The Causal Effect of Bankruptcy Law on the Cost of Finance*

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ABSTRACT

We exploit the staggered nature of the Italian bankruptcy law reform of 2005-2006 to disentangle the distinct causal impact of both reorganization and liquidation procedures in bankruptcy on firms' cost of loan financing. Using a unique loan-level dataset covering the universe of firm funding contracts we present two major findings: first, that the introduction of a reorganization procedure increased the interest rates on loan financing; second, that the reform that accelerated the liquidation procedure not only decreased firms' cost of finance but also relaxed credit constraints.

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I. Introduction

Bankruptcy law deals with firm distress by means of two procedures: firm reorganization and firm liquidation. While both procedures attempt to mitigate creditors' conflicting positions, reorganization procedures also need to balance these considerations against the need to preserve firm's incentives to repay outstanding liabilities. Moreover, since financial contracts take into account how bankruptcy law deals with conflicts among the stakeholders of a firm, both procedures are likely to affect a firm's cost of finance. In most OECD countries reforms of the bankruptcy code generally modify both procedures at the same time, thus complicating the empirical assesment of the distinct impact of each procedure on firms' cost of finance.[1]

In this paper we exploit the staggered nature of the Italian corporate bankruptcy reform of 2005-2006, which was imposed through two laws. The first law *de facto* introduced a reorganization procedure for firms in distress.[2] The second law significantly accelerated firm liquidation procedures. We investigate the impacts of this reform using a unique loan-level dataset covering the universe of bank funding contracts to firms. This allows us to disentangle how the changes to reorganization and liquidation procedures affect the costs of funding borne by small- and medium-sized manufacturing firms.

We present two major findings. Our first result 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. In principle, the introduction of a reorganization procedure gives rise to two opposite effects. The first is to lower interest payments because of efficiency gains from improved creditor coordination. In the absence of a clear legal procedure, if each creditor negotiates with the firm about the enforcement of respective claims, strategic holdout by other debt-holders may penalize those that reach a deal. As a result, the firm may inefficiently shut down. At the same time, 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 in liquidation, banks are 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) and Fudenberg and Tirole (1990)). Our results therefore show that worse repayment incentives outweigh efficiency gains from improved creditor coordination.

Our second result is that the reform of the liquidation procedure has produced a substantial decrease in the cost of finance. The legislation was intended to make the distribution of liquidation proceeds happen more quickly, and in a more orderly fashion. This led to creditor expectation that bankruptcy recovery rates would improve. Importantly, we also show that the reduction of the cost of finance caused by the liquidation reform has also lessened firms' credit

[1] The most recent examples include Spain, France, and Brazil. The Spanish reform of 2004 merged the two bankruptcy procedures into one; in 2005, Brazil and France each amended both procedures simultaneously.

[2] As we will discuss in section II, pre-reform reorganization procedures formally existed but were hardly used because of the numerous constraints imposed on their content and their legal contestability.

constraints.[3]

We interpret our results as causal because our identification strategy exploits the exogenous change in Italian bankruptcy law and combines it with a feature of Italian bank lending that allows us to implement a differences-in-differences (henceforth DID) methodology. The original Italian bankruptcy code dated back to 1942; the legal change was triggered by one of Europe's biggest corporate governance scandals, which ended with the bankruptcy of the Italian Parmalat corporation at the end of 2003. To avoid violation of European regulations, the Italian government had to act quickly to reform Italian bankruptcy law. Our DID framework also takes advantage of an important feature of Italian bank lending: banks observe the same measure of firm default probability, the Z-score. Therefore, we compare interest rates for firms that are perceived to be at no risk of default with the interest rates of firms for which banks perceive a non-zero probability of default.

To support the interpretation of our results we extend our analysis in several ways. First we analyse how the impact of the procedures varies with the number and concentration of firm-bank relationships. We show that firms with a large number of bank relationships, or a low degree of loan concentration, where gains from creditor coordination are higher, experience a lower increase in interest rates after reorganization is introduced. Secondly, we use CEO forecasts on sales, prices, and production capacity to show that there is no contemporaneous change on the demand side that could rationalize our results. Finally, we address the concern that our results are driven by credit cycles by controlling for the difference between yields on triple A-rated US corporate bonds and Baa-rated bonds.

Italy offers a particularly advantageous environment to test the issues at stake for several reasons. Banking finance is the major source of finance for small- and medium-sized enterprises in Italy, accounting for around 80% of funding sources.[4] In addition, banks' loan contracts are mostly short-term, which implies that the procedures affecting the scope for renegotiation of the terms of funding contracts are compelling for banks' loan pricing decisions. Finally, multi-bank borrowing is a pervasive aspect of firm financing in Italy, with a median of five banks per firm.

