

# BANKRUPTCY LAW AND THE COST OF BANKING FINANCE

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# Bankruptcy Law and the Cost of Banking Finance\*

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## Abstract

Many theories study how firms' cost of funding depends on reorganization and liquidation in bankruptcy. However empirical evidence on this subject is scarce due to the difficulty in interpreting reforms that change different legal instruments at the same time. We take advantage of the timing of the 2005-2006 Italian bankruptcy law and combine it with a unique loan-level dataset. We find that the introduction of a reorganization procedure increased the interest rates on bank loans; the reform that made the liquidation procedure faster reduced firms' loan costs; and the presence of gains from creditor coordination reduced the cost of funding.

**JEL classification:** G21, G30, G33.

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# 1 Introduction

How does bankruptcy law affect a firm's cost of funding? Numerous theoretical studies show that the design of financial contracts depends on the features of the two major legal instruments in bankruptcy, firm reorganization and firm liquidation.<sup>1</sup> In this paper we disentangle the separate effect that each of these instruments has on firms' credit conditions, by taking advantage of the timing of the Italian corporate bankruptcy reform of 2005-2006.

Reorganization and liquidation procedures can have opposite effects on a firm's cost of finance. On the one hand, both liquidation and reorganization attempt to mitigate creditors' conflicting positions. Therefore, a structured reorganization procedure (Gertner and Scharfstein, 1991) and a liquidation phase capable of preserving the value of a firm when it goes into liquidation (Harris and Raviv, 1990; Hart and Moore, 1994), should reduce the cost of funding. However, the design of the reorganization phase also needs to preserve a firm's repayment incentives, which might be reduced by the prospect of lenient renegotiation in bankruptcy (Hart and Moore, 1988; Fudenberg and Tirole, 1990).

The 2005-2006 reform of the Italian bankruptcy law for small- and medium-sized enterprises (henceforth SME) offers an ideal institutional setting within which to test these theories. First, the reform was prompted by one of the largest corporate scandals in Europe, the Parmalat scandal, and was not driven by pre-reform trends in SMEs' performance. Secondly, unlike most reforms of bankruptcy law,<sup>2</sup> which simultaneously modify reorganization and liquidation procedures, the Italian reform consisted of two separate, consecutive laws. The first law *de facto* introduced a reorganization procedure for those firms in distress. The second law significantly speeded up firms' liquidation procedures. Differently from the rest of the empirical literature, this timing allows us to disentangle the effects of each reform on firms' credit conditions and test predictions featured in theoretical studies.

We use a unique loan-level dataset covering the universe of bank funding contracts, to study how the reform of reorganization and liquidation procedures has affected the costs of funding borne by small- and medium-sized manufacturing firms. This dataset provides us with detailed, quarterly information on the interest rates that banks charge to individual borrowers on newly-issued term loans and outstanding credit lines. The quarterly frequency of the data, as well as our ability to measure the cost of new banking finance, is crucial to take full advantage of the timeline of the reforms. Finally, since banking finance accounts for around 80% of the funding of Italy's SMEs, we effectively

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<sup>1</sup>Among the others, Harris and Raviv (1990), Gertner and Scharfstein (1991), Aghion and Bolton (1992), Berglöf and Von Thadden (1994), Dewatripont and Tirole (1994), Gale and Hellwig (1995), Von Thadden (1995), Hart and Moore (1998), Von Thadden et al. (2010).

<sup>2</sup>The most recent examples among OECD countries include Spain in 2004, and France and Brazil in 2005. An important earlier example is the U.S. 1978 reform, which changed important features of both the reorganization and liquidation phases.

grasp the true financial costs borne by these firms.

The financing conditions of firms before and after the reforms are likely to be influenced by unobservable economic factors, thereby rendering any simple comparison of contractual conditions in the pre- and post-reform regimes misleading. For this reason, our identification strategy takes advantage of the exogenous policy change by combining it with a measure of default probability as perceived by the bank's loan officer. More specifically, we compare the credit conditions applied to those firms perceived by the loan officer to be at no risk of default, with the conditions applied to those firms deemed likely to default. Indeed we provide evidence that the firms at no risk of default and the firms more likely to default were on similar time trends before the legal changes.

We present three major findings. Our first finding is that the introduction of a reorganization procedure increased the interest rates on loan-financing for firms by up to 0.2 percentage points, or 20 basis points. The theoretical debate on the effects of reorganization in bankruptcy has highlighted the fact that the introduction of this kind of procedure may have one of two opposing effects (Tirole, 2006, chapters 2 and 10). The first potential effect is that of lowering interest payments because of efficiency gains from improved creditor coordination. In the absence of a clear legal procedure, should each creditor negotiate with the firm regarding enforcement of their respective claims, strategic holdout by other debtors may penalize those that reach a deal. As a result, the firm may inefficiently shut down (Gertner and Scharfstein, 1991). The second is that reorganization may exacerbate the debtor's incentives to behave in an opportunistic way, and thus increase the ex-ante cost of financing: if the firm has greater value as a going concern than when in liquidation, banks will be tempted to agree on continuation. Reorganization thus weakens banks' commitment to punishment, and lowers entrepreneurs' incentives to behave (see, e.g., Hart and Moore, 1988; Fudenberg and Tirole, 1990). Our results therefore show that weaker repayment incentives outweigh efficiency gains from improved creditor coordination.

Our second finding is that the reform of the liquidation procedure has produced a substantial decrease in the cost of finance (e.g., Harris and Raviv, 1990; Hart and Moore, 1994). Legislation was intended to ensure that liquidation proceeds were distributed faster, and in a more orderly fashion. This led to creditor expectation of increased liquidation payments in bankruptcy.

Our third finding consists in identifying gains from improved creditor coordination in bankruptcy (Gertner and Scharfstein, 1991). Borrowing from multiple banks is a pervasive aspect of firm financing in Italy, with a median of four banks used by each firm. We detect the importance of coordination gains by analyzing how the impact of the two legislative reforms varies with the number, and the concentration, of firm-bank relationships. We show that firms using a large number of banks, or characterized by a low degree of loan concentration (where gains from creditors coordination are larger), experience a smaller

increase in interest rates following the introduction of a reorganization procedure, and a significantly larger fall in interest rates following reform of the liquidation procedure.

In order to corroborate the validity of our empirical analysis, we extend it in various directions. Firstly, we show that our findings cannot be accounted for by simultaneous changes in firms' demand conditions or by the cyclical nature of the credit market. Secondly, we employ an alternative identification strategy that focuses on interest rate variations among virtually identical firms, perceived to be in different risk categories by the loan officers of the banks in question, giving us conditions similar to those of a randomized experiment.

The wealth of data in our possession means that in addition to our analysis on interest rates, we also have a number of results showing how the reform affected the cost of lending contracts in non-price terms. We found out that the use of secured lending increased significantly after both reforms and that the new liquidation procedures triggered a lengthening of loan maturities. Finally, we also show that the new liquidation procedures reduced firms' credit constraints and led to an increase in the number of per-firm bank relationships. All of these outcomes can be interpreted in a way that is in keeping with the rationale underlying the findings regarding interest rates.

The Italian reorganization procedure introduced by the 2005-2006 reform shares important analogies with U.S. Chapter 11.<sup>3</sup> Moreover, the Italian reforms of the bankruptcy code also share important features with recent reforms in other OECD countries like France, Spain and Brazil.<sup>4</sup> The unique feature of the Italian experience is therefore not the content of the reform but its staggered nature which, together with the availability of detailed loan-level data, provides us with an ideal setting to test existing bankruptcy theories.

Previous research has analyzed the effects of bankruptcy on companies' financial and real decisions from a cross-country perspective,<sup>5</sup> e.g., Qian and Strahan (2007), Davydenko and Franks (2008), Djankov et al. (2008), Acharya and Subramanian (2009), Bae and Goyal (2009), Acharya et al. (2011). However, by adopting a within-country perspective, we are able to hold constant other institutional settings that might also have an impact on the cost of funding. Moreover, our empirical strategy takes advantage of the fact that

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<sup>3</sup>In both procedures, the entrepreneur can open the reorganization phase unilaterally, conditional on court approval. Moreover, as in Chapter 11 the entrepreneur can stay in charge of the company while renegotiating with creditors. Finally, the decision over the restructuring plan is taken via a creditor vote and the judge can enforce a plan despite the objections of some creditors (cram-down).

<sup>4</sup>With particular regard to European countries, from early 2000's the European Commission has supported a process of bankruptcy codes harmonization aimed at the adoption of bankruptcy codes inspired by U.S. Chapter 11. The presumption of the European Commission was that the harsh approach to failure that characterized bankruptcy codes in Europe would deter risk-taking, experimentation and innovation.

<sup>5</sup>A large body of the literature on corporate bankruptcy has also studied the consequences of bankruptcy-law design, in terms of the direct costs they generate and the associated continuation and liquidation rates (e.g., Weiss, 1990; Franks and Torous, 1994; Strömberg, 2000; Franks and Sussman, 2005; Bris et al., 2006; Benmelech and Bergman, 2011).

the policy change itself was not related to the economic conditions of Italian SMEs but due to one of Europe’s biggest corporate governance scandals.

Scott and Smith (1986) show that the 1978 U.S. corporate bankruptcy law reform raised the cost of funding by introducing several changes in the design of both reorganization and liquidation procedures.<sup>6</sup> The timeline of the Italian bankruptcy law reform, together with the availability of detailed information on newly issued loans, allows us to disentangle the impact of each procedure on the cost of debt financing. Moreover, our results suggest that distinct changes in each procedure can have opposite effects on a firm’s cost of finance.<sup>7</sup> Finally, our findings regarding the impact of reform of liquidation procedures are consistent with the findings in Vig (2011), Assunção et al. (2012) and Cerqueiro et al. (2012), all of which study the impact on terms of credit that the reform of creditor protection has.<sup>8</sup> Unlike these studies, we also examine the impact that increasing debtors’ rights and improving creditor coordination during the reorganization phase has on the cost of funding.

## 2 Institutional and Theoretical Framework

The Italian bankruptcy law reform replaced the 1942 Bankruptcy Law by means of two separate, consecutive items of legislation, namely Legislative Decree no. 35 of 2005, and Law no. 5 of 2006. The former *de facto* introduced reorganization procedures into the Italian system, while the latter significantly modified the functioning of liquidation procedures. In this section, we first discuss the salient features of the 1942 bankruptcy system and then present the major changes introduced by the 2005-2006 reform.

### 2.1 The Italian Bankruptcy Law Pre-Reform Regime

Under the 1942 Italian Bankruptcy Law, an insolvent entrepreneur could try to reach a settlement with his creditors either by bringing reorganization proceedings (*concordato preventivo*) or by reaching an out-of-court agreement (*accordo stragiudiziale*).<sup>9</sup>

Both in-court and out-of-court reorganization agreements were subject to important restrictions inhibiting the implementation of potentially viable agreements. In-court re-

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<sup>6</sup>Hackbarth et al. (2012) furthers the analysis offered by Scott and Smith (1986) by studying the impact of the 1978 bankruptcy reform on stock returns.

<sup>7</sup>There are also studies of the effect that the provision of exemptions in personal bankruptcy can have on loan interest rates (Gropp et al., 1997; Berkowitz and White, 2004).

<sup>8</sup>More specifically, Vig (2011) analyses the impact of the 2002 Indian bankruptcy reform on the volume of secured credit, and finds that strengthening creditors’ rights reduces the aggregate demand for secured credit, because borrowers anticipate a greater liquidation bias in bankruptcy. Assunção et al. (2012) find that the 2004 Brazilian reform facilitating the sale of repossessed cars led to improved credit conditions, since it gave rise to the concession of larger loans with lower spreads and longer maturities. Finally, Cerqueiro et al. (2012) show that the 2004 Swedish reform reducing the value of collateral to financial institutions led to a significant increase in loan interest rates and to a decrease in the supply of credit.

<sup>9</sup>The synopsis in this section is based on Stanghellini (2008), chapter 9.

organization plans had to feature the full repayment of secured creditors' claims, together with at least 40% of unsecured creditors' claims. A deal reached out-of court between the creditors and the debtor could subsequently be nullified by the appointed trustee in bankruptcy (claw-back provision), thereby undermining the execution of the agreement (Costantini, 2009).

Figure 1 uses data provided by Italian Chambers of Commerce to plot the share of opened in-court reorganization proceedings in all bankruptcy proceedings (in-court reorganizations and liquidations) across time. In the early 2000s, only 1% of all new bankruptcy proceedings involved reorganization, thus highlighting the inefficiency of such an instrument of negotiation with banks during the pre-reform period.

[Figure 1 Here]

In the pre-reform system, a liquidation proceeding (*procedura fallimentare*) was directed by a court-appointed trustee under the control of the bankruptcy judge. Creditors could neither veto the decisions made by the trustee, nor ask for the trustee to be substituted. The lack of creditor coordination often led to litigation, and made the pre-reform liquidation procedure a poor instrument to protect creditor interests and preserve the value of the bankrupt enterprise.

As a consequence, liquidation proceedings were very lengthy affairs. Figure 2 uses data from Unicredit Bank, one of Italy's largest retail banks, to plot the distribution of liquidation proceedings according to their duration. The blue bars indicate the distribution of liquidation proceedings in the pre-reform regime. Figure 2 shows that approximately 95% of liquidation proceedings prior to 2005 lasted for more than 24 months.

[Figure 2 Here]

The reform of the 1942 Italian Bankruptcy Law was prompted by the Parmalat scandal in December 2003.<sup>10</sup> The scandal forced the Italian government to reform the reorganization procedure for large distressed firms (*procedura d'amministrazione straordinaria*), and also triggered the legal changes affecting SMEs (Stanghellini, 2008).<sup>11</sup>

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<sup>10</sup>Parmalat SpA was a multinational Italian dairy and food corporation. The company collapsed in late 2003 with a EU14 billion (\$20bn; £13bn) hole in its accounts, in what remains one of Europe's biggest corporate bankruptcies.

