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Abstract

Exploiting the timing of the 2005–2006 Italian bankruptcy law reforms, we disentangle the effects of reorganization and liquidation in bankruptcy on bank financing and firm investment. A 2005 reform introduces reorganization procedures facilitating loan renegotiation. The 2006 reform subsequently strengthens creditor rights in liquidation. The first reform increases interest rates and reduces investment. The second reform reduces interest rates and spurs investment. Our results highlight the importance of identifying the distinct effects of liquidation and reorganization, as these procedures differently address the tension in bankruptcy law between the continuation of viable businesses and the preservation of repayment incentives.

JEL classification: G33, K22.

Keywords: Financial Distress, Financial Contracting, Renegotiation, Multi-bank Borrowing, Bankruptcy Courts.

1. Introduction[1]

Bankruptcy procedures—an important determinant in the development of capital markets—attempt to balance the rights of creditors and debtors (Djankov, Hart, McLiesh, and Shleifer, 2008). A large theoretical literature has studied the relative merits of the two primary bankruptcy procedures, reorganization and firm liquidation.[2] These procedures need to ensure that viable businesses continue, while preserving borrower repayment incentives, yet these objectives are often in conflict (Hart, 1995). Therefore, the analysis of the consequences of bankruptcy law for firm financing and investment requires empirical evidence.

The empirical literature in corporate finance has examined how reforms to bankruptcy codes affect firm outcomes.[3] These studies have looked at reforms that either only change the enforcement of bankruptcy rules or that simultaneously alter both reorganization and liquidation. A prominent example is the U.S. bankruptcy code of 1978, which introduced provisions related to both liquidation (Chapter 7) and renegotiation (Chapter 11) at the same time.[4] However, liquidation and reorganization address the conflicting objectives of bankruptcy in different ways; thus, to understand the workings of bankruptcy law we need to isolate the effects of each procedure.

This paper disentangles the impacts of reorganization and liquidation on firm credit conditions and investment using data from the 2005–2006 Italian bankruptcy reform law for small- and medium-sized enterprises (SMEs).

The Italian reform consisted of two distinct and consecutive laws. The first, inspired by U.S. Chapter 11, introduced legal outlets that made the renegotiation of credit contracts easier. Subsequently, the second law significantly speeded up firms' liquidation

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[2]Roberts and Sufi (2009) provide a comprehensive survey of the theoretical and empirical literatures on financial contracting.

[3]See, for example, Scott and Smith (1986), Araújo, Ferreira, and Funchal (2012), Vig (2013), Assunc̃ao, Benmelech, and Silva (2013), Cerqueiro, Ongena, and Roszbach (forthcoming), Hackbarth, Haselmann, and Schoenherr (forthcoming).

[4]Other countries have recently reformed liquidation and reorganization at the same time, including Spain in 2004, and France and Brazil in 2005.

procedures. This staggered timing allows us to test the distinct effect of reorganization and liquidation on bank financing conditions and firm investment.

The reforms were prompted by the Parmalat scandal, one of the largest corporate scandals in Europe and, thus, were not driven by trends in SME performance. The 2005 reform of reorganization procedures amends Italy's 1942 bankruptcy system, removing stringent creditor reimbursement requirements that had limited in-court restructuring agreements. The reform also limits claw-back provisions, which had previously allowed judges to nullify out-of-court agreements. After this first reform, in-court reorganization procedures increases from about 2% of total bankruptcy procedures before 2005 to over 10% in 2009. Moreover, the total value of restructured credit in the economy, both in and out of court, increases from 0.5 billion Euro before 2005 to one billion Euro in 2007.

One year later, in 2006, the legislature reforms Italy's liquidation procedure. Prior to this second reform, liquidation was a poor instrument for protecting creditor interests and preserving the value of the firm's assets. Poor trustee incentives to speed up the process combined with a lack of creditor coordination made liquidations a lengthy affair. The reform strengthens creditors' ability to monitor the trustee as well as improving creditor coordination. Subsequently, the share of liquidation procedures that lasted longer than 24 months decreases from approximately 95% before 2005 to less than 60% after 2005.

We examine the impact of these reforms on financial contracts and investment using a theoretical framework in the spirit of Hart and Moore (1998) whereby a cash-constrained firm needs bank financing to carry out an investment project. The firm deals with multiple creditors, its cash flows are stochastic and only partially verifiable. In such a context, Gennaioli and Rossi (2013) show that the optimal allocation of control rights results in two classes of debt. One class is concentrated on a leading creditor, or bank, that has exclusive control over the liquidation versus reorganization decision. The other class is dispersed among creditors without control rights. The design of the bank funding contract depends on whether parties renegotiate the liquidation threat, because renegotiation induces the entrepreneur to default strategically.

Based on this framework, we make the following empirical predictions. First, a reform of the reorganization procedures that strengthens borrower rights to renegotiate outstanding financial contracts increases the cost of bank financing and reduces investment. Second, a reform of the liquidation procedures that strengthens creditor rights reduces the cost of bank financing and spurs investment. We also make predictions related to the likelihood of firm exposure to the bankruptcy reforms. First, credit conditions to firms that are more likely to be in distress are more responsive to the design of insolvency proceedings. Second, reforms have a stronger effect in efficient bankruptcy courts. By increasing a firm's verifiable value, more efficient courts facilitate renegotiation of financial

contracts.

To empirically test the effects of the reforms on firms' credit conditions and investment, we use a unique loan-level dataset collected by the Italian central bank (the banking-sector supervisory authority). This dataset comprises detailed quarterly information on each newly issued loan and credit line, including interest rate, amount, maturity, and collateral. Our sample contains information on 226,422 loan contracts and 100,000 credit lines issued by 94 banks to a total of 35,041 distinct small and medium-sized manufacturing firms. We also have access to information on these firms' balance sheets and investment. Importantly, since SMEs in Italy do not have access to public equity or bond markets, bank financing accounts for around 60% of their assets. We therefore capture a significant component of the cost of external capital borne by these firms.

Our main empirical strategy employs a difference-in-differences framework. We exploit the policy changes by combining them with cross-sectional differences in firms' credit risk. In particular, following the theoretical insights developed above, we compare the credit conditions applied to firms that are perceived to be at low risk of default with those of firms deemed more likely to default. To construct our exposure groups, we rely on information from the external credit rating system for SMEs that is used for risk assessment purposes by all major Italian financial intermediaries.

We find that interest rates on bank financing increase by an average of 12 basis points after the 2005 reorganization reform. This results in an increase of 3%, or 190 million Euro per year, in the value of scheduled interest payments from SMEs to banks. The increase in the cost of bank financing leads to tighter credit constraints and reduced investment rates by an average of 2.5%. Taken together, these results suggest that the reorganization reform exacerbates opportunistic behavior among entrepreneurs. The subsequent increase in the cost of bank financing implies that potentially viable projects do not receive funding.

The liquidation reform produces a decrease in the cost of bank financing, which results in a decrease of 2%, or 130 million Euro per year, in total interest payments for SMEs in the manufacturing sector. The reform also eases firms' access to credit, leading to 3.2 percentage points decrease, on average, in the likelihood that they report being credit constrained. Finally, we find that the new liquidation procedure spurs investments.

In our empirical framework, we address two challenges. First, firms might not be randomly assigned to the exposure groups we consider. Therefore, we control for a rich set of firm and financial contract characteristics. In addition, following the recent approach in the banking literature (e.g., Cerqueiro, Ongena, and Roszbach, forthcoming), we include in our specification fixed effects at the firm-bank level and for each quarter in the sample period. The time fixed effects account for macroeconomic and aggregate shocks that affect credit demand or supply. Firm-bank fixed effects capture not only heterogeneity

across borrowers or banks, but also heterogeneity across each firm-bank pairing. We therefore exploit the variation in the cost of finance occurring within the same firm-bank relationship over time.

Second, our exposure groups might react differently to changes in macroeconomic conditions and financial market fluctuations (e.g., Giannetti and Laeven, 2012). We address this possibility by allowing credit conditions of firms with different degrees of exposure to the reforms to be differentially affected by a time-varying measure of credit standards applied to Italian SMEs by banks.[5]

We use additional strategies to identify the financial and the economic impact of the reforms. First, we use a threshold analysis that focuses on variations in the interest rates of credit lines, investment, and credit constraints for firms that, on the basis of a continuous variable, are "as if randomly" allocated into different credit risk categories.[6] Our main results are confirmed, indicating that they are unlikely to be driven by unobserved differences in the characteristics of firms in our exposure groups.

Second, we study the impact of the reforms on credit conditions exploiting heterogeneity in the administration of bankruptcy law across Italian courts.[7] Following the law and finance literature (e.g., Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2003), we take the pre-reforms duration of bankruptcy proceedings to distinguish between firms that operate in more versus less efficient bankruptcy courts. We find that after the reorganization reform, firms in more efficient bankruptcy courts are more likely to restructure their loan contracts. The reorganization reform increased and the liquidation reform decreased the interest payments borne by firms in more efficient courts relative to those in less efficient courts. These results are consistent with our theoretical predictions.

We examine whether our findings depend on the number of relationships firms have with banks. Gennaioli and Rossi (2013) show that the dispersion in the class of non-controlling creditors should be observed at relatively high levels of cash-flow verifiability. Consistent with this result, we find that the per-firm number of creditors is positively correlated with the degree of cash-flow verifiability. Moreover we show that after the reorganization reform loan interest rates remain stable for firms with a single bank relationship, but increase significantly for firms with multiple bank relationships. This result

[5]In Appendix D, we show that our conclusions do not simply capture banks' uncertainty regarding the repercussions of the reforms by exploiting a debtor-friendly reform of the reorganization code introduced in 2012.

[6]In particular, we estimate our specification using only firms whose continuous variable value is close to the threshold that divides firms into contiguous categories.

[7]The theoretical literature has shown that efficiency of bankruptcy courts influences financial contracts' design (e.g., Gennaioli and Rossi, 2010). Jappelli, Pagano, and Bianco (2005) find that judicial enforcement is a determinant of credit conditions. Moreover, Ponticelli (2013) shows that court efficiency influences firm performance using data from the recent Brazilian bankruptcy reform that simultaneously changed features of both reorganization and liquidation.

suggests that before the reform, renegotiation was relatively more difficult for firms dealing with multiple banks because of standard coordination issues (Gertner and Scharfstein, 1991). We also find that the decrease in interest rates produced by the liquidation reform is significantly larger for the firms dealing with multiple banks, reflecting the differential impact of improved creditor coordination.

This paper makes three primary contributions to the literature. First, we show the importance of identifying the distinct effects of liquidation and reorganization, as they can differently address the standard tension in bankruptcy between the continuation of viable businesses and the preservation of repayment incentives. Other papers in corporate finance have studied how bankruptcy reforms affect firm financing (e.g., Scott and Smith, 1986; Araújo, Ferreira, and Funchal, 2012; Hackbarth, Haselmann, and Schoenherr, forthcoming).[8] However, they look at reforms that change features of reorganization and liquidation at the same time. The timeline of the Italian reforms, together with our detailed data on newly issued loans and credit lines, allows us to isolate the negative impact of renegotiation of funding contracts on bank financing and investment, from the positive impact of stronger creditor rights in liquidation.

Second, we complement the vast literature analyzing the direct and indirect costs of bankruptcy (e.g., Weiss, 1990; Franks and Torous, 1994; Strömberg, 2000; Franks and Sussman, 2005; Bris, Welch, and Zhou, 2006; Benmelech and Bergman, 2011; Sautner and Vladimirov, 2013) by providing evidence on the indirect costs stemming from entrepreneur opportunistic behavior at the prospect of a lenient reorganization procedure.

Finally, we support and expand the literature on debt restructuring (e.g., Asquith, Gertner, and Scharfstein, 1994; James, 1996; Brunner and Krahnen, 2008) in two primary ways. We first show that when creditors can more easily coordinate during reorganization, financing costs can increase for firms that do business with multiple banks. We then show that debt restructuring is easier for firms in more efficient courts, thus revealing a novel channel linking bankruptcy courts to bank funding decisions.

In Section 2, we present the institutional and theoretical framework that guides our empirical investigation. Section 3 describes our datasets, and Section 4 presents our empirical strategy. In Section 5, we present our main results on the link between bankruptcy reforms and the cost of bank financing. Section 6 provides additional results related to the impact of the reforms on access to credit and investment as well as the nonprice terms of financial contracts. We also analyze how our results on the cost of bank financing depend

[8]Scott and Smith (1986) show that the 1978 U.S. corporate bankruptcy law reform raised the cost of funding. Hackbarth, Haselmann, and Schoenherr (forthcoming) further the analysis offered by Scott and Smith (1986) by studying the impact of the 1978 bankruptcy reform on stock returns. Finally, Araújo, Ferreira, and Funchal (2012) examine the impact of the Brazilian bankruptcy reform that simultaneously changed reorganization and liquidation on credit conditions.

on the number of banks with which a firm does business. Section 7 concludes.

2. Institutional and theoretical framework

The 2005–2006 reforms to Italian bankruptcy procedures replace the 1942 Bankruptcy Law through two distinct, consecutive items of legislation (Stanghellini, 2008): Legislative Decree no. 35 of 2005 (the reorganization reform) and Law no. 5 of 2006 (the liquidation reform). The 2005 reform, inspired by U.S. Chapter 11, makes the renegotiation of credit contracts easier. The 2006 reform significantly modifies liquidation procedures.

Italian bankruptcy reform was prompted by the Parmalat scandal in December 2003 and was, thus, not driven by trends in firm performance.[9] At that time, Italy had already been reprimanded twice by the E.C. Court of Justice, which deemed the 1942 bankruptcy procedure for large distressed firms an illegal form of state aid because it involved a bailout system. To restructure Parmalat without violating European law, the Italian government reformed the entire legislation governing reorganization, including the regulation targeting SMEs, defined as firms with less than 500 employees.

[Fig. 1]

The reform process proved fast. At the end of December 2004, a draft of the reorganization reform was submitted to the Italian parliament for approval during the first quarter of 2005. The draft was developed by a parliamentary committee whose work started in February 2004. The draft formulated by the committee dictated the terms of the draft Legislative Decree no. 35, suggesting that the content of the law was known to banks and firms by the end of December. During the first quarter of 2006, the Italian parliament enacted the second reform, which governed liquidation. Fig. 1 shows the timeline of the reform process.

2.1. The Italian bankruptcy law pre-reform regime

Under the 1942 Italian Bankruptcy Law, both in-court and out-of-court reorganization procedures were subject to a number of restrictions that inhibited potentially viable deals. To begin in-court reorganization, the debtor's plan had to feature the full repayment of secured creditors' claims, together with at least 40% of unsecured creditors' claims. Moreover, for the debtor's proposal to be ratified, the law required a qualified majority of two-thirds of votes (in value). Finally, a deal reached out of court between creditors

[9]Parmalat SpA was a multinational Italian dairy and food corporation. The company collapsed in late 2003 with a 14 billion Euro ($20 billion; £13 billion) hole in its accounts—this remains one of Europe's biggest corporate bankruptcies.

and the debtor could then be nullified by the bankruptcy trustee (also called a claw-back provision).

The left panel of Fig. 2 shows in-court reorganizations as a percentage of all Italian bankruptcy proceedings between 2000 and 2010. In the early 2000s, only 2% of all new bankruptcy proceedings involve reorganization. In comparison, U.S. court data show that between 2005 and 2009 Chapter 11 filings make up about 19% of total U.S. business filings.[10]

[Fig. 2]

Prior to the Italian reforms, a liquidation proceeding was directed by a court-appointed trustee. The trustee's remuneration depended on the size of the firm entering liquidation and was independent of recovery rates or the duration of the procedure. Moreover, creditors could neither veto the trustee's decisions nor ask that the trustee be replaced. The combined effect of weak trustee incentives to speed up the procedure and the lack of creditor rights to effectively monitor the trustee meant that liquidation proceedings were very lengthy affairs in the pre-reform period. Fig. 3 uses data from Unicredit Bank, one of Italy's largest retail banks, to compare the duration of liquidation procedures before and after the 2006 reform. Approximately 95% of liquidation proceedings last longer than 24 months prior to 2005.

[Fig. 3]

2.2. The reform of reorganization procedures

The 2005 reorganization reform introduces several provisions to facilitate the renegotiation of outstanding loans and to protect the debtor. In particular, after the reform the entrepreneur can initiate the reorganization phase unilaterally, under the protection of the automatic stay of creditor claims. Moreover, the reform abolishes the requirements on the minimum reimbursement rates necessary to open an in-court procedure and reduces to one half the share of votes (in value) required to ratify a debtor's plan. As in a Chapter 11 court cramdown decision, the judge can now impose the debtor's plan despite objections from creditors. Finally, the reform strengthens the validity of out-of-court agreements by limiting the impact of clawback provisions.

The left panel of Fig. 2 shows that after the 2005 reform, the use of in-court reorganization procedures rises from approximately 2% in 2005 to more than 10% in 2009. The increase of in-court proceedings is not the result of crowded out out-of-court bankruptcies. The right panel of Fig. 2 shows that the total value of credit restructured at a loss in

[10]Source: `http://www.uscourts.gov/Statistics/JudicialFactsAndFig.s.aspx`.

court and out of court rises from 0.5 billion Euro in 2003 and 2004 to 0.8 billion Euro in 2005, rising to 1 billion Euro in 2007.[11]

Finally, anecdotal evidence from the Milan bankruptcy court shows that the reorganization reform leads to substantially lower recovery rates in reorganization. During 2008–2009, unsecured creditors obtain no reimbursement in about 40% of in-court reorganization proceedings, 10% of the original credit in about 22% of proceedings, and more than 40% in only 3% of cases (*Corriere della Sera*, June 27, 2013).

2.3. The reform of liquidation procedures

The 2006 liquidation reform strengthens creditor rights and weakens the power of the trustee. Creditors can now set up a committee and ask for the trustee to be replaced. Moreover, all trustee actions must be approved by the creditors' committee. Consequently, creditors gain not only a monitoring role over the trustee but also the ability to take coordinated action, which helps to speed up liquidation proceedings.

Fig. 3 shows that the liquidation reform substantially reduces the length of liquidation procedures. Whereas approximately 95% of liquidation procedures opened before 2005 last longer than 24 months, less than 60% of those opened after the liquidation reform last for more than two years.

2.4. Theoretical framework

This section builds on the Italian institutional framework to develop testable hypotheses about the relationship between bankruptcy reforms and the design of financial contracts. We consider a setting in the spirit of Hart and Moore (1998), in which a cash-constrained firm needs bank financing to carry out an investment project. As in Gennaioli and Rossi (2013), the firm deals with multiple creditors, its cash flows are stochastic and only partially verifiable.[12] In such a context, the optimal contract provides the entrepreneur with incentives to repay by threatening to liquidate the firm's assets following non-repayment. The ensuing optimal equilibrium allocation of control rights features two classes of debt. One class is concentrated on a large creditor ('the bank') that has exclusive control over the liquidation versus reorganization decision. The other class is dispersed among creditors without control rights.

[11] Italian banks are required to report to the Central Credit Register any operation that renegotiates at a loss any feature of a credit relationship. This measure of restructured credit does not include the renegotiated debt owed by firms that file for liquidation; thus, the steep rise we see in Fig. 2 cannot come from the liquidation reform.

[12] In Appendix C, we derive the predictions on the cost of funding using a single-bank version of the model.