A large body of the literature on corporate bankruptcy has studied the ex-post consequences of bankruptcy-law design, in terms of the direct costs they generate and the associated continuation and liquidation rates (e.g., Altman (1984); Weiss (1990); Franks and Torous (1994); Strömberg (2000); Bris et al. (2006)).[5] Lately, a number of contributions have also investigated the indirect costs of bankruptcy, by looking at its impact on corporate financial and real decisions under a cross-country perspective, e.g., Acharya et al. (2006), Quian and Strahan (2007), Djankov et al. (2008), Acharya and Subramanian (2008), Bae and Goyal (2009). More

[3]Defined as firms demanding more credit but being rejected by banks.

[4]See *Bank of Italy Annual Report*, 2009.

[5]Direct bankruptcy costs comprise all the expenses necessary to carry out the process of reorganization and liquidation. Indirect costs are those generated by the corporate response at the prospect of a given legal procedure. See Senbet and Seward (1995) for a survey of the indirect and direct costs of bankruptcy.

specifically, Djankov et al. (2008) analyze the debt-enforcement process in 88 countries and find that it is an important predictor of the level of per-capita income and debt-market development. Bae and Goyal (2009) exploit the differences in creditors' legal protection across 48 countries to show that banks respond to poor debt enforcement by reducing loan amounts, shortening loan maturities, and increasing loan spreads. Davydenko and Franks (2008) use a sample of small- and medium-sized enterprises that defaulted on bank debt in France, Germany, and the UK to show that banks adjust lending and reorganization procedures so as to mitigate costly aspects of bankruptcy codes. By means of a cross-country panel of large firms, Qian and Strahan (2007) finds that higher creditor protection is associated with lower interest rates, longer-term lending, and more concentrated loan ownership.

A second strand of the literature has documented the impact of bankruptcy on firms' credit conditions by employing a within-country perspective. For example, Benmelech and Bergman (2011) shows that waves of bankruptcies in a given industry have an adverse impact on the cost of debt borne by firms in the same industry. Franks and Sussman (2005) shows that in England banks commit to a severe stance towards debt renegotiations, and argue that this is done to avoid firms' strategic default. Interestingly, they also find little evidence of creditors' mis-coordination. Vig (2011) analyses the impact of the 2002 Indian bankruptcy reform on the volume of secured credit, and finds that strengthening creditor rights reduces the demand for secured credit, because borrowers anticipate a greater liquidation bias in bankruptcy.

Our study is directly related to the articles that analyze the effect of bankruptcy reforms on the cost of funding, e.g. Scott and Smith (1986), Berkowitz and White (2004), Araújo et al. (2011). Using cross-sectional data, Scott and Smith (1986) finds that the 1978 U.S. corporate bankruptcy law reform has raised the cost of funding by introducing several novelties, such as expanding the list of personal property exemptions, and allowing the entrepreneur to invoke the automatic stay of creditors' claims. We improve on Scott and Smith (1986) because the timeline of the Italian bankruptcy law reform allows us to disentangle the impacts of both the new reorganization procedure and the new liquidation procedure on the cost of debt financing. Araújo et al. (2011) use the recent Brazilian bankruptcy reform as a natural experiment and compare the average cost of debt financing for Brazilian firms with that of firms in other South American countries. They show that the simultaneous reform of liquidation and reorganization procedures has significantly decreased the average cost of funding borne by publicly traded firms. Our results suggest however that distinct changes in each procedure can have opposite effects on a firms cost of finance. Finally, Berkowitz and White (2004) documents that the provision of larger exemptions in personal bankruptcy has worsened the conditions applied to business loans.[6] Although their results share similarities with ours, the theoretical underpinnings are somewhat different. Indeed, the outcomes in Berkowitz and White (2004)

[6] Analogously, Gropp et al. (1997) studies the impact of exemptions in personal bankruptcy on non-business loans, and also finds that the cost of financing increased.

hinge on the response made by creditors to a reduction of borrowers' degree of liability. In our study, the new reorganization procedure generates a theoretical trade-off that could have resulted in improved firms' credit conditions. We show that the introduction of reorganization procedures that reinforce entrepreneurs' rights to restructure a firm in difficulty triggers a significant increase of the cost of finance to small- and medium-sized firms.