<sup>11</sup>More specifically, Italy had already been condemned twice by the E.C. Court of Justice because the use of this type of procedure was deemed to constitute an illegal form of state aid. Therefore, the government needed to intervene so as to avoid an infringement of European regulations, and at the same time to restructure Parmalat. To accomplish both objectives, the existing legislation governing reorganization needed to be reformed. The timeline of the Italian reform can be found in Appendix B

## 2.2 The Reform of Reorganization Procedures – Legislative Decree no. 35

At the end of December 2004, a draft copy of Legislative Decree no. 35 was submitted to the Italian parliament for approval during the first quarter of 2005.<sup>12</sup> Legislative Decree no. 35 only reformed the in-court and out-of-court reorganization procedures, but did not promote any reform of the liquidation procedure. Unlike under the pre-reform system, the new procedure abolished any reimbursement requirements for secured and unsecured creditors. The court ratifies the debtor’s proposal if the majority of creditors (in value) vote for it, or if the judge believes that even if creditors were to reject the plan, they will be no worse off as a result of the proposal than they would be under any alternative provision.<sup>13</sup> Finally, Legislative Decree no. 35 strengthened the judicial validity of out-of-court agreements by limiting the impact of claw-back provisions.<sup>14</sup>

The following example should help clarify the impact of the reform on the implementation of reorganization procedures. Let us suppose a firm is cashless and has total debts of  $D$  equally shared between two banks. If liquidated, its assets would be worth  $A$ . To carry on, the firm needs an injection of  $I$  to generate  $Y$  during the following period. Without such a cash injection, the firm would yield nothing during the following period. Assume that the firm is in financial distress ( $Y - I < D$ ) but not in economic distress ( $Y - I \geq D - A > 0$ ), such that banks would prefer the business to continue operating rather than going into liquidation ( $Y - I > A$ ). In this situation, the deal that maximizes the firm’s value and repayments to creditors involves the two banks writing down part of  $D$ , leaving  $I$  to the firm and receiving a payoff of  $(Y - I)/2 > A/2$  each during the following period. Then we assess the feasibility of this agreement under the pre-reform and post-reform systems. Prior to the reform, the firm would have been bound to go bankrupt. It could have renegotiated in-court only if it could have guaranteed full repayment of secured creditors’ claims, together with 40% of unsecured creditors’ claims. However, since the firm is cashless, these two constraints would not have been met. Alternatively, the firm could have reached an out-of-court agreement with one of the banks. However the other bank could still have asked the court to claw back and nullify the effects of that

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<sup>12</sup>The process leading to the drafting of Legislative Decree no. 35 proved very fast. In February 2004, the “Trevisanato Parliamentary Committee” was set up in order to reform procedures aimed at the reorganization of distressed firms, and by the end of December the committee has already formulated a plan that was to dictate the terms of the draft Legislative Decree no. 35, which would imply that the content of the Decree was known to banks and firms by the end of that same month. The reconstruction of the timeline of the Italian reform is based on research conducted, using the Lexis-Nexis database, on Italian press articles about the 2005/2006 bankruptcy reforms. Keywords “*legge fallimentare*”, time span January 2004 - December 2006.

<sup>13</sup>This is similar to what happens in the U.S. under Chapter 11 with a bankruptcy court’s cram-down decision.

<sup>14</sup>In Appendix B Table X provides a detailed comparison between the salient features of the reorganization procedure in the pre-reform and post-reform systems.



transaction.<sup>15</sup> Following the reform, no condition is placed on the required reimbursement of creditors, and the optimal write-down can now be implemented. Moreover, the scope for claw-back provisions is severely limited for out-of-court agreements. The post-reform system therefore permits the efficient resolution of a firm's distress.<sup>16</sup>

Figure 1 suggests that Legislative Decree no. 35 has had a significant impact on the use of reorganization procedures. The share of reorganization procedures increased from approximately 1% of total procedures before 2005, to over 10% of the total number of procedures opened in 2009.<sup>17</sup>

### 2.3 The Reform of Liquidation Procedures – Italian Law no. 5

It was not until May 2005 that the government was mandated to amend the liquidation procedure, with the declared objective of reducing its duration and improving creditor coordination. Meanwhile, major stakeholders (e.g., the banks' association) lobbied fiercely for a change in the law regulating liquidation, and the new law, Italian Law no. 5, was enacted on 9 January 2006. Italian Law no. 5 strengthened creditors' right to control liquidation procedures, and improved creditor coordination.<sup>18</sup>

Figure 2 shows that Italian Law no. 5 significantly reduced the time taken by liquidation procedures. Whereas approximately 95% of those liquidation procedures opened before 2005 (blue bars) lasted for more than 24 months, less than 60% of those opened after the introduction of Italian Law no. 5 (red bars) lasted for more than 24 months.

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<sup>15</sup>For example, the firm could have agreed out-of-court to a write-off with one bank, in exchange for the repayment of  $D/2$  in the following period. Under this agreement, the firm could have continued operating until the following period, and the second bank would have received a payoff of  $Y - I - D/2$ . In the event that  $Y - I - D/2 < A/2$  (that is, if the second bank obtained less than in liquidation) it would have had the incentive to ask the court for the claw-back of the transaction between the firm and the negotiating bank.

<sup>16</sup>In the example it is assumed that out-of-court collective renegotiation is unfeasible or inefficient, due to, for example, the hold-up problems of individual creditors. This assumption is commonly found in theoretical studies of corporate finance (e.g., Gertner and Scharfstein, 1991; Von Thadden et al., 2010) and is supported by strong empirical evidence (Asquith et al., 1994; Gilson, 1997).

<sup>17</sup>Also, several items of anecdotal evidence suggest the full compliance of the bankruptcy courts with the prescriptions contained in the new law. Copies of the decrees concerning the opening of reorganization procedures under the post-reform system are available upon request.

<sup>18</sup>Italian Law no. 5 relegates the court to the role of supervisor of development of the procedure. Moreover, said Italian Law no. 5 establishes that creditors can set up a committee, which may consist of either three or five members, and which must represent all classes of creditors equally. A creditors' committee may request that the trustee in bankruptcy be replaced, it must give its consent to said trustee's actions, and, more importantly, it can veto continuation of a firm's business if such continuation could harm creditors' interests. Finally, the committee may suspend the liquidation phase if it approves a settlement agreement proposed by the same creditors, the trustee, a third party, or the debtor. In Appendix B, Table XI compares the main features of the liquidation procedure under the pre- and post-reform systems.

## 2.4 Theoretical Framework

Before turning to an analysis of our empirical strategy, we present the theoretical foundations of our identification strategy, and illustrate our main theoretical predictions. In the real economy, each firm needs banking capital to finance its business projects.<sup>19</sup> Firms can be of two types, *safe* or *risky*: *safe* firms always succeed, whereas *risky* firms are more likely to fail. Therefore, bankruptcy design only affects the value of risky firms. In the event of failure, and in the absence of an effective reorganization procedure, *risky* firms are automatically liquidated. Otherwise, the entrepreneur running a *risky* firm is entitled to open a reorganization procedure in the event of failure.

The following are some of the central empirical predictions arising from the theoretical literature regarding the impact of bankruptcy features on the cost of finance.

**Reorganization Procedures** Reform of the reorganization procedure has reinforced entrepreneurs' right to open a restructuring procedure either in-court or out-of-court, while staying in control of the firm. There are two views as to the effect on interest rates of reorganization in bankruptcy.

In the first view, agents negotiate in the absence of agency costs. Following this assumption, it has been shown that the existence of a structured procedure of reorganization in bankruptcy can spur investment by distressed firms. This is because, in the absence of a clear renegotiation procedure, conflicts between creditors would be exacerbated (Gertner and Scharfstein, 1991). This was illustrated in the example given in Section 2.2: if the continuation value of a risky project is positive following first-period failure, the efficient decision from the banks' point of view involves the negotiation of a haircut on respective claims. This enables the entrepreneur to bring the project to completion and avoid inefficient liquidation. However, in the absence of a structured reorganization procedure, a problem of strategic holdout may arise. If a single bank negotiates a haircut to enable the firm to continue, all the others have an incentive to free-ride and preserve the value of their claims. Therefore, according to this view, the introduction of a renewed reorganization phase should reduce the interest rate difference between *safe* and *risky* firms.

In the second view, the contracting environment is characterized by a problem of agency costs. This agency problem reduces the value of the income that the *risky* firms may pledge to the bank.<sup>20</sup> Indeed, studies have shown that in the presence of asymmetric information, renegotiation impairs the contract's ability to cope with agency problems (e.g., Hart and Moore, 1988; Fudenberg and Tirole, 1990). To clarify this point, let us

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<sup>19</sup>One should remember that banking finance represents 80% of Italian firms' total funding.

<sup>20</sup>For instance, this may be consistent with a model in which the entrepreneur needs to put time and effort into a risky firm (and this decision is unobservable and unverifiable), otherwise the probability of the project succeeding will be lower, and the entrepreneur stands to gain private benefits. Note that the pledgeable income in question is the surplus delivered by a project, net of the costs of the allotted investment and private benefits (Tirole, 2006).

consider a risky firm that fails at the end of the first period, because the entrepreneur has behaved opportunistically. In these circumstances, the optimal contract would require the termination of the entrepreneurial project. However, if the firm's continuation value is positive, there are rents to be shared via renegotiation. The presence of a reorganization procedure offers a natural environment in which parties can find an agreement to let the venture continue. Now, consider the consequences of this outcome during the first-period contracting stage: the entrepreneur knows that behaving opportunistically does not harm his chances of completing the project, thus requiring a larger agency rent in order to implement the project, and reducing the bank's pledgeable income.

**Prediction 1.** *The introduction of a reorganization procedure can either increase or reduce the difference in those interest rates applied to risky and those applied to safe firms. The outcome depends on whether the gains from creditor coordination offset the costs caused by the agency problem.*

**Liquidation Procedure** Italian Law no. 5 has considerably improved creditors' ability to make coordinated decisions and to control the liquidation phase. We expect that these changes will result in larger liquidation values (due, for example, to the shorter duration of procedures). In turn, these will be reflected in a reduced interest rate gap between *safe* and *risky* firms (e.g., Harris and Raviv, 1990; Hart and Moore, 1994).

**Prediction 2.** *The reform of the liquidation procedures should have reduced interest rate differences between risky and safe firms.*

**Creditors Coordination** Both reforms have improved creditor coordination, and should therefore result in reduced interest rates if there are greater coordination gains. Indeed, Gertner and Scharfstein (1991) show that a structured reorganization procedure allows creditors to coordinate and limit the scope for holdouts, and von Thadden et al. (2010) show that in the presence of a structured in-court reorganization procedure, strengthening creditor rights mitigates firms' hold-up problems, with increasing beneficial effects as the number of creditors grows. The next prediction is as follows:

**Prediction 3.** *The greater the number of banks a firm deals with, and the lower a firm's loan concentration is, the greater should be the reduction in interest rates due to the reforms.*

### 3 Data

In order to test these implications, we employ a unique loan-level dataset. Our main data sources for the credit conditions of firms and the characteristics of their loans, are confidential datasets collected by the Bank of Italy as part of its bank supervision duties:

Central Credit Register (*Centrale dei Rischi*) and *Taxia*. In addition to this information, we also have balance sheet data for the universe of Italian companies from the *Cerved* database. These data allow us to observe the cost of newly-issued loans and the major features of funding contracts at the firm-bank level (such as maturities and the presence of collateral). They also comprise a measure of default probability that reflects the firm’s rating as perceived by the loan officer of a bank and that allows us to capture the distinction between “safe” and “risky” firms as featured in the theoretical framework. Our final dataset is composed by a total of 202,964 distinct manufacturing firms, 1,097 banks and 361,310 newly issued term loans.

### 3.1 Data sources

**The Central Credit Register** In order to comply with Italian banking regulations, all financial intermediaries operating in Italy (banks, special purpose vehicles, other financial intermediaries providing credit) have to report financial information, on a monthly basis, for each borrower whose aggregate exposure exceeds 75,000 Euros. Thus we can use the central credit register to compute the aggregate financial characteristics of firms. For each borrower-bank relationship we thus have information on financing levels, granted and utilized, for three categories of instruments: term loans, revolving credit lines, and loans backed by account receivables. The information on term loans is supplemented by other non-price characteristics, such as loan maturity, and the presence, or otherwise, of real or personal guarantees.<sup>21</sup>

**Taxia** *Taxia* is a subset of the Central Credit Register that covers information on more than 80 percent of total bank lending in Italy. More specifically, this dataset provides us, on a quarterly basis, with detailed information on the interest rates that banks charge to individual borrowers on newly issued term loans and outstanding credit lines. In addition, the dataset provides information on the maturity and presence of collateral for all newly-issued term loans. The data collection process of *Taxia* was heavily revised in 2004. We therefore have reliable loan-level information starting from the second quarter of 2004.

**Cerved** Firms’ balance sheets and profit-and-loss accounts come from the *Cerved* database, collected by the *Cerved* Group. These data cover the universe of Italian corporations (about 800,000 firms) and are used, amongst other things, for the purpose of credit risk evaluation by banks. One of the unique features of this dataset is that it provides extensive coverage of privately owned SMEs. This is particularly important for our purposes, since the bankruptcy law reform we are interested in analyzing, applies to this type of

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<sup>21</sup>This dataset has been used by, among others, Detragiache et al. (2000), Sapienza (2002), Bonaccorsi Di Patti and Gobbi (2007). Data from credit registers have also been used for other countries (Hertzberg et al., 2011; Jiménez et al., 2012).

firm. From this dataset, we collect yearly balance-sheet information on assets, revenue, value added, and other characteristics such as location, date of constitution, and industrial sector. In addition, Cerved data provide an indicator of the default probability of each firm, which is the *Score* variable that plays a crucial role in our empirical analysis, the features of which we will discuss later.