Crucially, the value of contractual repayments depends both on the presence of structured workout outlets and the bank's bargaining power in renegotiation. In the absence of workout outlets, renegotiation is unfeasible and the liquidation threat credible. If renegotiation is feasible and cash flows are largely verifiable, the bank is willing to renegotiate the deal because liquidation is not ex-post efficient. However, renegotiation makes debt risky, because the entrepreneur realizes that he can strategically default without fearing liquidation. Consequently, the contractual repayment must rise for the bank to break even, and this increase will be larger, the stronger the bargaining power of the debtor at the renegotiation stage.

The 2005 Italian bankruptcy reorganization reform facilitates the renegotiation of outstanding contracts and puts the entrepreneur in a strong bargaining position. Therefore, our first prediction is that the reorganization reform increases the cost of bank financing. We expect this increase to be greater if cash flows are largely verifiable and for firms that are more likely to default.

Prediction 1. *The Italian reform of the reorganization procedures increases the cost of bank financing.*

The liquidation reform strengthens creditor rights, as captured by the degree of cash-flow verifiability. Then, after the liquidation reform the bank's expected payoff in renegotiation increases and our empirical prediction is that interest rates decrease among firms more likely to renegotiate.

Prediction 2. *The Italian reform of the liquidation procedures reduces the cost of bank financing.*

Predictions 1 and 2 focus on the impact of the reforms on the cost of bank financing. We expect that the increase in the cost of funding following the reorganization reform influences access to credit, causing some valuable investment projects not to receive credit. Instead, we expect that the decrease in the cost of lending following the liquidation reform relaxes credit constraints and induces an expansion of firm investments.

Prediction 3. *The reorganization reform tightens credit constraints and reduces investments. By strengthening creditor rights, the liquidation reform relaxes credit constraints and encourages firm investments.*

Finally, Gennaioli and Rossi (2013) find that the two-tier debt structure with dispersion in the class of noncontroling creditors should be observed at relatively high levels of cash-flow verifiability. When cash flows are largely verifiable, for given value of the bank's stake in reorganization, the optimal contract allocates (part of) the liquidation proceeds to the noncontrolling creditors so as to boost the firm's debt capacity. We test

this prediction when analyzing how our results on the cost of bank financing are related to the number of a firm's creditors.

2.5. Identification strategies

To construct empirical tests of our predictions we use the results of the theoretical framework that the firms with higher probability of default and operating in an environment allowing for a larger degree of cash flow verifiability are more exposed to the reorganization reform. In our main empirical strategy, we exploit the availability in our dataset of information regarding firm differences in the ex-ante probability of default as perceived by the loan officer to measure the impact of bankruptcy on bank financing.

Moreover, we use the duration of bankruptcy proceedings as a proxy for the degree of cash-flow verifiability. Prior research shows that a more efficient judicial administration constrains managerial opportunism (Jappelli, Pagano, and Bianco, 2005) and that the efficiency of bankruptcy courts influences the design of financial contracts (e.g., Gennaioli and Rossi, 2010). Sections 4.1 and 5.3 discuss these two empirical strategies in greater detail.

3. Data and descriptive statistics

To test our empirical predictions, we use a unique loan-level dataset on Italian SMEs (defined as firms with less than 500 employees). Our main data sources are confidential datasets collected by the Bank of Italy: the Central Credit Register (*Centrale dei Rischi*) and Taxia. These data allow us to observe the cost of newly issued loans and credit lines, together with the major features of loan contracts (such as maturity and the presence of collateral) at the firm-bank level.[13] We also have balance sheet data for Italian companies from the Cerved Group database, which include the *Score*, the most important credit rating that Italian banks use to assess the credit risk of Italian SMEs. Finally, we collect data on the length of bankruptcy proceedings from the National Institute of Statistics (Istat).

The dataset we use for our main analysis is of quarterly frequency, running from the second quarter of 2004 to the last quarter of 2007, and comprises a total of 94 banks, 35,041 distinct small and medium manufacturing firms, 226,422 loan contracts, and 100,000 distinct credit lines. These data allow us to fill a gap in the literature by studying how bankruptcy reforms affect SMEs; most studies on the economic and financial consequences of bankruptcy codes focus on large, publicly listed companies.

[13]Data from the Italian Central Credit Register have been used by, e.g., Sapienza (2002). Data from credit registers have also been used for other countries (e.g., Hertzberg, Liberti, and Paravisini, 2011).

3.1. Credit contracts

The main features of each newly issued term loan and credit lines are taken from the Taxia dataset, which contains quarterly information on more than 80% of total bank lending in Italy. Our main dependent variable for measuring the cost of bank financing is *Loan Interest Rate*, which computes the gross annual interest rate for each new term loan, inclusive of participation fees, loan origination fees, and monthly service charges. The rate is calculated so that the present value of loan installments equals the present value of payments at loan origination. The information on loan maturity in Taxia allows us to distinguish among loans whose maturity is up to one year (*Short-Term*), one to five years (*Medium-Term*), or longer than five years (*Long-Term*). Finally, we know the size of the loan (*Size of Loan*) and whether the loan has no collateral (*Unsecured*), only real collateral (*Real*), only personal collateral (*Personal*), both (*Real and Personal*), or is unmatched (*Other*). *Credit Line Interest Rate* is the average net annual interest rate on each credit line, and *Granted Credit Lines* is the total value of the credit lines the firm was granted by the bank at the end of a given quarter. Appendix B provides a list with descriptions of the variables we use in our empirical analysis.

Table 1 presents descriptive statistics regarding the interest rates applied to newly issued term loans and credit lines granted between the second quarter of 2004 and the last quarter of 2007.

[Table 1]

The average interest rate charged for a loan during the sample period is 5.15%, and the average loan is approximately 383,000 Euro. The median loan, however, is 120,000 Euro, because our data cover loans as small as 1,000 Euro. Short-term loans with less than one-year's maturity constitute around two-thirds of all loans and are subject to significantly higher interest rates than medium- or long-term loans. In addition, loans guaranteed by real securities have significantly lower interest rates. Overall, even though the firms in our dataset are SMEs that take on relatively small loans, the other financial characteristics of these contracts are comparable to those in the literature (e.g., Santos, 2011; Strahan, 1999).

The bottom panel of Table 1 shows that the average interest rate charged on credit lines is 9.03%, which is significantly higher than the average rate on loans. Moreover, the average amount of the credit lines granted to firms in our sample amounts to 123,000 Euro.

3.2. Financing structure and balance sheet information

In the first panel of Table 2, we report the descriptive statistics regarding the financing structure of firms, which we compute using information in the Credit Register. The table shows that loans and credit lines account for the majority of total bank financing, and total bank financing represents 57% of the book value of a firm's assets.

[Table 2]

The middle panel of Table 2 provides an overview of the main balance sheet characteristics of Italian manufacturing firms, computed using information in the Cerved database.

3.3. Credit Score

The Cerved dataset contains each firm's *Score*, an indicator of the likelihood of default within two years that is computed on the basis of multiple discriminant analyses of financial ratios (Altman, 1968). The *Score*, which takes integer values ranging from 1 (the safest firm) to 9 (the firm most likely to default), is purchased by all major banks from Cerved Group as an index of firms' risk levels.

The *Score* variable varies considerably across firms. Firms in the 25th percentile of the rating distribution have a *Score* of 4, and those in the 75th percentile have a *Score* of 7. Fig. 4 illustrates key features of the *Score* variable.

[Fig. 4]

The left panel of Fig. 4 is taken from Panetta, Schivardi, and Shum (2009), who plot the *Score* variable against an indicator of actual default incidence using the same balance sheet and bank data as us for the period 1988–1998. The figure shows that the *Score* is an accurate predictor of actual default incidence across Italian firms. Firms with a rating of up to 4 in a given year have less than a 1% probability of defaulting within the next year. This probability rises to 5% for firms with a *Score* of 7. In our main specification, we use this evidence to capture exposure to the reforms based on the value of a firm's rating. The right panel plots the *Score* variable against the interest rate on loans for our pre-reform sample. We see a strong positive relation between the rating variable and interest rates on loans. The best (lowest) Score, in terms of creditworthiness, is on average associated with a loan interest rate of 4%, whereas the worst (highest) category pays an average loan interest rate of around 5%.

3.4. Duration of bankruptcy proceedings

Finally, from the Italian National Institute of Statistics (Istat), we obtain court-level data on the duration of bankruptcy proceedings closed in 2002 (*Length*). The average duration of a bankruptcy proceeding in the 157 courts in our sample is 8.22 years. Yet, durations vary substantially across courts: the standard deviation of the average duration of bankruptcy cases in the sample is 2.43 years, indicating significant variation across tribunals in Italy in how bankruptcy law is administered (see Table 2).

[Fig. 5]

Two factors likely affect the variability in the length of Italian bankruptcy proceedings: judges in Italy are appointed based on a centralized selection procedure, and have few incentives to speed up proceedings (Bianco, Giacomelli, Giorgiantonio, Palumbo, and Szego, 2007). All this generates some randomness in the distribution of judges' ability and effort across courts. It also explains why heterogeneity in court efficiency, as shown in Fig. 5, does not follow the north-south divide that characterizes the distribution of economic outcomes in Italy. We exploit this quasi-random variation to identify the effect of the reforms on credit conditions.

Because our empirical framework relies on cross-sectional variation in the *Score* variable and in the duration of bankruptcy proceeding, we must show that these two variables are independent of one another. If high-risk borrowers were disproportionately concentrated within districts with efficient courts, the results of the two identification strategies would be driven by the same source of variation. The right panel in Fig. 5 plots the distribution of *Score* values in efficient and inefficient tribunals.

The distribution is nearly identical for all values of *Score*. We also run a Wilcoxon rank-sum test and find that the null hypothesis—that both samples are drawn from populations with the same distribution—cannot be rejected at all conventional levels of statistical significance.

4. Empirical framework

A simple comparison of firms' financing conditions before and after the reforms could be misleading, because the resulting differences might reflect unobserved economic conditions. To identify firms' differential exposure to the legal changes, our main identification strategy takes advantage of firms' heterogeneity with respect to the ex-ante risk of default.

4.1. Exposure to the reforms and unconditional evidence

Since we expect firms with a greater probability of default (a higher *Score*) to be more sensitive to the design of bankruptcy law, we implement a difference-in-differences analysis. We capture firm differential exposure to the reforms in two ways. First, we use each firm's value of the *Score* variable. Second, based on the evidence in Fig. 4, we compare the financing conditions applied to firms perceived to be at no risk of default (*Score* of 1–4) to those of firms perceived to be more likely to default (*Score* of 5–9). Because the post-reform value of the *Score* variable might be affected by the policy changes, we define exposure based on the value of a firm's rating in 2004, that is, before the 2005–2006 bankruptcy reforms.

The left panel of Fig. 6 illustrates the link between *Score* and exposure to the reorganization reform. The increase in restructured credit is mainly driven by firms with higher *Score* values.

[Fig. 6]

We use the *Score* to measure firms' exposure to the reforms for several reasons. First, unlike U.S. credit ratings, the *Score* is not solicited by firms and is available for all Italian corporations; hence, its availability is not the result of firms' strategic considerations. Second, the algorithm for computing the *Score* did not change in response to the bankruptcy reforms, and its exact formula is a Cerved Group business secret. Finally, because of accounting rules and data collection requirements, a firm's *Score* for any given year is computed by the Cerved group on the basis of lagged balance sheet information. This feature, combined with the fact that we use firms' 2004 *Score* values, gives us confidence that we are not capturing anticipation effects—firms could not place themselves into rating categories based on the anticipated costs or benefits of the reforms.

We next look at unconditional difference-in-differences plots. Fig. 7 provides a first insight into changes in the unconditional average interest rates set on newly issued term loans between 2004 and 2007. The vertical lines correspond to the reorganization reform (first quarter of 2005) and the liquidation reform (first quarter of 2006).

[Fig. 7]

The left panel of Fig. 7 separately plots average interest rates for firms perceived to be at no risk of default (a *Score* of 1 to 4) and those for firms deemed likely to default (a *Score* of 5 to 9). Average interest rates increase for both groups during the sample period. The right panel plots the difference in average interest rates between *Score* categories. Interest rate differences are stable before the reorganization reform, validating

the common trend assumption embedded in difference-in-differences settings. Before the reorganization reform, a higher *Score* implies an interest rate that is 18 basis points higher, on average. In the quarters following the reorganization reform, this difference increases to 20 basis points. Finally, after the liquidation reform, the average interest rate difference for firms with a high versus low *Score* drops to a level significantly lower than it had been in 2004.

To quantify the economic effects of the reforms, consider the average firm in our sample, which has a *Score* of 5. Following the 2005 reorganization reform, this firm experiences a relative increase in loan rates of eight basis points with respect to the least exposed firm with a *Score* of 1. Aggregating for all of the firms in our sample, we find that the scheduled loan repayments to banks from SMEs increases by 2.7%, or 51 million Euro per year as a consequence of the reorganization reform. Following the 2006 liquidation reform, interest rate differences implied by a higher *Score* decrease from 20 to 16 basis points. Therefore, average loan interest rates fall by 16 basis points, and the firm interest payments to banks decrease by 102 million Euro per year.

Fig. 7 provides some initial evidence on the source and timing of changes brought on by the bankruptcy reforms. However, we interpret this evidence with caution. Firms were not randomly assigned to the different exposure groups we consider. In addition, our exposure groups can have reacted differently to changes in macroeconomic conditions and financial market fluctuations over our sample period. Therefore, we introduce a multivariate difference-in-differences framework that allows us to address these concerns and formally test how the reforms influence the cost of bank financing (Predictions 1 and 2).

4.2. Main specification

In this section, we first describe our main specification and then discuss how we handle the empirical challenges discussed above. We denote by Y_{ijt} the interest rate on the loan issued by bank j to firm i at time t (defined as the interaction between quarter and year). The econometric analysis is structured using the following difference-in-differences

framework (henceforth, DID):

$$\begin{aligned} Y_{ijt} \;=\; & constant + \alpha Exposed_i + \beta(Exposed_i \times After\ Reorganization_t) \\ & +\gamma(Exposed_i \times Interim\ Period_t) \\ & +\delta(Exposed_i \times After\ Liquidation_t) \\ & +\lambda(Exposed_i \times Cycle_t) \\ & +X_{ijt}\Phi + Z_{it}\Omega + B_{it-1}\Psi \\ & +Firm_i \times Bank_j + Quarter \times Year + \epsilon_{ijt}, \end{aligned} \tag{1}$$

in which $Exposed_i$ is a time-invariant indicator capturing a firm's exposure to the reforms based on the value of a firm's *Score* in 2004, before the reorganization and liquidation reforms.

$After\ Reorganization_t$ and $After\ Liquidation_t$ are time dummies associated with the dates of the reforms. These dummies take a value of zero prior to each legal change and one thereafter. The reorganization reform was implemented in the first quarter of 2005; therefore, $After\ Reorganization_t$ takes a value of one from the first quarter of 2005 onwards. The liquidation reform was enacted in January 2006; thus, $After\ Liquidation_t$ is equal to one from the first quarter of 2006. Finally, $Interim\ Period_t$ is a time dummy that takes a value of one starting from the third quarter of 2005 to capture potential anticipatory effects preceding the liquidation reform. Our specification is computationally equivalent to one in which the reform dummies $After\ Reorganization_t$, $Interim\ Period_t$, and $After\ Liquidation_t$ switch back to 0 when the next relevant time interval starts.

The interaction between the exposure and reform indicators identifies the impact of each reform on loan interest rates. The coefficient on the first interaction, β, is the DID estimate for the reorganization reform. It measures how the difference in interest rates between exposure groups changes during the first half of 2005 relative to the pre-reform period. According to Prediction 1, the sign on the coefficient is positive. The coefficient on the third interaction, δ, represents the DID estimate of the average effect of the reform of the liquidation procedure. Based on Prediction 2, we expect δ to be negative.

4.2.1. Heterogeneity in firm characteristics

In our main specification, we deal with heterogeneity in firm characteristics in two ways. First, following the recent approach in the banking literature (e.g., Cerqueiro, Ongena, and Roszbach, forthcoming), we control for a detailed set of fixed effects at the firm-bank level ($Firm_i \times Bank_j$) and for each period in the sample ($Quarter \times Year$). Firm-bank fixed effects capture not only time-invariant heterogeneity across borrowers or banks, but also time-invariant heterogeneity across each firm-bank pairing. Time fixed

effects account for macroeconomic and aggregate shocks that affect credit demand or supply. This specification thus allows us to take advantage of variation in the cost of finance within the same firm-bank relationship over time. Consequently, threats to the internal validity of the DID estimator in our model are unlikely to come from common shocks or from time-invariant differences in firms' exposure to the reforms.

Second, we account for time-varying heterogeneity between firms by including a rich set of firm and financial contract characteristics in the empirical model. Specifically, X_{ijt} are the characteristics of each newly issued term loan, such as maturity, collateral, and loan size.[14] Z_{it} denotes firm financing characteristics constructed from the Central Credit Register. B_{it-1} are balance sheet variables measured in the calendar year prior to the contract.

4.2.2. Macroeconomic conditions and financial market fluctuations

Our specification explicitly tackles the possibility that our exposure groups react differently to changes in macroeconomic conditions and financial market fluctuations over our sample period (e.g., Giannetti and Laeven, 2012). We include an interaction term between the indicator of exposure to the reforms and time-varying measures of credit cycles ($Exposed_i \times Cycle_t$) in all of our regressions.[15] As our baseline measure for credit cycles, we use information on credit standards applied to SMEs in the Italian credit market. Italian banks provide this information when completing the *Bank Lending Survey* (BLS) of the European Central Bank.[16]

5. Bankruptcy reforms and the cost of financing

To establish the relation between bankruptcy reforms and the cost of bank financing, we first employ our DID specification using loan contracts and the *Score* variable to capture exposure to the reforms. After a battery of robustness checks, we confirm our main results using two empirical strategies with additional sources of identification. The first, exploiting the rating methodology used by banks, compares the cost of credit lines borne by firms that are "as if randomly allocated" into different risk categories. The

[14]The inclusion of this information as control variables follows the approach taken by the empirical studies of bank financing based on loan-level data (see, among the others, Santos, 2011; Jiménez, Ongena, Peydró, Saurina, 2014). Nonprice dimensions can simultaneously change after the reforms; however, we obtain the same results if we re-estimate our baseline specification excluding loan characteristics.

[15]The level of these credit-cycle proxies cannot be estimated, as it would be collinear with the quarterly fixed effects.

[16]This quarterly survey is sent to senior loan officers and asks the following question: "Please indicate how you expect your bank's credit standards as applied to the approval of loans or credit lines to SMEs to change over the next three months" (source: `http://www.ecb.europa.eu/stats/money/surveys/lend/html/index.en.html/`).

second uses differences in the duration of bankruptcy proceedings to capture exposure to the reforms.

5.1. Evidence from term loans

Table 3 reports the estimates of the DID specification for loan interest rates. For ease of exposition, we do not report in the table the estimates obtained for the control variables.[17]

[Table 3]

The results indicate that the cost of bank financing rises significantly among firms more exposed to the reorganization reform. Column 1 captures the differential exposure to the reforms based on the firms' *Score* rating in 2004. The estimate of *After Reorganization* $\times$ *Exposed* is positive, indicating that the interest rate for firms in a higher *Score* category increases in the six months following the introduction of the new reorganization procedures. This result is in line with the theoretical insights in Section 2.4: the reorganization reform introduces structured reorganization outlets and puts the entrepreneur in a strong bargaining position, thereby inducing the bank to raise interest payments to break even (Prediction 1). Note that the magnitude of the estimated impact of the reorganization reform obtained with the multivariate analysis is comparable to that obtained within the unconditional framework.

