Bankruptcy law and bank financing

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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.

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1. Introduction

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. 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.\textsuperscript{1} These studies have looked at reforms that either change only the enforcement of bankruptcy rules or alter

\textsuperscript{1} See, for example, Araujo, Ferreira, and Funchal (2012); Assunção, Benmelech, and Silva (2013); Hackbarth, Haselmann, and Schoenherr (2015); Scott and Smith (1986); Vig (2013), and Cerqueiro, Ongena, and Roszbach (forthcoming).

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simultaneously both reorganization and liquidation. A prominent example is the US bankruptcy code of 1978, which introduced provisions related to liquidation (Chapter 7) and renegotiation (Chapter 11) at the same time.\textsuperscript{2} 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-size enterprises (SMEs).

The Italian reform consisted of two distinct and consecutive laws. The first, inspired by US Chapter 11, introduced legal outlets that made the renegotiation of credit contracts easier. Subsequently, the second law significantly speeded up firms’ liquidation 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 increase 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 euros before 2005 to one billion euros 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 improves 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 \textit{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, \textit{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 data set collected by the Italian central bank (the banking sector supervisory authority). This data set contains 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-size manufacturing firms. We also have access to information on these firms’ balance sheets and investment. Importantly, because 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 (DID) framework. We exploit the policy changes by combining them with cross-sectional differences in firms’ credit risk. 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 euros 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 euros 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

\textsuperscript{2} Other countries have recently reformed liquidation and reorganization at the same time, including Spain in 2004 and France and Brazil in 2005.
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 relation over time.

Second, our exposure groups could 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.3

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. 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.4 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 relations firms have with banks. Gennaioli and Rossi (2013) show that the dispersion in the class of noncontrol-
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 non-price terms of financial contracts. We also analyze how our results on the cost of bank financing depend 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 US 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. At that time, Italy had already been reprimanded twice by the European Commission 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 fewer than five hundred employees.

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

Panel A 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 bankruptcy proceedings involved reorganization. In comparison, US court data show that between 2005 and 2009 Chapter 11 filings make up about 19% of total US business filings.7

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.

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. 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.

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6 Parmalat SpA was a multinational Italian dairy and food corporation. The company collapsed in late 2003 with a 14 billion euros ($20 billion; £13 billion) hole in its accounts. This remains one of Europe’s biggest corporate bankruptcies.

7 See http://www.uscourts.gov/Statistics/JudicialFactsAndFig.s.aspx.
Finally, the reform strengthens the validity of out-of-court agreements by limiting the impact of claw-back provisions.

Panel A of Fig. 2 shows that, after the 2005 reform, the use of in-court reorganization procedures rises from approximately 2% in 2005 to over 10% in 2009. The increase of in-court proceedings is not the result of crowded out-of-court bankruptcies. Panel B shows that the total value of credit restructured at a loss in court and out of court rises from 0.5 billion euros in 2003 and 2004 to 0.8 billion euros in 2005, rising to 1 billion euros in 2007.8

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 over 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 relation 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 Gennaini and Rossi (2013), the firm deals with multiple creditors, and its cash flows are stochastic and only partially verifiable.9 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.

Crucially, the value of contractual repayments depends 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

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8 Italian banks are required to report to the Central Credit Register the operations that renegotiate at a loss a feature of credit relations. This measure of restructured credit does not include the renegotiated debt owed by firms that file for liquidation. Thus, the steep rise in Fig. 2 cannot come from the liquidation reform.

9 In the Online Appendix available on authors’ website, we derive the predictions on the cost of funding using a single-bank version of the model.
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 noncontrolling 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 data set 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 data set on Italian SMEs (defined as firms with fewer than five hundred employees). Our main data sources are confidential data sets 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. We also have balance sheet data for Italian companies from the Cerved Group database, which include the Score, the most important credit rating that
Table 1
Interest rates on newly issued loans and credit lines. The table reports pooled loan-level data for the period 2004.Q2–2007.Q4. Observations are at the loan-quarter level, and monetary values are expressed in thousands of euros. 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), has only real collateral (Real), has only personal collateral (Personal), has 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.

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<th>Mean</th>
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<th>Median</th>
<th>75th percentile</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
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Italian banks use to assess the credit risk of Italian SMEs. Finally, we collect data on the length of bankruptcy proceedings from the Italian National Institute of Statistics (Istat).

The data set we use for our main analysis is of quarterly frequency, running from the second quarter of 2004 to the last quarter of 2007, and contains 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.

