), the bankruptcy indexes are interacted with both the SOE and time dummy to control for a time trend and endogenous changes in the usage of debt. In these two specifications, the coefficients on the two dummies interacted with the product of ΔR and 'pvt' is positive and statistically significant confirming that empirical support for hypothesis *HD* is robust to an endogenous increase in the usage of bank debt among SOEs and to a time trend.

Table 7 Panel B has the regressions for public debt. Specifications (i) and (ii) show empirical support for hypothesis *HB* that pro-creditor reforms lead to an increase in public debt. In specification (i), the coefficient on SOE interacted with ΔC is positive, but is only marginally significant; the coefficient becomes significant at the 5% level in specification (ii). In the last two specifications, the coefficients on ΔC interacted with the SOE and placebo dummies are positive and statistically significant indicating that empirical support for hypothesis *HB* is robust

25

to a time trend and to an endogenous increase in the usage of public debt. None of the regression specifications show any support for hypothesis *HC* that anti-creditor reforms lead to a decrease in public debt. The coefficients on ΔR and on $\Delta C*\Delta R$ interacted with the control dummies are not statistically significant in any of the regression specifications.

Table 7 Panel C has the regressions for private debt. In specifications (i and ii), the coefficient on SOE interacted with ΔC is negative and is marginally significant. The negative coefficient suggests that pro-creditor reforms lead to a reduction in private debt. This is not a hypothesis that emerges from the theory section. The coefficients on SOE interacted with ΔC become insignificant in the next four specifications. There is strong support in the next four specifications for versions of hypothesis *HE*. In specifications (v) and (vi) where SOE and the placebo dummies are interacted with the bankruptcy indexes, the coefficients on ΔR and on $\Delta C*\Delta R$ are positive and significant. The positive coefficients indicate that anti-creditor reforms and pro-restructuring reforms lead to an increase in private debt. It is the only source of financing available to firms that don't already have such debt, when the supply of bank and public debt shrink following anti-creditor reforms. When the firm has pre-existing private debt, the negative and statistically significant coefficient on SOE and the time dummy interacted with $\Delta R*pvt$ in regressions (iv), (v) and (vi) show that anti-creditor reforms lead to a reduction in private debt.

5.2. Supply-side effects

The testable hypotheses developed in Section 2 considered supply and demand jointly. Even though the hypotheses are stated in terms of the supply effect, or the willingness of a group of lenders to lend, the demand side was considered in their development. For instance, hypothesis *HB* predicts that a pro-creditor bankruptcy law encourages public debtholders to lend. On the supply side, banks are just as eager to lend when the law allows them to seize collateral. The demand side, however, discourages borrowing from banks. The firm prefers to borrow from junior lenders so that it can effectively lower the bankruptcy threshold (HHL). Joint consideration of the demand and supply effects leads to the hypothesis that a pro-creditor bankruptcy law encourages public debtholders to lend. Accordingly, the dependent variable in

the two-stage regressions in equation (13) represents an equilibrium change which balances the change in firms' demand for a particular category of debt with the supply of that category of det. Following this logic, we do not separate out demand and supply effects as in (Ivashina (2009)). Nevertheless, in results not reported in the paper, but available from the authors, we estimated the effect of bankruptcy reforms on the supply of bank debt, and included the predicted change in the supply of bank debt as an additional explanatory variable in equation (13). The results remain qualitatively unchanged.

6. Economic impact of bankruptcy reforms

The evidence suggests that bankruptcy laws redistributed debt among bank, public, and private sources without significantly altering the level of total long-term debt outstanding in a firm. The redistribution could have nonetheless affected the real economy by encouraging new issuers of bank and public debt who did not have access to these sources prior to the change in bankruptcy law. Haselmann and Vig (2008) demonstrate that bankruptcy reforms in Eastern European countries had an impact on the real economy by increasing lending to households, which tend to be weaker credits than corporate entities.

We identify issuers of new debt in the post-reform period in each category by calculating:

$$\Delta D_{i,post} = [D_{i,post} - (D_{i,pre}/LTD_{pre})*LTD_{post}]/A_{post} \qquad (14)$$

where $\Delta D_{i,post}$ is the amount of new debt in the ith category in the post-reform period, $D_{i,post}$ is the level of debt in the ith category in the post-reform period (in \$), LTD_{post} is the level of total debt in the post-reform period, and A_{post} is the level of total assets in the post-event period. The second part in the numerator of equation (14) is the amount of debt in a category that would have been acquired (or shed) had the firm continued to borrow in the same proportion of total long-term debt as in the previous year. Thus equation (14) measures newly issued (or shed) debt in any category over and above what would be predicted had only total assets increased.

To determine whether the characteristics of issuers changed in the post-bankruptcy reform period, we estimate an OLS regression. The post-reform characteristic, namely size, tangible assets, profitability, and Z-score, is regressed on the two bankruptcy indexes. To determine the incremental effect of the bankruptcy indexes on issuers of different categories of debt, we add additional independent variables. For each category of debt, we create three dummy

variables related to the amount of new debt of that category that was issued in the post-reform period. 'd_33', 'd_66', and 'd_99' take a value of one if the amount of new debt issued within a category falls in the 33rdpercentile, 66th percentile, or the 99th percentile respectively. The dummy variables interacted with the bankruptcy indexes are included as additional explanatory variables.

Table 8 has the results of the OLS regressions. T-statistics are calculated using clustered standard errors. Panel A has the results for new issuers of bank debt. Accordingly, 'd_33' and 'd_66' are dummy variables for firms whose new bank debt issuance is in the 33rd and 66th percentiles respectively. The regressions show that pro-restructuring reforms encouraged weaker quality firms to issue large amounts of new bank debt. Size, profitability and asset tangibility are lower among issuers of large amounts of new bank debt following pro-restructuring reforms; in the regressions for size, profitability, and asset tangibility, the coefficients on $\Delta C*\Delta R$ interacted with the 'd_66' dummy are negative and are statistically significant. These firms may have relied on private debt (Denis and Mihov, 2003) previously and were encouraged by pro-restructuring laws to switch to bank debt. The decrease in these characteristics is less pronounced among modest issuers of new bank debt; the coefficient on $\Delta C*\Delta R$ interacted with the 'd_33' dummy is statistically insignificant in the regressions for profitability and asset tangibility. Modest amounts of new bank debt were issued by more profitable firms with greater asset tangibility following pro-creditor reforms; the coefficient on ΔC interacted with the 'd_33' dummy is positive and is statistically significant in the profitability and asset tangibility regressions. These are high quality firms that are less likely to default, and become susceptible to seizure of collateral.

Panel B has results for new issuers of public debt. Since most firms in our sample have never issued public debt, the ''d_33' and 'd_66' variables are zero for a majority of the sample. Hence, we replace those two dummy variables with 'd_99' which takes a value 1 if the amount of new public debt issued exceeds the 66th percentile of such issuance. The results show that firms with opposite characteristics as bank issuers issued public debt. Weaker firms, as indicated by size and profitability issued public debt following pro-creditor reforms. The coefficient on ΔC interacted with the 'd_99' dummy is negative and is statistically significant in the profitability and size regressions. By contrast, larger, more profitable firms issued public

28

debt following pro-restructuring reforms. Public debt holders appear to have been encouraged by pro-creditor bankruptcy laws to lend to weaker firms.

Finally, Panel C has results for new issuers of private debt. The results show that pro-creditor reforms encouraged stronger firms to issue modest amounts of private debt; the coefficient on ΔC interacted with the 'd_33' dummy is positive and is statistically significant in the size, profitability and asset tangibility regressions. Weaker firms issued modest amounts of private debt following pro-restructuring reforms; the coefficient on $\Delta C*\Delta R$ interacted with the 'd_33' dummy is negative and is statistically significant in the size and asset tangibility regressions.