**Other Data Sources** We supplement these data sources with information provided by the Invind survey. Invind is a yearly survey run by the Bank of Italy over a representative sample of manufacturing firms. The survey collects, amongst other things, information about CEOs’ forecasts of firms’ sales growth, prices, and other qualitative information such as production capacity and capacity utilization. There are about 1,500 firms in each cross-section and the representativeness of the survey is ensured by the stratification of the sample by sector of activity, firm size and region.

Since only SMEs were affected by the policy change, we have omitted data regarding firms with more than 500 registered employees.<sup>22</sup> Further details on data organization and data cleaning can be found in Appendix A. The final dataset is of a quarterly frequency, and runs from the second quarter of 2004 to the last quarter of 2007, comprising a total of 202,964 distinct manufacturing firms and 1,097 banks.

### 3.2 Variables and Descriptive Statistics

**Loan Characteristics** Our main dependent variable is the *Loan Interest Rate*, which computes 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 at loan origination. We also have information on the following term loan characteristics: *Size of Loan* is the granted amount of the issued term loan; *Maturity* is a set of binary variables indicating whether the maturity of the newly-issued loans is up to one year, between one and five years, or more than five years; *Guarantee* is a set of binary variables indicating whether the loan has no collateral (Unsecured), only real collateral (Real), only personal collateral (Personal), both (Real and Personal), or is unmatched (Other). We also compute a price measure for revolving credit lines, *Credit Line Interest Rate*, as 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 for a given quarter.

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

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<sup>22</sup>Firms above this threshold have access to a different set of procedures.

### [Table I Here]

The average interest rate charged for a loan during the sample period is 5.15%. However, rates vary substantially across our sample, since in the lowest and highest quartiles of the distribution, interest rates were 4.06% and 6.03%, respectively. The average loan in the sample amounted to approximately 383,000 Euros. Yet, our data cover loans as small as 1,000 Euros, and the loan at the median of the distribution amounted to 120,000 Euros. The lower panels of Table I explore heterogeneity in annual interest rates across loan characteristics. As in Strahan (1999) and Santos (2011) we find that short-term loans with less than one-year's maturity, which constitute around two-thirds of all loans, are subject to a significantly higher interest rate than medium- or long-term loans. In addition, we find that loans guaranteed by real securities have significantly lower interest rates attached to them.

The bottom panel of Table I shows that the average interest rate charged on credit lines is 9.03%, which is significantly higher than the average rate on loans. Credit lines are not only associated with larger mean rates, but also with a greater dispersion around the mean, as measured by the higher standard deviation and the higher inter-quartile differences. Finally, the average entity of those credit lines granted by banks to firms in our sample amounts to 123,000 Euros.

**Aggregate Financing Variables** We use information from the Credit Register to compute aggregate variables describing the financial structure of firms. *Credit Lines/Tot. Bank Fin.* is the total entity of a firm's credit lines divided by the total amount of bank financing granted for all loan categories. *Advances/Tot. Bank Fin.* is a firm's total loans backed by account receivables, divided by the total amount of bank financing granted for all loan categories. *Loans/Tot. Bank Fin.* is the firm's total term loans, divided by the total amount of bank financing granted for all loan categories. The first panel in Table II describes the financing structure of the firms in the sample.

### [Table II Here]

Loan financing accounts for a substantial share of bank financing. Term loans represent, on average, 37% of a firm's total bank financing, whereas credit lines represent on average 14% of total bank financing. Backed loans account for 49% of total bank financing, and they are mostly used for liquidity purposes. Finally, total bank financing represents 57% of the book value of a firm's assets.

**Balance Sheet Variables** On the basis of our balance sheet data, we compute several characteristics of the firms in question. We define *Age of Firm* as the difference between the current year and the year of the firm's incorporation. *Value Added* and *Total Assets*

are defined on the basis of the Balance Sheet accounts. *Total Sales* are a firm’s revenues, as recorded in the profit and loss accounts. *Group Ownership* is a binary variable equal to one if the firm belongs to a group. *Score* is an indicator of the likelihood of a firm default, and that takes a value ranging from one (for the safest firm) to nine (for the firm most likely to default). *Leverage* is defined as the ratio of debt (both short- and long-term) to total assets.

The bottom panel in Table II provides an overview of the main balance sheet characteristics of Italian manufacturing firms, in terms of unique firm-year observations. As the variation in a firm’s age suggests, the sample includes not only mature firms but also relatively young firms. Similarly, sales vary between 0.66 ME at the bottom quartile of the distribution to over 4.3 ME at the top quartile of the distribution. Finally, note that default risk, as proxied by *Score*, varies considerably across firms. At the lowest quartile firms are solvent, but at the median of the distribution firms are already classified as vulnerable by banks.

## 4 Empirical Framework and Results

### 4.1 Identification Strategy

**Identification** A naïve comparison of firms’ financing conditions before and after the reforms could be misleading, because the resulting differences might also reflect unobserved economic conditions. On keeping with our theoretical framework, we empirically distinguish between two groups: one group comprises all firms logically unaffected by bankruptcy codes because they are not perceived to be at risk of failure (control group), while the other group’s cost of financing depends on the bankruptcy law, because their business project is at risk of failure (treatment group). To identify the two groups, we use the fact that our dataset comprises a measure of default probability that reflects the firm’s rating as perceived by the loan officer at the time a funding contract is negotiated.

The availability of this information in our dataset is linked to the development of Italy’s credit market. At the end of the 1970s, regional chambers of commerce and banks decided to cooperate on the collection of firms’ mandatory balance sheet disclosures. Cerved was appointed to collect balance sheet information from firms, and it uses that information to provide risk-assessment tools to banks, most prominently the *Score*. The *Score* variable computes the likelihood of a firm defaulting on the basis of multiple discriminant analyses of financial ratios (Altman, 1968). *Score* is an indicator having values of between one (for those firms least likely to default) to nine (for those that are most likely to default) and is purchased by all major banks from Cerved to be employed as an index of firms’ risk levels.

Assignment for treatment based on the *Score* is advantageous for several reasons.

Firstly, unlike U.S. credit ratings, the *Score* is unsolicited and available for all Italian firms, hence its availability is not the result of strategic considerations on the part of the firms themselves. Secondly, *Score* was predetermined at the time of the reform. Indeed, the *Score* of a firm for any given year is computed, due to accounting rules and data collection requirements, on the basis of lagged balance sheet information. This implies that at the time of the reforms, firms could not place themselves into *Score* categories based on the anticipated costs or benefits of the same reforms. Finally, the algorithm for the computation of *Score* did not change in response to the bankruptcy reform, and its exact formula is a business secret of the Cerved Group.

**Empirical Features of Score** Figure 3 summarizes the key features of our assignment variable.

[Figure 3]

The top-left panel of Figure 3 is taken from Panetta et al. (2007) who, using the same balance sheet and bank data as ours for the period 1988-1998, plot the *Score* variable against an indicator of actual default incidence. The figure shows that the *Score* is an accurate predictor of actual default incidence among Italian firms. Firms with a *Score* of up to four in a given year, have less than a 1% probability of defaulting within the next two years. This probability rises to 10% for firms with a *Score* of 7.

The remaining figures are computed on the basis of our pre-reform sample. The bottom panels plot the *Score* variable against the interest-rate on loans (bottom-left) and credit lines (bottom-right). There is a strong positive relation between *Score* and interest rates on loans and credit lines. The best (lowest) *Score*, in terms of creditworthiness, is on average associated with a loan interest rate of 4%, whereas the worst (highest) category pays an average loan interest rate of around 5%. An analogous pattern emerges for the interest rates applied to credit lines across *Score* categories. Note also that the most significant differences in terms of interest rates, appear when comparing *Score* one to four with *Score* five to nine. This is in line with the fact that above *Score* 4, firms are labeled by banks as “vulnerable”.

Finally, the top-right panel of Figure 3 plots the distribution of firms within each *Score* category. There are relatively few firms at the tails of the *Score* classification. Only 5% of the firms in our sample belong to the first *Score* category, and only 2% of our sample firms belong to the highest *Score* category.

**Specification** The multivariate analysis is defined as follows. Let  $Y_{ijlt}$  denote the interest rate to firm  $i$  by bank  $j$  on loan  $l$  at time  $t$ .



$$\begin{aligned}
Y_{ijlt} = & \text{constant} + \alpha \text{Treatment}_i + \beta (\text{Treatment}_i \times \text{After Reorganization}_t) \\
& + \gamma (\text{Treatment}_i \times \text{Interim Period}_t) \\
& + \delta (\text{Treatment}_i \times \text{After Liquidation}_t) \\
& + X_{ijlt}\kappa + Z_{it}\omega + B_{it-1}\mu \\
& + \text{Firm} \times \text{Bank} + \text{Quarter}_t + \epsilon_{ijlt}
\end{aligned}$$

where  $\text{Treatment}_i$  is a dummy variable equal to one for firms which in 2004 had a *Score* of between five and nine, or to 0 otherwise. This classification has two advantages. First, it mirrors the split of the *Score* categories at which bankruptcy rates and interest rates start to increase significantly. Second, it enables the construction of larger treatment and control groups to limit the influence of extreme observations.

*After Reorganization*, *Interim Period* and *After Liquidation* are time dummies associated with the thresholds of the reforms. These dummies take a value of 0 prior to the reform, and of 1 thereafter. The reform of the reorganization procedure was implemented in the first quarter of 2005, therefore *After Reorganization* takes a value of 1 from the first quarter of 2005 onwards. In May 2005 the government was mandated by the parliament to reform liquidation procedures, so *Interim Period* takes a value of 1 starting from the third quarter of 2005. Finally, the reform of liquidation procedures was enacted in January 2006, then *After Liquidation* is equal to 1 from the first quarter of 2006.<sup>23</sup>

The interaction between the treatment and reform indicators identifies the impact of each reform on the loan interest rates. Under Prediction 1 the sign of coefficient  $\beta$  is ambiguous: it would be negative in a setting that emphasizes the presence of coordination gains (Gertner and Scharfstein, 1991), but positive in one that emphasizes the presence of agency costs (Hart and Moore, 1988; Fudenberg and Tirole, 1990). Under Prediction 2 the sign of  $\delta$  is negative: we expect an unambiguous decrease in interest rates following the reform of liquidation procedures (Harris and Raviv, 1990; Hart and Moore, 1994).

The model also includes wealth of loan and firm characteristics.  $X_{ijlt}$  are loan characteristics, such as maturity, collateral, and loan size.<sup>24</sup>  $Z_{it}$  denotes firm financing characteristics as constructed from the Central Credit Register.  $B_{it-1}$  are balance sheet variables measured in the calendar year prior to the contract.  $\epsilon_{ijlt}$  denotes the error term, clustered at the firm level. The inclusion of  $\text{Firm} \times \text{Bank}$  fixed effects means that we not only control for firm or bank time-invariant characteristics, but also for match-specific characteristics. Thus we effectively take advantage of the variations in the cost of finance within

<sup>23</sup>In Appendix B, Figure 6 provides a detailed timeline of the Italian bankruptcy reform process.

<sup>24</sup>The use of this information as control variables is consistent with the empirical studies based on loan level data (Santos, 2011, Jiménez et al., 2011). However, we acknowledge that non-price dimensions might simultaneously change after the reforms. Therefore, we re-estimate our baseline specification excluding loan characteristics, and obtain the same results.

the same firm-bank relationship over time.

We first estimate our main specification above and then extend our analysis in two different ways. Firstly, we consider the impact of the Italian reform on the cost of credit lines. Although credit lines represent a significantly smaller fraction of total bank financing than loans do, they offer two advantages from the point of view of our empirical analysis. To begin with, in our dataset the interest rate on each credit line is observed continuously over time. Therefore we can track credit lines that straddle the legal reforms to analyse interest rate variations for the same contract directly before and after the the reform. Moreover, in a typical credit line contract, banks maintain the right to modify the pricing terms of the relationship upon occurrence of contract-specified events, such as legal reforms. This implies that anticipation effects are less likely to matter for this type of financing. Finally, we extend our analysis by studying the impact of the reform on other contract dimensions, such as maturity and collateral.

## 4.2 Price Effects

**Differences-In-Differences Plots** Before turning to the multivariate analysis, it is useful to look at naïve differences-in-differences plots. Figure 4 provides a first insight into changes in those unconditional average interest rates set on newly-issued loans (top panels) and credit lines (bottom panel) between the second quarter of 2004 and the fourth quarter of 2007. Vertical lines represent legislative reforms made during the first quarter of 2005 as a result of Italian Legislative Decree no. 35, and during the first quarter of 2006 as a result of Italian Law no. 5.

### [Figure 4]

The left panels of Figure 4 separately plot average interest rates for control firms (black line, square) and average interest rates for treated firms (red line, triangle). They show that average interest rates increased for both groups during the sample period. The right panels of figure 4 plot the difference in average interest rates between the two groups of firms for each quarter. The fact that the rates for both groups followed similar time trends before the first reform, seems to validate the common trend assumption embedded in the DID setting.