3.1. Credit contracts

The main features of each newly issued term loan and credit lines are taken from the Taxia data set, which contains quarterly information on over 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), has only real collateral (Real), has only personal collateral (Personal), has 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 Line is the total value of the credit lines the firm was granted by the bank at the end of a given quarter. The Appendix A 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.

The average interest rate charged for a loan during the sample period is 5.15%, and the average loan is approximately 383,000 euros. The median loan, however, is 120,000 euros, because our data cover loans as small as 1,000 euros. 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 data set 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).

Table 1 reports 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 euros.

3.2. Financing structure and balance sheet information

Table 2 reports 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 that total bank financing represents 57% of the book value of a firm’s assets.
Table 2
Financing structure, balance sheet, and court efficiency information. The table reports pooled data for the period 2004–2007. Observations are at the firm-year level, and monetary values are expressed in thousands of euros. Term Loans/Total Bank Financing 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 Financing 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 Financing 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 Financing/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 Group 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>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>25th percentile</th>
<th>Median</th>
<th>75th percentile</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financing structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term Loans/Total Bank Financing</td>
<td>0.37</td>
<td>0.19</td>
<td>0.35</td>
<td>0.52</td>
<td>0.22</td>
<td>0.00</td>
<td>1.00</td>
<td>240,277</td>
</tr>
<tr>
<td>Credit Lines/Total Bank Financing</td>
<td>0.14</td>
<td>0.05</td>
<td>0.10</td>
<td>0.19</td>
<td>0.13</td>
<td>0.00</td>
<td>1.00</td>
<td>240,277</td>
</tr>
<tr>
<td>Backed Loans/Total Bank Financing</td>
<td>0.49</td>
<td>0.33</td>
<td>0.50</td>
<td>0.66</td>
<td>0.22</td>
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</tr>
<tr>
<td>Total Bank Financing/Assets</td>
<td>0.57</td>
<td>0.41</td>
<td>0.58</td>
<td>0.74</td>
<td>0.22</td>
<td>0.10</td>
<td>1.00</td>
<td>163,997</td>
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<td>Balance sheet information</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of Firm</td>
<td>15.54</td>
<td>6.00</td>
<td>13.00</td>
<td>22.00</td>
<td>12.57</td>
<td>1.00</td>
<td>147.00</td>
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<tr>
<td>Score</td>
<td>5.06</td>
<td>4.00</td>
<td>5.00</td>
<td>7.00</td>
<td>2.01</td>
<td>1.00</td>
<td>9.00</td>
<td>351,428</td>
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<tr>
<td>Leverage</td>
<td>0.74</td>
<td>0.64</td>
<td>0.78</td>
<td>0.88</td>
<td>0.18</td>
<td>0.00</td>
<td>1.00</td>
<td>221,788</td>
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<tr>
<td>Total Sales</td>
<td>5,531.36</td>
<td>660.00</td>
<td>1,596.00</td>
<td>4,306.00</td>
<td>28,095.94</td>
<td>0.00</td>
<td>6,398,586.00</td>
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<tr>
<td>Bankruptcy proceedings</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>8.22</td>
<td>6.2</td>
<td>7.96</td>
<td>9.4</td>
<td>2.5</td>
<td>1.35</td>
<td>17.04</td>
<td>157</td>
</tr>
</tbody>
</table>

The table also 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 data set 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). 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.

Score 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 plots the Score variable against the interest rate on loans for our pre-reform sample. A strong positive relation exists 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%, and the worst (highest) category pays an average loan interest rate of around 5%. Panetta, Schivardi, and Shum (2009) show that 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.

3.4. Duration of bankruptcy proceedings

Finally, from 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).

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, Gia-comelli, 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. Panel B of 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 could 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

Because 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, we compare the financing conditions applied to firms perceived to be at no risk of default (Score of 1–4) with those of firms perceived to be more likely to default (Score of 5–9). Because the post-reform value of the Score variable could 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.

Panel A 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.

We use Score to measure firms’ exposure to the reforms for several reasons. First, unlike US credit ratings, 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 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).

Panel A of Fig. 7 separately plots average interest rates for firms perceived to be at no risk of default (a Score of 1–4) and those for firms deemed likely to default (a Score of 5–9). Average interest rates increase for both groups during the sample period. Panel B 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 8 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 euros 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 euros 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 DID framework:

\[
Y_{ijt} = \text{Constant} + \alpha \text{Exposed}_i + \beta (\text{Exposed}_i \times \text{After Reorganization}_t) + \gamma (\text{Exposed}_i \times \text{Interim Period}_t)
\]
in which Exposed 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.