In summary, the evidence confirms that weaker firms were drawn to issue bank debt by pro-restructuring reforms. Pro-creditor reforms encourage strong firms to issue bank debt, and weak firms to issue public debt. Bankruptcy reforms that encourage restructuring enable strong firms to issue public debt, but private debt is the only source of debt for weak firms of smaller size with few tangible assets. Countries that adopted pro-creditor laws were shown in Table 3 to have weak equity markets, but strong debt markets. The evidence in this section and in prior sections shows that the laws had the desired effect of shifting demand away from bank debt into public and private debt. Countries that adopted pro-restructuring laws were shown in Table 3 to have weak debt markets and a strong equity market. The evidence in Table 8 shows that the laws had the desired effect of shifting demand into bank debt.

7. Effect of bankruptcy reforms on the banking sector

The previous section showed that there were changes in the characteristics of issuers of different categories of debt following bankruptcy reforms. In this section, we examine the impact of these reforms on the banking sector in each country to determine whether the sector was strengthened or weakened by the type of bankruptcy law adopted. We obtain financial data on individual banks in the eleven countries in our study from the Bankscope database. The data obtained includes: i) total capital ratio, ii) interest margin iii) loan loss reserve to gross loans, iv) net interest revenue, v) net loans to total assets, vii) impaired loans to gross loans, viii) operating income, and ix) interbank ratio. We sort countries into three groups as in Table 3: countries adopting pro-restructuring reforms, those adopting pro-creditor reforms, and finally, those adopting anti-creditor reforms. For each group, we obtain the median values of the variables listed above in the three years up to, and including the year when the new bankruptcy law went into effect, and in the three years following the event year. Since there are differences in the size of the banking sector that can be affected by aggregating across countries in a single group, we only include relative size and quality measures that are calculated as ratios.

Results are reported in Table 9. The amount of lending increased following pro-restructuring reforms, decreased following anti-creditor reforms, and decreased, but not significantly so, following pro-creditor reforms; the proportion of loans to assets increased from 61.37% in the pre-reform period to 63.45% in the post-reform period for the pro-restructuring group, decreased from 57.83% to 57.18% for the anti-creditor group, and decreased from 64.09% to 60.10% for the pro-creditor group. Greater lending following pro-restructuring reforms was accompanied by improvements in profitability measures. Net interest revenues increased significantly from 2.75% in the pre-reform period to 3.09% in the post-reform period. Similarly, interest margin increased significantly from 2.92% in the pre-reform period to 3.33% in the post-reform period for this group of countries.

The decrease in lending activity following pro-creditor and anti-creditor reforms appear to have enabled banks to strengthen the credit quality of their loan portfolios. The ratio of impaired loans to gross loans for the anti-creditor category declined from 3.61% in the pre-reform period to 2.68% in the post-reform period, and declined from 1.64% in the pre-reform period to 1.55% in the post-reform period for the group of pro-creditor countries. A second

measure of credit quality, loan loss reserves to gross loans, also declined for these two groups of countries.

The last two columns of Table 9 are joint tests for the statistical significance of differences across the three groups of countries. The F-tests indicate that the change in the ratio of loans to assets, the change in the ratio of impaired loans to gross loans, and the change in net interest revenue from the post-reform to the pre-reform period are significantly different across the three groups of countries. Tukey's test for pairwise comparisons show that the difference in the loan to assets ratio is significantly different between the pro-restructuring group and the pro-creditor group, and between the pro-restructuring and anti-creditor groups. The differences between the pro-creditor and anti-creditor groups are not significant.

In Table 10, we present results from OLS regressions estimated with the change in each of the eight banking measures around the event year as the dependent variable. The independent variables are the change in the creditor rights index, the product of the change in the creditor rights index and the restructuring index, and a proxy for the size of the bank. The proxy we use is the ratio of total assets/equity. There were many missing values on the Bankscope database for a purer measure such as total assets, or total loans, which precluded their use as an explanatory variable.

The results confirm those from the univariate statistics. The profitability of the banking industry increased after pro-restructuring reforms and decreased following pro-creditor reforms. In the regressions for the change in interest margin and the change in net interest revenues, the coefficients on $\Delta C * \Delta R$ are positive, while the coefficients on ΔC are negative. Profitability and the total amount of lending appear to be related in that total lending declined significantly following pro-creditor reforms, and increased, at a marginal level of significance, following pro-restructuring reforms. The coefficient on ΔC in the regression for the change in loans to assets is negative and statistically significant, while the coefficient on $\Delta C * \Delta R$ in the same regression is positive, but is only marginally significant. As evidence that pro-restructuring reforms encouraged banks to lend to weaker credit, the coefficients on $\Delta C * \Delta R$ in the regressions for the change in impaired loans to gross loans, and the change in loan loss reserves, are positive and significant.

8. Conclusions

Rajan and Zingales (1995) and others have shown that credit markets are larger when the legal environment protects creditor rights. This paper extends this result by showing that a judicious choice of bankruptcy laws can affect the relative importance of credit and equity markets in financing a country's growth. By encouraging firms to turn away from private debt and into bank debt, pro-restructuring bankruptcy laws appear to have helped countries build up the banking sector. The opposite effect, namely, lower reliance on the banking sector, appears to occur when countries adopted pro-creditor laws that encouraged weaker firms to turn away from bank debt and into public debt. Finally, anti-creditor laws helped countries strengthen their banking sector by encouraging weak firms to shift away from bank debt and into private debt. Our empirical results capture the equilibrium relationship between the change in demand for debt and the change in supply of that debt category in response to changes to bankruptcy law. By considering the demand and supply effects jointly, we are able to reconcile conflicting results in the existing literature about the effect of bankruptcy law changes on firm-level leverage.

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Appendix A
Numerical examples to illustrate incentives of creditors to restructure

In the base-case scenario, we consider a firm with assets worth $600 financed with bank loans of $300. The firm is in financial distress after the market value of its assets in place has dropped to $0. The market value of bank loans has fallen below its face value, with equity suffering a complete loss. The book value and market value balance sheets of the firm are below.

	book value	market value		book value	market value
Cash	270	270	Bank loan	300	270
assets in place	330	0	Equity	300	0
	600	270		600	270

Suppose the company has an investment project with a guaranteed 15% rate of return that requires an investment of $290 today. If the firm's cost of capital is assumed to be 10%, the project has a positive NPV. Since the firm has only $270 in cash on hand, it needs an additional $20 to invest in this project. The required investment will be split between the bank and shareholders in such a way that each party maximizes the payoff received in exchange for its contribution. Banks are limited to a payoff equal to the face value of their loans, while shareholders have options like payoffs. Hence banks will be willing to offer only minimal coupon concessions that are just enough to force shareholders to contribute. Thus, we suppose the bank agrees to make coupon concessions which will contribute $0.50 to the cost of the investment with the remaining $19.50 coming from shareholders. The market value balance sheets at t=1 and at t=0 at a 10% discount rate after the investment has been made are:[8]

	market value t=0	market value t=1		market value t=0	market value t=1
Cash	283.18	333.5	Bank loan	272.23	300
assets in place	0	0	Equity	10.95	33.5
	283.18	333.5		283.18	333.5

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[8] The value of bank loan at t=0 is calculated as: $300/1.1 - 0.5 = \$272.23$ and the value of equity as: $33.5/1.1 - 19.50 = \$10.95$.

Since the value of the bank loan has increased by $2.23 net of its contribution of $0.50, it grants the concession.