Consistent with Prediction 2, the negative estimate on $AfterLiquidation \times Exposed$ in column 1 indicates that the liquidation reform decreases the cost of loan financing for firms. These results suggest that the stronger creditor rights due to the reform induce banks to reduce firm financing costs. Table 3 also shows that the liquidation reform reduces average loan interest rates by seven basis points and the relative firm interest payments to banks by 45 million Euro per year. This estimate is lower than that obtained in the unconditional analysis due to the inclusion of the controls related to firm- and contract-specific characteristics.

The findings in Table 3 show that reorganization and liquidation reforms in bankruptcy can have opposite effects on the cost of bank financing. Thus, results stemming from reforms that simultaneously change reorganization and liquidation can be misleading. Morever, note that the design of the new reorganization procedures influence bank funding decisions even after the liquidation reform was passed. That is, in the absence of the reorganization reform, the total interest payments borne by firms would have been significantly lower than what we observe.

[17] The tables with the full list of controls are in Appendix D.

Columns 2–7 of Table 3 provide a battery of robustness checks for our main results. In column 2, we distinguish between firms in high (i.e., 5–9) and low (i.e., 1–4) *Score* categories and find that our conclusions are robust to this alternative firm classification criterium.

In our main specification, we include a detailed set of fixed effects at the firm-bank level ($Firm_i \times Bank_j$), allowing us to observe variation in the cost of finance within the same firm-bank relationship over time. This procedure could introduce sample selection, because the variation identifying our estimates comes from those firms that take out at least two loans from the same bank during the period of interest. To address this possibility, in column 3 we separately control for fixed effects at the firm and bank levels, allowing us to consider firms that take multiple loans from different banks. The results are comparable with those in column 1.

Column 4 addresses the possibility that our results are driven by differential reactions to pre-reform economic differences among firms in our exposure groups. We fix the control variables to their 2004 values and interact them with reform dummies. Again, the magnitude and sign of the coefficients of interest are unaffected.

In column 5, we take care of concerns related to the influence of demand differences across firms by introducing proxies for sales forecasts. Specifically, we use microlevel data on the forecast of firm sales from the Invind survey of manufacturing firms. Each year the survey asks the top management of about 1,500 manufacturing firms about their year-ahead forecasts of sales growth. When we re-estimate our baseline loan-interest rate specification including this measure of sales forecasts, the main results are confirmed.

In column 6, we use as an alternative proxy for credit cycles, the implied yield on 10-year Italian government bonds, because commercial lending rates might follow the trend of the government bond market. Our main results hold. Similarly, results are robust to a wide range of other proxies for credit cycles (see Appendix D).

Finally, in column 7, we examine whether aggregate shocks might have been differentially transmitted to firms by Italian banks. Deterioration in the capital position of financial intermediaries can reduce the supply of credit, causing an increase in the cost of debt financing (e.g., Kashyap and Stein, 2000). Had a negative shock hit Italian banks during the first quarter of 2005, this channel could explain our results on the impact of the reorganization reforms. We thus re-estimate our specification including bank fixed effects interacted with a dummy for each quarter-year to account for any aggregate shock that might have differentially influenced banks' lending decisions during our sample period. Even though the number of estimated parameters increases significantly, the magnitude and precision of our main results do not change.

5.2. Evidence from credit lines

We next examine how the bankruptcy reforms affect interest rates on credit lines. We first estimate our DID specification using credit lines, which allows us to quantify the effect of the reforms on the total cost of bank financing. We then exploit the advantageous features of credit lines to provide evidence on interest rate changes happening for firms that are "as if randomly" allocated into different exposure groups.

In a typical credit line contract, banks maintain the right to modify the pricing terms if certain contract-specified events, such as legal reforms, occur. Banks can immediately and unilaterally adjust the pricing of the contract. Because we can continuously observe the interest rate on each credit line in our dataset over time, we can track credit lines as the legal reforms were implemented, observing interest rate variations within the same contract directly before and after each legal change.

5.2.1. DID analysis

In column 1 of Table 4, we run our main specification using interest rates on credit lines as a dependent variable. Differential exposure to the reforms depends on firms' individual *Score* value in 2004.

[Table 4]

The estimates in column 1 confirm that the reforms change the cost of bank financing in opposite directions. The magnitude of the increase in interest rates following the reorganization reform is significantly larger than the decrease in interest rates following the liquidation reform. To see this, take the average firm in our sample with a *Score* of 5. This firm experiences a 14-basis-point increase in the interest rates on its credit line after the reorganization reform but a 7-basis-point decrease after the liquidation reform. Columns 2 and 3 show that our results are robust to the use of alternative firm classification criteria, and when we consider actively drawn credit lines.

We can now quantify the impact of each reform on the total cost of bank financing, that is, the weighted average change in the cost of loan and credit line financing following each reform. For each firm, the weights are based on the firm's share of loan and credit line financing. We find that the reorganization reform increases the average total cost of bank financing by 11.6 basis points, corresponding to an increase of 3%, about 190 million Euro per year, in the value of scheduled interest repayments from SMEs to banks. The liquidation reform reduces the total cost of bank financing by an average of 7 basis points, implying that the total scheduled repayments due by SMEs decreases by 2%, or about 130 million Euro per year.

5.2.2. Score *thresholds*

We next focus on variations in interest rates applied to the credit lines of firms that, on the basis of a continuous variable, are "as if randomly" allocated into different credit risk categories. We can, thus, compare firms that, although economically similar, are on different sides of a *Score* threshold. We take advantage of the fact that the rating methodology allocates firms to *Score* categories on the basis of an underlying continuous variable, s. Banks' loan officers have access to both the continuous and the categorical variables, but they only use the categorical *Score* indicator for loan pricing decisions.

For risk management purposes, banks focus on the threshold between category 6, in which a firm is labeled as performing, and category 7, in which a firm is labeled as substandard (Rodano, Serrano-Velarde, and Tarantino, 2014). The support of the continuous variable for categories 6 and 7 ranges between -0.6 and 1.5, and the threshold lies at 0.15. We normalize the threshold to 0 and we estimate our DID specification using only firms whose value of the continuous variable s is very close to the threshold that divides categories 6 and 7. A firm's exposure to the bankruptcy reforms is then determined on the basis of the following criterion:

$$Exposed_i = \begin{cases} 1 \quad \text{if} \quad -0.3 < s_{i,2004} < 0 \\ \\ 0 \quad \text{if} \quad 0 < s_{i,2004} < 0.3 \end{cases} \tag{2}$$

This subsample contains each firm i whose value of the continuous *Score* variable in 2004, $s_{i,2004}$, falls within the $(-0.3, 0.3)$ window around the threshold $\bar{s}$. Our specification includes a third-order polynomial in the assignment variable (s), quarterly fixed effects, and an interaction between our credit cycle proxy and the indicator of exposure to the reforms.

The estimates from the threshold regression (column 4 of Table 4) show that financing conditions for firms at the threshold change after the reorganization reform. Firms marginally below the threshold (*Score* of 7), experience an interest-rate increase of approximately 6 basis points with respect to firms marginally above the threshold (*Score* of 6). Similarly, firms more exposed to the liquidation reforms experience a statistically significant decrease in interest rates. The magnitude of these threshold estimates suggest that our estimates from the main specification are a lower bound with respect to the impact of the bankruptcy reforms.

When we extend this empirical strategy to the analysis of loan interest rates, our estimates are economically consistent with the evidence arising from credit-line contracts but are statistically not significant. The reason is that, contrary to credit lines, the interest rate of a new loan is only measured at issuance. Thus, the number of observations drops

by 90% with respect to the case of credit lines.

To verify the internal validity of our results, in Table 5 we examine whether firms on each side of the threshold are balanced with respect to economic characteristics such as activity, geographical location, and ownership.

[Table 5]

In regard to these pre-assignment characteristics, differences between firms are small and statistically nonsignificant around the threshold. This contrasts with a comparison of the entire range of firms within *Score* categories 6 and 7, as well as with the comparison between firms in categories 1–4 and firms in categories 5–9. For example, firms in category 6 are less likely to operate in the food sector but are more likely to operate in an industry with an SIC code starting with 2, and they are more likely to be located in Rome or Milan. Further robustness checks can be found in Appendix D.

5.3. Evidence from duration of bankruptcy proceedings

We next use variation in the efficiency of bankruptcy courts. Since we use the length of bankruptcy proceedings as a proxy for court efficiency, we construct exposure groups based on the duration of bankruptcy proceedings in 2002, before the bankruptcy reforms were passed.

Using court efficiency to capture exposure to the reforms is advantageous for several reasons. First, there is significant geographic heterogeneity in the administration of bankruptcy law (Fig. 5). As discussed in Section 3, this dispersion is mainly driven by administrative and organizational structures that produce a quasi-random distribution of judges' ability and effort across courts. Moreover, Italian law has stringent provisions aimed at making it extremely difficult for firms to strategically relocate for judicial purposes.[18] Hence, forum shopping is very costly for firms. A potential disadvantage of this strategy is that the duration of bankruptcy proceedings is typically measured with noise, which could generate an attenuation bias that would imply a downward bias to our estimates.

To illustrate the link between court efficiency and exposure to the reorganization reform, we plot the value of total restructured credit for firms located in efficient and inefficient courts, defined on the basis of the bottom and top terciles of duration, respectively. The right panel of Fig. 6 shows that after the reorganization reform, the increase in the value of restructured credit is larger in the most efficient courts. In efficient courts,

[18] One of these provisions requires that bankruptcy cases must be filed in the tribunal that serves the area where the firm is headquartered. Another provision prescribes that firms cannot change their location (and, consequently, their tribunal) during the year preceding the opening of bankruptcy proceedings.

restructured credit soared from 123 million Euro in 2003 to nearly 600 million Euro at the end of 2007. In inefficient courts, restructured credit grew from 113 million Euro in 2003 to only 210 million Euro by the end of the sample period. This evidence confirms the theoretical result that, by facilitating loan renegotiation, court efficiency renders a firm more exposed to the reorganization reform (Section 2.4). Table 6 looks at loan interest rates and cross-sectional differences in the duration of bankruptcy proceedings. We augment the main DID specification to include court fixed effects.

[Table 6]

Column 1 measures the relative exposure to the reforms by the inverse of the (log) duration of bankruptcy proceedings. Consistent with Prediction 1, the estimated impact of the reorganization reform is positive and statistically significant, indicating that interest payments borne by firms in efficient courts increase relative to firms located in inefficient courts. Specifically, the cost of loan financing increases by 2 basis points for a firm operating in a tribunal in which procedures are a standard deviation shorter. Column 2 confirms this finding, showing that the interest rates borne by firms in the lower tercile of the distribution of duration (that is, the courts in which bankruptcy proceedings last a shorter time) increase by 3.7 basis points relative to those of firms in the upper tercile of the distribution (courts in which proceedings last longer). Moreover, consistent with Prediction 2, our DID estimates in columns 1 and 2 confirm that the liquidation reform decreases the cost of loan financing for firms exposed to the new bankruptcy law.

Table 6 also includes a set of robustness checks. In all of these columns, we capture exposure to the reforms by comparing firms in the upper versus lower terciles of the distribution of bankruptcy proceedings duration. Columns 3 and 4 show that our main results mirror those of column 2 when we control for time-varying differences in local demand conditions. In particular, in column 3 we use data on the quarterly changes in regional labor markets from the Italian National Institute of Statistics (Istat). We then interact changes in the resulting unemployment rate with our indicator for court efficiency. In column 4, we control for firm sales forecasts from the Invind survey of manufacturing firms. To further address the possibility that firm and court characteristics are correlated, in column 5 we include a propensity score correction for firms in efficient and inefficient courts.[19] We re-estimate our specification using only firms whose predicted probability of being located in efficient courts lies between 30% and 70%. Finally, as in Table 3, in column 6, we deal with the possibility that our results are driven by differential reactions to initial economic differences between the firms in our exposure

[19]We estimate a probit model using as a dependent variable whether a firm is located in an efficient court before the reform. The regressors are firm-specific characteristics whose value is taken in 2004.

groups by interacting all controls (which use 2004 values) with reform dummies. All of our results remain qualitatively and quantitatively comparable to those obtained with our main specification.[20]

6. Additional results

In this section, we first examine how the Italian bankruptcy reforms shape access to funding and investment. We then look to variation in the number of firm-bank relationships for evidence supporting the mechanism underlying our main results. Finally, we study the impact of the reforms on nonprice contractual dimensions. Throughout this section, we capture exposure to the reforms through differences in the value of a firm's *Score*.

6.1. Investment and Access to Credit

To estimate the impact of the reforms on investment, we use yearly balance sheet information of SMEs in the manufacturing sector between 2001 and 2007. We run an investment equation using the investment rate as the dependent variable, which we define as the ratio between firm investment in fixed material assets and lagged material fixed assets. The specification regresses this dependent variable on the interaction between our reform dummy variables, *After Reorganization* and *After Liquidation*, and the value of a firm's *Score*. We also control for lagged sales, lagged leverage, and fixed effects at the firm level.

[Table 7]

Column 1 reports estimates for the overall sample. In column 2, we repeat the threshold analysis performed in Table 4 for firms close to the threshold $\bar{s}$ between *Score* categories 6 and 7. Estimates in column 1 suggest that following the introduction of rules facilitating renegotiation, investment rates decrease by 0.13 percentage points, while the stronger creditor rights instituted in the liquidation reform increase investment rates by 0.08 percentage points. The economic impact of the reforms appears to be significantly larger when looking at the firms at the threshold: economically similar firms at the threshold decrease their investment rate by 1.8 percentage points after the reorganization reform but then increase their investment rate by 2 percentage points in the years following the liquidation reform.

[20]We also obtain qualitatively similar results when running the threshold analysis performed in Table 4 splitting firms based on the degree of court efficiency (see Appendix D for further details).

To link these changes in investment practices to bank lending policies, we also analyze credit constraints reported by SMEs. Columns 3 and 4 use information from the yearly Invind survey conducted by the Bank of Italy. The dependent variable is a binary measure equal to one if a firm claimed to be credit constrained in the yearly survey. We follow Guiso and Parigi (1999) and classify a firm as credit constrained if it requested more credit but failed to obtain it. Column 3 shows that the probability of firms claiming to be credit constrained increases in 2005 but decreases in the years after the liquidation reform. Column 4 limits the analysis to the subsample of firms close to the *Score* threshold between categories 6 and 7. The results from column 4 suggest that the estimates obtained with the specification in column 3 are lower bounds, since the effect of the reforms on credit constraints of firms in column 4 is economically larger. In particular, the introduction of rules facilitating reorganization increases the probability of credit constraints by nearly 5 percentage points.[21]

6.2. Number of banks

Our results suggest that the cost of financing contracts increases under the new reorganization procedures. Following the literature studying debt restructuring in the presence of multiple firm-bank relationships (e.g., Asquith, Gertner, and Scharfstein, 1994; James, 1996), we next examine whether the increase in cost depends on the number of firm-bank relationships.

First, we turn to Gennaioli and Rossi's (2013) theoretical finding that, as cash-flows' verifiability increases, the two-tier debt structure with a class of dispersed non controlling creditors should be observed. This prediction is confirmed in our dataset: the relation between the number of firm-bank relationships and the efficiency of judicial administration is positive and statistically significant. The correlation implies that, on average, firms located in the most efficient courts have 10% more bank relationships than firms located in the least efficient courts.

Next, we examine how the presence of multiple creditors affects the resolution of financial distress. In the presence of multiple creditors, coordination issues complicate the negotiations (Gertner and Scharfstein, 1991), and bankruptcy is the legal institution used to settle these conflicts during the debt enforcement phase (Jackson, 1986). The reorganization reform facilitates renegotiation by introducing legal procedures like majority voting and the judge's cram-down decision. Therefore, we expect that firms with multiple bank relationships experience a relatively higher increase in the cost of bank financing after the reorganization reform.

[21] In Appendix D, we dismiss the concern that our results are biased by banks' anticipation of the liquidation reform by taking advantage of the fact that a subset of firms participating in the Invind survey is re-surveyed in the third quarter.

To empirically test these predictions, we measure the number of banks a firm deals with in 2004 and split our sample into firms contracting with a single bank and firms contracting with multiple banks. We measure the information on the number of banks in 2004, since the number of firm-bank relationships in later years might change as a consequence of the reforms. Results are presented in the first two columns of Table 8.

[Table 8]

The results in the table confirm our intuition and are consistent with the findings in the literature (e.g. Demiroglu and James, 2013): interest rate differences remain stable for firms with a single banking relationship (column 1) but significantly increase for firms exposed to the reforms that did business with multiple banks (column 2). These outcomes suggest that improved coordination in bankruptcy facilitates renegotiation and thus results in increased ex-ante costs of financing for firms with multiple banks.

In regard to the liquidation reform, we find that the decrease in interest rates is significantly larger for the firms exposed to the reforms that do business with multiple banks. This finding reflects the impact of improved creditor coordination during the liquidation phase. Finally, note that the hypothesis that the coefficients of each reform are equal across sub-samples is rejected at conventional levels.

6.3. Nonprice contractual terms

In this section, we examine the effects of the reforms on contractual features like the amount of credit granted, the use of collateral, and maturity. We also look at whether the reforms affect the number of firm-bank relationships. In Table 8, for each outcome, we report the estimates of the main specification run on the overall sample in the columns labeled (a), and the estimates obtained using the firms close to the threshold between *Score* categories 6 and 7 in the columns labeled (b).

The first nonprice dimension we study is *Loans Granted*, defined as the log of the loans granted by banks to a firm. Consistent with our results on the price effects of the reforms, the reorganization reform decreases the amount of loan financing granted by Italian banks to the average firm with a *Score* of 5 by 2.8%, whereas the liquidation reform increases the amount of loans granted by 0.8%. In line with our prior analyses, estimates obtained using the sample of firms at the threshold are significantly larger. Using these estimates, we find that for the average firm with a *Score* of 5, the amount of loan financing decreases by up to 24% following the introduction of the new reorganization procedure but increases by 11% after the liquidation reform.

We next investigate the impact of the reforms on the amount of *Secured Lending* and *Short-Term Lending*. *Secured Lending* is the ratio of the amount of loans secured by real

guarantees to the total amount of granted bank financing. We find a significant increase in the use of secured lending after the reorganization reform, probably because collateral can help the bank mitigate financial frictions, which are likely to be particularly important for firms that appear riskier. The point estimates in the threshold specification have a similar magnitude but are not statistically significant. The threshold estimates for short-term lending, instead, show that the reforms have a significant impact on the maturities of bank financing. More specifically, the reorganization reform increases the proportion of short-term lending by 1.2 percentage points.

Finally, in the last two columns, we show how the reforms affect the number of firm-bank relationships. *Number of Banks* is the total number of individual banks that grant financing at the firm level. We find that the reorganization reform reduces the number of firm-bank relationships, whereas the liquidation reform, by reducing the cost of creditor coordination, increases them. The threshold estimates confirm these results and suggest that their magnitude is larger for the sample of firms at the threshold. Indeed, the reorganization reform leads to a reduction of about 1 firm-bank relation for a firm with the average value of the *Score* variable. Moreover, after the liquidation reform, the number of bank relationships a firm has increases by an average of 2.4. Overall, these outcomes are consistent with the theoretical mechanisms underlying our findings on interest rates.

7. Conclusions

We provide novel evidence on how the design of financial contracts and firm investment depend on the two major instruments in bankruptcy: reorganization and liquidation. The timing of the Italian bankruptcy law reforms of 2005 and 2006, together with a loan-level dataset covering the universe of corporations' funding contracts, allows us to examine the effects of reorganization and liquidation reforms separately.