\( + \delta (\text{Exposed} \times \text{After Liquidation}) \)
\( + \lambda (\text{Exposed} \times \text{Cycle}) \)
\( + X_{ijt} \Phi + Z_{it} \Omega + B_{it-1} \Psi \)
\( + \text{Firm} \times \text{Bank} + \text{Quarter} \times \text{Year} + \epsilon_{ijt}. \) (1)

in 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, Interim Period, and After Liquidation, switch back to zero 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, \( \beta \), 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, \( \delta \), represents the DID estimate of the average effect of the reform of the liquidation procedure. Based on Prediction 2, we expect \( \delta \) 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 \( (\text{Firm} \times \text{Bank}) \) and for each period in the sample \( (\text{Quarter} \times \text{Year}) \). 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 relation 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. \( X_{ijt} \) are the characteristics of each newly issued term loan, such as maturity, collateral, and loan size. \( Z_{it} \) 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.

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, Jiménez, Ongena, Peydró, and Saurina, 2014; Santos, 2011). We acknowledge that non-price dimensions can simultaneously change after the reforms. However, we obtain the same results if we reestimate our baseline specification excluding loan characteristics.
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 × Cycle_t) in all of our regressions. 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.

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 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. 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 × 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). 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 × 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 7 basis points and the relative firm interest payments to banks by 45 million euros 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. Moreover, 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.

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 criterion.

In our main specification, we include a detailed set of fixed effects at the firm-bank level (Firm_t × Bank_j), allowing us to observe variation in the cost of finance within the same firm-bank relation 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. We use micro level data on the forecast of firm sales from the Invind survey of manufacturing firms. Each year the survey asks the top management of about 15 hundred manufacturing firms about their year-ahead forecasts of sales growth. When we reestimate 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 ten-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.

Finally, in Column 7, we examine whether aggregate shocks could 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 regarding the impact of the reorganization reforms. We thus reestimate our specification including bank fixed effects interacted with a dummy for each quarter-year to account for any aggregate shock that could have differentially influenced banks’ lending decisions during our sample period. Even though the number of
Table 3
Bankruptcy reforms and interest rates on loans. The table reports ordinary least squares 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 small and medium-size enterprises (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 standard industrial classification codes. If we cannot construct an average forecast in a given cell, we assign the industry-year average forecast. Column 6 interacts the Exposure indicator with the implied yield on ten-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 the Appendix A for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

<table>
<thead>
<tr>
<th>Rating</th>
<th>After Reorganization × Exposed</th>
<th>After Liquidation × Exposed</th>
<th>Interim Period × Exposed</th>
<th>Credit Standards SME × Exposed</th>
<th>Italian Government Bond × Exposed</th>
<th>Loan and Firm Time-Varying Controls</th>
<th>Firm × bank fixed effects</th>
<th>Quarter × year fixed effects</th>
<th>R-squared</th>
<th>N</th>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
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<tr>
<td></td>
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<td>0.045**</td>
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<td>0.023**</td>
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<td>0.017**</td>
<td>0.028**</td>
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<td>(0.006)</td>
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<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.009)</td>
<td>(0.009)</td>
<td>183,498</td>
</tr>
</tbody>
</table>

Table 4
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. Because we can continuously observe the interest rate on each credit line in our data set 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. Evidence from credit lines

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.

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 euros 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 euros per year.
Table 4
Bankruptcy reforms and interest rates on credit lines. The table reports ordinary least squares 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 small and medium-size enterprises (SMEs), is interacted with the Exposure indicator. Column 3 reports estimates for the subsample of firm-bank observations with nonzero overdraft use. Column 4 estimates the specification for firms close to the threshold \( \beta \) 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 the Appendix A for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

<table>
<thead>
<tr>
<th>Rating</th>
<th>1–4 versus 5–9</th>
<th>Actively used</th>
<th>Threshold analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

- **After Reorganization × Exposed**
  - 0.035***
  - (0.004)
  - 0.086***
  - (0.012)
  - 0.046***
  - (0.005)
  - 0.060***
  - (0.021)

- **After Liquidation × Exposed**
  - -0.017***
  - (0.004)
  - -0.028**
  - (0.013)
  - -0.026***
  - (0.005)
  - -0.055**
  - (0.026)

- **Interim Period × Exposed**
  - 0.004
  - (0.003)
  - 0.019*
  - (0.011)
  - 0.007*
  - (0.004)
  - 0.009

- **Credit Standards SME × Exposed**
  - -0.006
  - (0.005)
  - -0.005
  - (0.018)
  - -0.004
  - (0.007)
  - 0.001*

- **Credit Line and Firm Time-Varying Controls**
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes

- **Firm × bank fixed effects**
  - Yes
  - Yes
  - Yes
  - No

- **Quarter × year fixed effects**
  - Yes
  - Yes
  - Yes
  - Yes

- **R-squared**
  - 0.096
  - 0.096
  - 0.118
  - 0.018

- **N**
  - 1,558,095
  - 1,558,095
  - 1,028,693
  - 501,164

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 use only 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:

\[
\text{Exposure}_i = \begin{cases} 
1 & \text{if } -0.3 < s_{i2004} < 0 \\
0 & \text{if } 0 < s_{i2004} < 0.3
\end{cases} 
\] (2)

This subsample contains each firm \( i \) whose value of the continuous Score variable in 2004, \( s_i2004 \), 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 measured only 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.