A2. Supply of bank and public debt with restructuring

We examine creditors' incentives to restructure when the firm has both senior bank debt and junior public debt outstanding. Below are the market and book value balance sheets of a company on the verge of financial distress.

	book value	market value		book value	market value
Cash	270	270	Bank loan	300	300
			Debt	100	100
assets in place	330	130	Equity	200	0
	600	400		600	400

The assets of the firm are just sufficient to pay off the bank and public debt holders in full. We suppose that creditors are aware that if the firm were to be liquidated, its assets in place would be worthless so the firm would only be worth $270. Knowing this, they prefer to seize collateral whose market value is currently $400 and recover their debt, rather than liquidate the firm. If bankruptcy law does not permit creditors to seize collateral, the firm can threaten to liquidate the firm. If the firm follows through on its threat, its balance sheet is:

	market value		market value
Cash	270	Bank loan	270
Assets in place	0	Public Debt	0
		Equity	0
	270		270

The firm can offer to rehabilitate the firm if creditors offer coupon concessions to invest in a project requiring an investment today of $290 with a guaranteed return of 15% a year later. Shareholders are unwilling to contribute anything since the project will generate only $333.50, an insufficient amount to repay all outstanding debt. It is up to bank and public debt holders to contribute to the investment through coupon concessions. Both groups of creditors have to offer concessions, but the split between the two is determined by their relative bargaining power. Banks have greater bargaining power due to their seniority in the APR, which ensures that public debt holders are paid only after banks have been repaid in full. Thus, banks will grant coupon concessions that are just sufficient to ensure that public debt holders will contribute toward the

investment. Thus, we suppose the bank contributes $0.50 and public debt holders contribute $19.50. The balance sheets at t=0 and at t=1 after the investment is undertaken are:

	market value t=0	market value t=1		market value t=0	market value t=1
Cash	283.18	333.50	Bank loan	272.23	300.00
			Debt	10.95	33.50
assets in place	0.00	0.00	Equity	0.00	0.00
	283.18	333.50		283.18	333.50

The market values of bank and public debt after the investment is made are higher than if the firm were liquidated. Therefore both sets of creditors are willing to grant coupon concessions when they are forced to do so. If they were not forced to grant concessions but were allowed to seize assets, the bank receives $300 and public debt receives $100 at t=1. With restructuring as shown in the table above, the bank receives $300 at t=1 but public debt receives only $33.50. Thus, the bank is indifferent between offering coupon concessions or seizing assets. Public debt holders, on the other hand, are better off seizing assets than restructuring.

A3. Restructuring in the presence of private debt

We examine the incentives of banks when the firm has both bank and private debt outstanding. Private debt is junior to bank debt, but unlike public debt, can be restructured without the participation of other lenders.[9] We consider again the market value balance sheet of a firm in financial distress:

	market value		book value	market value
Cash	270	Bank loan	300	270
Assets in place	0	Private Debt	100	0
		Equity	200	0
	270		600	270

The firm is on the verge of liquidation as the assets in place have fallen to zero. The firm can invest in a project requiring an investment of $290 with a guaranteed 15% rate of return. Although the bank will refuse to contribute toward the investment, shareholders and the bank can exploit the weak bargaining position of private debt holders to force them to contribute the entire

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[9] The private placement exemption under section 4(2) of the Securities Act allows an exchange offer to be made to accredited investors without a general solicitation.

$20 required to undertake the investment. The balance sheets at t=0 and t=1 after the investment is made are:[10]

	market value t=0	market value t=1		market value t=0	market value t=1
Cash	283.18	333.5	Bank loan	270	297
assets in place	0	0	private debt	12.85	36.135
			Equity	0.33	0.365
	283.18	333.5		283.18	333.5

Private debt is willing to contribute the entire investment since its payoff at t=1 after the investment is made is higher than its payoff before the investment. The outcome is first best as every claimant is either no worse off or is made better off. Thus, the example illustrates that the presence of private debt allows restructuring to occur even when bankruptcy law permits APR violations.

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[10] The market values for bank loan and equity at t=0 and at t=1 are calculated as follows: At t=1, the bank keeps = 0.99*300 = 297, at t=0, its PV discounted at 10% = 297/1.1 = 270. At t=1, private debt receives (333.5-297)*0.99=36.135, which is worth = 36.135/1.10-20=12.85, and equity keeps an amount = 333.5-297-36.135=0.365 at t=1, which is worth = 0.365/1.10 = 0.33 at t=0.

Appendix B
Summary of major changes in the new bankruptcy code

Spain: *Filing for bankruptcy encouraged*: Bankruptcy proceedings were consolidated into a single insolvency proceeding. The law created special courts (*Juzgados de lo Mercantil)* with expertise in dealing with matters related to Commercial Law. Directors of insolvent companies who fail to file for bankruptcy in a timely manner face severe liabilities and penalties. The new law thus reinforces the principle of *par condition creditorum*, the liability of bankrupt company's directors. *Treatment of creditors in liquidation*: Classification of subordinate credits was changed. Ordinary creditors receive priority over subordinate credit. Payments to privileged categories (such as employees) and payments to treasury are limited, with the latter only receiving up to 50% of their debt.

Netherlands: *Treatment of creditors*: Secured creditors, especially those holding mortgages and pledges on assets, have been granted increased powers to close on collateral and are not subject to priority rules. Unsecured creditors are required to file claims against an administrator. In the event of liquidation, new priority rules grant the highest priority to estate claims. This category of claimants can also include DIP financing. The second highest priority is given to preferred credits, which are credits that were established prior to bankruptcy. Unsecured creditors have the lowest priority. Courts can *clawback* any payments that were made by the firm in the period before filing for bankruptcy. Director liabilities are imposed for fraud or for poor decision making.

France: *Filing for bankruptcy*: The *procedure de sauvegarde* is a new procedure that allows a debtor who is still solvent, but anticipates future insolvency to initiate "rescue proceedings" under court protection. The debtor then receives an automatic stay of all outstanding claims. Current management and ownership remain in place, but are supervised by a bankruptcy trustee. To encourage creditors, especially banks, to renegotiate their claims, the new law grants privileges to new credit extended during the negotiation process. These privileges include immunity from *clawback* and priority in case the firm is subsequently liquidated. Unsecured creditors have very limited rights, as the judge can force postponement of payment on their claims. Furthermore, this category of creditors is not invited to be a part of creditor committees.

Italy: *Filing for restructuring*: Encourages out-of-court restructuring or "composition." Legal requirements for a debtor to be eligible to a work-out have been simplified to allow debtors who are not currently insolvent but who are anticipating difficulties to request composition with creditors. Italy eliminated the requirement that the debtor guarantee payment of 100% of secured claims and 40% of unsecured claims to qualify for composition. *Treatment of creditors*: The new rule eliminated the *clawback* provision which allowed courts to set aside payments and decisions made by the debtor in the two-year period prior to declaration of bankruptcy. *Treatment of firms*: Allows firms to maintain control over the physical assets of the firms, so much so that it allows firms to transfer some or all assets of the firm to another entity that will assume management of the assets. Permits an unconditional "discharge" of debts that have not been paid by bankruptcy. Firms are no longer subject to civil personal liability on claims that remain.

United Kingdom: *Filing for bankruptcy*: The new law prohibits floating charge holders from appointing an administrative receiver. Floating charges are usually held by debenture holders. *Treatment of creditors in bankruptcy*: The court imposes a moratorium on collection of credits if the firm enters into a Corporate Voluntary Arrangement (CVA) with its creditors. In the event of liquidation, the new law changes priority rules by abolishing the Crown's preferential rights to recover its claims on taxes. *Treatment of firms in bankruptcy*: Leaves current management and ownership in control of the firm to negotiate with creditor committees, and a reorganization plan that emerges is not subject to court approval. It discharges outstanding debt by eliminating director liability if the conduct of directors is not deemed to be wrongful or fraudulent.

Russia: The new law makes it difficult for the creditor to initiate a bankruptcy because it now requires that the creditor obtain a court judgment on a debt that has not been repaid for at least 3 months. Once the filing is approved, an automatic stay is enforced on all payments. The new law weakened the rights of secured creditors to recover their debts. It sets out a specific procedure for the sale of pledge property. The claims of secured creditors are satisfied out of the proceeds from the sale of pledged property, after satisfying claims under the first and second order of priority. If proceeds are insufficient to pay secured creditors, their claims are to be

included in the third category along with those of unsecured creditors. The priority of secured creditors has been superseded by other claimants such as employees and tax authorities. *Rights of Debtors*: The new law leaves current management in place while the firm renegotiates its claims with the debtor, or it permits a third-party manager to take control of the company's operations. It also specifically strengthened debtors by prohibiting out-of-court security interest enforcement after bankruptcy is initiated.