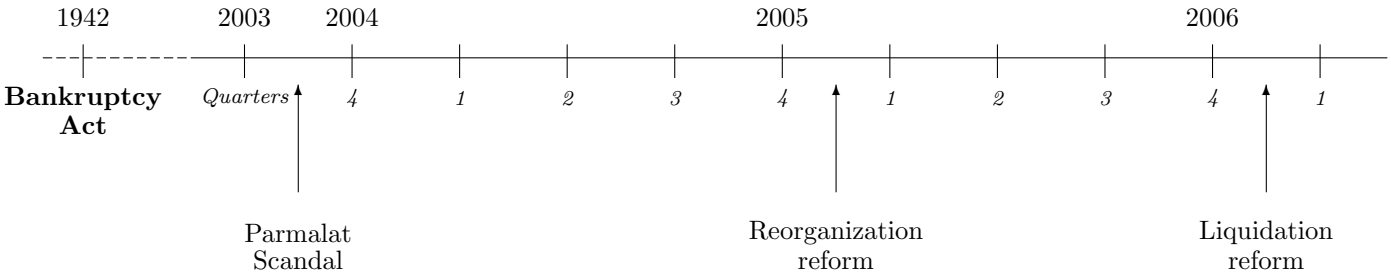
We find that bankruptcy reforms that strengthen borrower rights to renegotiate outstanding financial contracts produce an increase in interest payments on bank financing and a reduction in firm investment. Second, the increased creditor rights in liquidation resulting from the new liquidation procedure lead to a significant reduction in the cost of bank financing and spur firm investment. We also analyze the effect of creditor coordination in bankruptcy and provide evidence that the impact of both legislative reforms on the cost of bank financing is stronger when the firm receives funding from multiple banks. Finally, we show that debt restructuring is easier for firms in more efficient courts, thus unveiling a novel channel linking bankruptcy courts to bank funding decisions.

The Italian reorganization procedure introduced by the 2005–2006 reforms shares important analogies with U.S. Chapter 11: in both, the entrepreneur can unilaterally file

for the opening of the reorganization phase and stay in charge of the company while renegotiating with creditors. Moreover, creditors vote on a restructuring plan, and the judge can enforce a plan despite the objections of creditors (cram-down provision). The Italian reforms of the bankruptcy code also share important features with recent reforms in other OECD countries like France, Spain, and Brazil, though in these countries the reforms change reorganization and liquidation procedures at the same time.

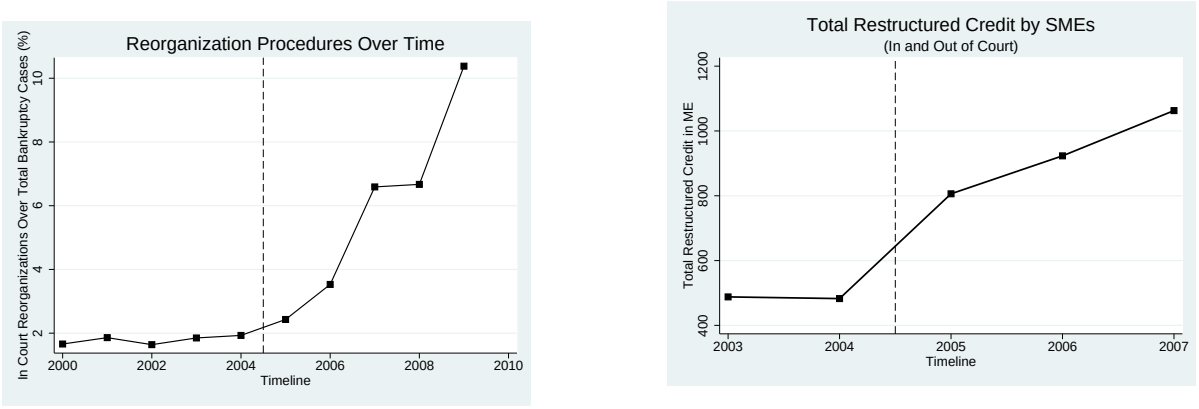
A. Figures and Tables

Figure 1: Timeline of the Bankruptcy Reform Process



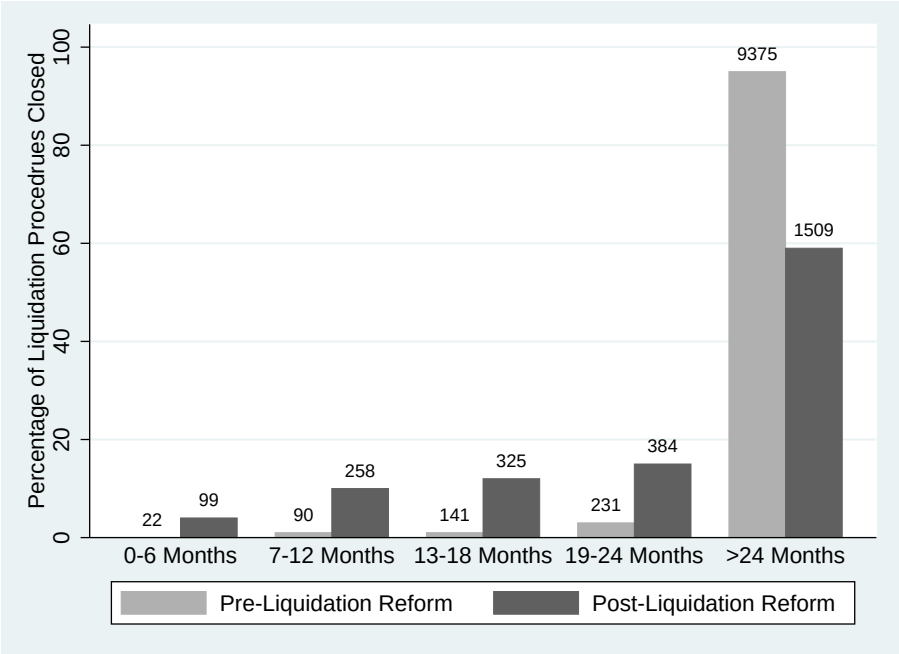
The reconstruction of the timeline of the Italian reforms pulls from Italian press articles about the bankruptcy reforms that appear in the Lexis-Nexis database. Keywords *"legge fallimentare"*, time span January 2004–December 2006.

Figure 2: Reorganization Practices of Italian SMEs



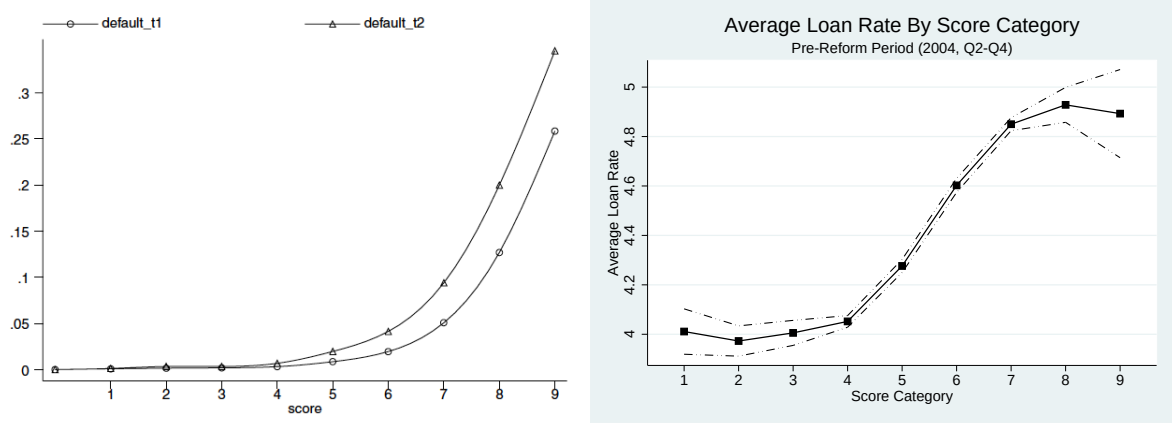
The left panel uses data from the Italian Chambers of Commerce to plot the ratio of opened in-court reorganization proceedings to all bankruptcy proceedings (in-court reorganizations and liquidations) over time. The right panel plots yearly averages of restructured credit for Italian SMEs in millions of Euro. Restructured credit is defined within the Central Credit Register as any operation that renegotiates at a loss for the bank any feature of a credit relationship. This measure of restructured credit does not include the renegotiated debt owed by firms that file for liquidation.

Figure 3: Duration of Liquidation Procedures Before and After the Liquidation Reform



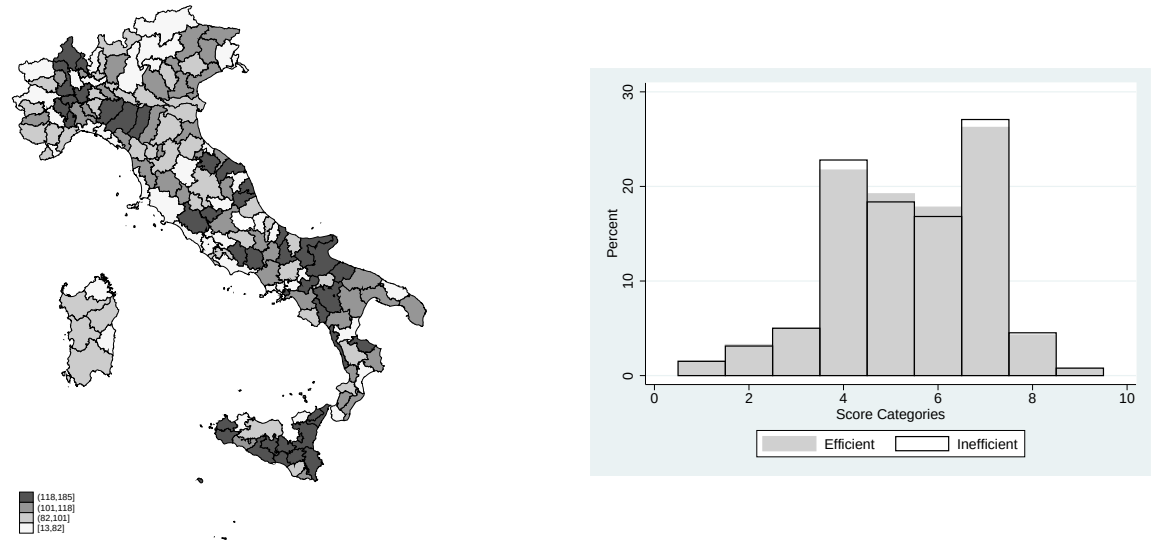
Plot of the percentage of liquidation procedures closed within X months before and after the liquidation reform. Totals reported on top of bars. Source: Unicredit Bank.

Figure 4: The *Score* Variable



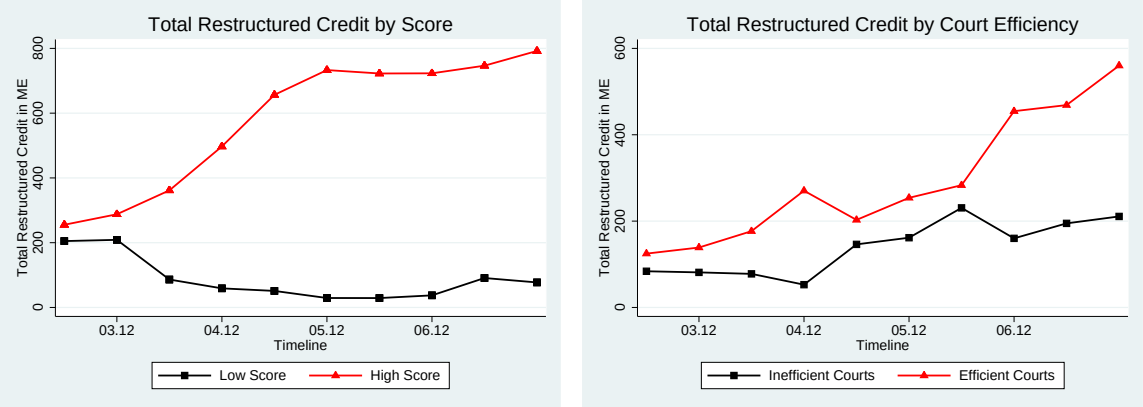
The left panel is taken from Panetta, Schivardi, and Shum (2009), who use the same balance sheet and bank data as we do, for the period between 1988 to 1998 to plot the *Score* variable against an indicator of default within the next one (circle) and two years (triangle). The right panel, computed on the basis of our pre-reform sample (2004.Q2–2004.Q4), plots the *Score* variable against the average interest rate on newly issued bank loans.

Figure 5: Property of the Distribution of Length of Bankruptcy Proceedings in Italy



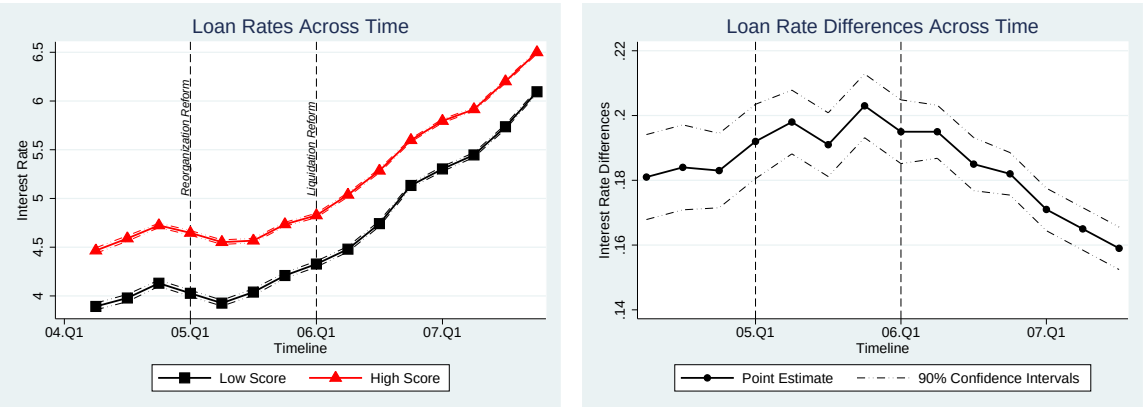
In the left panel, the average length of bankruptcy proceedings, expressed in months, is based on court-level data of proceedings closed in 2002. Darker areas correspond to courts with longer durations (source: Italian National Institute of Statistics). The right panel plots the share of firms within each *Score* category in efficient courts (bottom tercile of bankruptcy duration distribution, light grey) and inefficient courts (top tercile of bankruptcy duration distribution, black line), for our pre-reform sample (2004.Q2-2004.Q4). The Wilcoxon rank-sum that tests whether both samples are drawn from populations with the same distribution cannot be rejected ($z = -0.994$, p-value of .32).

Figure 6: Exposure and Renegotiated Credit



The figure plots total restructured credit in millions of Euro according to differential exposure to the reforms. The left panel plots total restructured credit for firms with a low *Score* (between 1 and 4, black line, square) and total restructured credit for firms with high *Score* (between 5 and 9, red line, triangle). The right panel plots total restructured credit in millions of Euro for firms in inefficient courts (top tercile of bankruptcy duration distribution, black square) and firms in efficient courts (bottom tercile of bankruptcy duration distribution, red triangle). Recall that restructured credit is defined within the Central Credit Register as any operation that renegotiates at a loss for the bank any feature of a credit relationship.

Figure 7: Difference-in-Differences Plot of Interest Rates



The left panel plots average interest rates for firms with a low *Score* (between 1 and 4, black line, square) and average interest rates for firms with a high *Score* (between 5 and 9, red line, triangle). The right panel plots the difference in average interest rates borne by firms in different *Score* categories for each quarter. Vertical lines correspond to the time the reforms were passed—the first quarter of 2005 for the reorganization reform and the first quarter of 2006 for the liquidation reform.

Table 1: Interest Rates on Newly Issued Loans and Credit Lines

Variable	Mean	25th Percentile	Median	75th Percentile	Standard Deviation	Min	Max	N
Newly Issued Loans: All								
Loan Interest Rates	5.15	4.06	5.00	6.03	1.43	0.10	9.42	361310
Size of Loan	383.64	50.00	120.00	300.00	2078.08	1.00	750168.44	361310
Newly Issued Loans: Rates by Maturity								
Short-Term (< 1 Year)	5.24	4.10	5.07	6.25	1.53	0.28	9.42	235460
Medium-Term (1–5 Years)	5.08	4.10	4.99	5.93	1.26	0.10	9.42	85234
Long-Term (> 5 Years)	4.74	3.84	4.63	5.49	1.09	0.44	9.40	40616
Newly Issued Loans: Rates by Guarantee								
Unsecured	4.79	3.80	4.66	5.59	1.33	0.10	9.42	151693
Real	4.51	3.63	4.34	5.29	1.10	0.31	9.24	6944
Personal	5.49	4.38	5.36	6.44	1.45	0.10	9.42	170979
Real and Personal	4.92	3.94	4.81	5.75	1.22	0.44	9.39	12684
Other	5.35	4.22	5.21	6.31	1.50	0.69	9.42	19010
Credit Lines								
Credit Line Interest Rates	9.03	7.22	8.75	10.84	2.65	2.79	22.81	2864748
Granted Credit Line	123.94	20.00	45.89	100.00	926.97	0.00	470000.00	4207552

Pooled loan-level data for the period 2004.Q2–2007.Q4. Observations are at the loan-quarter level, and monetary values are expressed in KE (1,000 Euro). *Loan Interest Rate* is the gross annual interest rate inclusive of participation fees, loan origination fees, and monthly service charges. *Size of Loan* is the granted amount of the issued term loan. The maturity of new term loans is captured by a set of binary variables indicating whether the maturity is up to one year (*Short-Term*), between one and five years (*Medium-Term*), or more than five years (*Long-Term*). The presence of guarantees is captured by a set of binary variables indicating whether the loan has no collateral (*Unsecured*), only real collateral (*Real*), only personal collateral (*Personal*), both (*Real and Personal*), or is unmatched (*Other*). *Credit Line Interest Rate* is the net annual interest rate on the credit line. *Granted Credit Line* is the total credit line the firm was granted by the bank in a given quarter.

Table 2: Financing Structure, Balance Sheet, and Court Efficiency Information

Variable	Mean	25th Percentile	Median	75th Percentile	Standard Deviation	Min	Max	N
Financing Structure								
Term Loans/Total Bank Fin.	0.37	0.19	0.35	0.52	0.22	0.00	1.00	240277
Credit Lines/Total Bank Fin.	0.14	0.05	0.10	0.19	0.13	0.00	1.00	240277
Backed Loans/Total Bank Fin.	0.49	0.33	0.50	0.66	0.22	0.00	1.00	240277
Total Bank Fin./Assets	0.57	0.41	0.58	0.74	0.22	0.10	1.00	163997
Balance Sheet Information								
Age of Firm	15.54	6.00	13.00	22.00	12.57	1.00	147.00	420083
Score	5.06	4.00	5.00	7.00	2.01	1.00	9.00	351428
Leverage	0.74	0.64	0.78	0.88	0.18	0.00	1.00	221788
Total Sales	5531.36	660.00	1596.00	4306.00	28095.94	0.00	6398586.00	351460
Bankruptcy Proceedings								
Length	8.22	6.2	7.96	9.4	2.5	1.35	17.04	157

Pooled data for the period 2004–2007. Observations are at the firm-year level, and monetary values are expressed in KE (1,000 Euro). *Term Loans/Total Bank Fin.* is the firms' total amount of term loans granted, divided by the total amount of bank financing granted for all categories (loans, credit lines, backed loans). *Credit Lines/Total Bank Fin.* is firms' total credit lines granted, divided by the total amount of bank financing granted in all categories (loans, credit lines, backed loans). *Backed Loans/Total Bank Fin.* is firms' total loans granted backed by account receivables and divided by the total amount of bank financing granted in all categories (loans, credit lines, backed loans). *Total Bank Fin. / Assets* is firms' total amount of bank financing granted (loans, credit lines, backed loans), divided by total assets. *Age of Firm* is the difference between the current year and the year of the firm's incorporation. *Score* is an indicator of the risk profile of each firm computed by Cerved following the Altman (1968) methodology. The *Score* value is taken in 2004. *Leverage* is defined as the ratio of debt (both short and long term) over total assets, as taken from balance sheet data. *Total Sales* is firms' revenues. *Length* is the duration, expressed in years, of bankruptcy proceedings in a bankruptcy court in 2002.