When Italian Legislative Decree no. 35 was passed at the beginning of 2005, the difference in loan and credit line rates increased. Upon the announcement of legal action over the liquidation procedure, loan rate differences dropped significantly by approximately ten basis points. This suggests that anticipation effects in the ‘intermediate’ period might complicate the empirical assessment of the liquidation reform.<sup>25</sup> After the actual passing

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<sup>25</sup>For instance, in a press release to ANSA (Italian press agency) in November 2005, the general director of the Italian Banks Association stated that the approach taken by the government with respect to the

of Italian Law no. 5, interest rate differences decreased again to around 45 basis points. Interestingly, it was precisely at the time that Italian Law no. 5 was passed, that the drop in credit line differences occurred. This is in keeping with the automatic renegotiation mechanisms in place for credit lines, which as a result are less subject to anticipation effects. To better judge the statistical significance of these variations in interest rates, we turn to multivariate analysis.

**Multivariate Analysis** Table III estimates the DID specification by OLS, clustering standard errors at the firm level.<sup>26</sup>

[Table III]

Prediction 1 and the ensuing discussion, would seem to show that reorganization in bankruptcy can give rise to a theoretical trade-off. On the one hand, a structured procedure of reorganization improves creditor coordination (Gertner and Scharfstein, 1991). On the other hand, in the presence of asymmetric information, renegotiation impairs a creditor’s ability to cope with a firm’s agency problems (Hart and Moore, 1988; Fudenberg and Tirole, 1990). The DID estimates of the impact of the reorganization reform suggest that the reform raised the cost of loan financing for treated firms compared with control firms. Estimates in column 1 show that the interest rates applied to affected firms, compared with unaffected firms, increased by 4.3 basis points in the 6 months following introduction of the new reorganization procedure. This corresponds to an increase of conditional baseline differences of 17.5%. The implication for Prediction 1 is that the weaker repayment incentives caused by renegotiation outweigh efficiency gains due to greater creditor coordination.

According to Prediction 2, the new design of the liquidation procedure will result in larger liquidation values and, accordingly, in less costly funding (Harris and Raviv, 1990; Hart and Moore, 1994). In keeping with these insights, we find that the liquidation reform reduced interest rates differences of affected firms compared to unaffected firms, after 2006. This result leads us to deduce that since the reform of the liquidation procedure, the distribution of liquidation proceeds in a faster, more orderly fashion. The magnitude of the coefficient is close to the estimate of the reorganization reform, and suggests that these effects could empirically wash out when assessing simultaneous reforms.

In keeping with our identification strategy, the interest rate variations are larger (seven basis points) when comparing control group firms with a subsample of treated firms that are perceived to be significantly more likely to default (categories 7 to 9). Column 3 shows that these results are not due to any arbitrary assignment to treatment and control groups,

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reform of the liquidation procedure was perfectly acceptable, but that it was still necessary to implement said reform as soon as possible.

<sup>26</sup>In Appendix B, Table XIV shows that price estimates on credit lines are similar to price estimates on loans. Results also hold when considering only those credit lines actually utilized, as in Table XV.

by interacting the dummies associated to the legal changes with the *Score* indicator itself. Using this approach, the interest rate differences between the lowest and highest *Score* indicator, increased by 18 basis points following enactment of Italian Legislative Decree no. 35.

The regressions in Table III include a number of controls at firm and contractual level. We do not offer any causal statements regarding their interpretation, but merely note that their impact, and possible interpretation, is in line with previous empirical studies (Strahan, 1999; Davydenko and Franks, 2008; Santos, 2011).<sup>27</sup>

**Creditor Coordination Gains** According to Prediction 3, firms with a greater number of banks, and thus a lower degree of loan concentration, should experience a larger reduction in interest rates following the reforms. This supposition follows from the finding in Gertner and Scharfstein (1991), according to which a structured reorganization procedure allows creditors to coordinate and limit the scope for holdouts, and Von Thadden et al. (2010), who show that in the presence of a structured in-court reorganization procedure strengthening creditor rights generates benefits that increase with the number of firm creditors. To verify this, we construct two indicators of creditor-coordination problems. The first is based on the number of banks a firm deals with, and the second is a Herfindahl index of loan concentration. The use of a Herfindahl index allows us to take account of the fact that certain banking relations are of negligible importance in terms of the amounts granted. The indicators were computed for 2004, since after that year they might have changed as a consequence of the reforms. Table IV re-estimates our DID specification for subsamples split on the basis of the median of these two indicators.

#### [Table IV]

The first two columns of Table IV report coefficient estimates when the sample is split according to the indicator of the number of banks: firms with a number of bank relations larger than the median in our sample (equal to 4) are deemed to have larger coordination problems. The benefits of the reforms mainly accrued to firms with a large number of bank relations. For firms with more than four bank relations, the increase in interest rates following the introduction of Italian Legislative Decree no. 35 was significantly smaller than it was for those firms with a low number of bank relations. The decrease in interest

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<sup>27</sup>In Appendix B, Table XII reports a number of robustness checks. Column (1) excludes loan control variables. Column (2) clusters standard errors at bank level. Columns (3) and (4) address issues concerning the definition of our assignment variable. Column (3) excludes firms that changed the assignment group after 2004. Column (4) classifies firms into treatment and control group on the basis of their yearly *Score* indicator, in order to address concerns that the fall in interest rates following Italian Law no. 5 might be driven by attrition within the treatment-group sample. Columns (5) to (7) include time interactions with fixed bank, industry and region effects. Finally, in the same appendix, Table XIII includes two measures of a firm's banking relationships. The first is an indicator of change in the number of banks the firm deals with, while the second is an indicator of changes in the identity of the firm's banks. Results remain unchanged.

rates following the liquidation reforms, was significantly larger for the group of firms with a high number of bank relations. The assumption that the coefficients of both reforms were equal across sub-samples is rejected, lending support to the idea that the benefits of both reforms mainly accrued to firms with substantial gains from coordination. This conclusion is confirmed if loan concentration is used to split the sample.

### 4.3 Alternative Interpretations: Demand Shocks and Credit Market Cycles

We interpreted estimates from the DID regression as being the result of successive reforms of Italian bankruptcy procedures, which have affected banks' pricing policy. At the same time, prices of loan contracts may also have changed due to other factors, such as unobserved demand shocks or credit market cycles. These can be of importance to our empirical strategy, because our treatment and control groups are not randomized and could be differentially affected by either demand shocks or credit cycles. To address both concerns, we first document the absence of differential demand shocks over the sample period, and we show that proxying for such shocks in the DID estimates does not affect the results. We also re-estimate our main specification, controlling for the existence of credit market cycles during the sample period.

**Demand Shocks** In order to address the issue of demand shocks, we rely on the information contained in the Invind survey of manufacturing firms. Each year the survey asks the top management of each firm about their year-ahead forecasts of sales growth, prices and productive capacity.<sup>28</sup>

To check the robustness of our main results to demand shocks, we embed these forecasts into our multivariate DID specification. We proceed as follows: for each year, we impute to each firm in our sample in a particular bin, the average forecast sales, price and capacity as calculated from the Invind database over the corresponding bin.<sup>29</sup> We then re-estimate

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<sup>28</sup>In Appendix B Figure 7 we provide a graphical check of the effect of differential demand shocks on treatment and control firms. The left panels of the figure separately plot average forecasts for control firms (black line, square) and treated firms (red line, triangle). The right panels plot the difference in forecasts between the two groups of firms for each year. The top panels in Figure 7 plot forecasts of sales growth. Between 2001 and 2007, the average forecast sales growth for the treatment group firms was 6-7%, but only 5% for those firms in the control group. As long as these differences remain constant, they do not invalidate our DID framework. The right panel shows that during our sample period (2004-2007), differences in sales forecasts were stable at two percentage points. Since demand shocks can also be channeled through prices, we plot price forecasts for own-production in the middle panel. Differences in price forecasts seem small in magnitude and statistically not significantly different from zero. The bottom panel plots forecasts of productive capacity for both treatment and control firms. If firms were to differ in their forecasted use of productive capacity, we would expect such differences to materialize in higher investment and financing needs. However, in terms of their use of productive capacity, both groups of firms seem to display similar trends.

<sup>29</sup>We use three specifications of bins. The first is constructed by matching a firm's industry code with the binary treatment indicator ( $Sic*TC$ ), the second by matching a firm's industry code with *Score*

our baseline loan-interest rate specification. Our results are shown in Table V, where each column considers a different proxy for the demand shock.

[Table V]

Each set of columns is divided according to the three bins:  $Sic*TC$ ,  $Sic*Score$ ,  $Sic*Size$ . Table V documents that demand factors do not confound our estimates of the impact of the bankruptcy procedure reforms. All estimates of the impact of reorganization and liquidation remain similar both in terms of magnitude and precision. Only forecasts on productive capacity seem to impact the loan-financing conditions of firms: a higher capacity utilization implies higher investment needs, and thus an increases in the price of the loan contract.

**Credit Cycles** Another potential threat to the causal interpretation of our results is the behaviour of international credit markets during the sample period. In this case, the argument is that during the period leading up to the crash of Lehman Brothers, credit markets were booming, and riskier firms were able to obtain loans at better interest rates. The presence of a credit boom could account for the lower interest rate differences after 2006, although it would not be consistent with the hike in interest rate differences after the introduction of the reorganization procedure. To address this issue, we proceed as follows. First we construct a proxy for international credit markets cycles. We collect information on Moody’s corporate bond yields from the Federal Reserve Board<sup>30</sup> and compute variable  $US\ BAA/AAA$  as the difference between yields on US corporate triple A-rated bonds and Baa-rated bonds. Then, we augment our DID specification by interacting the treatment group indicator with this proxy. Alternatively, we include a time trend in the  $Score$  variable itself. Results are shown in Table VI.

[Table VI]

In both specifications, the magnitude and statistical significance of our estimates remain unchanged. Our proxy for international credit market conditions in column 1 is negative and not significant. This result is not surprising, since Italian banks were not involved in the type of financial deals underlying the 2008 financial crisis.<sup>31</sup> In addition, Italy’s housing market did not experience a housing bubble, which could have fueled a domestic credit boom. Column 2 shows that even time trends in the  $Score$  variable do not alter our price estimates.

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( $Sic*Score$ ), and the third by matching a firm’s industry code with size dummies ( $Sic*Size$ ). If we cannot construct an average forecast in a given cell, we assign the industry-year average forecast.

<sup>30</sup><http://www.federalreserve.gov/releases/h15/current/>

<sup>31</sup>For instance, no Italian bank received bailout funds from the government during the Lehman crisis.

## 4.4 Alternative Identification Strategies: Exploiting Thresholds

We then take advantage of the fact that credit lines are easier to track empirically across time, and employ two alternative identification strategies.

**Time Thresholds** We show that changes in interest rates were consistent with the precise timeline of the reform, and with firms' perceived degree of exposure to the legislative changes made (i.e. the value of the *Score*). We plot the changes in average quarterly interest rates on credit lines within each *Score* category in the quarter preceding the reforms, and in the quarter immediately after the reforms. The left panel of Figure 5 focuses on the reorganization reform (Italian Legislative Decree no. 35), and plots changes in interest rates between 2004.Q4-2004.Q3 (black line, square) and 2005.Q1-2004.Q4 (green line, triangle). The right panel focuses on the liquidation reform and plots changes in interest rates between 2005.Q4-2005.Q3 (black line, square) and 2006.Q1-2005.Q4 (green line, triangle).

### [Figure 5]

The black line (square) in the left panel of Figure 5 shows that credit-line interest rates in the quarter preceding the introduction of Italian Legislative Decree no. 35 remained stable across the entire *Score* range. After the introduction of the reorganization procedure credit-line rates remained unchanged only for lower categories. Instead, firms in higher categories experienced an increase in their average interest rates. For example, the interest rate for a firm in *Score* category eight did not change before Italian Legislative Decree no. 35, conversely interest rates immediately increased by approximately 20 basis points in the three months following the announcement of Italian Legislative Decree no. 35.

The right panel of Figure 5 shows that Italian Law no. 5 reversed interest rate movements with respect to Italian Legislative Decree no. 35. In the quarter preceding the reform (black line, square), the average cost of credit lines increased across categories. This suggests that for credit lines the increase in interest rates due to Italian Legislative Decree no. 35 had not yet vanished. Immediately after Italian Law no. 5 was passed, within-*Score* interest rates decreased most significantly for firms at a higher risk of defaulting.

**Time and *Score* Thresholds** As a final robustness check, we focus on interest rate variations of almost identical firms divided into different *Score* categories. To do so, we take advantage of the fact that firms are allocated to *Score* categories on the basis of a continuous variable. Very close to a given threshold of this continuous variable, we obtain conditions similar to a randomized experiment. We focus on the threshold between *Score*

category 6 and 7,<sup>32</sup> because a firm in category 6 is classified as “vulnerable”, whereas a firm in category 7 is classified as “risky”.

To assess the internal validity of this approach, we check that in the area around the threshold: firms do not manipulate their *Score* to put themselves into a given *Score* category, and firms possess similar characteristics that are logically unaffected by the threshold. We first document in Figure 8 of Appendix B that, consistent with our explanations on the computation of *Score*, there is no evidence of self-selection.<sup>33</sup> Table VII then tests whether firms above and below the threshold are balanced in terms of characteristics logically unaffected by the threshold (Imbens and Lemieux, 2007). The table presents findings for firms within different windows around the normalized threshold ( $\pm 0.15$ ,  $\pm 0.2$ ,  $\pm 0.25$ ). Pre-assignment characteristics include a firm’s activity code and location. Other firm characteristics include ownership and financing structures.

[Table VII]

Table VII shows that firms marginally above and below the threshold are roughly balanced with respect to pre-assignment characteristics. Differences between firms in terms of pre-assignment characteristics are small and statistically non-significant in most windows around the threshold. This contrasts with a comparison of the entire range of firms within *Score* 6 and 7, as well as with the comparison of the entire range of treatment and control firms. For example, firms in category 6 are less likely to be operating in the food sector, but more likely to be operating in a SIC code starting with 2, and more likely to be localized in Rome or Milan.