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
Table 5
Balancing property test. 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 2 reports differences for all firms in Score categories 6 and 7; Column 3 for all firms in the sample. Food Sector is a binary variable equal to one for a firm with a standard industrial classification (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 2. 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 one for a firm owned by a business group. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Score 6 and 7</th>
<th>Score 1–4 versus 5–9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Sector</td>
<td>0.007</td>
<td>0.011***</td>
</tr>
<tr>
<td>SIC Code Starts with 2</td>
<td>−0.01</td>
<td>−0.012*</td>
</tr>
<tr>
<td>Geography</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rome</td>
<td>−0.003</td>
<td>−0.012***</td>
</tr>
<tr>
<td>Milan</td>
<td>0.005</td>
<td>−0.007***</td>
</tr>
<tr>
<td>BG Ownership</td>
<td>0.003</td>
<td>0.005***</td>
</tr>
<tr>
<td>Unique firms in category 6/7</td>
<td>2,707/2,733</td>
<td>7,169/12,452</td>
</tr>
</tbody>
</table>

with a standard industrial classification code starting with 2, and they are more likely to be located in Rome or Milan. Further robustness checks can be found in the Online Appendix available on authors’ website.

5.3. Evidence from duration of bankruptcy proceedings

We next use variation in the efficiency of bankruptcy courts. Because 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, significant geographic heterogeneity exists 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. 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. Panel B 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, restructured credit soared from 123 million euros in 2003 to nearly 600 million euros at the end of 2007. In inefficient courts, restructured credit grew from 113 million euros in 2003 to only 210 million euros 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.

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. 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 Column 3 we use data on the quarterly changes in regional labor markets from 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

---

12 One of these provisions requires that bankruptcy cases 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.
Table 6
Bankruptcy reforms and loan interest rates, empirical strategy using court efficiency. The table reports ordinary least squares 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 small and medium-size enterprises (SMEs), is interacted with the Exposure indicator. Column 3 interacts the Exposed indicator with quarterly changes in regional unemployment rates obtained from the Italian National Institute of Statistics (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 use only firms whose predicted probabilities of being located in efficient courts lie between 30% and 70% to reestimate 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 the Appendix A for the definition of these variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Log length</th>
<th>Terciles</th>
<th>Unemployment</th>
<th>Forecasted sales</th>
<th>Propensity score correction</th>
<th>Interacted controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Reorganization × Exposed</td>
<td>0.061**</td>
<td>0.037**</td>
<td>0.038**</td>
<td>0.040**</td>
<td>0.045**</td>
<td>0.041**</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.019)</td>
<td>(0.019)</td>
<td>(0.019)</td>
<td>(0.019)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>After Liquidation × Exposed</td>
<td>−0.085***</td>
<td>−0.052***</td>
<td>−0.048***</td>
<td>−0.059***</td>
<td>−0.064***</td>
<td>−0.076***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.017)</td>
<td>(0.018)</td>
<td>(0.019)</td>
<td>(0.020)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Interim Period × Exposed</td>
<td>−0.046*</td>
<td>−0.038**</td>
<td>−0.030**</td>
<td>−0.032**</td>
<td>−0.030*</td>
<td>−0.040***</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.015)</td>
<td>(0.015)</td>
<td>(0.016)</td>
<td>(0.017)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>Credit Standards SME × Exposed</td>
<td>0.019</td>
<td>0.010</td>
<td>0.073</td>
<td>0.067</td>
<td>0.051</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.025)</td>
<td>(0.070)</td>
<td>(0.079)</td>
<td>(0.082)</td>
<td>(0.300)</td>
</tr>
<tr>
<td>Demand Forecast</td>
<td></td>
<td></td>
<td>−0.009</td>
<td>−0.033</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loan and Firm Time-Varying Controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Firm × bank fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Quarter × year fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.557</td>
<td>0.562</td>
<td>0.562</td>
<td>0.539</td>
<td>0.561</td>
<td>0.548</td>
</tr>
<tr>
<td>N</td>
<td>198,191</td>
<td>128,062</td>
<td>127,945</td>
<td>106,848</td>
<td>85,702</td>
<td>99,398</td>
</tr>
</tbody>
</table>

Efficient and inefficient courts. We reestimate 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 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.