Table 3: Bankruptcy Reforms and Interest Rates on Loans

Dependent Variable: Interest Rates on Loans

	Rating	1–4 vs. 5–9	Firm and Bank FE Separately	Interacted Controls	Forecasted Sales	Government Bonds	Bank Channel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After Reorganization×Exposed	0.019***	0.045***	0.021***	0.023**	0.021***	0.018***	0.017***
	(0.006)	(0.016)	(0.006)	(0.009)	(0.006)	(0.006)	(0.006)
After Liquidation×Exposed	-0.017***	-0.048***	-0.012***	-0.028***	-0.016***	-0.019***	-0.014***
	(0.005)	(0.015)	(0.005)	(0.009)	(0.006)	(0.005)	(0.005)
Interim Period×Exposed	-0.000	0.005	-0.013**	0.002	-0.000	-0.000	0.004
	(0.005)	(0.014)	(0.005)	(0.008)	(0.005)	(0.005)	(0.005)
Credit Standards SME×Exposed	.013*	0.020	0.011	0.029***	0.012		0.014
	(0.007)	(0.022)	(.009)	(.009)	(0.009)		(0.008)
Italian Government Bond×Exposed						0.014	
						(0.049)	
Demand Forecast					-.025		
					(.049)		
Loan and Firm Time-Varying Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm × Bank FE	Yes	Yes	Firm & Bank	Yes	Yes	Yes	Yes
Quarter × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.559	0.559	0.759	0.543	0.538	0.559	0.584
N	183498	183498	226422	154019	155330	183498	183498

The table reports OLS estimations of the impact of the bankruptcy reforms on loan interest rates. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, exposure to the reforms is defined on the basis of a firm's *Score* in 2004. In all columns, except for column 2, *Exposed* is the *Score* indicator itself (with values between 1 and 9) in 2004. In column 2, *Exposed* is a binary variable indicating whether the loan was made by a firm whose *Score* was higher than 4 in 2004. In all columns, except column 6, *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. Column 3 controls for fixed effects at the firm level and at the bank level instead of the firm-bank level. Column 4 interacts all controls using 2004 levels with reform timing indicators. Column 5 controls for average firm one-year-ahead *Demand Forecast*. For each year, we impute for each firm in our sample in a particular bin the average expected sales calculated from the Invind database over the corresponding bin. The match for each bin is implemented on the basis of two characteristics: industry (*Industry*) and size (*Firm Size*), in which *Industry* refers to the two-digit SIC codes. If we cannot construct an average forecast in a given cell, we assign the industry-year average forecast. Column 6 interacts the *Exposed* indicator with the implied yield on 10-year Italian government bonds. Column 7 includes (*Bank* × *Quarter* × *Year*) fixed effects. *Loan and Firm Time-Varying Controls* include a loan's guarantee, maturity, and size and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. For ease of exposition, the coefficients are not reported. See Appendix B for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 4: Bankruptcy Reforms and Interest Rates on Credit Lines

Dependent Variable: Interest Rates on Credit Lines

	Rating	1–4 vs. 5–9	Actively Used	Threshold Analysis
	(1)	(2)	(3)	(4)
After Reorganization×Exposed	0.035***	0.086***	0.046***	0.060***
	(0.004)	(0.012)	(0.005)	(0.021)
After Liquidation×Exposed	-0.017***	-0.028**	-0.026***	-0.055**
	(0.004)	(0.013)	(0.005)	(0.026)
Interim Period×Exposed	0.004	0.019*	0.007*	0.009
	(0.003)	(0.011)	(0.004)	(0.019)
Credit Standards SME×Exposed	-0.006	-0.005	-0.004	0.001*
	(0.005)	(0.018)	(.007)	(.000)
Credit Line and Firm Time-Varying Controls	Yes	Yes	Yes	No
Firm×Bank FE	Yes	Yes	Yes	No
Quarter×Year FE	Yes	Yes	Yes	Yes
R-squared	0.096	0.096	0.118	0.018
N	1558095	1558095	1028693	501164

The table reports OLS estimations of the impact of the bankruptcy reforms on credit line interest rates. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, exposure to the reforms is defined on the basis of a firm's *Score* in 2004. In all columns, except for column 2, *Exposed* is the *Score* indicator itself (with values between 1 and 9). In column 2, *Exposed* is a binary variable indicating whether the credit line was made by a firm whose *Score* was higher than 4 in 2004. In all columns, *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. Column 3 reports estimates for the subsample of firm-bank observations with non-zero overdraft use. Column 4 estimates the specification for firms close to the threshold $\bar{s}$ between *Score* categories 6 and 7. In this specification, *Exposed* is a dummy variable equal to one for firms marginally below the threshold and classified as risk category 7, and zero for firms marginally above the threshold and thus classified as risk category 6. This specification includes as covariates a polynomial expression in the continuous variable. *Credit Line and Firm Time-Varying Controls* include the size of the granted credit line and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. For ease of exposition, the coefficients are not reported. See Appendix B for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 5: Balancing Property Test

	±.3	Score 6/7	Score 1–4 vs. 5–9
Activity:			
Food Sector	.007	.011***	-.003***
SIC Code Starts With 2	-.01	-.012*	-.075***
Geography:			
Rome	-.003	-.012***	.003
Milan	.005	-.007***	.018***
BG Ownership	.003	.005***	.012***
Unique Firms	2707/2733	7169/12452	20652/30703

The table reports differences in firm characteristics in 2004.Q4. The first column reports differences for firms marginally above and below the threshold (normalized to zero) for *Score* categories 6 to 7. The column *Score 6/7* reports differences for all firms in *Score* categories 6 and 7, and column *Score 1–4 vs. 5–9* for all firms in the sample. *Food Sector* is a binary variable equal to one for a firm with a SIC code of 16 ("Manufacture of food products and beverages"). *SIC Code Starts With 2* is a binary variable equal to one for a firm with a SIC code starting with two. *Rome* and *Milan* are binary variables equal to one for a firm registered in the cities of Rome or Milan. *BG Ownership* is a binary variable equal to 1 for a firm owned by a business group. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 6: Bankruptcy Reforms and Loan Interest Rates—Empirical Strategy Using Court Efficiency

Dependent Variable: Interest Rates on Loans

	Log Length	Terciles	Unemployment	Forecasted Sales	Propensity Score Correction	Interacted Controls
	(1)	(2)	(3)	(4)	(5)	(6)
After Reorganization×Exposed	0.061**	0.037**	0.038**	0.040**	0.045**	0.041**
	(0.030)	(0.019)	(0.019)	(0.019)	(0.019)	(0.017)
After Liquidation×Exposed	-0.085***	-0.052***	-0.048***	-0.059***	-0.064***	-0.076***
	(0.028)	(0.017)	(0.018)	(0.019)	(0.020)	(0.019)
Interim Period×Exposed	-0.046*	-0.028*	-0.030**	-0.032**	-0.030*	-0.040***
	(0.025)	(0.015)	(0.015)	(0.016)	(0.017)	(0.017)
Credit Standards SME×Exposed	0.019	0.010	0.073	0.067	0.051	.068
	(0.041)	(0.025)	(0.070)	(0.079)	(0.082)	(.300)
Demand Forecast			-0.009	-0.033		
			(0.006)	(0.059)		
Loan and Firm Time-Varying Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm×Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter×Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.557	0.562	0.562	0.539	0.561	0.548
N	198191	128062	127945	106848	85702	99398

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates using measures of court efficiency to capture exposure to the reforms. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In column 1, *Exposed* is the additive inverse of the log duration of bankruptcy proceedings as measured in 2002. In all remaining columns, *Exposed* is a binary variable indicating whether the loan was made in an efficient court (bottom tercile of the duration distribution) as opposed to an inefficient court (top tercile of the duration distribution) as measured in 2002. In all columns *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. Column 3 interacts the *Exposed* indicator with quarterly changes in regional unemployment rates obtained from Istat. Column 4 controls for the average firm one-year-ahead *Demand Forecast* constructed as in Table 3. In column 5, we implement a propensity score correction for firms in efficient and inefficient courts. We first estimate a probit model using as dependent variable indicating whether a firm is located in an efficient court before the reform. The regressors are firm-specific characteristics whose values are taken in 2004. We only use firms whose predicted probabilities of being located in efficient courts lie between 30% and 70% to re-estimate our specification. Column 6 interacts all controls taken in 2004 levels with reform timing indicators. *Loan and Firm Time-Varying Controls* include a loan's guarantee, maturity, and size and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. For ease of exposition, the coefficients are not reported. See Appendix B for the definition of these variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 7: Bankruptcy Reforms, Credit Constraints, and Investment

	Investment (I/K)		Credit Constraints	
	All	Threshold	All	Threshold
	(1)	(2)	(3)	(4)
After Reorganization×Exposed	-.13***	-1.8**	0.006*	0.047*
	(.032)	(0.8)	(0.003)	(0.028)
After Liquidation×Exposed	.084***	2**	-0.008***	-0.049*
	(.025)	(0.8)	(0.002)	(0.028)
Firm Time-Varying Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
R-squared	0.012	0.024	0.006	0.029
N	415874	15128	8770	1215

The table reports the OLS estimates of the impact of the bankruptcy reforms on investment rates and credit constraints of firms. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, *Exposed* is defined on the basis of a firm's value of *Score* in 2004. Columns 1 and 2 use balance sheet information of SMEs in the manufacturing sector between 2001 and 2007. Columns 3 and 4 use information from the yearly *Invind* survey conducted by the Bank of Italy. In columns 1 and 2, the dependent variable, I/K, is given by the ratio between investment into material fixed assets and lagged material fixed assets, multiplied by 100. Column 1 reports estimates for the overall sample; column 2 reports estimates for firms close to the threshold $\bar{s}$ between *Score* categories 6 and 7. In columns 3 and 4, the dependent variable, *Credit Constraints*, is a binary variable equal to one if the firm requested more bank financing but the request was rejected. Column 3 reports estimates for the overall sample, while column 4 reports estimates for firms close to the threshold $\bar{s}$ between *Score* categories 6 and 7. *Firm Time-Varying Controls* include lagged sales and leverage. For ease of exposition, the coefficients are not reported. See Appendix B for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 8: Bankruptcy Reforms, Creditor Coordination, and Nonprice Contractual Dimensions

	Price Effects		Loans Granted		Secured Lending		Short-Term Lending		Number of Banks	
	Single Bank	Multiple Banks	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
After Reorganization×Exposed	0.001	0.022***	-0.007***	-0.060***	0.001***	0.002	-0.000	0.012***	-0.011***	-0.029*
	(0.023)	(0.006)	(0.001)	(0.007)	(0.000)	(0.003)	(0.001)	(0.004)	(0.003)	(0.016)
After Liquidation×Exposed	0.010	-0.020***	0.002***	0.028***	-0.001	-0.003	-0.001	-0.003	0.028***	0.062***
	(0.018)	(0.005)	(0.001)	(0.006)	(0.000)	(0.003)	(0.001)	(0.004)	(0.003)	(0.019)
Interim Period×Exposed	-0.009	-0.001	0.000	0.005	0.001***	-0.003	-0.000	0.000	0.001	0.016
	(0.018)	(0.005)	(0.000)	(0.004)	(0.000)	(0.003)	(0.001)	(0.003)	(0.002)	(0.013)
Credit Standards SME×Exposed	-0.028	0.022***	-0.004	0.002	0.005	0.001	0.002	-0.001	-0.024***	-.026
	(0.028)	(0.008)	(0.009)	(0.009)	(0.006)	(0.006)	(0.001)	(0.007)	(0.004)	(0.036)
Loan and Firm Time-Varying Controls	Yes	Yes	Firm Level	Firm Level	Firm Level	Firm Level	Firm Level	Firm Level	Firm Level	Firm Level
Firm FE	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	
Quarter×Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
R-squared	0.503	0.565	0.255	0.830	0.009	0.118	0.053	0.121	0.121	0.121
N	12813	166926	684502	84840	603121	80695	603121	80695	549405	74738

The table reports the OLS estimates of the impact of bankruptcy reforms on price and nonprice dimensions of firms' financing. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, *Exposed* is defined on the basis of a firm's 2004 *Score*. In all columns, *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposed* indicator. The columns labeled "Single Bank" and "Multiple Banks" split the sample into firms contracting with a single bank and firms contracting with more than one bank in 2004, respectively. For each nonprice dependent variable, columns labeled (a) report the estimates for the overall sample, while columns labeled (b) report estimates for firms close to the threshold $\bar{s}$ between *Score* categories 6 and 7. *Loans Granted* is defined as the log of total loan financing granted. *Secured Lending* is the total amount of loans granted with real securities compared to the total amount of loans granted to the firm. *Short-Term Lending* is the total amount of loans granted with a maturity of less than one year compared to the total amount of loans granted to the firm. *Number of Bank Relations* is computed for **each quarter** as the number of distinct bank relationships with positive granted term loans. *Loan and Firm Time-Varying Controls* include a loan's guarantee, maturity, and size and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. In all columns but the first two, we only include time-varying controls at the firm level. See Appendix B for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

B. Definition of Variables

Variables at the Firm-Bank Level All these variables are at the quarterly level.

- *Credit Line Interest Rate* is the average net annual interest rate on the credit line.
- *Granted Credit Lines* is the total credit line the firm was granted by the bank in a given quarter.
- *Guarantee* is a set of binary variables indicating whether the newly issued term loan has no collateral (Unsecured), only real collateral (Real), only personal collateral (Personal), both (Real and Personal), or is unmatched (Other).
- *Loan Interest Rate* is the gross annual interest rate for newly issued term loans, inclusive of participation fees, loan origination fees, and monthly service charges. This rate is calculated so that the present value of loan installments equals the present value of payments.
- *Maturity* is a set of binary variables indicating whether the maturity of the newly issued term loans is up to one year, between one and five years, or more than five years.
- *Number of Bank Relations* is computed for **each quarter** as the number of distinct bank relationships with positive granted term loans.
- *Secured Lending* is the total amount of loans granted with real securities compared to the total amount of loans granted.
- *Short-Term Lending* is the total amount of loans granted with maturity less than a year compared to the total amount of loans granted by the bank to the firm.
- *Size of Loan* is the log of the granted amount of the newly issued term loan.

Variables at the Firm Level Variables denoted by QT are at the quarterly level; YR indicates they are at the annual level.

- *After Liquidation* is a dummy variable equal to one beginning in January 2006 (2006.Q1, QT).
- *After Reorganization* is a dummy variable equal to one beginning in January 2005 (2005.Q1, QT).

- *Age of Firm* is the difference between the current year and the year of firm incorporation (YR).

- *Backed Loans/Total Bank Fin.* is a firm's total loans backed by account receivables, divided by total bank financing granted in all loan categories (QT).

- *Credit Constraints* is a binary variable equal to one if a firm reported that it requested more credit from banks but failed to obtain it (YR).

- *Credit Lines/Total Bank Fin.* is a firm's total credit lines divided by the total bank financing granted in all loan categories (QT).

- *Credit Standards SME* is information provided by Italian banks in the *Bank Lending Survey* (BLS) of the European Central Bank regarding expected credit standards applied to Italian SMEs. This quarterly survey is sent to senior loan officers and asks the following question: "Please indicate how you expect your bank's credit standards as applied to the approval of loans or credit lines to SMEs to change over the next three months" (`http://www.ecb.europa.eu/stats/money/surveys/lend/html/index.en.html/`, QT).

- *Demand Forecast* is determined as follows. For each year, we impute to each firm in our sample in a particular bin the average expectation of one-year-ahead sales as calculated from the Invind database over the corresponding bin. The match for each bin is implemented on the basis of two characteristics: industry and size. If we cannot construct an average forecast in a given cell, we assign the industry-year average forecast. The one-year-ahead forecasts are related to sales growth (*Sales*, YR).

- *Exposed* is an indicator capturing exposure to the reforms. In our main specification, *Exposed* is either the *Score* indicator itself (with values between 1 and 9), or a binary variable indicating whether the loan was made by a firm whose *Score* was strictly larger than 4 in 2004.

  In the specification of Table 6, *Exposed* is defined on the basis of the duration in 2002 of the liquidation procedures carried out in the court jurisdiction in which the firm is headquartered. *Exposed* is either the additive inverse of the log duration of bankruptcy proceedings, or a binary variable indicating whether the loan was made in an efficient court (bottom tercile of the duration distribution) or an inefficient court (top tercile of the duration distribution).

- *Firm Size* is a categorical variable distinguishing five employment brackets: $X \leq 20$, $20 < X \leq 50$, $50 < X \leq 100$, $100 < X \leq 250$, $500 > X$ (YR).

- *Food Sector* is a binary variable equal to one for a firm with a SIC code of 16 ("Manufacture of food products and beverages") (YR).
- *Geography - Rome/Milan* is a binary variable equal to one for a firm registered in the cities of Rome or Milan (YR).
- *Group Ownership* is a binary variable equal to one if the firm belongs to a business group (YR).
- *I/K* is the ratio between firm investment in fixed material assets and one-year-lagged material fixed assets (YR).
- *Interim Period* is a dummy variable equal to one beginning in June 2005 (2005.Q3, QT).
- *Length* is the average duration, expressed in years, of bankruptcy proceedings in a bankruptcy court in 2002.
- *Leverage* is the ratio of debt (both short- and long-term) over the total book-value of assets in the balance sheets (YR).
- *Loans Granted* is the log value of the loans granted by banks to a firm (QT).
- *Score* is an indicator of the likelihood of a firm default, and takes a value ranging from 1 (for the safest firm) to 9 (for the firm most likely to default) (YR).
- *SIC Code Starts With 2* is a binary variable equal to one for a firm with a SIC code starting with 2 (YR).
- *Term Loans/Total Bank Fin.* is a firm's total amount of term loans divided by the total amount of bank financing granted in all loan categories (QT).
- *Total Assets* is the log of total assets (YR).
- *Total Bank Fin./Assets* is firms' total amount of bank financing granted (loans, credit lines, backed loans) divided by total assets (QT).
- *Total Sales* is the log of total sales (YR).
- *Value Added* is the log of value added (YR).
- *Number of Bank Relations* is the number of distinct bank relationships per firm (QT).

C. Reorganization, Liquidation, and the Cost of Bank Financing: Theoretical Framework

This section develops a model of credit in the spirit of Hart and Moore (1998). The purpose of the model is to derive empirical predictions concerning the relationship between the bankruptcy reforms and bank loans' interest rates. In particular, the set-up shows that the reorganization reform can increase, and the liquidation reform decrease, the cost of bank financing. The theoretical analysis offers guidance also regarding those firms' or institutional characteristics that render a firm loans' cost more responsive to the design of insolvency proceedings.