Table VIII reports separate OLS estimations of the impact of the bankruptcy reforms on interest rates, using observations from the quarters around the time the legislative changes were made, and regarding firms close to the threshold between *Score* category 6 and 7.

[Table VIII]

The estimates from the threshold regressions show that financing conditions for virtually identical firms changed upon the introduction of the reorganization procedure. Firms marginally below the threshold, classified as category 7, experienced an increase in interest rates of approximately 5 to 8 basis points compared with firms marginally above the threshold, classified as category 6. These estimates are statistically significant and larger

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<sup>32</sup>The support of the continuous variable for *Score* categories 6 and 7 ranges from 1.5 to -0.6, and the threshold lies at 0.15. Below the threshold, a firm’s *Score* is 7. Above the threshold, a firm’s *Score* is 6.

<sup>33</sup>In Appendix B Figure 8 plots the empirical distribution of firms around the threshold for categories 6 and 7 using size bins of 0.01. The threshold is normalized to 0 and firms in *Score* category 7 are situated below the dotted line (dark grey bars). The figure shows that self-assignment to categories 6 and 7 seems unlikely. Indeed, firms not only ignore the methodology to be followed when computing the underlying continuous variable, but they also ignore the thresholds that are selected for each category.



in magnitude than the ones from the main specification.<sup>34</sup> The estimates relating to the reform of the liquidation procedure are negative and similar in magnitude to the ones from the main specification, albeit not statistically significant.

## 4.5 Non-Price Effects

In addition to our analysis of the impact of the reforms on the interest rate differences, we also examine the effects on other aspects of loan contracts triggered by the reforms.

### [Table IX]

We employ our main DID specification for the analysis of non-price dimensions. The dependent variable in column (1) of Table IX is *Secured Lending*, defined as the amount of real secured lending compared to total financing granted at firm-bank level. The estimates show that there was a significant - approximately 0.3 percentage point - increase in the use of secured lending after both legislative reforms. The increase in secured lending that followed the introduction of reorganization procedures (Italian Legislative Decree no. 35) can be accounted for quite simply. In the presence of moral hazard, the use of collateral reduces agency costs and raises pledgeable income (Tirole, 2006, chapter 4). The evidence of increased interest rate differences after the introduction of Italian Legislative Decree no. 35, suggests that the reform exacerbated agency problems, and therefore it is natural to expect a rise in the volume of collateralized lending. At the same time, the increase in secured lending observed after the introduction of the new liquidation procedures, is in keeping with the views of Von Thadden et al. (2010), who show that if liquidation values grow, the total collateral supplied by the enterprise to be seized in bankruptcy, rises.

Column (2) shows details of the change in the maturities of bank financing. *Short Term Lending* is defined as the amount of lending with maturity of less than one year, compared to total financing granted at firm-bank level. The result that Italian Law no. 5 has reduced short-term lending by 1 percentage point is consistent with the findings of Hart and Moore (1994) and Shleifer and Vishny (1992). The former show that larger liquidation values make longer debt contracts feasible. The latter study the trade-off between the benefit of debt overhang in constraining management, and liquidation costs. Given that higher liquidation values make long-term contracts more attractive (Benmelech, 2009), Shleifer and Vishny (1992) predict an increase in debt maturity with liquidation value. This result confirms the conclusions of Benmelech et al. (2005).

The dependent variable in column (3) is *Number of Banks*, defined as the total number of individual banks that grant financing at firm level. The number of firm-bank relationships significantly increased following the reform of the liquidation procedure. This

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<sup>34</sup>As the idea of a quasi-natural experiment would suggest, introducing or omitting variables does not modify our conclusions. Moreover, as we introduce firm-bank fixed effects in the specification, we cannot also include the time invariant running variable. Cross-sectional estimates, including the polynomial in the running variable, yield very similar estimates (tables available upon request).

outcome is again in keeping with the theoretical insights in von Thadden et al. (2010). The latter show that in the presence of an in-court reorganization procedure and asymmetric information, strengthening individual creditors' rights makes contracting with two creditors more profitable than with a single creditor.<sup>35</sup>

Column (4) analyses the impact of the legislative reforms on leverage at firm level. *Leverage* is defined as the total loans granted by banks to a firm compared to the book value of the firm's assets. In a contracting environment à-la-Tirole (2006), chapter 3, with perfectly inelastic supply and competitive financial markets, the size of a loan depends on the nature of the business project. In Appendix B, Figure 7, we show that forecasted demand conditions, that is, the distribution of business projects, did not change discontinuously during our sample period, and thus we expect Italian Legislative Decree no. 35 and Italian Law no. 5 to have no impact on company leverage.

We use the annual Invind Survey to study the effect of the reforms on credit constraints. Firms are asked whether they originally wanted more credit at current or higher interest rates, but were turned down. Following Guiso and Parigi (1999), we classify a firm as credit-constrained if it requested more credit but failed to obtain such. The sample in column (5) ranges from 2002 to 2007, and the specification includes controls for forecast demand. The specification includes fixed firm effects, and thus takes advantage of the time-variation in credit constraints for the same firm. We show that the share of credit-constrained firms decreased by 2.7 percentage points after 2004, corresponding to a 30% reduction in credit constraints.

## 5 Conclusion

Despite the wealth of theories on how the design of financial contracts depends on the two instruments in bankruptcy, reorganization and liquidation, there is little evidence on the subject. The lack of thorough empirical evidence is mostly due to the problem of disentangling and interpreting reforms that change different legal instruments at one and the same time. We provide new evidence by using the staggered nature of the Italian bankruptcy law reform of 2005 and 2006 to examine the impact of legislation on firms' cost of finance, using a loan-level dataset covering the universe of firm funding contracts.

Our initial finding shows that the negative effects of bankruptcy reorganization on repayment incentives outweigh the positive effects of improved creditor coordination. Our second finding is that the increased firm liquidation values resulting from the new liquidation procedure leads to a significant reduction in the cost of finance. Our third finding consists in the identification of gains from creditor coordination in bankruptcy.

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<sup>35</sup>In the absence of a structured renegotiation procedure, Bolton and Scharfstein (1996) show that an increase in liquidation values following the strengthening of creditor rights (as for Italian Law no. 5) would have reduced the number of creditor relationships.

These outcomes have important implications not only in terms of their theoretical relevance, but also because they enable us to understand the distinct consequences of the design of reorganization and liquidation procedures on the cost of finance. The Italian reorganization procedure introduced by the 2005-2006 reform shares important analogies with U.S. Chapter 11: in both, the entrepreneur can unilaterally file for the opening of the reorganization phase and stay in charge of the company while renegotiating with creditors. Moreover, the decision over the restructuring plan is taken via a creditor vote and the judge can enforce a plan despite the objections of some creditors (cram-down). The Italian reforms of the bankruptcy code also share important features with recent reforms in other OECD countries, like Brazil. More specifically, the content of the Italian bankruptcy reform is analogous to the bankruptcy reforms that took place in European countries like France and Spain.<sup>36</sup> Indeed since the early 2000s the European Commission pushed for the adoption by member states of bankruptcy codes embedding restructuring procedures analogous to U.S. Chapter 11.

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<sup>36</sup>Though in these two cases the ensuing reform changed reorganization and liquidation procedures at the same time.

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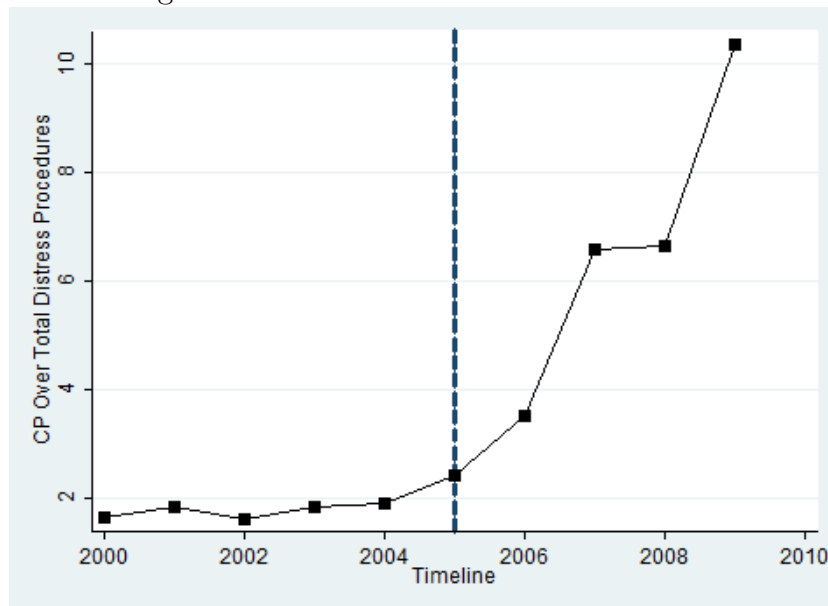
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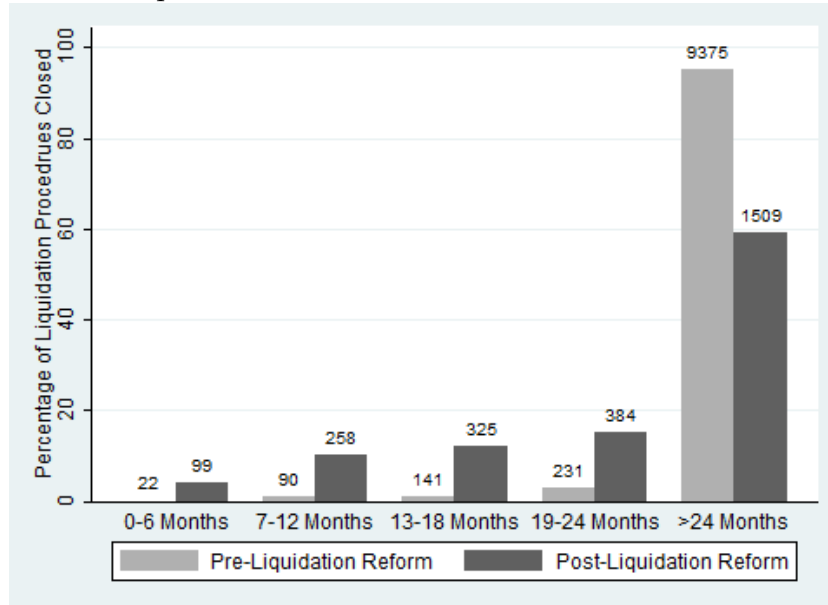
## 6 Tables and Figures

Figure 1: Share of Reorganization Procedures in Total Distress Procedures Over Time



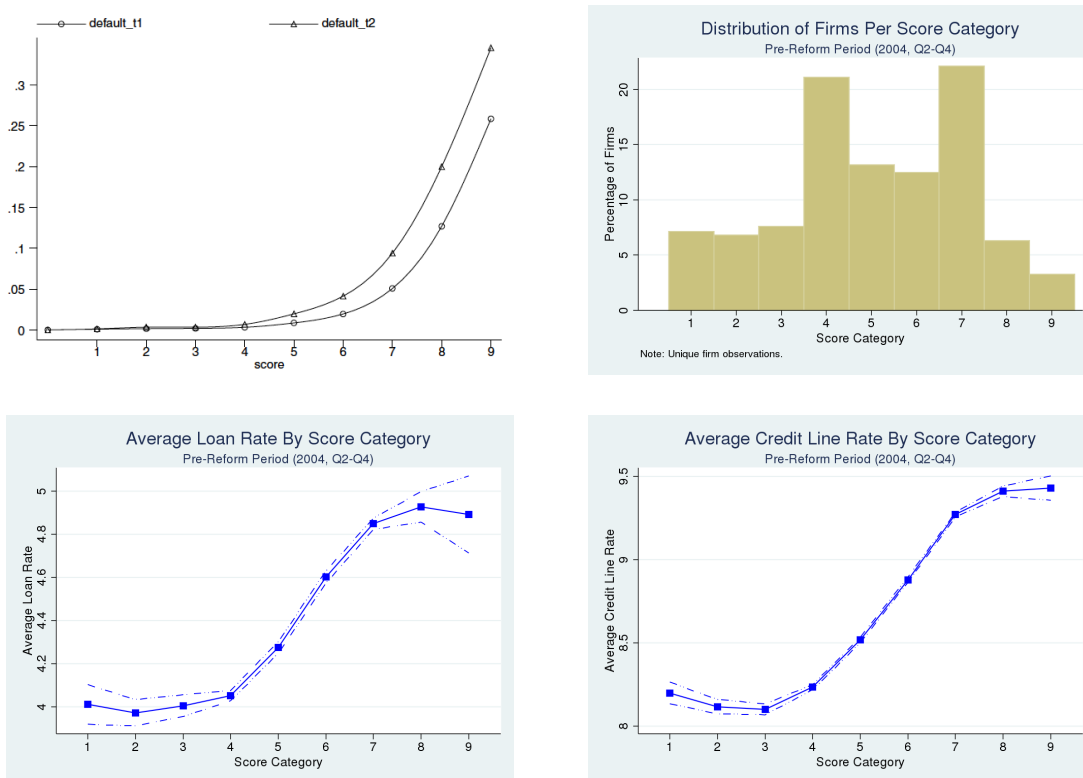
Plot of the ratio of the number of opened reorganization procedures (*concordato preventivo*) to the total number of opened distress procedures (reorganization and liquidation). Source: Chambers of Commerce.

Figure 2: Duration of Liquidation Procedures Before and After Italian Law No. 5 Reform



Plot of the percentage of liquidation procedures closed within  $X$  months before and after introduction of the reform under Italian Law no. 5. Totals reported on top of bars. Source: Unicredit Bank.