The rest of the paper is organized as follows. Section II describes Italian bankruptcy law and the legal changes that occurred in 2005 and 2006. Section III describes the data set and the variables used in the analysis, and provides descriptives statistics. Section IV presents the underlying theoretical framework to be tested and discusses our identification strategy. Section V presents the empirical results. Section VI addresses threats to the causal interpretation of the results. Section VII concludes.

II. The Italian Bankruptcy Law Reform

A. The Pre-Reform Regime

Under the 1942 Italian bankruptcy act, the insolvent entrepreneur could try and settle with creditors by opening an in-court procedure of reorganization (*concordato preventivo*).[7] However, the pre-reform reorganization procedure was extremely difficult to implement for a number of reasons. First, an entrepreneur's settlement plan needed to feature the full repayment of secured creditors and at least 40% of unsecured creditors' claims. In this way, the law constrained parties' freedom to negotiate, potentially inhibiting the implementation of viable agreements. Moreover, before opening negotiations the court had to assess whether the distressed entrepreneur "deserved" the chance to reorganize, on the grounds that he had been unlucky but was fundamentally honest. Again, even profitable proposals could be rejected for arguments not grounded on efficiency reasons. Finally, in the pre-reform regime the entrepreneur was not protected by the automatic stay of creditors (a provision that protects the entrepreneur during the reorganization process by introducing a standstill on creditor's right to ask for the reimbursement of their claims).

Figure 1 uses data from Italian chambers of commerce to plot the share of opened in-court procedures of reorganization in total bankruptcy procedures across time. In the early 2000s, only 1% of the total new bankruptcy procedures were reorganizations, *concordato preventivo*, highlighting its inefficiency as an instrument of negotiation with banks in the pre-reform regime.

[Figure 1 Here]

Entrepreneurs in difficulty could renegotiate with creditors out-of-court (*accordo stragiudiziale*). However, a deal reached out-of court between the parties could subsequently be nullified by the

[7] The synopsis in this section is based on Stanghellini (2008), chapter 9.

trustee during bankruptcy proceedings, thereby undermining the certainty of negotiations' effects (Costantini, 2009).

Thus the main instrument for dealing with firms in distress at this time was the liquidation procedure. Under the pre-reform liquidation procedure, proceeds were distributed to creditors by a court-appointed trustee, and creditors could neither control nor veto the decisions taken by the trustee, who decided with full autonomy. The combined effect of a judicially directed liquidation procedure, coupled with insufficient creditor power to control the trustee, 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 procedures were very lengthy. Figure 2 uses data from Unicredit SpA, one of Italy's largest retail banks, to plot the distribution of liquidation procedures according to their duration. The blue bars indicate the distribution of liquidation procedures in the pre-reform regime. Figure 2 shows that approximately 95% of the liquidation procedures before 2005 lasted for more than 24 months.[8]

[Figure 2 Here]

Overall, the 1942 bankruptcy act was not able to resolve the problems of distressed firms. The chance to reform such an obsolete system came in the aftermath of the Parmalat crash. 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. The pre-reform Italian bankruptcy law also included an ad hoc procedure to rescue big, distressed enterprises without compromising their long-term viability. However, Italy had already been condemned twice by the E.C. Court of Justice because these types of procedures were deemed to constitute a form of illegal state aid. Therefore, the government needed to intervene so as to avoid an infringement of the European regulations and at the same time restructure Parmalat. To accomplish both objectives, reform of the Italian law governing reorganization was required.

B. The Reform of Reorganization Procedures – Decree 35

In February 2004, the Trevisanato parliamentary committee was set up to restructure the procedures to reorganize distressed firms. At the end of December 2004, the committee proposed the scheme that dictated the terms of the final draft of Decree 35 (in other words, the content of Decree 35 was known to banks and firms by the end of December 2004). It is important to underline that Decree 35 reformed only the in-court and out-of-court reorganization procedures,

[8] In an interview given to an Italian press agency (ANSA) in 2005, Giuseppe Zadra, general director of the Italian Banks Association, stated that the lengthiness of the Italian liquidation procedures generated high costs for banks, inevitably leading to higher interest rates for firms.

and did not involve or discuss any reform of the liquidation procedure.[9]

Decree 35 empowered the legal instruments that parties could use to resolve insolvency by renegotiating outstanding financial contracts either in-court or out-of-court. More specifically, Decree 35 introduced two crucial reforms: first, it strengthened the judicial validity of out-of-court agreements by limiting the impact of claw-back provisions. In the pre-reform regime, these had constituted the main impediment to the effectiveness of out-of-court restructuring. Second, it greatly reformed the in-court reorganization procedure (*concordato preventivo*). The new law prescribes that the debtor is the sole party entitled to open the procedure and formulate a restructuring plan, while continuing to run the company under the protection of an automatic stay of creditors' claims. The court ratifies the debtor's proposal if the majority of creditors vote for it,[10] or if the judge believes that, even if creditors reject the plan, they will be made no worse off by the proposal than under any alternative.[11]

Figure 1 suggests that Decree 35 has had significant impact on the relative use of reorganization procedures. Indeed the share of reorganization procedures has increased from approximately 1% of total procedures before 2005, to over 10% of the total number of procedures opened in 2009.