C.1. Set-up

There are three dates, $t = 0, 1, 2$. At $t = 0$, a cashless entrepreneur needs funding to set up the physical assets of a firm at the cost of $K > 0$. The bank can help the entrepreneur because it has money but no human capital to run the venture. Under entrepreneur's management, in $t = 1$ the assets generate cash flows that depend on the realized state of nature σ, which we denote $y_1(\sigma)$ with $\sigma \in \{h, l\}$. Specifically, with probability p the state is $\sigma = h$, and the value of firm cash flows in $t = 1$ is "high" and equal to $y_1(h) = \bar{y}_1$. With probability $(1 - p)$ the state is $\sigma = l$, the value of $t = 1$ cash flows is "low" and given by $y_1(l) = \underline{y}_1$, with $\bar{y}_1 > \underline{y}_1 > 0$. In $t = 2$ cash flows are equal to y_2 with certainty. Moreover, in $t = 1$, the physical assets of the firm can be liquidated and yield L, where L represents the value of the firm's physical assets in a piecemeal liquidation (or an alternative management), as opposed to the value y_2 generated by continuation.

Table 9 presents the distribution of cash flows in each state of nature.

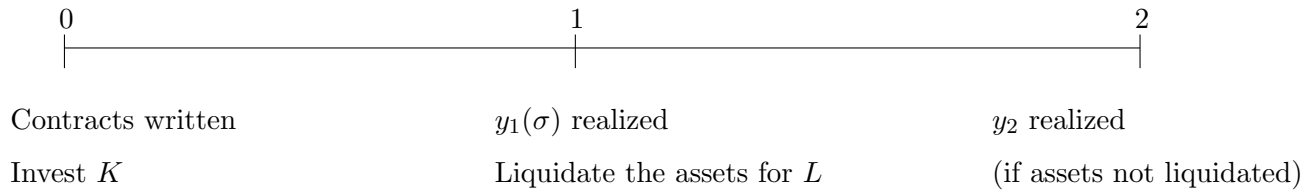
Table 9: States of Nature

σ	$\Pr(\sigma)$	Cash Flows in $t = 1$	Cash Flows in $t = 2$
h	p	$y_1(h) = \bar{y}_1$	y_2
l	$1 - p$	$y_1(l) = \underline{y}_1$	y_2

We assume that the bank and the firm are risk neutral and have symmetric information. Specifically, nobody knows the state σ at $t = 0$, but they have perfect knowledge of the state of nature σ at $t = 1$. Moreover, the entrepreneur cannot bring leftovers across dates,[22] and both investment and liquidation are zero-one decisions. Figure 8 illustrates the timeline of the game.

[22]The main implication of this assumption is that the amount granted by the bank will not exceed K at equilibrium. The standard benefit of extra lending is to provide the entrepreneur with funds to renegotiate and reduce ex-post inefficiencies. In our model, though, ex-post inefficient outcomes never arise at equilibrium.

Figure 8: Timeline



Following Gennaioli and Rossi (2013), we assume that the entrepreneur can be legally compelled to pay to the bank ex post only a fraction $\alpha \in [0,1]$ of firm cash flows $y_t(\sigma)$. That is, $\alpha y_t(\sigma)$ is the fraction of observable and verifiable cash flows in date t and state σ, determining what the entrepreneur can credibly pledge to the bank out of firm cash flows ex ante. The remaining share $(1-\alpha)$ is retained by the entrepreneur and thus cannot be pledged to the bank.[23] The parameter α captures the degree of investor protection against entrepreneur opportunism or the efficiency of the court in the firm's district. Indeed, more efficient judicial administration constrains managerial opportunism (Jappelli, Pagano, and Bianco (2005)). As in Hart and Moore (1998), the value of the physical collateral L is fully verifiable.

We solve the model under the following parametric restrictions:

A1: $y_2 > L > \bar{y}_1 > \underline{y}_1$.

A2: $p(\alpha\bar{y}_1 + L) + (1-p)(\alpha\underline{y}_1 + L) \geq K$.

A1 imposes that cash flows in $t = 2$ are larger than firm assets' liquidation values, so that it is never ex-post efficient to liquidate the firm. Moreover, it implies that liquidation values are larger than the cash flows in $t = 1$. *A2* ensures that assets' liquidation values, L, are sufficiently large that liquidation ensures bank's break even.

For bank financing to occur and the firm to be started, two participation constraints must be satisfied. First, the equilibrium contract must allow the bank to break even. Second, the entrepreneur's expected payoffs must be positive. Finally, following the definition in Hart (1995), the first best is achieved when the entrepreneur can finance the project, and the liquidation decision is ex-post efficient.

[23] Therefore, this model nests the Hart and Moore (1998) assumption of fully unverifiable cash flows, which arises when $\alpha = 0$.

C.2. Equilibrium Contracts

We solve the model under three scenarios. In the first, we assume that the bank can fully commit to enforce the contract signed at $t = 0$ with the entrepreneur. In this environment, the bank never renegotiates the initial contract in $t = 1$. Second, we consider the scenario in which commitment is limited, that is, one in which the bank might be tempted to renegotiate the contract in $t = 1$. In both scenarios, the entrepreneur is assumed to hold all the bargaining power at $t = 0$ and during ex-post renegotiation (we discuss after Proposition 2 the consequences of this assumption on the equilibrium repayments in the scenario with limited commitment).[24]

To draw a comparison between these two theoretical scenarios and the pre- and post-reorganization reform periods we note that, before the reorganization reform, legal constraints allowed the bank to commit to the enforcement of financial contracts; thus, we expect that the implied cost of bank financing was as in the scenario featuring full commitment. The reform introduced reorganization procedures that facilitated the renegotiation of loan contracts, thus weakening bank's capability to enforce the liquidation threat.

We focus on debt contracts. In a debt contract, the firm borrows K from the bank in $t = 0$ and promises to repay R_1 and R_2 in $t = 1$ and $t = 2$, respectively. Repayments will be contingent on the realized state of nature and the firm repayment decision. If the firm repays in full in $t = 1$, it is allowed to continue; otherwise, the bank has the right to liquidate the assets and obtain the liquidation proceeds. Given *A1*, the optimal contract is such that the firm is never liquidated at equilibrium, thus avoiding ex-post inefficiency. We will show that debt contracts achieve this outcome.

$R(\sigma)$ is the sum of the equilibrium repayments R_1 and R_2 in state σ.[25] Moreover, while the risk-free interest rate is zero, we define the interest rate $1 + r$ borne by the firm as the ratio between the maximum value of $R(\sigma)$ set in the financing contract and the initial installment K:

$$1 + r = \frac{\max\{R(h), R(l)\}}{K}.$$

Thus, there is a direct relationship between the value of the repayments, $R(\sigma)$, and the loan interest rate, $(1 + r)$. We next first derive repayments in the environments with full commitment (R^c) and limited commitment (R^n). For our empirical predictions, we compare the ensuing value of the interest rate $(1 + r)$ in these scenarios.

[24]The assumptions on the bargaining power are standard in the literature (e.g., Hart (1995)). Relaxing them would lead to analogous results as long as the entrepreneur retains a sufficiently strong bargaining position.

[25]This is an abuse of notation, because, although the contractual repayments R_1 and R_2 depend on both the firm's decision to repay and the state of nature σ, here we write R as function of σ only.

Full Commitment Assume that the contractual terms agreed to in $t = 0$ are always enforced and that ex-post renegotiation is unfeasible. The bank will write the contract to discourage strategic default by the entrepreneur, which happens when the entrepreneur fails to repay as much as specified in the contract, even though cash flows are sufficient to pay those debts. The optimal contract then allows the firm to continue after full repayment in $t = 1$ and liquidates the firm after default.

In this scenario, the bank can directly obtain verifiable cash flows of $\alpha y_1(\sigma)$ in $t = 1$ and αy_2 in $t = 2$. On top of these amounts, due to the liquidation threat the entrepreneur is willing to pay up to $(1 - \alpha)y_1(\sigma)$ out of $t = 1$ cash flows, and this is affordable to him. Therefore, the entrepreneur at equilibrium is ready to pay to the bank *up to* $y_1(\sigma)$ in $t = 1$ and αy_2 in $t = 2$; which, overall, sum to $y_1(\sigma) + \alpha y_2$ in each state σ.

Note that the firm is efficiently continued if the entrepreneur repays in full at $t = 1$. Instead, assets are inefficiently liquidated if the entrepreneur defaults strategically (Hart and Moore (1998)). This liquidation threat is credible with full commitment and is important to maximize entrepreneur repayment incentives. Indeed, it is thanks to the liquidation threat that in $t = 1$ the entrepreneur is willing to transfer to the bank $(1 - \alpha)y_1(\sigma)$ on top of the verifiable value of $t = 1$ cash flows ($\alpha y_1(\sigma)$).

But will the firm ever be liquidated at equilibrium? Provided the contractual repayments are feasible, the entrepreneur never defaults and liquidation never takes place at equilibrium. Let us proceed determining these contractual repayments. We assume that

A3: $y_1(\sigma) + \alpha y_2 > K$.

By *A3*, the maximum amount the entrepreneur can repay in each state σ ($y_1(\sigma) + \alpha y_2$) is larger than K. This means that with full commitment the bank can set repayments equal to the capital outlay K independently of the realized state of nature ($R^c(h) = R^c(l) = R^c = K$). These repayments are feasible,[26] thus the firm never defaults and the loan is safe to the bank. All this implies that liquidation never occurs on the equilibrium path and the value of the firm reaches the first best. Proposition 1 summarizes this discussion.

Proposition 1. *With full commitment, the bank sets repayments equal to the capital outlay K in all states of nature (that is, $R^c = K$), so that $r = 0$. The bank breaks even and the value of the firm is as in the first best.*

Proof. First let us introduce the notation that we use to write the program that parties solve at the contracting stage ($t = 0$). $R_t(\sigma, \rho)$ denotes the date-t contractual repayment, and $\lambda(\rho) \in \{0, 1\}$ is the date-1 liquidation decision. Repayments depend on the realized state of nature, $\sigma \in \{h, l\}$, and the entrepreneur's repayment decision, ρ. Variable $\rho \in$

[26] In the proof, we show that the value of R^c can be spread across periods to satisfy all the relevant constraints.

$\{0,1\}$ is an indicator taking a value of 1 if the entrepreneur repays in full in $t=1$, and 0 if the entrepreneur strategically defaults. The liquidation decision only depends on whether the entrepreneur repays at $t=1$.

With full commitment, the optimal debt contract maximizes entrepreneur expected payoffs,

$$\begin{aligned}\max_{\lambda(\sigma,\rho),R_t(\sigma,\rho)} \quad & p\left\{\bar{y}_1 - R_1(h,1) + \lambda(1)L + [1-\lambda(1)]\,y_2 - R_2(h,1)\right\} + \\ & (1-p)\{\underline{y}_1 - R_1(l,1) + \lambda(1)L + [1-\lambda(1)]y_2 - R_2(l,1)\}, \end{aligned} \tag{3}$$

under the following conditions. First, the entrepreneur participation constraint, which requires that the value of the maximand in (3) at equilibrium must be positive. Then, the bank break-even constraint:

$$p[R_1(h,1)+R_2(h,1)] + (1-p)[R_1(l,1)+R_2(l,1)] = K, \tag{4}$$

which must hold with equality because the entrepreneur holds all the bargaining power. The objective function in (3) and the break-even constraint in (4) are written setting $\rho=1$, that is, under the condition that the entrepreneur repays in full at $t=1$. To ensure that this is indeed the case in each state σ, the following incentive compatibility constraint must hold true:

$$\begin{aligned} & y_1(\sigma) + \lambda(1)L + [1-\lambda(1)]y_2 - R_1(\sigma,1) - R_2(\sigma,1) \geq \\ & y_1(\sigma) + \lambda(0)L + [1-\lambda(0)]y_2 - R_1(\sigma,0) - R_2(\sigma,0). \end{aligned} \tag{5}$$

The left-hand-side of (5) is given by the payoffs of the entrepreneur when the firm repays ($\rho=1$), and the right-hand-side is the entrepreneur payoffs under strategic default ($\rho=0$). Contractual repayments are subject to the following feasibility conditions:

$$R_1(\sigma,0) \leq \alpha y_1(\sigma) + \lambda(0)L, \quad R_2(\sigma,\rho) \leq \alpha y_2[1-\lambda(\rho)]. \tag{6}$$

Finally, the equilibrium first period repayment when $\rho=1$, $R_1(\sigma,1)$, is determined by the incentive constraint (5) and must satisfy $R_1(\sigma,1) \leq y_1(\sigma)$ (otherwise it would not be feasible). Of course, the firm is started if the value of entrepreneur expected payoffs in (3) is positive.

First note that to minimize entrepreneur payoffs in default, if the entrepreneur does not repay in full ($\rho=0$) the contract sets the highest possible payments: $R_1(\sigma,0) = \alpha y_1(\sigma) + \lambda(0)L$ and $R_2(\sigma,0) = [1-\lambda(0)]\alpha y_2$. Plugging these values into (5) we obtain:

$$R_1(\sigma,1) + R_2(\sigma,1) \leq \alpha[y_1(\sigma)+y_2] + \lambda(1)[L-y_2] + \lambda(0)(1-\alpha)y_2. \tag{7}$$

Recall that $y_2 > L$ under *A1*. Then, the right-hand-side of (7) is maximized by setting $\lambda(0) = 1$ and $\lambda(1) = 0$. That is, the optimal contract liquidates the assets if the firm defaults in $t = 1$, but allows the firm to continue otherwise. Plugging the optimal values of the liquidation decisions into (7) yields:

$$R_1(\sigma, 1) + R_2(\sigma, 1) \leq \alpha y_1(\sigma) + y_2. \tag{8}$$

Condition (8) shows that with full commitment, the firm is willing pay up to $\alpha y_1(\sigma) + y_2$ in each state σ. But is this amount feasible for the entrepreneur? Under the optimal contract, the feasibility conditions can be rewritten as follows:

$$R_1(\sigma, 1) \leq y_1(\sigma), \quad R_2(\sigma, 1) \leq \alpha y_2. \tag{9}$$

It follows that the entrepreneur cannot repay more than $y_1(\sigma) + \alpha y_2$ in each state σ, and this amount is smaller than $\alpha y_1(\sigma) + y_2$ when $y_2 > y_1(\sigma)$ (*A1*). Therefore, the maximum amount that, with full commitment, the entrepreneur can credibly pledge to the bank in state σ is pinned down by the feasibility conditions and equal to $y_1(\sigma) + \alpha y_2$.

We now turn to the determination of the per-period repayments. By *A2*, $y_1(\sigma) + \alpha y_2$ is larger than K, thus it always exists a value of the per-period repayments, $R_t(\sigma, 1)$, such that the break-even condition in (4), the feasibility constraints, and (8) hold true. In particular, if the bank sets $R_1(\sigma, 1) + R_2(\sigma, 1) = K$ and spreads the per-period repayments so that they are feasible, break even is certain and the loan is safe.[27]

Finally, note that although the optimal contract prescribes firm liquidation in the case of strategic default, liquidation never occurs on the equilibrium path. The reason is that the firm will always have an incentive to repay, so that its value always reaches the first best. □

Limited Commitment Assume now that the institutional environment provides a legal outlet that facilitates contract renegotiation. Will the bank agree to renegotiate after default? What are the consequences of renegotiation on the optimal contract? In the model, renegotiation does not take place when two conditions are met. The first is that the bank has a unilateral incentive to liquidate the firm. The second prescribes that, even though the bank has incentive to enforce the liquidation threat, the entrepreneur cannot bribe it and write a new contract after strategic default.

Let the entrepreneur strategically default in $t = 1$. Whether the bank has the incentive to liquidate firm's assets crucially depends on the continuation value of the firm. Indeed, when what the bank can obtain in $t = 2$ by allowing the firm to continue, αy_2, is smaller

[27] For instance, the contract can set $R_1(\sigma, 1) = \zeta K$ and $R_2(\sigma, 1) = (1 - \zeta)K$, with $\zeta = y_1(\sigma)/(y_1(\sigma) + \alpha y_2) \in (0, 1)$. It is easy to verify that these repayments satisfy all the relevant constraints.

than the liquidation values, L, the bank can credibly commit to pull the plug. In this case, the entrepreneur might still try to bribe the bank, and this bribing is effective only if his resources in $t = 1$ are enough to compensate the bank for its decision not to liquidate the assets and obtain L. Specifically, in $t = 1$ the entrepreneur can use the value of his cash on hand after repaying $\alpha y_1(\sigma)$, $(1 - \alpha)y_1(\sigma)$, and pledge to the bank up to αy_2 out of $t = 2$ cash flows. Thus, a sufficient condition for renegotiation not to take place at equilibrium is that $(1-\alpha)y_1(\sigma)+\alpha y_2 < L$:[28] in this case the entrepreneur cannot convince the bank to waive the liquidation decision and the optimal contract mirrors that of full commitment ($R^n(h) = R^n(l) = R^n = K$). Otherwise, renegotiation will take place at equilibrium.

Before analyzing the implications of renegotiation on equilibrium repayment and break even, it is important to remark that, under *A1*, the left-hand-side of the sufficient condition determining the feasibility of renegotiation is increasing in α.[29] This means, *an increase in α implies that renegotiation is more likely viable*. The intuition is that, by increasing the resources a firm can use to convince the bank to renegotiate, stronger investor protection or better courts allow parties to achieve ex-post efficiency. As it will be clear, this result is important for our empirical investigation.

When renegotiation takes place it also reduces what the entrepreneur can credibly repay in each state σ. Recall that the entrepreneur holds all the bargaining power in the renegotiation stage, so he will squeeze all the renegotiation surplus and leave the bank indifferent between accepting and rejecting the deal. Hence, the maximum amount that the bank can obtain in each state σ is $\alpha y_1(\sigma) + L$, which is lower than the maximum repayment with full commitment (i.e., $y_1(\sigma) + \alpha y_2$) when the sufficient condition for the feasibility of renegotiation is met (i.e., when $(1 - \alpha)y_1(\sigma) + \alpha y_2 \geq L$).

To sharpen the exposition of our results we focus on the comparison between the financing conditions when court efficiency is large ($\alpha > \bar{\alpha}$) and renegotiation is always feasible and those when court efficiency is low ($\alpha < \underline{\alpha}$) and renegotiation never takes place.[30]

Even though what the bank can obtain decreases with renegotiation, assumption *A2*

[28] The condition that insures that the entrepreneur cannot bribe the bank ($(1 - \alpha)y_1(\sigma) + \alpha y_2 < L$) is *sufficient* for renegotiation not to take place, because it also implies that the bank has unilateral incentive to commit (i.e., $\alpha y_2 < L$). The proof of Proposition 2 presents the formal proof of the results that follow.

[29] The formulation of *A1* that we employ implies that the left-hand-side of the sufficient condition for the feasibility of renegotiation is strictly increasing in α. More generally, there are two relevant alternative formulations of *A1*, and they are weakly increasing in α. In the first $\max\{y_1(\sigma), y_2\} > L$ and renegotiation is feasible independently of the value of α. Instead, were $\max\{\bar{y}_1, y_2\} > L > \underline{y}_1$ then renegotiation is feasible only when cash flows are "high."

[30] Note that $\bar{\alpha} \equiv (L - \underline{y}_1)/(y_2 - \underline{y}_1)$ and $\underline{\alpha} \equiv (L - \bar{y}_1)/(y_2 - \bar{y}_1)$, with $\bar{\alpha} > \underline{\alpha}$ under *A1*. If α falls into the $[\underline{\alpha}, \bar{\alpha}]$ interval renegotiation might be feasible in a state of nature and unfeasible in the other. This means, renegotiation might raise interest payments to a lower extent than when $\alpha > \bar{\alpha}$.

ensures that break even can be achieved via an appropriate choice of the contractual repayments. Before determining these repayments, we introduce our last parametric restriction:

A4: $\alpha\bar{y}_1 + L > K > \alpha\underline{y}_1 + L$.