China: Upon acceptance of a filing, a bankruptcy custodian is appointed to take over the assets of the firm and to manage daily operations. An automatic stay on payments of debt is imposed. Personal restrictions on management of the indebted firm are imposed. Creditor committees which allow creditors to negotiate with the debtor are established. A restructuring plan is adopted by the court with the approval of a simple majority of creditors attending a creditors meeting. Secured creditors can vote in a creditors meeting if they forfeit their priority right to be prepaid. In the event of liquidation, the new law moves up unpaid wages on the priority list to third place, after expenses incurred during bankruptcy proceedings and senior secured debt in that order. Collateral is recovered through a sale by public auction.

Brazil: Any new credit that is extended after the bankruptcy filing receives the highest priority. The second highest priority is given to employee wages, but payments were restricted to not exceed 150% of the minimum wage. Secured creditors got precedence over tax credits. *Rights of debtors*: The new law encourages extra-judicial restructuring. The restructuring is a prepackaged mechanism whose outcome is binding upon minority creditors.

Finland: Upon acceptance of a bankruptcy filing, the court appoints an estate administrator, or a liquidator, who takes over the assets of the firm and steers it through the bankruptcy process. Fees of the administrator are paid out of the assets of the firm. Creditors who hold a claim against collateral can exercise their right of liquidation of collateral and collect on their claim out of the sale price, if such a sale of collateral is approved by the estate administrator. The firm has to cooperate with the estate administrator; not doing so can lead to restrictions on the firm's management, including injunctions against leaving the country. The debtor shall not be released from liability for those debts in bankruptcy that are not repaid in full in the bankruptcy.

Greece: The company receives an automatic stay when its bankruptcy petition is approved. Survival of the debtors business is safeguarded by two voluntary restructuring proceedings: the "conciliation" proceeding, which is a pre-pack that applies to debtors who are not yet insolvent. The second is "reorganization," which presupposes bankruptcy, but can start simultaneously with bankruptcy proceedings. The debtor is also given a chance for a fresh start by separating assets into those that were acquired pre-bankruptcy, and those acquired afterwards. The latter remain under the administration of the debtor. The debtor is also discharged from any debts that remain unsatisfied after completion of bankruptcy proceedings. The most important change in the law eliminates penalties on the debtor by abolishing the extension of bankruptcy's consequence to the personal property of the debtor and of his family.

Portugal: Directors of the firm have to file within 60 days of acquiring information that the company may become insolvent or can face penalties for failure to do so. The court appoints an administrator who takes control of the firm's assets. The new law has expanded the power of creditors to now decide whether the company will be liquidated or restructured. Secured creditors rank highest in the order of priority for distribution of liquidation proceeds. Any restructuring agreement reached between the firm and a group of creditors cannot be *crammed down* on dissenting creditors.

Table 1

A creditor rights index and a restructuring index are constructed on the basis of provisions contained within the revised bankruptcy code in each country. A value of ½ is assigned to the provision that debtors are allowed to file for bankruptcy if the new code lets them do so after first alerting creditors. A value of ½ is assigned to the provision that the court is in control if the new code leaves management in control, but with court oversight of its actions. In Panel C, we present for comparison, the construction of the DMS creditor rights index for the countries in our sample. The DMS index is the creditor rights index described in Appendix A of Djankov, McLeish and Shleifer (2007).

Panel A: Construction of Creditor Rights Index

Country	Can debtors file for bankruptcy? (0:yes, 1:no)	Seizure of collateral when it is a pledge/mortgage (1:yes, 0:no)	Administrator or Court in control? (1:Yes, 0:No)	Priority ranking of secured creditors (1:higher, 0:Lower)	Automatic Stay? (0:yes, 1:no)	Can secured creditors opt out of restructuring inside bankruptcy (1:yes, 0:No)	Total
Italy	0	0	1	1	0	1	3
Spain	0	0	1	1	0	1	3
France	0	0	½	0	0	0	½
United Kingdom	0	0	1	0	0	0	1
Netherlands	0	1	1	1	0	1	4
Brazil	½	0	½	1	0	1	3
China	0	0	1	1	0	0	2
Portugal	½	1	1	1	1	1	5½
Russia	0	0	0	0	0	0	0
Greece	0	1	1	0	0	0	2
Finland	1	1	1	1	0	1	5

Table 1 (continued)

Panel B: Construction of Restructuring Index

Country	Separate procedure dealing with pre-insolvency restructuring? (Yes:1, 0:No)	Is there an automatic stay imposed on pre-insolvency restructuring? (1:Yes, 0:No)	Cramdown of restructuring agreement reached in pre-insolvency? (1:Yes, 0:No)	Is pre-insolvency restructuring private? (1:Yes, 0:No)	DIP financing gets super-priority (1:Yes, 0:No)	Clawback of payments prior to bankruptcy filing? (0:Yes, 1: No)	Total
Italy	1	0	1	0	0	1	3
Spain	0	0	0	0	0	0	0
France	1	1	1	1	1	1	6
United Kingdom	1	1	0	0	0	0	2
Netherlands	0	0	0	0	0	1	1
Brazil	1	0	1	0	1	1	4
China	1	1	0	0	0	0	2
Portugal	1	0	0	0	0	0	1
Russia	1	0	0	1	0	1	3
Greece	1	1	1	0	0	1	4
Finland	1	0	0	0	0	0	1

Panel C: Construction of the DMS creditor rights Index

Country	Restrictions for going into re-organization[11]	Automatic Stay on Assets[12]	Secured Creditors first paid	Management stays in reorganization[13]	Total
Italy	0	1	0	1	2
Spain	0	0	1	1	2
France	0	0	0	0	0
United Kingdom	1	1	1	1	4
Netherlands	1	1	1	0	3
Brazil	0	0	0	1	1
China	1	1	0	0	2
Portugal	0	1	0	0	1
Russia	1	1	0	0	2
Greece	0	1	0	0	1
Finland	0	0	1	0	1

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[11] Takes a value of one if creditor consent required to file for reorganization
[12] Takes a value of one if no automatic stay is imposed after a reorganization petition is filed.
[13] Takes a value of one if management does not stay in control of the firm.

Table 2

Panel A: Final values of the creditor rights and restructuring indexes based on the descriptions in Table 1. The DMS index is the creditor rights index listed in Appendix A of Djankov, McLeish and Shleifer (2007) in the most recent year prior to when the new bankruptcy law went into effect.

Country	Year when new law went into effect	DMS index of creditor rights based on the old law	Creditor Rights Index based on the new law	Restructuring index based on the new law	Restructuring index based on the old law
Italy	2006	2	3	3	0
Spain	2004	2	3	0	0
France	2006	0	0.5	6	3
United	2003	4	1	2	0
Netherlands	2003	3	4	1	0
Brazil	2005	1	3	4	0
China	2007	2	2	2	0
Portugal	2005	1	5.5	1	0
Russia	2002	2	0	3	0
Greece	2007	1	2	4	0
Finland	2004	1	5	1	0
Median		2	3	2	0

Panel B: Classification of countries into three groups based on the creditor rights and the restructuring indexes.