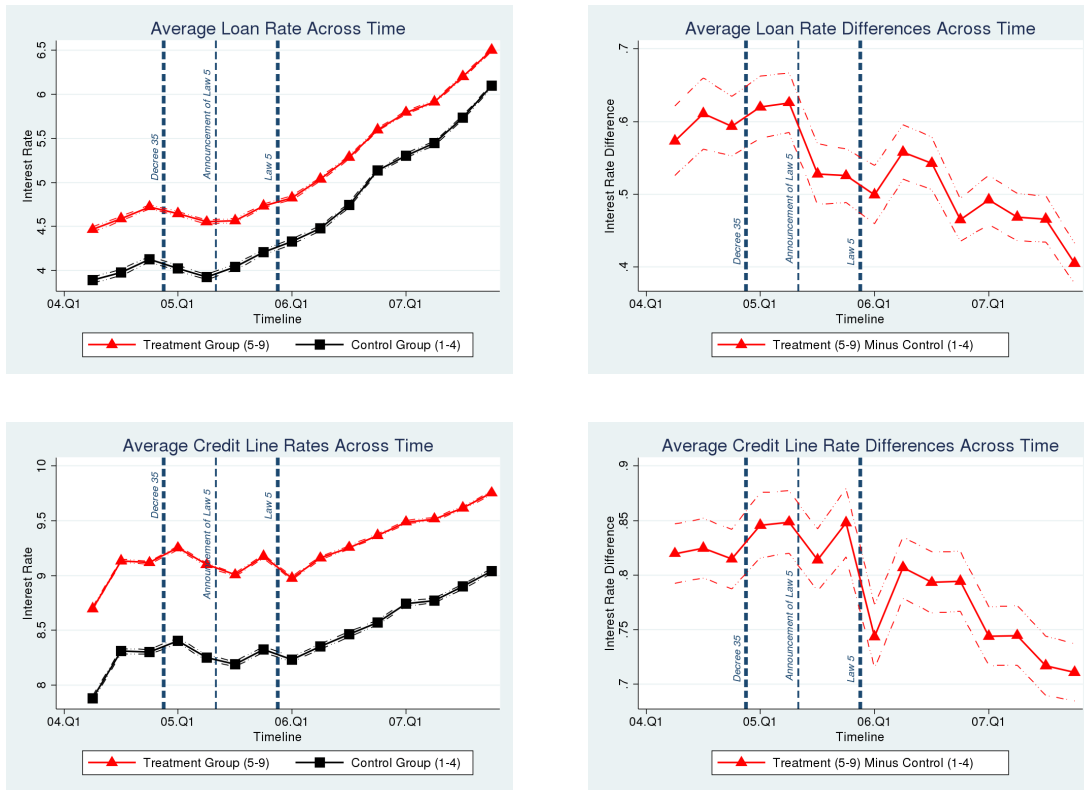
Figure 3: Characteristics of the Score Assignment Variable



The top left panel is taken from Panetta et al. (2007) who, using the same balance sheet and bank data for the period between 1988 to 1998, plot the  $Score$  variable against an indicator of default within the next one (circle) and two years (triangle). The top right panel plots, for our pre-reform sample (2004.Q2-2004.Q4), the share of firms within each  $Score$  category. The bottom panel, computed on the basis of our pre-reform sample (2004.Q2-2004.Q4), plots the  $Score$  variable against the average interest rate on loans (bottom-left) and credit lines (bottom-right).

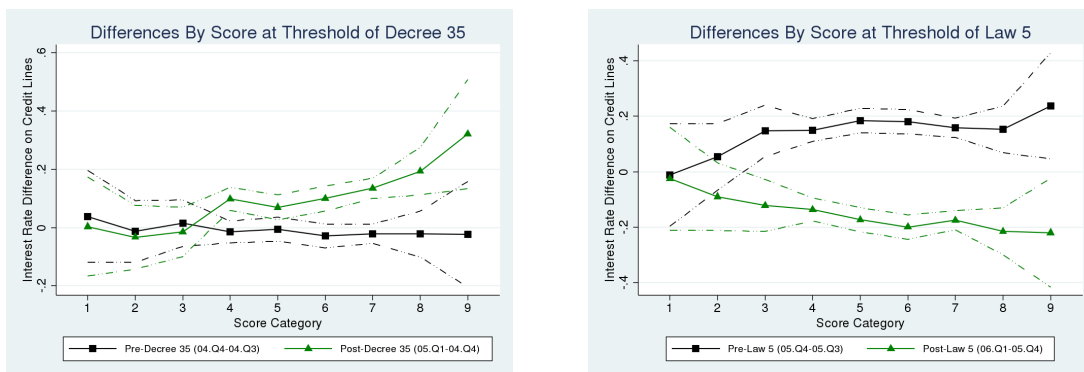


Figure 4: Differences-in-Differences Plot of Interest Rates



The left panels separately plot average interest rates for control firms (black line, square) and average interest rates for treated firm categories (red line, triangle). The right panel plots the difference in average interest rates between the two groups of firms for each quarter. Vertical lines represent legislative reforms that were made in the first quarter of 2005 pursuant to Italian Legislative Decree no. 35, and in the first quarter of 2006 pursuant to Italian Law no. 5. The top panels plot average interest rates for loans, while the bottom panels plot average interest rates for credit lines.

Figure 5: Within Score Variations At Threshold of Reforms



The figure plots changes in average quarterly interest rates on credit lines within each *Score* category in the quarter preceding the reforms and the quarter immediately after the reforms. The left panel of Figure 6 focuses on the reorganization reform (Italian Legislative Decree no. 35) and plots changes in interest rates between 2004.Q4-2004.Q3 (black line, square) and 2005.Q1-2004.Q4 (green line, triangle). The right panel focuses on the liquidation reform and plots changes in interest rates between 2005.Q4-2005.Q3 (black line, square) and 2006.Q1-2005.Q4 (green line, triangle).

Table I: INTEREST RATES ON NEWLY-ISSUED LOANS AND CREDIT LINES

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

Pooled loan-level data for the period 2004.Q2-2007.Q4. Observations are at the loan-quarter level, and monetary values are expressed in KE (1,000 Euros). *Loan Interest Rate* is 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. *Maturity* is a set of binary variables indicating whether the maturity of the newly-issued loans is up to 1 year, between 1 and 5 years, or more than 5 years. *Guarantee* is a set of binary variables indicating whether the loan has no collateral (Unsecured), only real collateral (Real), only personal collateral (Personal), both (Real and Personal), or is unmatched (Other). *Credit Line 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 for a given quarter.

Table II: FINANCING STRUCTURE &amp; BALANCE SHEET INFORMATION

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

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

Table III: Impact of the Reforms on Loan Interest Rates

Dependent Variable: Interest Rates on Loans			
	Binary TC All Firms (1)	Binary TC 1-4 vs 7-9 (2)	Score (1-9) All Firms (3)
After Reorganization*Treatment	0.043*** (0.016)	0.067*** (0.021)	0.018*** (0.006)
Interim Period*Treatment	0.005 (0.014)	-0.005 (0.017)	-0.000 (0.005)
After Liquidation*Treatment	-0.045*** (0.014)	-0.049*** (0.018)	-0.015*** (0.005)
Real Guarantee	-0.015 (0.028)	-0.012 (0.034)	-0.015 (0.028)
Personal Guarantee	0.036*** (0.014)	0.029 (0.018)	0.036*** (0.014)
Personal+Real Guarantees	-0.191*** (0.025)	-0.231*** (0.032)	-0.191*** (0.025)
Other Guarantees	0.042*** (0.013)	0.030* (0.018)	0.042*** (0.013)
Maturity: 1-5 Years	-0.285*** (0.012)	-0.295*** (0.016)	-0.285*** (0.012)
Maturity: >5 Years	-0.511*** (0.016)	-0.515*** (0.021)	-0.511*** (0.016)
Log Size of Loan	-0.085*** (0.003)	-0.093*** (0.004)	-0.085*** (0.003)
Credit Lines/Tot. Bank Fin.	0.143** (0.071)	0.154* (0.090)	0.143** (0.071)
Loans/Tot. Bank Fin.	-0.156*** (0.039)	-0.128*** (0.048)	-0.156*** (0.039)
Log Value Added	-0.013 (0.013)	-0.014 (0.017)	-0.013 (0.013)
Leverage	0.481*** (0.085)	0.458*** (0.101)	0.478*** (0.086)
Log Total Assets	0.123*** (0.027)	0.121*** (0.036)	0.124*** (0.027)
Log Total Sales	-0.166*** (0.024)	-0.132*** (0.029)	-0.167*** (0.024)
Age of Firm	-0.100 (0.068)	-0.149* (0.079)	-0.095 (0.069)
Group Ownership	0.013 (0.048)	0.056 (0.074)	0.014 (0.049)
Firm*Bank FE	Yes	Yes	Yes
Quarterly FE	Yes	Yes	Yes
R-squared	0.559	0.552	0.559
N	183498	104782	183498

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). In columns 1 and 2 *Treatment* is a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. In column 3 *Treatment* is the *Score* indicator itself (1-9). See Table I and II for the definition of the remaining variables. The omitted categories are “Unsecured” in the case of *Guarantees* and “Backed Loans/Tot. Bank Fin.” in the case of financing structure variables. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table IV: Impact of Reforms on Loan Interest Rates

Dependent Variable: Interest Rates on Loans				
	# of Bank Relations		Loan Concentration	
	Small	Large	Small	Large
After Reorganization* <i>Treatment</i>	0.079*** (0.029)	0.022 (0.020)	0.024 (0.019)	0.075** (0.030)
Interim Period* <i>Treatment</i>	-0.008 (0.024)	0.015 (0.016)	0.024 (0.016)	-0.021 (0.025)
After Liquidation* <i>Treatment</i>	-0.011 (0.022)	-0.073*** (0.018)	-0.073*** (0.018)	-0.006 (0.023)
Loan Controls: Guarantee, Maturity, Size, Financing Composition				
Firm Controls: Value Added, Leverage, Assets, Sales, Age, Ownership				
Firm*Bank FE	Yes	Yes	Yes	Yes
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.522	0.590	0.587	0.525
N	72477	106402	106682	72197
<i>F-Test for Homogeneous Treatment Effect Across Splits</i>				
0.0227			0.0210	

The table reports the split OLS estimation of the impact of bankruptcy reforms on loan interest rates. The first and second columns split the sample into *Low* versus *High* on the basis of the median # of *Bank Relations*. # of *Bank Relations* is computed in 2004 as the number of distinct bank relations with positive granted term loans. The third and fourth columns split the sample into *Low* versus *High* on the basis of the median *Loan Concentration*. *Loan Concentration* is computed in 2004 as the sum of the squares of bank shares in terms of granted loans. Note that *High Loan Concentration* is therefore associated with a single bank representing most of the loan financing. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). *Treatment* is a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. See Table I and II for a definition of the remaining variables. The omitted categories are “Unsecured” in the case of *Guarantees* and “Backed Loans/Tot. Bank Fin.” in the case of financing structure variables. F-Test is a partial F-test on the equality of coefficients *After Reorganization\*Treatment* and *After Liquidation\*Treatment* across splits. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table V: Impact of Reforms and Demand Differences

	Dependent Variable: Interest Rates on Loans									
	SIC*TC		SIC*SCORE		SIC*SIZE					
	Sales	Price	Capacity	Sales	Price	Capacity	Sales	Price	Capacity	
After Reorganization*Treatment	0.043** (0.017)	0.045** (0.020)	0.049** (0.019)	0.043** (0.017)	0.048** (0.020)	0.047** (0.020)	0.044** (0.017)	0.046** (0.020)	0.054*** (0.021)	
Interim Period*Treatment	0.010 (0.014)	0.005 (0.016)	0.005 (0.016)	0.009 (0.016)	0.005 (0.016)	0.012 (0.016)	0.009 (0.014)	0.004 (0.016)	0.003 (0.017)	
After Liquidation*Treatment	-0.046*** (0.016)	-0.038*** (0.016)	-0.045*** (0.016)	-0.047*** (0.016)	-0.039*** (0.016)	-0.046*** (0.016)	-0.046*** (0.016)	-0.039*** (0.016)	-0.047*** (0.017)	
CEO Forecast	-0.001 (0.001)	-0.002 (0.002)	0.001** (0.000)	-0.001* (0.000)	-0.000 (0.001)	0.000 (0.000)	-0.000 (0.000)	-0.001 (0.001)	0.001** (0.000)	
Loan Controls: Guarantee, Maturity, Size, Financing Composition										
Firm Controls: Value Added, Leverage, Assets, Sales, Age, Ownership										
Firm*Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Quarterly FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
R-squared	0.538	0.547	0.540	0.538	0.545	0.543	0.538	0.547	0.541	
N	155646	146036	145529	155442	140220	138354	155330	145047	126396	

The table reports the OLS estimation of the impact of bankruptcy reforms on loan interest rates. Each column controls for average one-year-ahead *CEO Forecast* on *Sales*, *Prices* and *Capacity*. For each year we impute to each firm of our sample in a particular bin the average expectation of sales, price and capacity calculated from the Invid database over the corresponding bin. We use three specifications of bins. The first is constructed by interacting firm industry code with binary treatment indicator (*Sic\*TC*), the second by interacting firm industry code with *Score* (*Sic\*Score*) and the third by interacting firm industry code with size dummies (*Sic\*Size*). If we cannot construct an average forecast in a given cell, we assign the industry-year average forecast. *SIC* refers to 2 digit SIC codes, *SCORE* to the *Score* variable and *TC* to the treatment definition. *Size* is a categorical variable distinguishing five employment brackets:  $X \leq 20$ ,  $20 < X \leq 50$ ,  $50 < X \leq 100$ ,  $100 < X \leq 250$ ,  $500 < X$ . *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). *Treatment* is a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. See Table I and II for a definition of the remaining variables. The omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table VI: Impact of Reforms and Credit Cycles

Dependent Variable: Interest Rates on Loans

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

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

Table VII: Balancing Property Test

	Windows Around Threshold			Score 6/7	All T/C
	$\pm.15$	$\pm.2$	$\pm.25$		
<i>Activity:</i>					
Food Sector	.001	.007	.007	.011***	-.003***
SIC Code Starts With 2	-.014	-.01	-.008	-.012*	-.075***
<i>Geography:</i>					
Rome	-.001	.007	-.003	-.012***	.003
Milan	.003	-.004	.005	-.007***	.018***
BG Ownership	.000	.000	.001	.005***	.012***
<i>Financing Structure:</i>					
Long Term Debt	.00	-.005	-.007**	-.003	-.037***
Loan Financing	-.001	-.007	-.009*	-.019***	.032***
Credit Line Financing	.002	.003	.005*	.007***	.003***
Trade Credit Financing	-.001	.004	.004*	.012***	-.035***
Unique Firms	1904/1733	2481/2331	2816/2785	7169/12452	20652/30703

The table reports differences in firm characteristics in 2004.Q4. The first three columns report differences for firms marginally above and below the threshold (normalized to 0) for *Score* categories 6 to 7. The column *Score 6/7* reports differences for all firms in *Score* categories 6 and 7, and column *All T/C* for all firms in the treatment and control categories. *Food Sector* is a binary variable equal to 1 for a firm with a SIC code of 16 (“Manufacture of food products and beverages”). *SIC Code Starts With 2* is a binary variable equal to 1 for a firm with a SIC code starting with 2. *Rome* and *Milan* are binary variables equal to 1 for a firm registered in the cities of Rome or Milan. *Long Term Debt* is defined as the total amount of loans granted with maturity more than a year compared to the total amount of loans granted by the bank to the firm. See Table I and II for a definition of the remaining variables. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.