A4 implies that the maximum amount that the bank can obtain when cash flows are "low" is lower than the initial outlay ($\alpha\underline{y}_1 + L < K$), thus the contractual repayments when cash flows are "high" ($R^n(h)$) need to be raised above K for the bank to break even. Assuming that, by the law, the bank is entitled to extract what the entrepreneur can credibly promise to repay when cash flows are "low" (that is, $R^n(l) = \alpha\underline{y}_1 + L$), the repayments when cash flows are "high" are fixed to satisfy the bank break-even constraint:[31]

$$R^n(h) = \frac{K - (1-p)(\alpha\underline{y}_1 + L)}{p}. \tag{10}$$

This value of $R^n(h)$ is larger than K but still feasible for the entrepreneur, since it is lower than what the entrepreneur can credibly repay in state $\sigma = h$ ($\alpha\bar{y}_1 + L$). Under these contractual terms, the firm receives funding and repays the due amounts, so the first best is achieved. The following proposition summarizes.

Proposition 2. *If renegotiation takes place (i.e., $\alpha > \bar{\alpha}$), the bank will have to raise the repayments when cash flows are "high" above K to break even ($R^n(h) > K$). If instead renegotiation does not take place (i.e., $\alpha < \underline{\alpha}$), the contract mirrors that of full commitment (i.e., $R^n = R^c = K$). Then, the interest rate with limited commitment is given by*

$$r = \begin{cases} \frac{R^n(h)}{K} - 1 & \text{if } \alpha > \bar{\alpha} \\ 0 & \text{if } \alpha < \underline{\alpha} \end{cases}$$

In either case, the value of the firm reaches the first best.

Proof. This proof closely follows the analysis in Gennaioli and Rossi (2012) Appendix 1, page 629 (Lack of commitment and ex post renegotiation). We first assess whether the threat to liquidate the assets following a $t = 1$ strategic default is credible. Specifically, we will give the condition such that lack of commitment arises on the side of the bank. We will proceed by determining whether, although the bank can commit to liquidate, the entrepreneur can still convince it to renegotiate. Finally, we determine the maximum repayments that the bank can obtain in each state σ with and without renegotiation.

[31] The bank is indifferent between any alternative $R^{n\prime}(l)$ that, given $R^{n\prime}(h)$, satisfies the break-even condition. In particular, were $R(l) = R^{n\prime}(l) \leq R^n(l)$, the value of $R^{n\prime}(h)$ that allows the bank to break even needs to be larger than $R^n(h)$. That is, if $R^{n\prime}(l) \leq R^n(l)$, then the value of the interest rate with limited commitment and renegotiation will be even larger than if $R(l) = R^n(l)$.

Let the entrepreneur strategically default in $t = 1$ (by, say, paying only $\alpha y_1(\sigma)$ to the bank). The bank can credibly liquidate the firm whenever $R_2(\sigma, 0) \leq L$; the reason is that what the bank obtains by letting the firm continue is smaller than the liquidation values. If $\alpha y_2 \leq L$ this condition is naturally satisfied, so that the bank will always prefer to liquidate the firm's assets after default. Conversely, if $\alpha y_2 > L$ the contract sets $R_2(\sigma, 0) = L$ and the the bank will always be willing to renegotiate.

Before proceeding, we need to determine whether, even though the bank has the unilateral incentive to liquidate firm's assets ($\alpha y_2 \leq L$), the entrepreneur can convince the bank to renegotiate. First note that after repaying $\alpha y_1(\sigma)$ entrepreneur's cash on hand in $t = 1$ is equal to $(1 - \alpha)y_1(\sigma)$. Then recall that by letting the firm continue the bank obtains at most αy_2 in $t = 2$, whereas by pulling the plug the bank obtains L in $t = 1$. This means that the entrepreneur can convince the bank to renegotiate the liquidation decision if, and only if, $(1 - \alpha)y_1(\sigma) \geq L - \alpha y_2$, or $(1 - \alpha)y_1(\sigma) + \alpha y_2 \geq L$. Instead, when $(1 - \alpha)y_1(\sigma) + \alpha y_2 < L$ bribing the bank is never feasible for the entrepreneur.

This discussion gives rise to three cases. In the first $\alpha y_2 \leq L$ and $(1-\alpha)y_1(\sigma)+\alpha y_2 < L$, so that the bank has no unilateral incentive to renegotiate and the entrepreneur has not enough resources to bribe it. In the second $\alpha y_2 \leq L$ and $(1 - \alpha)y_1(\sigma) + \alpha y_2 \geq L$, so that the liquidation threat is credible, but the entrepreneur can always convince the bank to renegotiate and write a new contract. In the third, $\alpha y_2 > L$ and the bank will always renegotiate.

In the first case the entrepreneur repayment incentives are as with full commitment, see Proposition 1, and the optimal contract mirrors that of full commitment ($R^n(h) = R^n(l) = R^n = K$). In the remaining two cases we need to study the renegotiation game under the assumption that $(1 - \alpha)y_1(\sigma) + \alpha y_2 \geq L$, as this is the sufficient condition to trigger renegotiation. Recall that the entrepreneur holds the bargaining power in the renegotiation stage, implying that he will squeeze the renegotiation surplus in full and leave the bank with L.[32] Therefore, the bank's maximum total repayment in each state σ with renegotiation is equal to $\alpha y_1(\sigma) + L$, which is lower than the maximum amount under full commitment ($y_1(\sigma) + \alpha y_2$) when, as in the cases we are considering, $\alpha y_1(\sigma) + L \leq y_1(\sigma) + \alpha y_2$.

Before determining the value of the contractual repayments, to sharpen the exposition of our results we exclude those values of α such that renegotiation might be feasible in a state of nature and unfeasible in the other. Specifically, we assume that α can either be larger than $\bar{\alpha} \equiv (L - \underline{y}_1)/(y_2 - \underline{y}_1)$ or lower than $\underline{\alpha} \equiv (L - \bar{y}_1)/(y_2 - \bar{y}_1)$, with $\bar{\alpha} > \underline{\alpha}$ under

[32] To clarify the role of bargaining power in the renegotiation stage, suppose that renegotiation occurs according to a standard Nash bargaining protocol in which the bargaining power of the entrepreneur is equal to $e \in [0, 1]$. Then the bank obtains at most $\alpha y_1(\sigma) + eL + (1 - e)[\alpha y_2 + (1 - \alpha)y_1(\sigma)]$ in state σ. Setting $e = 1$ yields our results.

A1: when $\alpha < \underline{\alpha}$ renegotiation is never feasible (because $(1-\alpha)\bar{y}_1+\alpha y_2 < L$ when $\alpha < \underline{\alpha}$), whereas when $\alpha > \bar{\alpha}$ renegotiation always takes place (because $(1-\alpha)\underline{y}_1+\alpha y_2 > L$ when $\alpha > \bar{\alpha}$).

We now pin down the values of the repayments, $R_1(\sigma,\rho)$ and $R_2(\sigma,\rho)$, when renegotiation happens ($\alpha > \bar{\alpha}$). The maximum value of $R_1(\sigma,0)+R_2(\sigma,0)$ is determined by (5), so as to maximize entrepreneur repayment incentives, under the assumption that the liquidation policy is not renegotiation-proof ($\lambda(0)=0$). $R_1(h,1)$ and $R_2(h,1)$ are chosen so to allow the bank to break even. Indeed, even though renegotiation reduces what the bank can obtain in each state σ, by *A2* the bank will still be able to break even. Moreover, since $\alpha\underline{y}_1 + L < K$ (by *A4*), the bank will not be able to set the repayments as in the case with full commitment. This means, it will have to raise the value of the repayments in state $\sigma = h$ to break even.

Assume that, by the law, the bank is entitled to extract $\alpha\underline{y}_1 + L$ in state $\sigma = l$, then it fixes $R_1(h,1)$ and $R_2(h,1)$ to satisfy its break-even condition:[33]

$$R_1(h,1)+R_2(h,1) = \frac{K-(1-p)(\alpha\underline{y}_1+L)}{p}. \tag{11}$$

The value of $R_1(h,1)+R_2(h,1)$ in (11) is larger than K; however, it is lower than $\alpha\bar{y}_1+L$. In analogy to the case with full commitment analyzed in the proof of Proposition 1, it is always possible to write the per-period repayments $R_1(h,1)$ and $R_2(h,1)$ so as to satisfy the feasibility conditions. Therefore, liquidation never occurs on the equilibrium path and the first best is attained.

To conclude, we provide the comparative statics analysis of the expression in (11) with respect to L and p. Specifically, the derivative of (11) with respect to L is equal to $-(1-p)/p < 0$, and the derivative with respect to p is given by

$$\frac{\partial(R_1(h,1)+R_2(h,1))}{\partial p} = \frac{(\alpha\underline{y}_1+L)-K}{p^2},$$

which is clearly negative by *A4*.

□

Discussion and Role of Bank's Bargaining Power in Renegotiation A direct consequence of Proposition 2 is that a firm's interest rate increases when the bank's liquidation threat is not credible. In particular, the interest rate will remain zero if parties do not renegotiate and rise to a value that is larger than zero ($R^n(h)/K-1$) otherwise.

[33] In fact, the bank is indifferent between any value of $R_1(l,1)+R_2(l,1)$ that, given the repayments in state $\sigma = h$, satisfies the break-even condition. In particular, were $R_1(l,1)+R_2(l,1)$ to be lower than $\alpha\underline{y}_1+L$, then the value of the repayments in state $\sigma = h$ that allows the bank to break even needs to be larger than in (11).

Note that this result has been derived in a setting in which the entrepreneur holds full bargaining power in ex-post renegotiation. Were the bank to hold some bargaining power then the increase in the repayment would be smaller at equilibrium.

The analysis of the limited commitment scenario yields *comparative statics* that will be useful for our empirical analysis. First, as already remarked above, renegotiation happens when the value of α is relatively large, or, following our interpretation of α, when courts are more efficient. Second, the value of the repayments in (10) decreases with the liquidation value of the firm (L) and the likelihood that cash flows are "high" (p).[34] Intuitively, if liquidation values rise the value of the repayments in (10) shrinks, because the bank can extract more when cash flows are "low." At the same time, as the probability that cash flows are "high" increases, the risk of default is lower and therefore the bank reduces the value of the repayments.

Renegotiation and Firm Value We conclude this section by discussing the implications of our results for firm value. In the environments that we have considered, the firm always receives funding and liquidation never occurs at equilibrium. Thus, firm value will always be equal to the first best, and we can just focus on the effects of renegotiation on interest rates. Our model then predicts that renegotiation reduces what the entrepreneur can credibly repay, thus forcing the bank to increase payments in order to break even. However, renegotiation does not alter firm value.

Assumption *A2* is crucial to draw this conclusion. If the inequality in *A2* were binding for some of the parameters' value, there might be valuable projects that would not receive funding when commitment is limited. In this case, renegotiation not only changes the interest rates on bank loans but also introduces a dead-weight loss.

D. Robustness Checks for Empirical Framework

Control Variables Tables 10, 11, and 12 in this appendix report the full list of control variables' coefficients in our main Difference-in-Differences (DID) specifications. Tables 10 and 11 report the estimates of the empirical strategy using the Score variable for loan and credit-line interest rates. Table 12 reports the estimates of the empirical strategy using differences in court efficiency and focusing on the impact of the reforms on loan interest rates.

Time Thresholds Given that banks are free to renegotiate the terms of credit-line contracts, we expect to see changes in interest rates following the passage of each re-

[34] Formal calculations are in the proof of Proposition 2.

form. Moreover, interest-rate changes should be consistent with firms' perceived degree of exposure to the reforms, as captured by each firm's Score.

In Figure 9 we plot the changes in average quarterly interest rates on credit lines within each Score category in the two quarters preceding each reform and in the two quarters spanning the reforms. The left panel focuses on the reorganization reform and the right panel on the liquidation reform. The black line (square) in the left panel shows that interest rates on credit lines in the quarter preceding the reorganization reform remained stable across the entire Score range. After the reorganization reform, credit-line rates remained unchanged only for lower Score categories. Average interest rates increased for firms with higher Score. For example, the interest rate for firms with a Score of 8 remained steady before the reorganization reform but increased by approximately 20 basis points immediately following it. The right panel shows that the liquidation reform had the opposite effect on interest-rate differences: in the quarter preceding the reform, the average cost of credit lines increased across categories, suggesting that the increase in interest rates stemming from the reorganization reform had not yet vanished. However, interest rates decreased significantly after the liquidation reform, particularly for firms in higher Score categories.

Threshold Analysis - Internal Validity To corroborate the internal validity of our results obtained at the threshold between Score categories 6 and 7, we test whether firms in our dataset are able to manipulate their Score values. To begin with, we present a simple visual plot of the distribution of firms around the threshold.[35]

Figure 10 shows that self-assignment into categories 6 and 7 is unlikely. Indeed, firms not only ignore the methodology to be followed when computing the underlying continuous variable, but they also ignore the thresholds that are selected to define each category.

Threshold Analysis - Price Effects Column (1) of Table 13 reports the estimates from the threshold regression using loan interest rates as an outcome variable. In column (2) we report the results of the threshold analysis performed on credit-line contracts. In columns (3) and (4) we implement our threshold analysis using interest rates on credit lines as dependent variable. In column (3) we focus on the sample of firms operating in more efficient courts, while in column (4) we look at firms in less efficient courts.

As it is evident by inspecting the results in column (1), (3) and (4) the threshold analysis applied to interest rates yields results that are economically consistent with those arising from the main analysis. Statistical significance is low, for two main reasons. First,

[35]Figure 10 plots the empirical distribution of firms around the threshold for categories 6 and 7 using size bins of 0.01. The threshold is normalized to zero, and firms in Score category 7 are situated below the dotted line.

the reduced sample sizes and, second, the attenuation bias caused by the fact that the durations of bankruptcy proceedings is measured with error.

Bankruptcy Reforms and Legal Uncertainty Finally, we address the potential concern that the effects we capture merely reflect banks' uncertainty regarding the consequence of the legal changes on their relationships with firms. We exploit a debtor friendly reform of the reorganization code that took place in 2012. This reform further facilitated firm's access to the reorganization procedures, with the idea that simpler corporate restructuring proceedings could boost the business of SMEs. Before the 2012 reform, the entrepreneur was required to submit a reorganization plan upon filing for the reorganization phase. The new code prescribes instead that the entrepreneur can ask to open the procedure of reorganization even without submitting such a plan. We then run our DID specification using data on newly-issued bank loans between 2011 and 2013 to assess the impact of the 2012 legal change on loans' interest rates. Our conjecture is that, by exacerbating the scope for opportunistic behavior, the recent reform should have increased interest rates for firms more exposed to that reform as measured by Score. Table 15 confirms our conjecture, and supports our interpretation of the consequences of the 2005 reorganization reform. If the impact of the 2005 reorganization reform was driven by legal uncertainty, then we should find that the effect of the 2012 reform is qualitatively different from our main results. This reassures us regarding banks' understanding of the legal changes that occurred in 2005 and 2006.

Investment and Credit Constraints The results relying on the information in the Invind September survey are reported in Table 16 column (1) for investments and column (2) for credit constraints. These specifications measure the consequences of the reorganization reform by taking advantage of the fact that a subset of firms participating in the Invind survey were re-surveyed in the third quarter of 2005. These specifications therefore constitute a robustness check relative to the possibility of anticipation effects of the liquidation reform. Note that in this survey firms are not asked about their exact investment expenditures, but only whether they adjusted their plans and the reason for this adjustment.

Table 10: Bankruptcy Reforms and Interest Rates on Loans

Dependent Variable: Interest Rates on Loans

	Rating	1–4 vs. 5–9	Firm and Bank FE Separately	Interacted Controls	Forecasted Sales	Government Bonds	Bank Channel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After Reorganization×Exposed	0.019***	0.045***	0.021***	0.023**	0.021***	0.018***	0.017***
	(0.006)	(0.016)	(0.006)	(0.009)	(0.006)	(0.006)	(0.006)
Interim Period×Exposed	-0.000	0.005	-0.013**	0.002	-0.000	-0.000	0.004
	(0.005)	(0.014)	(0.005)	(0.008)	(0.005)	(0.005)	(0.005)
After Liquidation×Exposed	-0.017***	-0.048***	-0.012***	-0.028***	-0.016***	-0.019***	-0.014***
	(0.005)	(0.015)	(0.005)	(0.009)	(0.006)	(0.005)	(0.005)
Credit Standards SME×Exposed	.013*	0.020	0.011	0.029***	0.012		0.014
	(0.007)	(0.022)	(.009)	(.009)	(0.009)		(0.008)
Italian Government Bond×Exposed						0.014	
						(0.049)	
Demand Forecast					-.025		
					(.049)		
Real Guarantee	-0.015	-0.015	0.025		-0.014	-0.015	-0.023
	(0.028)	(0.028)	(0.021)		(0.032)	(0.028)	(0.028)
Personal Guarantee	0.036***	0.036***	0.074***		0.031**	0.036***	0.035***
	(0.014)	(0.014)	(0.011)		(0.015)	(0.014)	(0.013)
Personal and Real Guarantees	-0.191***	-0.191***	-0.155***		-0.203***	-0.191***	-0.186***
	(0.025)	(0.025)	(0.021)		(0.027)	(0.025)	(0.025)
Other Guarantees	0.042***	0.042***	0.070***		0.040***	0.042***	0.042***
	(0.013)	(0.013)	(0.015)		(0.014)	(0.013)	(0.013)
Maturity: 1-5 Years	-0.285***	-0.285***	-0.214***		-0.301***	-0.285***	-0.271***
	(0.012)	(0.012)	(0.010)		(0.013)	(0.012)	(0.013)
Maturity: >5 Years	-0.511***	-0.511***	-0.414***		-0.530***	-0.511***	-0.507***
	(0.016)	(0.016)	(0.013)		(0.018)	(0.016)	(0.017)
Log Size of Loan	-0.085***	-0.085***	-0.113***		-0.090**	-0.085***	-0.086***
	(0.003)	(0.003)	(0.004)		(0.004)	(0.003)	(0.003)
Credit Lines/Tot. Bank Fin.	0.143**	0.143**	0.127		0.158**	0.143**	0.115
	(0.071)	(0.071)	(0.078)		(0.078)	(0.071)	(0.070)
Term Loans/Tot. Bank Fin.	-0.156***	-0.156***	-0.215***		-0.136**	-0.157***	-0.176***
	(0.039)	(0.039)	(0.041)		(0.042)	(0.039)	(0.038)
Log Value Added	-0.013	-0.013	-0.013		-0.016	-0.013	-0.013
	(0.013)	(0.013)	(0.016)		(0.015)	(0.013)	(0.013)
Leverage	0.474***	0.479***	0.526***		0.449**	0.477***	0.483***
	(0.086)	(0.086)	(0.088)		(0.096)	(0.086)	(0.084)
Log Total Assets	0.124***	0.123***	0.148***		0.111**	0.124***	0.116***
	(0.027)	(0.027)	(0.028)		(0.029)	(0.027)	(0.026)
Log Total Sales	-0.167***	-0.166***	-0.206***		-0.161**	-0.167***	-0.166***
	(0.024)	(0.024)	(0.025)		(0.026)	(0.024)	(0.023)
Age of Firm	-0.094	-0.099	-0.119*		-0.036	-0.095	-0.106
	(0.069)	(0.068)	(0.067)		(0.075)	(0.069)	(0.067)
Group Ownership	0.014	0.013	-0.016		0.039	0.014	0.009
	(0.049)	(0.048)	(0.054)		(0.058)	(0.049)	(0.048)
Firm × Bank FE	Yes	Yes	Firm & Bank	Yes	Yes	Yes	Yes
Quarter × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.559	0.559	0.759	0.543	0.538	0.559	0.584
N	183498	183498	226422	154019	155330	183498	183498