Group	Criteria for grouping	List of countries
Pro-creditor	creditor rights index ≥ 3.0, restructuring index < 2.	Netherlands, Finland, Portugal and Spain
Anti-creditor	creditor rights index < 3, restructuring index > 2.0,	France, Greece, Brazil, and Russia
Pro-restructuring	creditor rights and restructuring index, both ≥ 3.0, or creditor rights and restructuring index both < 3.	Italy, China, UK

Table 3
Legal and Cultural Characteristics of countries adopting bankruptcy reforms

Characteristics of countries undertaking each category of bankruptcy reform are reported below. Data on religion and legal origin are from the CIA Factbook and data on other variables are from World Bank. Rule of Law index is one of six governance indicators for countries compiled by World Bank. All variables are measured in the year of enactment of the new laws.

		domestic credit to private sector (as % of GDP)	bank non-performing loans (% of total gross loans)	bank capital to assets (%)	market capitalization of equity market (as % of GDP)	annual growth in GDP (%)	inflation rate (%)	unemploy-ment rate (%)	rule of law	Legal Origin	Religion
Countries that adopted pro-restructuring laws	Italy	89.42	5.3	7.6	44.9	0.66	1.99	7.73	0.49	civil	catholic
	UK	143.13	2.5	6.6	132.2	2.81	2.91	4.84	1.64	common	protestant
	China	107.49	6.2	5.8	178.2	14.2	4.75	4	-0.45	civil	none
	Average	113.35	4.67	6.67	118.43	5.89	3.22	5.52	0.56		
Countries that adopted pro-creditor laws	Netherland	148	2	4.3	90.7	0.34	2.12	3.6	1.67	civil	catholic
	Finland	67.6	0.4	9.6	97.2	4.11	0.19	8.79	1.86	civil	protestant
	Portugal	141.21	1.5	5.8	35	0.76	2.29	7.62	1.15	civil	catholic
	Spain	124.9	0.8	6.7	90.1	3.27	3.04	10.97	1.17	civil	catholic
	Average	120.43	1.18	6.60	78.30	2.12	1.91	7.75	1.46		
Countries that adopted anti-creditor laws	France	98.4	3	4.5	107.6	2.47	1.68	8.83	1.41	civil	catholic
	Greece	94.08	4.5	6.6	85.3	4.28	2.89	8.28	0.8	civil	orthodox
	Brazil	31.37	3.5	9.8	53.8	3.16	6.87	9.3	-0.45	civil	catholic
	Russia	18	5.6	14.4	36	4.74	15.79	7.86	-0.87	civil	orthodox
	Average	60.46	4.15	8.83	70.68	3.66	6.81	8.57	0.22		

Table 3 (continued)

Panel B: Tests of differences: An F-test for differences in the characteristics of countries in each of the three categories: pro-creditor, pro-restructuring, and anti-creditor. For comparison, F-tests for differences of a bootstrapped sample are reported in the third column. A bootstrapped sample is obtained for each reform category by sampling at random, 1000 times each, a proportion of the entire sample that is represented by the number of firms in that category. An F-test for differences in the mean level of the characteristic within each pseudo-category is reported. The pro-creditor reform category accounts for 11%, the pro-restructuring for 64%, and the anti-creditor group for 24% of the entire sample.

	F-test for equality of differences among the three categories (p-value)	F-test from bootstrapped samples (p-value)
domestic credit to private sector (as % of GDP)	0.01	0.89
Bank non-performing loans (% of total gross loans)	0.00	0.20
Bank capital to assets (%)	1.00	0.84
Market capitalization of equity market (as % of GDP)	0.41	0.77
Annual growth in GDP (%)	0.17	0.83
Inflation rate (%)	0.16	0.83
Unemployment rate (%)	0.07	0.10
Rule of law	0.04	0.62

Table 4
Characteristics of Country Samples

Countries	Spain	Nether-lands	Finland	Portugal	UK	China	France	Greece	Brazil	Italy	Russia
Number of publicly traded firms	3340	219	121	51	2236	2117	897	264	479	294	1287
Number of firms with continuous data over sample period	77	108	96	29	572	1056	438	105	126	125	38
Utilities and financial institutions	3227	25	12	6	83	254	75	12	46	35	17
Number of firms with continuous data that are not utilities	58	83	84	23	543	807	341	93	102	92	23
Mean market capitalization (in $ millions)	1591	2704	1970	1357.8	1637	1173	3011	522	948	2774	845.60
Mean total assets (in $ millions)	4154	3796	2448	6232	1516	537	2662	2027	1742	2670	3078
Agriculture and Mining	-	-		8%	14%	-	-		-	-	19%
Manu-facturing	64%	42%	47%	34%	42%	65%	54%	45%	72%	68%	47.6%
Retail	-	-			12%	-	-	20%	12%	-	-
Services	10%	16%	15%	20%	22%	-	24%	15%	-	17%	-

Figure 1
Long-term debt to total assets in countries adopting bankruptcy reforms

The ratio of long-term debt to total assets is calculated for all firms in countries sorted into three groups on the basis of changes to bankruptcy law: i) pro-creditor laws, ii) pro-restructuring laws, and iii) anti-creditor laws. The sample of firms in each country excludes financials and utilities, and includes only those in continuous existence over the sample period. All data is from Worldscope for the years from 1990 to 2010.
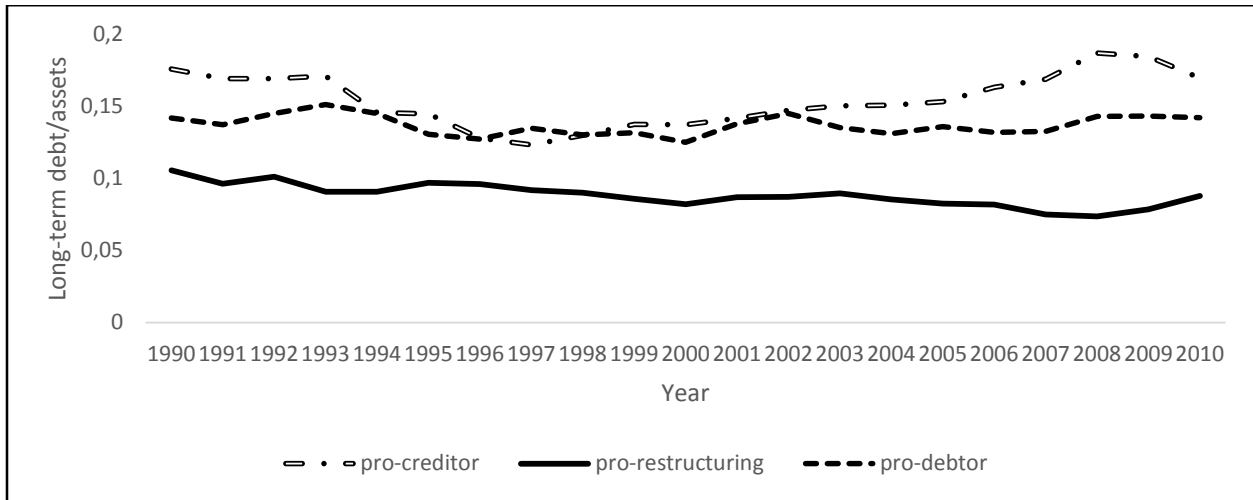
Panel B: Tests of equality of mean debt levels

	Change in mean debt levels	
	1990-2009	2000-2009
pro-restructuring group	0.033 **	0.032 **
pro-creditor group	0.027	0.032
anti-creditor group	0.06	0.027