Table VIII: Threshold Estimates

	Windows Around Threshold		
	$\pm.15$	$\pm.2$	$\pm.25$
Legislative Decree no. 35	0.054** (0.024)	0.084*** (0.021)	0.068** (0.019)
R-squared	0.020	0.020	0.021
N	35442	46572	54290
Law no. 5	-0.018 (0.028)	-0.028 (0.024)	-0.027 (0.022)
R-squared	0.001	0.001	0.001
N	33954	45806	53852
Controls	No	No	No
Firm*Bank FE	Yes	Yes	Yes
Quarterly FE	Yes	Yes	Yes

The table reports the OLS estimation of the impact of bankruptcy reforms on loan interest rates, in the quarters preceding and following the introduction of the legislative reforms, and at the threshold (normalized to 0) of the continuous *Score* variable going from category 6 to 7. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table IX: Impact of Reforms on Non-Price Dimensions

	Secured Lending (1)	Short Term Lending (2)	Number of Banks (3)	Leverage (4)	Credit Constraints (5)
After CP*Treatment	0.003*** (0.001)	-0.000 (0.001)	-0.010 (0.010)	0.001 (0.001)	
Interim Period*Treatment	0.002*** (0.001)	0.000 (0.001)	0.008 (0.007)	0.002*** (0.001)	
After Failure*Treatment	0.003*** (0.001)	-0.008*** (0.001)	0.083*** (0.011)	0.001 (0.001)	
After 2004* Treatment					-0.027** (0.011)
Firm Controls	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	Yes
Firm*Bank FE	Yes	Yes	No	No	No
Quarterly FE	Yes	Yes	Yes	Yes	No
R-squared	0.003	0.004	0.121	0.058	0.005
N	1865970	1865970	549405	553887	7620

The table reports the OLS estimation of the impact of bankruptcy reforms on the non-price dimensions of firms' financing. *Secured Lending* is defined as the total amount of loans granted with real securities compared to the total amount of loans granted by the bank to the firm. *Short Term Lending* is defined as the total amount of loans granted with a maturity of less than 1 year compared to the total amount of loans granted by the bank to the firm. *Number of Banks* is defined as the number of banks a firm uses. *Leverage* is defined as the ratio of a firm's total bank financing compared to the book-value of its assets. *Credit Constraints* is a binary variable equal to 1 if a firm requested more bank financing, but said request was rejected. The information on *Credit Constraints* is based on the yearly Invind survey. The set of control variables for column 5 includes forecasts of one-year-ahead sales growth. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

## A For Online Publication: Data Organisation, Sample Selection, Definition of Variables

Our analysis focuses on manufacturing firms for the period 2004-2007. We organize our final sample in several steps.

The first step is to organise the information in the *Taxia* database. We take information on newly-issued term loans (interest rates, loan size, and maturity) from the *Taxia* database and we match it with the guarantee information contained in the Central Credit Register to recover their guarantee status.<sup>37</sup> We drop all new loans with an amount smaller than 1,000 Euro and extreme percentiles of the term loan interest-rate distribution.<sup>38</sup> Then we associate the interest rates on credit lines (between a given bank and a given firm in a certain period) in the *Taxia* database with other characteristics of the firm-bank relationship, such as total amount of credit granted and utilized on the credit lines in the same period. We drop extreme percentiles of the credit lines interest-rate distribution. Finally, we drop the first quarter of 2004, since this is the first time data was collected at the credit-line level and is possibly subject to substantial measurement error.<sup>39</sup>

The second step is to harmonize the format of the Credit Register and the credit line data. We therefore organize the financial information on amounts, loan categories, and guarantees at the quarterly level. This leaves an unbalanced panel of firm-bank relations at the quarterly level observed over 15 periods, which are then matched with yearly balance sheet data. We organize the balance-sheet data before merging them with the financial information of firms. We drop firms with incomplete balance sheets and profit and loss accounts, missing *Score*, with leverage above one or below 0. Since only small- and medium-sized firms were affected by the policy change we drop firm observations with more than 500 recorded employees.<sup>40</sup> Every year of balance-sheet data is matched with quarterly credit information. The final dataset is of quarterly frequency, and runs from

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<sup>37</sup>We do so by constructing an algorithm that tries to match a new loan from firm  $j$  with bank  $b$  in period  $t$  to the information on the same match in the same time period. The algorithm searches for a match to the exact amount of the new term loan in the Credit Register by comparing it to the total size of utilized and granted loans in a six-month window around period  $t$ . If the algorithm doesn't find an exact match then it searches for matches with first differences of utilized and granted loans in the same time window around the contract period  $t$ . Subsequently, we check the type of loan relationship between the bank and the firm in the Credit Register. Provided all the contracts between the bank and the firm have the same collateral status, we assume that the new term loan necessarily has the same collateral status (otherwise we would observe a distinct entry in the data). If we cannot find a match we create a residual "unmatched" category that should be interpreted as having a high probability of some kind of collateral on the loan. Indeed, in the six-month window around the date of the new loan there is some kind of collateral agreement between the firm and the bank involved.

<sup>38</sup>For computational reasons, we focus on firms that have at most one loan per quarter with a given bank. In this way we drop 3% of all newly-issued term loans.

<sup>39</sup>Results are robust to the inclusion of the first quarter.

<sup>40</sup>Firms above this threshold had access to a different set of procedures that were also reformed during the same period.

the second quarter of 2004 to the last quarter of 2007, for a total of 202,964 firms and 1,097 banks.

**Definition of Variables at the Firm-Bank Level** All variables are at the quarterly level.

- *Credit Line Interest Rate*, as 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 for a given quarter;
- *Guarantee* is a set of binary variables indicating whether the newly-issued term loan has no collateral (Unsecured), only real collateral (Real), only personal collateral (Personal), both (Real and Personal), or is unmatched (Other);
- *Loan Interest Rate*: Gross annual interest rate for newly-issued term loans, inclusive of participation fees, loan origination fees, 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;
- *Secured Lending*: Total amount of loans granted with real securities compared to the total amount of loans granted;  
*Short Term Lending*: Total amount of loans granted with maturity less than a year compared to the total amount of loans granted by the bank to the firm.
- *Size of Loan* is the log of granted amount of the newly-issued term loan;

**Definition of Variables at the Firm Level** Variables denoted by QT are at the quarterly level, if they are denoted by YR they are at the annual level.

- *Advances/Tot. Bank Fin.*: Firm's total loans backed by account receivables, divided by total bank financing granted in all loan categories, QT;
- *After Reorganization*: Dummy variable equal to one beginning in January 2005 (2005.Q1), QT;
- *After Liquidation*: Dummy variable equal to one to 1 beginning in January 2006 (2006.Q1), QT;

- *Age of Firm*: Difference between the current year and year of firm incorporation, YR;
- *CEO Forecast*: For each year we impute to each firm of our sample in a particular bin the average expectation of one-year ahead sales, price and capacity calculated from the Invind database over the corresponding bin. We use three specifications of bins. The first is constructed by interacting firm industry code with binary treatment indicator ( $Sic*TC$ ), the second by interacting firm industry code with *Score* ( $Sic*Score$ ) and the third by interacting firm industry code with size dummies ( $Sic*Size$ ). 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*), price changes (*Price*), and productive capacity utilization (*Capacity*), YR;
- *Credit Constraints*: Binary variable equal to one if a firm requested more bank financing, but said request was rejected, YR;
- *Credit Lines/Tot. Bank Fin.*: Firm's total credit lines divided by the total bank financing granted in all loan categories, QT;
- *Food Sector*: Binary variable equal to one for a firm with a SIC code of 16 ("Manufacture of food products and beverages"), YR;
- *Geography - Rome/Milan*: Binary variables equal to one for a firm registered in the cities of Rome or Milan, YR;
- *Group Ownership*: Binary variable equal to one if the firm belongs to a business group, YR;
- *Interim Period*: Dummy variable equal to one beginning in June 2005 (2005.Q3), QT;
- *Loan Concentration*: Sum of the squares of bank shares in terms of granted loans, QT;
- *Loans/Tot. Bank Fin.*: Firm's total amount of term loans, divided by the total amount of bank financing granted in all loan categories, QT;
- *Leverage*: is defined as the ratio of debt (both short- and long-term) over total book-value of assets in the balance sheets, YR. Alternatively we also compute *Bank Leverage* as the ratio of bank debt (both short- and long-term) over total book-value of assets, QT;
- *Score*: Indicator of the likelihood of a firm default, and that takes a value ranging from one (for the safest firm) to nine (for the firm most likely to default), YR;

- *SIC Code Starts With 2*: Binary variable equal to one for a firm with a SIC code starting with 2, YR;
- *Total Assets*: Log of total assets, YR;
- *Total Sales*: Log of total sales, YR;
- *Treatment*: Dummy variable equal to one for firms that, in 2004, have a *Score* between five and nine, 0 otherwise, YR;
- *US BAA/AAA*: Difference between yields on US corporate AAA rated bonds and Baa rated bonds. Information on corporate bond yields is taken from <http://www.federalreserve.gov/releases/h15/current/>, QT;
- *Value Added*: Log of value added, YR;
- *# of Bank Relations*: Number of distinct bank relations per firm, QT.