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, exposure to the reforms is defined on the basis of a firm's *Score* in 2004. In all columns, except for column (2), *Exposed* is the *Score* indicator itself (with values between 1 and 9) in 2004. In column (2), *Exposed* is a binary variable indicating whether the loan was made by a firm whose *Score* was larger than 4 in 2004. In all columns, except column (6), *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. Column (3), labeled "Firm and Bank FE Separately" controls for fixed effects at the firm level and at the bank level instead of the firm-bank level. Column (4), labeled "Interacted Controls," interacts all controls taken in levels of 2004 with reform timing indicators. For ease of exposition, the coefficients are not reported. Column (5) controls for average firm one-year-ahead *Forecast* on *Sales*. For each year, we impute for each firm in our sample in a particular bin the average expected sales calculated from the Invind database over the corresponding bin. The match for each bin is implemented on the basis of two characteristics: industry and size. *Firm Size* is a categorical variable distinguishing five employment brackets: $X \leq 20$, $20 < X \leq 50$, $50 < X \leq 100$, $100 < X \leq 250$, $500 > X$. *Industry* refers to the two-digit SIC codes. If we cannot construct an average forecast in a given cell, we assign the industry-year average forecast. Column (6), labeled "Government Bonds," interacts the *Exposed* indicator with the implied yield on 10-year Italian government bonds. Column (7), labeled "Bank Channel," includes $(Bank \times Quarter \times Year)$ fixed effects. The omitted categories are "Unsecured" in the case of loan guarantees, and "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. See Appendix C of the manuscript for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 11: Bankruptcy Reforms and Interest Rates on Credit Lines

Dependent Variable: Interest Rates on Credit Lines

	Rating	1–4 vs. 5–9	Actively Used	Threshold Analysis
	(1)	(2)	(3)	(4)
After Reorganization×Exposed	0.035***	0.086***	0.046***	0.060***
	(0.004)	(0.012)	(0.005)	(0.021)
Interim Period×Exposed	0.004	0.019*	0.007*	0.009
	(0.003)	(0.011)	(0.004)	(0.019)
After Liquidation×Exposed	-0.017***	-0.028**	-0.026***	-0.055**
	(0.004)	(0.013)	(0.005)	(0.026)
Credit Standards SME×Exposed	-0.006	-0.005	-0.004	0.001*
	(0.005)	(0.018)	(.007)	(.000)
Credit Lines/Tot. Bank Fin.	-0.980***	-0.981***	-1.022***	
	(0.058)	(0.058)	(0.067)	
Term Loans/Tot. Bank Fin.	-0.284***	-0.285***	-0.349***	
	(0.030)	(0.030)	(0.035)	
Log Value Added	-0.011	-0.010	-0.013	
	(0.011)	(0.011)	(0.012)	
Leverage	0.882***	0.891***	0.867***	
	(0.069)	(0.069)	(0.083)	
Log Total Assets	0.180***	0.177***	0.222***	
	(0.022)	(0.022)	(0.025)	
Log Total Sales	-0.215***	-0.213***	-0.210***	
	(0.018)	(0.018)	(0.020)	
Age of Firm	0.316***	0.320***	0.284***	
	(0.049)	(0.048)	(0.057)	
Group Ownership	0.039	0.040	-0.003	
	(0.080)	(0.079)	(0.099)	
Firm×Bank FE	Yes	Yes	Yes	No
Quarter×Year FE	Yes	Yes	Yes	Yes
R-squared	0.096	0.096	0.118	0.018
N	1558095	1558095	1028693	501164

The table reports OLS estimation of the impact of the bankruptcy reforms on credit line interest rates. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, exposure to the reforms is defined on the basis of a firm's *Score* in 2004. In all columns, except for column (2), *Exposed* is the *Score* indicator itself (with values between 1 and 9). In column (2), *Exposed* is a binary variable indicating whether the credit line was made by a firm whose *Score* was larger than 4 in 2004. In all columns, *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. Column (3), labeled "Actively Used," reports estimates for the subsample of firm-bank observations with non-zero overdraft use. Columns (4), labeled "Score Threshold," estimates the specification for firms close to the threshold $\bar{s}$ between Score categories 6 and 7. In this specifications, *Exposed* is a dummy variable equal to one for firms marginally below the threshold and classified as risk category 7, and zero for firms marginally above the threshold and thus classified as risk category 6. This specification includes as covariates a polynomial expression in the continuous variable. The omitted categories are "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. See Appendix C of the manuscript for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 12: Bankruptcy Reforms and Loan Interest Rates—Empirical Strategy Using Court Efficiency

Dependent Variable: Interest Rates on Loans

	Log Length	Terciles	Unemployment	Forecasted Sales	Propensity Score Correction	Interacted Controls
	(1)	(2)	(3)	(4)	(5)	(6)
After Reorganization×Exposed	0.061**	0.037**	0.038**	0.040**	0.045**	0.041**
	(0.030)	(0.019)	(0.019)	(0.019)	(0.019)	(0.017)
Interim Period×Exposed	-0.046*	-0.028*	-0.030**	-0.032**	-0.030*	-0.040***
	(0.025)	(0.015)	(0.015)	(0.016)	(0.017)	(0.017)
After Liquidation×Exposed	-0.085***	-0.052***	-0.048***	-0.059***	-0.064***	-0.076***
	(0.028)	(0.017)	(0.018)	(0.019)	(0.020)	(0.019)
Credit Standards SME×Exposed	0.019	0.010	0.073	0.067	0.051	.068
	(0.041)	(0.025)	(0.070)	(0.079)	(0.082)	(.300)
Demand Forecast			-0.009	-0.033		
			(0.006)	(0.059)		
Real Guarantee	-0.015	-0.038	-0.040	-0.046	-0.056	
	(0.027)	(0.032)	(0.032)	(0.038)	(0.038)	
Personal Guarantee	0.030**	0.040**	0.040**	0.034*	0.051***	
	(0.014)	(0.017)	(0.017)	(0.019)	(0.020)	
Personal and Real Guarantees	-0.195***	-0.205***	-0.203***	-0.216***	-0.195***	
	(0.024)	(0.029)	(0.029)	(0.033)	(0.038)	
Other Guarantees	0.038***	0.032**	0.031**	0.038**	0.039**	
	(0.013)	(0.016)	(0.016)	(0.018)	(0.019)	
Maturity: 1-5 Years	-0.287***	-0.269***	-0.269***	-0.291***	-0.262***	
	(0.012)	(0.014)	(0.014)	(0.016)	(0.018)	
Maturity: >5 Years	-0.522***	-0.506***	-0.506***	-0.534***	-0.473***	
	(0.016)	(0.020)	(0.020)	(0.021)	(0.024)	
Log Size of Loan	-0.084***	-0.088***	-0.088***	-0.094***	-0.082***	
	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	
Credit Lines/Tot. Bank Fin.	0.166**	0.061	0.067	0.133	0.006	
	(0.069)	(0.083)	(0.083)	(0.092)	0.107)	
Term Loans/Tot. Bank Fin.	-0.136***	-0.151***	-0.149***	-0.113**	-0.195***	
	(0.037)	(0.045)	(0.045)	(0.050)	0.057)	
Log Value Added	-0.007	-0.012	-0.012	-0.012	-0.029*	
	(0.012)	(0.014)	(0.014)	(0.017)	(0.016)	
Leverage	0.497***	0.508***	0.504***	0.500***	0.509***	
	(0.082)	(0.097)	(0.097)	(0.110)	0.120)	
Log Total Assets	0.115***	0.097***	0.096***	0.075**	0.116***	
	(0.025)	(0.031)	(0.031)	(0.034)	0.040)	
Log Total Sales	-0.160***	-0.129***	-0.128***	-0.128***	-0.145***	
	(0.022)	(0.026)	(0.026)	(0.030)	0.033)	
Age of Firm	-0.097*	-0.165***	-0.168***	-0.074	-0.202**	
	(0.053)	(0.063)	(0.063)	(0.069)	(0.084)	
Group Ownership	0.017	-0.098	-0.097	-0.052	-0.096	
	(0.048)	(0.060)	(0.060)	(0.067)	(0.064)	
Firm×Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter×Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.557	0.562	0.562	0.539	0.561	0.548
N	198191	128062	127945	106848	85702	99398

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates using measures of court efficiency to capture exposure to the reforms. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In column (1), *Exposed* is the additive inverse of the log duration of bankruptcy proceedings as measured in 2002. In all remaining columns, *Exposed* is a binary variable indicating whether the loan was made in an efficient court (bottom tercile of the duration distribution) as opposed to an inefficient court (top tercile of the duration distribution) as measured in 2002. In all columns *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. Column (3), labeled "Unemployment," interacts the *Exposed* indicator with quarterly changes in regional unemployment rates obtained from *ISTAT*. Column (4) controls for average firm one-year-ahead *Forecast* on *Sales* constructed as in Table 3. In column (5) we implement a propensity score correction of firms in efficient and inefficient courts. We first estimate a probit model using as a dependent variable whether a firm is located in an efficient court before the reform. The regressors are firm-specific characteristics whose value is taken in 2004. We only use firms whose predicted probabilities of being located in efficient courts lie between 30% and 70% to re-estimate our specification. Column (6), labeled "Interacted Controls," interacts all controls taken in levels of 2004 with reform timing indicators. For ease of exposition, the coefficients are not reported. The omitted categories are "Unsecured" in the case of loan guarantees, and "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. See Appendix C of the manuscript for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 13: Bankruptcy Reforms and Interest Rates - Threshold Analysis

Dependent Variable: Interest Rates

	Loans	Credit Lines		
		All	Efficient Courts	Inefficient Courts
	(1)	(2)	(3)	(4)
After Reorganization×Exposed	0.032	0.060***	0.033	-0.008
	(0.049)	(0.021)	(0.048)	(0.048)
After Liquidation×Exposed	-0.037	-0.055**	-0.091*	0.036
	(0.052)	(0.026)	(0.054)	(0.052)
Interim Period×Exposed	-0.072	0.009	0.009	-0.005
	(0.044)	(0.019)	(0.038)	(0.039)
Credit Standards SME×Exposed	-0.001	0.001*	0.000	-0.002**
	(0.001)	(.000)	(0.001)	(0.001)
Contract and Firm Time-Varying Controls	Yes	Yes	Yes	Yes
Firm×Bank FE	No	No	No	No
Quarter×Year FE	Yes	Yes	Yes	Yes
R-squared	0.517	0.018	0.329	0.309
N	17057	501164	106402	113261

The table reports threshold estimates of the impact of the bankruptcy reforms on loan interest rates in column (1) and credit line interest rates in columns (2) to (4). In all columns, the specification is estimated for firms close to the threshold $\bar{s}$ between Score categories 6 and 7. In this specifications, *Exposed* is a dummy variable equal to one for firms marginally below the threshold and classified as risk category 7, and zero for firms marginally above the threshold and thus classified as risk category 6. Columns (3) and (4) implement the threshold analysis separately for efficient courts (bottom tercile of the duration distribution) and inefficient court (top tercile of the duration distribution) respectively. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to one beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, *Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposure* indicator. *Contract and Firm Time-Varying Controls* include for credit lines the size of the granted credit line and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. *Contract and Firm Time-Varying Controls* include a loan's guarantee, maturity, and size and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. See Appendix C of the manuscript for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 14: Impact of Reforms and Credit Cycles

Dependent Variable: Interest Rates on Loans

	(1)	(2)
After Reorganization×Exposed	0.045***	0.045***
	(0.017)	(0.017)
After Liquidation×Exposed	-0.045***	-0.049***
	(0.014)	(0.015)
Interim Period×Exposed	0.010	0.002
	(0.014)	(0.014)
US BAA/AAA*Treatment	-0.031	
	(0.036)	
Loan Controls: Guarantee, Maturity, Size, Financing Composition		
Firm Controls: Value Added, Leverage, Assets, Sales, Age, Ownership		
Firm*Bank FE	Yes	Yes
Quarterly FE	Yes	Yes
Trend*Score	No	Yes
R-squared	0.559	0.559
N	183498	183237

The table reports the OLS estimation of the impact of bankruptcy reforms on loan interest rates. Column 1 interacts *Treatment* with a proxy for international credit market cycles *US BAA/AAA*. Column 2 interacts the *Score* indicator (1-9) with a time trend. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). *Treatment* is a binary variable indicating whether the loan was made by a firm with a *Score* of more than 4 in 2004. *US BAA/AAA* is the difference between yields on US corporate AAA rated bonds and Baa rated bonds. Information on corpororate bond yields is taken from `http://www.federalreserve.gov/releases/h15/current/`. See Appendix C of the manuscript for the definition of all relevant variables. The omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. Robust, firm clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1, 5 and 10 percent levels, respectively.

Table 15: Legal Uncertainty

	Rating
After Reorganization×Exposed	0.006***
	(0.002)
Credit Standards SME×Exposed	0.002***
	(0.000)
Loan and Firm Time-Varying Controls	Yes
Firm×Bank FE	Yes
Quarter×Year FE	Yes
R-squared	0.380
N	204885

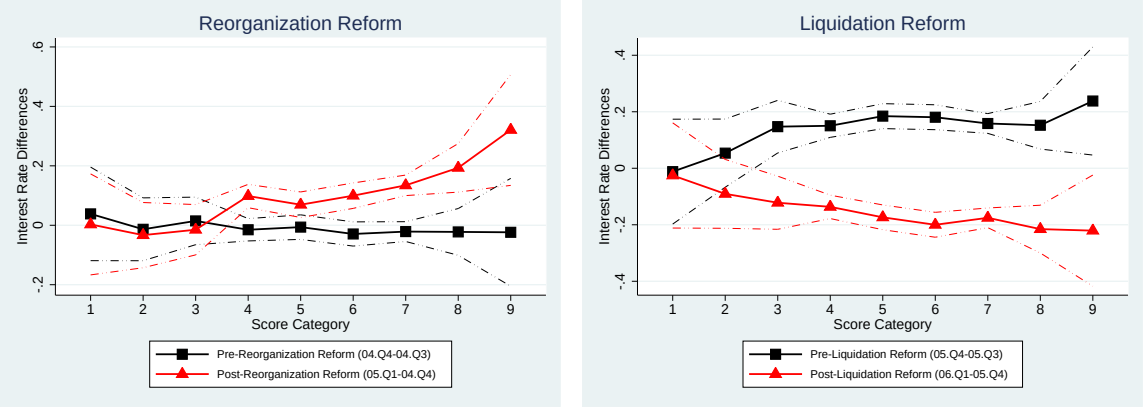
The table reports OLS estimation of the impact of the 2012 reorganisation reform on loan interest rates. The estimating period is from 2011q1 to 2013q2. *After Reorganization* is a binary variable equal to one beginning in August 2012 (2012.Q3). *Exposed* is a binary variable indicating whether the loan was made by a firm whose *Score* was larger than 4 in 2011.*Credit Standards SME*, corresponding to the expected credit standards applied to Italian SMEs, is interacted with the *Exposed* indicator. *Loan and Firm Time-Varying Controls* include a loan's guarantee, maturity, and size and a firm's financing composition, value added, leverage, assets, sales, age, and ownership. The omitted categories are "Unsecured" in the case of loan guarantees, and "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. See Appendix C of the manuscript for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Table 16: Bankruptcy Reforms, Credit Constraints and Investment - September Survey

	Investment	Credit Constraints
	(1)	(2)
After Reorganization×Exposed	-0.055**	0.10***
	(0.039)	(0.000)
Firm Time-Varying Controls	Yes	Yes
Firm FE	No	No
Year FE	Yes	Yes
R-squared	0.38	0.66
N	693	214

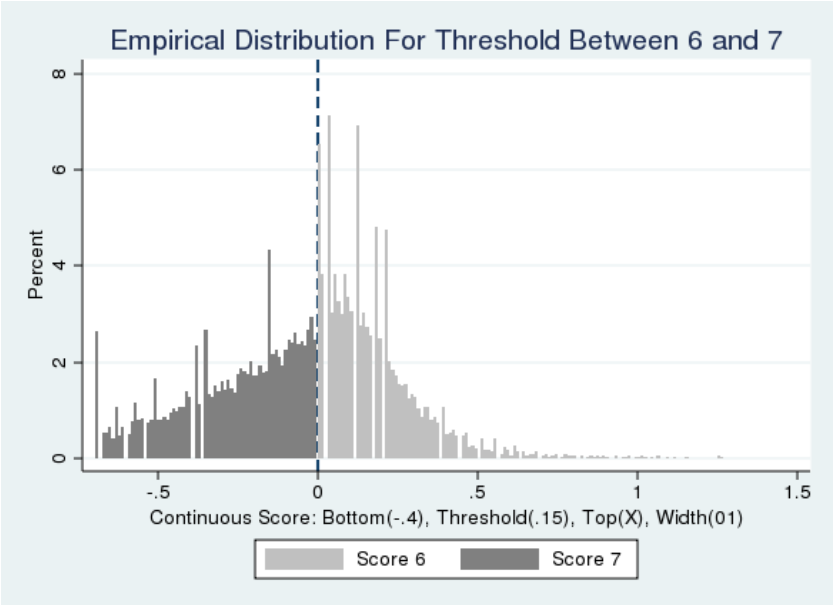
The table reports the OLS estimates of the impact of the bankruptcy reforms on investment rates and credit constraints of firms. Columns (1) and (2) exploit information from the 2005 recall survey of the *Invind* survey. In column (1) the dependent variable, Δ *I/K*, is a binary variable equal to one if the firm reported a significant negative change in its investment plans relative to its plans at the beginning of the year. The dependent variable in column (2), *Credit Constraints*, is a binary variable equal to one if the firm reported that its downward adjustment to investment plans were caused by credit constraints. *After Reorganization* is a binary variable equal to one beginning in January 2005 (2005.Q1). *After Liquidation* is a binary variable equal to one beginning in January 2006 (2006.Q1). In all columns, *Exposed* is defined on the basis of a firm's value of *Score* in 2004. *Firm Time-Varying Controls* include lagged sales and leverage. See Appendix C of the manuscript for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Figure 9: WithinScore Variations At the Threshold of the Reforms



The figure plots changes in average quarterly interest rates on credit lines within each *Score* category in the quarter preceding the reforms and the quarter spanning the reforms. The left panel of the figure focuses on the reorganization reform and plots changes in interest rates between 2004.Q4 and 2004.Q3 (black line, square), and between 2005.Q1 and 2004.Q4 (red line, triangle). The right panel focuses on the liquidation reform and plots changes in interest rates between 2005.Q4 and 2005.Q3 (black line, square), and between 2006.Q1 and 2005.Q4 (red line, triangle).

Figure 10: Distribution of Firms Around Score Threshold Between Categories 6 and 7



The figure plots the empirical distribution of the continuous variable underlying *Score* categories 6 and 7 using bins of 0.01 and firm observations in 2004.Q4. The threshold is normalized to zero. Firms in *Score* category 7 are to the left of the dotted line (dark grey bars), and firms in *Score* category 6 are to the right of the dotted line (light grey bars).

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