C. The Reform of Liquidation Procedures – Law 5

In May 2005, the government was mandated to amend the liquidation procedure. The declared objective of this reform should have been to speed up the liquidation procedure. However, although major stakeholders (e.g., the banks association) had lobbied intensively for a change of the liquidation phase, the reform of liquidation procedures finally took place on January 9, 2006, when parliament enacted Law 5.

The new law set in place a system that was able to preserve creditors' interest in the reimbursement of their claims and avoid conflicts among them. Law 5 prescribes that proceeds' distribution must respect the Absolute Priority Rule (APR).[12] To speed up the procedure the law prescribes that creditors can set up a committee, which can be composed of three or five members, and must represent all the classes of creditors equally.[13] Under the new regime, the creditors' committee can ask for the substitution of the trustee, must give its consent to the trustee's actions, and, most importantly, can veto the continuation of the firm's activity if this

[9]The reconstruction of the timeline of the Italian reform is based on research conducted using the Lexis-Nexis database, on Italian press articles related to the 2005/2006 bankruptcy reforms. Keywords "legge fallimentare", time span January 2004 - December 2006.

[10]The new law also allows the debtor to discriminate among creditors by class. In this case, for the agreement to be approved, a majority vote is not sufficient, and a more sophisticated system of qualified majorities is devised.

[11]This is similar to what happens in the U.S. under Chapter 11 with judge's *cramdown* decision.

[12]The APR determines the order of reimbursement of creditor claims in bankruptcy. It states that creditors who have secured their loans have seniority over other creditors and, therefore, have the right to be paid back first.

[13]Members are formally appointed by the bankruptcy judge, but following creditors' indications.

harms creditors' interests. Finally, the committee can suspend the liquidation phase if it approves a settlement agreement proposed by the same creditors, the trustee, a third party, or the debtor.

Figure 2 shows that Law 5 significantly reduced the time taken by liquidation procedures. The red bars indicate the distribution of liquidation procedures after Law 5 was introduced. Whereas approximately 95% of the liquidation procedures before 2005 lasted for more than 24 months, the share of such durations decreased below 60%. More than 25% of the procedures were closed within 18 months after the introduction of Law 5, as opposed to 2% pre-reform.[14]

III. Data

An empirical investigation of the relationship between bankruptcy law and the cost of finance of firms requires extensive data. This should comprise information not only about loans, but also concerning the financing structure and balance sheet characteristics of firms. In addition, given the high incidence of multi-bank lending in Italy (Detragiache et al. (2000)), it is desirable to identify all the contracts in which the firm has engaged.

A. Data sources

We obtained information on interest rates charged to firms from the *Taxia* dataset. This dataset is a subset of the Central Credit Register (*Centrale dei Rischi*), and we mainly used it to compute aggregate financial characteristics of firms. Finally, balance sheet data on the universe of Italian companies came from the *Cerved* database.

The Central Credit Register In order to comply with Italian banking regulation, 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. For each borrower-bank relation we thus have information on financing levels, granted and utilized, for three broad categories of financing: term loans, revolving credit lines, and loans backed by account receivables. The information on term loans is further broken down by other financial characteristics, such as maturity, presence of real and/or personal guarantees, and status of the loan (restructured or not). Note that the information in the Central Credit Register is collected, maintained, and thoroughly scrutinized by the Italian Central Bank, the Bank of Italy, and is an essential component of its banking sector supervision activity.[15] The Central Credit Register also includes unique firm and bank

[14] We provide a discussion comparing the Italian bankruptcy following its reform, with the US bankruptcy law.

[15] This dataset has been used by several papers, including Detragiache et al. (2000), Sapienza (2002), Bonaccorsi Di Patti and Gobbi (2007).

identifiers that enable us to match this dataset with interest rates and balance sheet data.