## B For Online Publication: Additional Tables and Figures

Figure 6: Timeline of the Reform Process

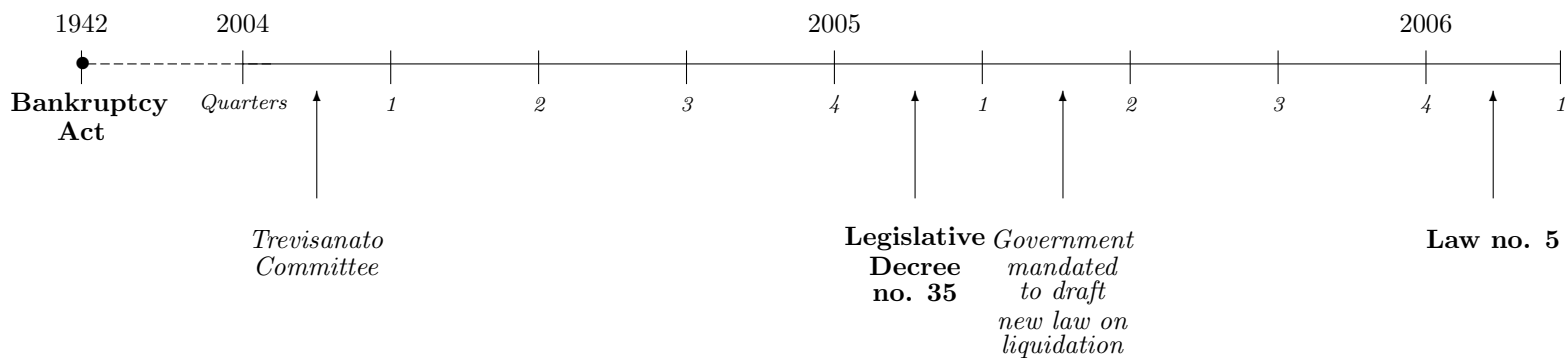
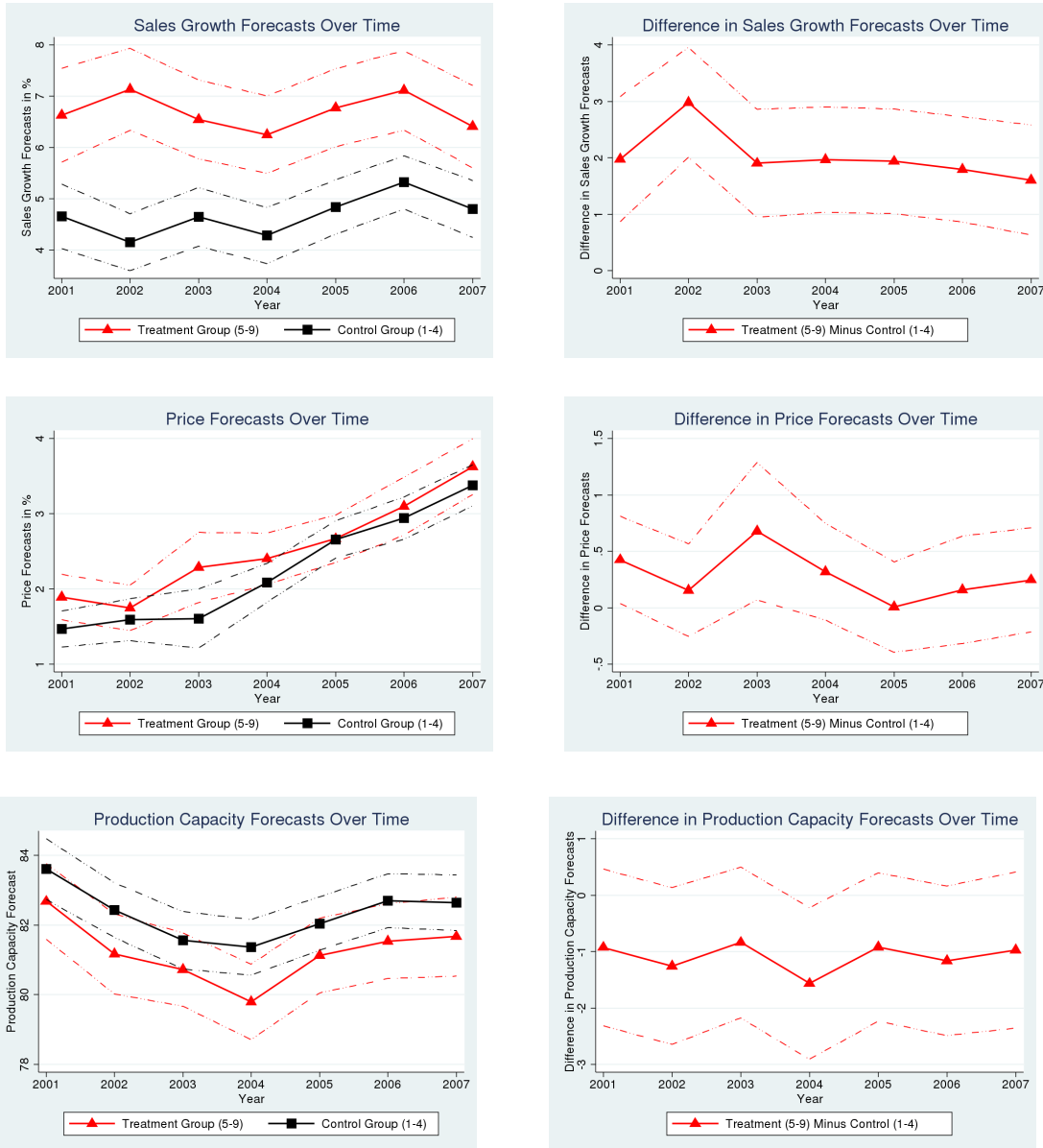
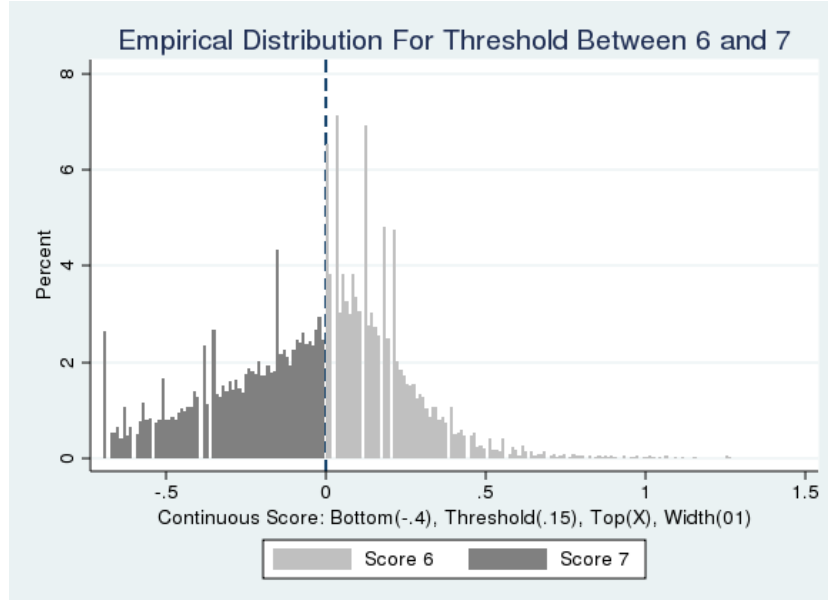


Figure 7: Differences-in-Differences Plot of CEO Forecasts



The figure uses information from the Invind survey of manufacturing firms between 2001 and 2007. The left panels separately plot average forecasts for control firms (black line, square) and treated firm categories (red line, triangle). The right panels plot the difference in forecasts between the two groups of firms for each year. The top panels plot forecasts of one-year-ahead sales growth, the middle panels plot forecasts of price changes, while the bottom panels plot forecasts of productive capacity utilization.

Figure 8: Distribution of Firms Around Score Threshold 6 to 7



The figure plots the empirical distribution of the continuous variable underlying *Score* categories 6 and 7, using bins of 0.01 and firm observations in 2004.Q4. The threshold is normalized to 0. Firms in *Score* category 7 lie to the left of the dotted line (dark grey bars), while firms in *Score* category 6 lie to the right of the dotted line (light grey bars).



Table X: Reorganization Procedures—Legal Changes.

	<b>Reorganization</b>	
	<i>Pre-reform</i>	<i>Post-reform</i>
Prerequisites (art. 160)	Any entrepreneur <i>not failed in the last five years and no bankruptcy fraud</i>	Any entrepreneur
Requirement on content of the plan (art. 160)	Reimbursement of - 100% secured creditors - 40% unsecured creditors	None
Initiator (art. 161)	Entrepreneur <i>in state of insolvency</i>	Entrepreneur
Assets' control (art. 167)	Debtor in possession	Debtor in possession
Automatic stay (art. 167, 168)	Yes	Yes
Decision process (art. 177)	Plan approved if more than <i>two thirds</i> of creditors (in value) vote in favor <i>No cram-down</i> Secured creditors can vote if they give up their privilege	Plan approved if more than half of creditors (in value) vote in favor Cram-down Secured creditors can vote if they give up their privilege
Plan rejected (art. 179)	The firm is liquidated	The firm is liquidated
Out-of-court agreements (art. 182)	Claw-back on all <i>transactions</i> <i>from 6 to 12 months</i> <i>before the opening of the</i> <i>procedure</i>	Limited scope for claw-back

Table XI: Liquidation Procedures—Legal Changes.

	<b>Liquidation</b>	
	<i>Pre-reform</i>	<i>Post-reform</i>
Assets' control (art. 31)	Court-appointed trustee	Court-appointed trustee
Role of the judge (art. 25)	Direct management of the procedure and control of trustee's decisions	Simple oversight of the procedure
Role of the trustee (art. 31)	Management of business' assets under the direction of the judge	Management of business' assets under judge's and creditors committee's oversight
Role of the creditors' committee	Appointed by the judge (art. 40)	Appointed by the judge after consulting the creditors (art. 40) Can ask for the substitution of the trustee (art. 37 <i>bis</i> )

Table XII: Alternative Specifications

Dependent Variable: Interest Rates on Loans				
	No Loan Controls (1)	Cluster Bank Level (2)	No Switchers (3)	No Switchers No Attrition (4)
After Reorganization*Treatment	0.037** (0.016)	0.043*** (0.016)	0.053** (0.021)	0.055*** (0.021)
Interim Period*Treatment	0.001 (0.014)	0.005 (0.015)	0.013 (0.017)	0.008 (0.017)
After Liquidation*Treatment	-0.040*** (0.014)	-0.045*** (0.017)	-0.050*** (0.017)	-0.045*** (0.017)
Loan & Firm Controls	Only Firm	Yes	Yes	Yes
Firm*Bank FE	Yes	Yes	Yes	Yes
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.538	0.559	0.553	0.551
N	187797	183498	137392	142913
	Bank*Time FE (5)	SIC3*Time FE (6)	Region*Time FE (7)	Log Specification (8)
After Reorganization*Treatment	.035** (0.016)	0.043*** (0.017)	0.043*** (0.016)	0.012*** (0.004)
Interim Period*Treatment	0.021 (0.014)	0.004 (0.014)	0.008 (0.013)	-0.001 (0.003)
After Liquidation*Treatment	-0.040*** (0.014)	-0.046*** (0.017)	-0.044*** (0.014)	-0.033*** (0.003)
Loan & Firm Controls	Yes	Yes	Yes	Yes
Firm*Bank FE	Yes	Yes	Yes	Yes
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.584	0.565	0.571	0.574
N	183498	183498	183418	183498

The table reports the OLS estimation of the impact of bankruptcy reforms on loan interest rates. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). In all specifications *Treatment* is defined as a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. See Table I and II for a definition of the remaining variables. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table XIII: Bank Composition

Dependent Variable: Interest Rates on Loans

	(1)	(2)	(3)
After Reorganization* <i>Treatment</i>	0.044*** (0.016)	0.044*** (0.016)	0.044*** (0.016)
Interim Period* <i>Treatment</i>	0.004 (0.014)	0.004 (0.014)	0.004 (0.014)
After Liquidation* <i>Treatment</i>	-0.045*** (0.014)	-0.045*** (0.014)	-0.045*** (0.014)
Bank Composition	-0.016* (0.009)		0.012 (0.011)
# of Banks		-0.005 (0.008)	-0.026** (0.013)
Loan Controls: Guarantee, Maturity, Size, Financing Composition			
Firm Controls: Value Added, Leverage, Assets, Sales, Age, Ownership			
Firm*Bank FE	Yes	Yes	Yes
Quarterly FE	Yes	Yes	Yes
R-squared	0.559	0.559	0.559
N	183336	183336	183336

The table reports the OLS estimation of the impact of bankruptcy reforms on loan interest rates. All columns use the entire range of *Score* observations. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). *Treatment* is a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. *Bank Composition* is a binary variable indicating whether the portfolio of bank relationships of the firm has changed. *# of Banks* is a binary variable indicating whether the number of bank relationships of the firm has changed. See Table I and II for a definition of the remaining variables. The omitted categories are “Unsecured” in the case of *Guarantees* and “Backed Loans/Tot. Bank Fin.” in the case of financing structure variables. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table XIV: Impact of Reforms on Credit Lines Interest Rates

Dependent Variable: Interest Rates on Credit Lines		
	Binary TC All Firms (1)	Binary TC 1-4 vs 7-9 (2)
After Reorganization*Treatment	0.086*** (0.012)	0.112*** (0.014)
Interim Period*Treatment	0.019* (0.011)	0.021* (0.012)
After Liquidation*Treatment	-0.028** (0.012)	-0.066*** (0.015)
Log Use of Credit Lines	-0.084*** (0.002)	-0.081*** (0.003)
Log Granted Credit Lines	-0.113*** (0.002)	-0.112*** (0.003)
Credit Lines/Tot. Bank Fin.	-0.981*** (0.058)	-0.887*** (0.069)
Loans/Tot. Bank Fin.	-0.285*** (0.030)	-0.248*** (0.037)
Log Value Added	-0.010 (0.011)	0.007 (0.013)
Leverage	0.891*** (0.069)	0.811*** (0.082)
Log Total Assets	0.177*** (0.022)	0.194*** (0.027)
Log Total Sales	-0.213*** (0.018)	-0.216*** (0.021)
Age of Firm	0.320*** (0.048)	0.375*** (0.059)
Group Ownership	0.040 (0.079)	-0.004 (0.115)
Firm*Bank FE	Yes	Yes
Quarterly FE	Yes	Yes
R-squared	0.096	0.093
N	1558095	965632

The table reports the OLS estimation of the impact of bankruptcy reforms on credit line interest rates. Column 1 uses the entire range of *Score* observations. Column 2 uses the range of *Score* observations between 1-4 and 7-9. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). *Treatment* is a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. See Table I and II for a definition of the remaining variables. The omitted category is “Backed Loans/Tot. Bank Fin.” in the case of financing structure variables. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

Table XV: Actively Used Credit Lines

Dependent Variable: Interest Rates on Credit Lines

	(1)	(2)
After Reorganization*Treatment	0.134*** (0.016)	0.155*** (0.017)
Interim Period*Treatment	0.028** (0.014)	0.033** (0.015)
After Liquidation*Treatment	-0.054*** (0.016)	-0.088*** (0.018)
Credit Line Controls: Amount Granted and Used		
Firm Controls: Value Added, Leverage, Assets, Sales, Age, Ownership		
Firm*Bank FE	Yes	Yes
Quarterly FE	Yes	Yes
R-squared	0.118	0.113
N	1028693	640208

The table reports the OLS estimation of the impact of bankruptcy reforms on credit line interest rates for the subsample of firm-bank observations with non-zero overdraft use. Column 1 uses the entire range of *Score* observations and column 2 uses the range of *Score* observations between 1-4 and 7-9. *After Reorganization* is a binary variable equal to 1 beginning in January 2005 (2005.Q1). *Interim Period* is a binary variable equal to 1 beginning in June 2005 (2005.Q3). *After Liquidation* is a binary variable equal to 1 beginning in January 2006 (2006.Q1). *Treatment* is a binary variable indicating whether the loan was made by a firm which had a *Score* of more than 4 in 2004. See Table I and II for a definition of the remaining variables. The omitted category is "Backed Loans/Tot. Bank Fin." in the case of financing structure variables. Robust, firm clustered standard errors are reported in parentheses. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10 percent levels, respectively.

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