** denotes statistically significant at the 5% level

Figure 2
Debt structure in countries adopting bankruptcy reforms

The ratio of bank, public, and private debt to total assets is calculated using data from Orbis for firms in countries sorted into pro-creditor, pro-restructuring, and pro-debtor reform categories as described in Table 2. Data is from 2001 to 2009.
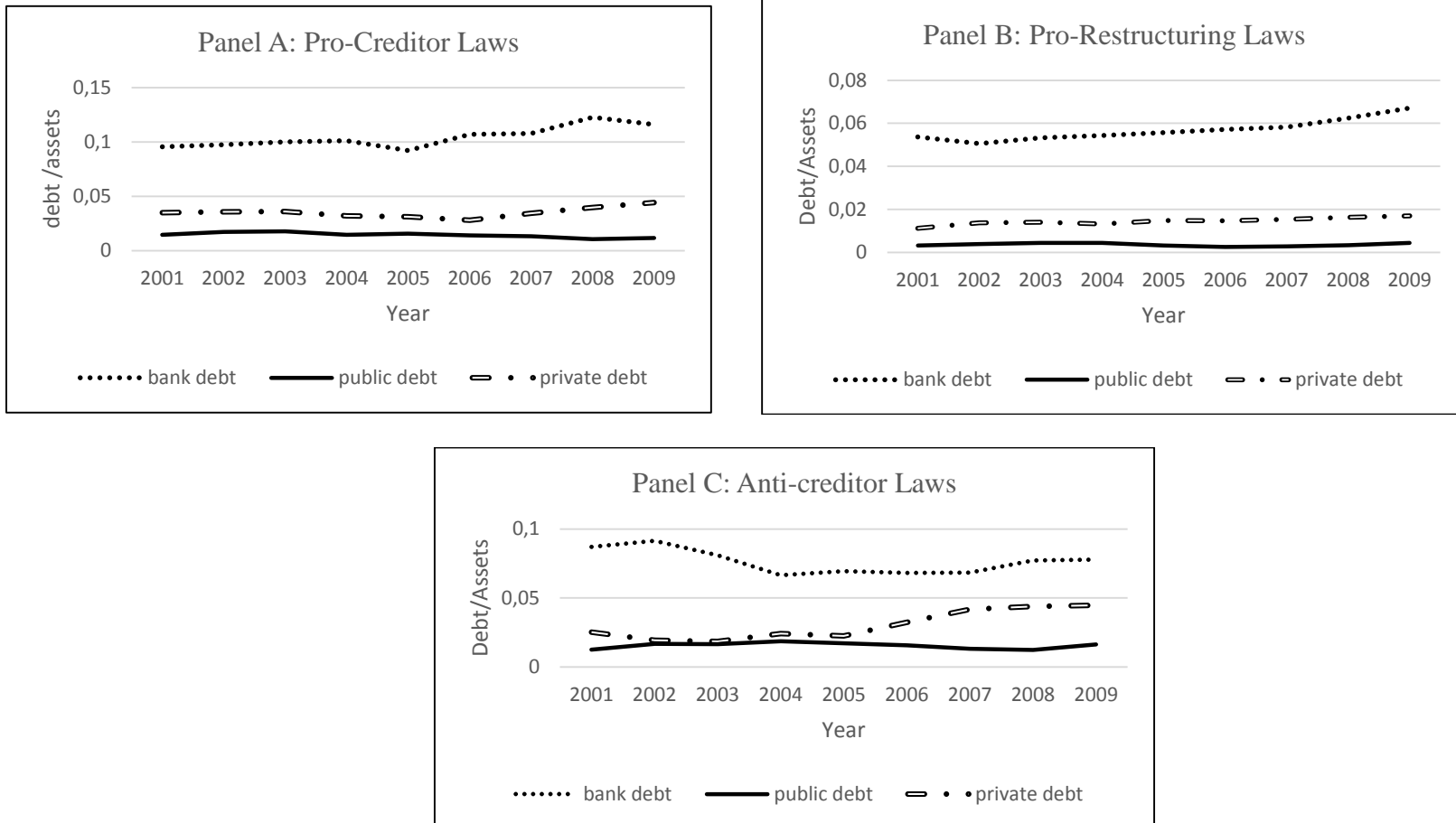
Table 5
Test of Relevance Condition for the Instrumental variable regressions

An OLS regression with the change in the DMS creditor rights index from 1995 to 2003 as the dependent variable is estimated with the change in the number of internet connections and the change in the rule of law index as independent variables. The t-statistics reported are calculated using standard errors clustered by country.

variable	coefficient	t-statistic
Observations	44	
Intercept	-0.841	-3.33
Change in internet connections	0.018	2.81
Change in rule of law index	0.273	0.56
Adj R-square	17.26%	

Cragg-Donald F-statistic	1564

Table 6
Regressions for total long-term debt

Two-stage regressions are estimated using the PROC SURVEYREG procedure by pooling firms and countries into a panel. The change in the creditor rights index after the bankruptcy reforms is the dependent variable in the first stage regression. The change in the number of internet connections and the change in the rule of law from the pre-reform to the post-reform period are the independent variables. In the second stage, the change in total long-term debt from the pre-event to the post-event period is the dependent variable. The change in the two bankruptcy indexes ΔC, the creditor rights index and ΔR, the restructuring index, are the independent variables in addition to control variables, SOE and TIME. SOE_{ik} is a dummy variable that equals one if firm i in country k is not a state-owned enterprise, and is 0 otherwise, and $TIME_k$ is a placebo dummy that takes a value one if the change in debt on the left hand side of the equation is around the event year when country k instituted bankruptcy reforms, and takes a value 0 if the change in debt is around a placebo event year in that same country. The placebo event is a year at least three years prior to, or at least three years after the new bankruptcy law went into effect, when there were no other changes to bankruptcy law in country k. Other independent variables are: i) firm size measured as log(total assets), ii) tangibility, which is the ratio of fixed assets to total assets, iii) the Altman Z-score, iv) "profit" which is the ratio of EBITDA to total assets, v) "ownership" which is the level of ownership of the controlling shareholder, and vi) "pvt" is the pre-reform private debt outstanding. Data on internet connections and rule of law are from the World Bank's website. Data on accounting variables and ownership is from Orbis. SOEs are identified using the 'Global Ultimate Owner' (GUO) field in the Orbis dataset. T-statistics are calculated using clustered standard errors.

Table 6 (continued)

	(i)		(ii)		(iii)		(iv)		(v)		(vi)	
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat
Observations	1791		1791		1789		1624		1550		1550	
Intercept	0.0166	0.72	0.0121	0.48	0.0113	0.44	0.0006	0.02	0.0013	0.05	0.0188	0.78
ΔC	-0.0040	-0.85	-0.0042	-0.91	-0.0040	-0.87	-0.0105	-2.19	-0.0106	-2.20	-0.0096	-2.00
ΔR			-0.0030	-0.41	-0.0047	-0.17	-0.0080	-0.27	0.0106	1.04		
ΔC*ΔR	-0.0020	-0.59			0.0009	0.07	0.0029	0.20			0.0010	0.21
ΔR* pvt							0.0031	0.05	-0.1618	-1.13	-0.1276	-0.96
SOE* ΔC	-0.0003	-0.11	-0.0011	-0.46	0.0001	0.03	0.0025	0.91				
SOE* ΔR			0.0030	0.46	0.0075	0.27	0.0163	0.56				
SOE* ΔC*ΔR	0.0010	0.31			-0.0025	-0.18	-0.0029	-0.19				
SOE* ΔR* pvt							-0.0717	-1.14				
SOE*TIME* ΔC									0.0027	1.14	0.0017	0.63
SOE*TIME* ΔR									-0.0023	-0.25		
SOE*TIME* ΔC*ΔR											0.0005	0.11
SOE*TIME*ΔR* pvt									0.0946	0.66	0.0679	0.50
Size	0.0000	0.01	0.0001	0.04	0.0002	0.09	-0.0003	-0.17	-0.0004	-0.22	-0.0007	-0.38
Tangibility	-0.0134	-0.80	-0.0138	-0.81	-0.0128	-0.75	-0.0062	-0.34	-0.0052	-0.28	-0.0088	-0.48
Z-score	-0.0077	-3.98	-0.0076	-3.95	-0.0077	-3.98	-0.0080	-3.04	-0.0079	-2.93	-0.0078	-2.91
Profit	0.0004	0.01	-0.0005	-0.02	-0.0003	-0.01	0.0229	0.71	0.0213	0.64	0.0232	0.69
Ownership	0.0003	2.66	0.0003	2.69	0.0003	2.56	0.0003	2.16	0.0003	2.08	0.0003	2.35
adj R-sq (%)	1.808		1.79		1.713		1.22		1.348		1.22	