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 relations for evidence supporting the mechanism underlying our main results. Finally, we study the impact of the reforms on non-price 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.

Column 1 of Table 7 reports estimates for the overall sample. In Column 2, we repeat the threshold analysis performed in Table 4 for firms close to the threshold § 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 and 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.

13 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.

14 We also obtain qualitatively similar results when running the threshold analysis performed in Table 4 splitting firms based on the degree of court efficiency.
Table 7
Bankruptcy reforms, credit constraints, and investment. The table reports the ordinary least squares 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 small and medium-size enterprises (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 one hundred. Column 1 reports estimates for the overall sample; Column 2, estimates for firms close to the threshold $\delta$ 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, and Column 4 reports estimates for firms close to the threshold $\delta$ 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 the Appendix A for the definition of all relevant variables. Robust, firm-clustered standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Investment ($I/K$)</th>
<th>Credit Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (1)</td>
<td>Threshold (2)</td>
</tr>
<tr>
<td><strong>After Reorganization × Exposed</strong></td>
<td>−0.13*** (0.032)</td>
<td>−1.8** (0.8)</td>
</tr>
<tr>
<td><strong>After Liquidation × Exposed</strong></td>
<td>0.084*** (0.025)</td>
<td>2** (0.8)</td>
</tr>
<tr>
<td><strong>Firm Time-Varying Controls</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Firm fixed effects</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Year fixed effects</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>R-squared</strong></td>
<td>0.012</td>
<td>0.024</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>415,874</td>
<td>15,128</td>
</tr>
</tbody>
</table>

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, as the effect of the reforms on credit constraints of firms in Column 4 is economically larger. The introduction of rules facilitating reorganization increases the probability of credit constraints by nearly 5 percentage points.

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 relations (e.g., Asquith, Gertner, and Scharfstein, 1994; James, 1996), we next examine whether the increase in cost depends on the number of firm-bank relations.

First, we turn to the Gennaioli and Rossi (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 data set. The relation between the number of firm-bank relations 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 relations 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 such as majority voting and the judge’s cramdown decision. Therefore, we expect that firms with multiple bank relations experience a relatively higher increase in the cost of bank financing after the reorganization reform.

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, because the number of firm-bank relations in later years could change as a consequence of the reforms. Results are presented in the first two columns of Table 8.

The results in the table confirm our intuition and are consistent with the findings in the literature (e.g., Demirgüç-Kunt and James, 2013): Interest rate differences remain stable for firms with a single banking relation (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, the hypothesis that the coefficients of each reform are equal across subsamples is rejected at conventional levels.

6.3. Non-price contractual terms

In this section, we examine the effects of the reforms on contractual features such as the amount of credit granted, the use of collateral, and maturity. We also look at whether the reforms affect the number of firm-bank relations. 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 non-price 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%, and 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. The reorganization reform increases the proportion of short-term lending by 12 percentage points.

Finally, in the last two columns, we show how the reforms affect the number of firm-bank relations. 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 relations, and 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. The reorganization reform leads to a reduction of about one firm-bank relation for a firm with the average value of the Score variable. Moreover, after the liquidation reform, the number of bank relations 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 data set 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 US 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 (cramdown provision). The Italian reforms of the bankruptcy code also share important features with recent reforms in other Organization for Economic Co-operation and Development countries such as France, Spain, and Brazil, though in these countries the reforms change reorganization and liquidation procedures at the same time.

Appendix A. Definition of variables

A.1. Variables at the firm-bank level

In this section, we list the firm-bank level variables of our data set. They are all defined 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.

Granted is a set of binary variables indicating whether the newly issued term loan has no collateral (Unsecured), has only real collateral (Real), has only personal collateral (Personal), has 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 relations with positive granted term loans.

Secured Lending is the total amount of loans granted with real securities compared with the total amount of loans granted.

Short-Term Lending is the total amount of loans granted with maturity less than a year compared with 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.

A.2. Variables at the firm level

In this section, we list the firm-level variables of our data set. Those that are 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 Financing 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 Financing 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 includes the following: “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: $x \leq 20$, $20 < x \leq 50$, $50 < x \leq 100$, $100 < x \leq 250$, and $500 > x$ (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). $\Lambda / K$ 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 Financing** 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 Financing/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 relations per firm (QT).

References