Table 7
Regressions for change in each category of long-term debt

Two-stage regressions are estimated using the PROC SURVEYREG procedure by pooling firms and countries into a panel. The change in the creditor rights index after the bankruptcy reforms is the dependent variable in the first stage regression. The change in the number of internet connections and the change in the rule of law from the pre-reform to the post-reform period are the independent variables in this regression. In the second stage regression, the change in the proportion of bank debt from the pre-event to the post-event period is the dependent variable. The change in the two bankruptcy indexes ΔC, the creditor rights index and ΔR, the restructuring index are the independent variables. SOE_{ik} is a dummy variable that equals one if firm i in country k is not a state-owned enterprise, and is 0 otherwise, and $TIME_k$ is a placebo dummy that takes a value one if the change in debt on the left hand side of the equation is around the event year when country k instituted bankruptcy reforms, and takes a value 0 if the change in debt is around a placebo event year in that same country. The placebo event is a year at least three years prior to, or at least three years after the new bankruptcy law went into effect, when there were no other changes to bankruptcy law in country k. Other independent variables are: i) firm size measured as log(total assets), ii) tangibility, which is the ratio of fixed assets to total assets, iii) the Altman Z-score, iv) "profit" which is the ratio of EBITDA to total assets, v) "ownership" which is the level of ownership of the controlling shareholder, and vi) "pvt" is the pre-reform private debt outstanding. Data on internet connections and rule of law are from the World Bank's website. Data on bank debt, other accounting variables and ownership is from Orbis. SOEs are identified using the 'Global Ultimate Owner' (GUO) field in the Orbis dataset. T-statistics are calculated using clustered standard errors.

Table 7 (continued)

Panel A: Regressions for change in the level of bank debt

	(i)		(ii)		(iii)		(iv)		(v)		(vi)	
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat
Observations	3076		3076		3074		3048		5069		5068	
Intercept	0.0267	2.38	0.0244	2.30	0.0265	2.36	0.0307	2.68	0.0006	0.07	0.0126	1.53
ΔC	0.0073	2.59	0.0072	2.54	0.0072	2.57	0.008	2.79	0.0021	1.38	0.0035	2.38
ΔR	-0.0107	-2.68			-0.0082	-0.51	-0.0082	-0.51			-0.0037	-2.18
$\Delta C*\Delta R$			-0.0048	-2.59	-0.0013	-0.17	-0.0003	-0.04	0.0015	2.37		
$\Delta R*$ pvt							-0.0556	-1.49	-0.0342	-4.13	-0.0192	-2.32
SOE* ΔC	0.0011	1.10	0.001	0.84	0.0007	0.58	0.0006	0.47				
SOE * ΔR	0.0100	2.67			0.0066	0.41	0.0052	0.33				
SOE * $\Delta C*\Delta R$			0.0049	2.68	0.0018	0.23	0.0004	0.05				
SOE * $\Delta R*$ pvt							0.0744	1.96				
SOE * TIME * ΔC									0.0006	0.59	0.0012	1.32
SOE * TIME * ΔR											0.0007	0.67
SOE * TIME *$\Delta C*\Delta R$									-0.0006	-1.16		
SOE * TIME *$\Delta R*$ pvt									0.0461	4.29	0.0360	3.37
Size	-0.0013	-1.57	-0.0013	-1.56	-0.0013	-1.57	-0.0013	-1.52	0.0002	0.36	0.0003	0.46
Tangibility	-0.0140	-1.94	-0.0137	-1.90	-0.0143	-1.97	-0.0171	-2.29	-0.0117	-2.15	-0.0138	-2.50
Z-score	0.0000	-0.10	0.0000	-0.11	0.0000	-0.10	0.0002	1.22	0.0000	0.12	0.0000	0.12
Profit	0.0000	0.12	0.0000	0.12	0.0000	0.13	-0.0032	-1.21	0.0000	-0.13	0.0000	-0.12
Ownership	0.0002	2.48	0.0002	2.43	0.0002	2.52	0.0002	2.48	0.0000	-0.73	0.0000	-0.31
adj R-sq (%)	0.67		0.66		0.62		0.80		0.56		0.53	

Table 7 (continued)

Panel B: Regressions for the change in public debt

	(i)		(ii)		(iii)		(iv)		(v)		(vi)	
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat
Observations	3074		3074		3072		3048		5071		5071	
Intercept	0.0173	4.05	0.0153	3.79	0.0173	4.06	0.0149	3.42	0.0102	3.15	0.0096	2.71
ΔC	0.0033	3.05	0.0032	2.99	0.0033	3.05	0.0028	2.58	0.0019	2.91	0.0017	2.68
ΔR	-0.0002	-0.14			-0.0045	-0.73	-0.0035	-0.57			-0.0002	-0.24
ΔC*ΔR			0.0003	0.44	0.0021	0.72	0.0020	0.69	-0.0004	-1.36		
ΔR* pvt							-0.0028	-0.19	-0.0092	-2.60	-0.0109	-3.07
SOE* ΔC	0.0007	1.85	0.0011	2.38	0.0008	1.71	0.0008	1.76				
SOE * ΔR	-0.0015	-1.02			0.0030	0.49	0.0029	0.47				
SOE * ΔC*ΔR			-0.0008	-1.20	-0.0023	-0.76	-0.0020	-0.68				
SOE * ΔR* pvt							-0.0074	-0.51				
SOE * TIME * ΔC									0.0009	2.21	0.0008	2.15
SOE * TIME * ΔR											0.0001	0.26
SOE * TIME *ΔC*ΔR									0.0002	0.86		
SOE * TIME *ΔR* pvt									-0.0010	-0.21	0.0005	0.11
Size	-0.0011	-3.28	-0.0011	-3.24	-0.0011	-3.28	-0.0011	-3.32	-0.0007	-2.45	-0.0007	-2.47
Tangibility	-0.0006	-0.21	-0.0001	-0.05	-0.0006	-0.20	0.0013	0.47	-0.0008	-0.32	-0.0007	-0.31
Z-score	0.0000	0.23	0.0000	0.22	0.0000	0.23	0.0000	0.42	0.0000	0.07	0.0000	0.07
Profit	0.0000	0.02	0.0000	0.01	0.0000	0.02	-0.0004	-0.40	0.0000	0.09	0.0000	0.09
Ownership	0.0000	0.72	0.0000	0.46	0.0000	0.68	0.0000	0.64	0.0000	0.64	0.0000	0.59
adj R-sq (%)	0.68		0.62		0.64		0.95		0.75		0.71	

Table 7 (continued)

Panel C: Regressions for change in private debt

	(i)		(ii)		(iii)		(iv)		(v)		(vi)	
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat
Observations	3066		3066		3064		3045		5064		5064	
Intercept	-0.0332	-4.26	-0.0159	-2.15	-0.0325	-4.17	-0.0484	-6.15	-0.0365	-6.19	-0.0153	-2.82
ΔC	-0.0044	-2.25	-0.0034	-1.75	-0.0040	-2.06	-0.0080	-4.03	-0.0048	-4.62	-0.0032	-2.94
ΔR	0.0107	3.87			0.0199	1.79	-0.0049	-0.92	0.0066	5.45	-0.0010	-2.33
ΔC*ΔR			0.0025	1.91	-0.0045	-0.84	0.0253	2.30	0.0047	0.80	0.0184	3.11
ΔR* pvt							-0.0105	-0.41				
SOE* ΔC	-0.0013	-1.90	-0.0016	-1.93	0.0004	0.50	0.0007	0.82				
SOE * ΔR	-0.0030	-1.15			-0.0082	-0.74	0.0036	0.68				
SOE * ΔC*ΔR			-0.0018	-1.39	0.0021	0.39	-0.0084	-0.76				
SOE * ΔR* pvt							-0.0553	-2.13				
SOE * TIME * ΔC									-0.0002	-0.35	-0.0012	-1.66
SOE * TIME * ΔR									0.0041	5.56		
SOE * TIME *ΔC*ΔR											0.0022	5.77
SOE * TIME *ΔR* pvt									-0.0660	-8.69	-0.0676	-8.80
Size	0.0016	2.75	0.0015	2.45	0.0016	2.75	0.0016	2.72	0.0017	3.90	0.0016	3.65
Tangibility	-0.0030	-0.60	-0.0044	-0.88	-0.0013	-0.26	0.0096	1.88	0.0010	0.25	-0.0028	-0.71
Z-score	0.0000	-0.17	0.0000	-0.13	0.0000	-0.16	-0.0001	-0.58	0.0000	0.04	0.0000	0.07
Profit	0.0000	0.00	0.0000	0.02	0.0000	-0.03	0.0010	0.56	0.0000	-0.16	0.0000	-0.13
Ownership	0.0001	1.26	0.0001	1.73	0.0000	0.85	0.0000	0.74	0.0000	1.25	0.0001	2.20
adj R-sq (%)	1.618		0.561		1.938		6.354		3.57		2.51	

Table 8

OLS regressions are estimated for post-reform size, profitability, tangibility and Z-score as the dependent variables for issuers of new debt. New bank, public, and private debt issuance is calculated as: $\Delta D_{i,post}= [D_{i,post}-(D_{i,pre}/LTD_{pre})*LTD_{post}]/A_{post}$ where $\Delta D_{i,post}$ is the amount of new debt in the ith category in the post-reform period, $D_{i,post}$ is the level of debt (in $) in the ith category in the post-reform period, LTD_{post} is the level of total debt in the post-reform period, and A_{post} is the level of total assets in the post-event period. The characteristics are the average in the three year post-reform period. , and the three-year pre-reform, characteristic of the issuer of debt in category i. For each category of debt, we create three dummy variables related to the amount of new debt of that category that was issued in the post-reform period. 'd_33', 'd_66', and 'd_99' take a value of one if the amount of new debt issued within a category falls in the 33rd percentile, 66th percentile, or the 99th percentile respectively. The independent variables are the incremental creditor rights index ΔC, the restructuring index ΔR, the product of the two indexes, and the two indexes interacted with the dummy variables. T-statistics are calculated using standard errors clustered at the country level.

Panel A: Bank debt issuers

	Post-reform size		post-reform asset tangibility		post-reform profitability		post-reform Z-score	
	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat
observations	3960		3959		3882		3816	
Intercept	12.058	39.63	0.405	12.54	0.089	3.55	2.687	4.66
ΔC	0.137	1.26	-0.020	-1.83	0.011	2.28	0.354	2.41
$\Delta C*\Delta R$	0.061	0.96	0.014	2.03	0.000	-0.02	-0.297	-2.32
$\Delta C*$ d_33	0.099	1.22	0.013	2.80	0.067	3.17	-0.318	-1.14
$\Delta C*$ d_66	0.102	2.45	0.021	1.88	0.014	1.79	0.015	0.38
$\Delta C*\Delta R*$ d_33	-0.123	-2.81	-0.005	-1.20	-0.010	-1.58	0.092	0.46
$\Delta C*\Delta R*$ d_66	-0.112	-2.73	-0.011	-3.13	-0.005	-2.01	-0.084	-2.33
adj R-sq (%)	4.08		1.45		0.77		0.06	

Table 8 (continued)

Panel B: Public debt issuers

	Post-reform size		post-reform asset tangibility		post-reform profitability		post-reform Z-score	
	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat
Observations	3960		3959		3822		3816	
Intercept	12.060	34.84	0.405	12.76	0.086	3.32	2.696	4.64
ΔC	0.230	2.41	-0.006	-0.85	0.049	3.76	0.198	1.56
ΔC*ΔR	-0.045	-0.64	0.008	1.24	-0.006	-1.87	-0.275	-2.13
ΔC* d_99	-0.439	-2.95	-0.029	-1.33	-0.021	-3.80	0.402	1.92
ΔC*ΔR* d_99	0.337	3.17	0.019	3.80	0.004	2.35	-0.083	-0.81
adj R-sq (%)	5.39		1.29		0.52		0.04	

Panel C: Private debt issuers

	Post-reform size		post-reform asset tangibility		post-reform profitability		post-reform Z-score	
	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat
observations	3960		3959		3882		3816	
Intercept	12.079	38.19	0.403	12.44	0.092	4.62	2.753	4.56
ΔC	-0.159	-2.33	-0.026	-2.83	0.010	2.42	0.354	2.54
ΔC*ΔR	0.098	1.40	0.017	2.39	-0.002	-0.40	-0.413	-2.70
ΔC* d_33	0.496	8.24	0.021	6.15	0.054	5.30	-0.175	-1.45
ΔC* d_66	0.135	1.56	0.025	1.91	-0.002	-0.62	0.220	1.02
ΔC*ΔR* d_33	-0.183	-6.81	-0.012	-2.91	-0.007	-1.57	0.197	1.37
ΔC*ΔR* d_66	-0.074	-4.07	-0.006	-1.54	0.000	0.58	0.014	0.14
adj R-sq (%)	7.32		1.87		0.68		0.07	

Table 9
State of the Banking Sector

Various metrics of quality, profitability, and size of individual banks from each country in the sample are obtained from Bankscope. The pre-reform period value of these metrics is calculated as the two years prior to and the year when the bankruptcy law went into effect. The post-reform period value is calculated as the three years after the bankruptcy law went into effect. The table reports the median across all banks in the groups of countries included in each category. The countries in the pro-restructuring group include --- The p-value for the statistical significance of the difference between the median pre- and post-values is from the KW test.

	Pro-Restructuring reforms (1)			Pro-creditor reforms (2)			Anti-creditor reforms (3)			F-test for equality of differences across the three categories	Tukey's pairwise comparison across each of the three groups
	post	pre	p-value of diff	post	pre	p-value of diff	post	pre	p-value of diff		
Net loans/total assets	63.45	61.37	0.00	60.10	64.09	0.51	57.18	57.83	0.01	0.00	1-3, 1-2
Impaired loans /gross loans	3.59	4.81	0.21	1.55	1.64	0.06	2.68	3.61	0.00	0.00	1-3
Loan loss reserve/gross loans	2.20	2.20	0.22	1.45	2.16	0.02	2.35	2.53	0.00	0.14	-
Operating income	1.28	1.10	0.38	1.01	1.03	0.42	1.10	1.07	0.21	0.79	-
Net interest revenues	3.09	2.75	0.00	1.23	1.48	1.00	1.88	1.90	0.00	0.00	1-3
Interest margin	3.33	2.92	0.00	1.32	1.59	0.45	2.01	2.07	0.00	0.12	-
Total capital ratio	14.90	15.61	0.00	13.71	15.59	0.74	12.16	11.21	0.10	0.09	-

Table 10
OLS regressions for the state of banking sector

For each banking measure listed in the first column of the table, the change in its value from three years prior to and including the year in which the new bankruptcy law went into effect (the 'event year') to three years after the event year, is calculated. This change in each banking measure is regressed on the change in the creditor rights index, on the product of the change in the creditor rights and the restructuring index, and on a measure of a bank's size, namely, the ratio of its total assets/equity. T-statistics calculated using standard errors clustered by country code, are in parentheses.

	observations	Intercept	ΔC	ΔC*ΔR	Total assets/equity	adj. R-sq (%)
Impaired loans /gross loans	983	-1.115	0.156	0.094	0.015	1.76%
		(-2.32)	(1.55)	(2.82)	(0.78)	
Loan loss reserve	1315	-0.490	0.034	0.103	-0.017	1.30%
		(-2.76)	(0.65)	(3.03)	(-1.14)	
loans/assets	1655	0.971	-0.311	0.082	-0.003	0.55%
		(2.94)	(-1.91)	(1.55)	(-1.77)	
Operating income	1227	0.200	-0.046	-0.017	-0.003	0.67
		(2.10)	(-1.11)	(-1.32)	(-2.02)	
Net interest revenue	1634	-0.155	-0.044	0.070	0.000	1.35
		(-2.03)	(-1.90)	(3.73)	(-1.36)	
interest margin	1632	-0.193	-0.094	0.086	0.000	1.072
		(-1.96)	(-2.22)	(3.60)	(-1.53)	
capital ratio	998	-2.098	-0.116	-0.027	0.118	1.94
		(-3.51)	(-0.57)	(-0.48)	(4.21)	

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