Taxia The information in Taxia is collected by the Bank of Italy as part of its supervision of the banking sector, in addition to the Central Credit Register. It covers a subgroup of banks which accounts for more than 80 percent of total bank lending in Italy. 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 amount and maturity of all newly issued term loans. The data collection process of *Taxia* was introduced in 2004, so we have reliable loan-level information starting from the second quarter of 2004.

Cerved database Balance sheets as well as profit and loss accounts of firms come from the Cerved database, collected by the private company Cerved Group. This data covers the universe of Italian corporations (about 800,000 firms) and is used, amongst others 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 small- and medium-sized firms. This is particularly important for our purposes, since the bankruptcy law we are interested in applies to this type of firm. From this dataset, we collect yearly balance-sheet information on assets, revenues, value added, and other characteristics such as location, date of constitution, and industry. In addition, the Cerved data provides an indicator of the default probability of each firm, the *Score* variable, that will play a crucial role in our analysis.

Other Data Sources In addition to these data sources, we use complementary information from the Invind survey. Invind is a yearly survey of a subsample of manufacturing firms, run by Bank of Italy. The survey collects, amongst other data, information about CEO forecasts of sales growth, prices, and other qualitative information, such as production capacity and capacity utilization. The number of firms in each cross section is around 1,500 and the representativeness of the survey is ensured by the stratification of the sample by sector of activity, firm size, and region.

Since only small- and medium-sized firms were affected by the policy change, we omitted data on firms with more than 500 recorded employees.[16] Further details on data organization and data cleaning can be found in Appendix A. The final dataset is of quarterly frequency, and runs from the second quarter of 2004 to the last quarter of 2007, for a total of 203,355 distinct firms and 1,097 banks.

[16]Firms above this threshold have access to a different set of procedures.

B. Variables and Descriptive Statistics

Interest Rates The dependent variable of interest is *Loan Interest Rate*, which computes the gross annual interest rate for newly issued term loans, inclusive of participation fees, loan origination fees, monthly service charges, and late fees. This rate is calculated so that the present value of loan installments equals the present value of payments. We also define the following term loan characteristics: *Size of Loan* is the 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. Unlike loans, credit lines are a relatively more homogeneous financial product, and we consider only two main characteristics: *Use of Credit Lines* is the total amount on the credit lines utilized by the firm during a quarter; *Granted Credit Lines* is the total credit line the firm was granted by the bank for a quarter.

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

[Table I Here]

The interest rate charged for a loan in the sample period is 5.15%. However these rates varied substantially since at the lowest and at the highest quartiles of the distribution, the interest rates were 4.06% and 6.03%, respectively. The average loan in the sample amounted to approximately 383,000 Euros. However, in our data we capture 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.

The second panel relates interest rates to the maturity of loans. On the one hand, liabilities with longer maturity may face greater credit risk, but, on the other hand, they are more likely to be granted to creditworthy firms. As in Strahan (1999) and Santos (forthcoming), we find that short-term loans with less than one-year's maturity, which constitute around two-thirds of all loans, have a significantly higher interest rate than medium- or long-term loans.

The third panel relates interest rates to the presence of collateral as measured by the existence of guarantees. All else being equal, collateral should make the loan safer. However, because of a self-selection effect, banks may require collateral from firms that they consider riskier (Berger and Udell (1990)), so collateral can be associated with both higher and lower rates. We find that loans guaranteed by real securities have significantly lower interest rates attached to them. However, as can be seen from the sample size, only a minority of firms seem to guarantee loans with real securities. Instead, we find that personal guarantees are much more prevalent as

collateral in Italy, and that the interest charged on these loans is significantly higher than the interest charged on loans with real guarantees.

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

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

[Table II Here]

Consistent with previous evidence on Italian firms, we find that loan financing accounts for a substantial share of bank financing. Term loans represent, on average, 37% of total bank financing of the firm, while credit lines represent on average 14% of total bank financing. Even though backed loans account for 49% of total bank financing, they are mostly used for liquidity purposes. Finally, total bank financing represents 57% in terms of book value of assets of the firm.

Balance Sheet Variables On the basis of balance sheets we compute several characteristics of firms. Note that in our empirical framework these variables are lagged one year with respect to financial variables. We define *Age of Firm* as the difference between current year and year of incorporation of the firm. *Value Added* and *Total Assets* are defined on the basis of the Balance Sheet accounts. *Total Sales* are firm revenues, as taken from 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 default probability of each firm that takes a value from one (the safest) to nine (the most risky) and is computed using balance sheet indicators (assets, rate of return, debts, etc.) according to the methodology described in Altman (1968) and Altman, Marco and Varetto (1994). Cerved Group classifies firms into four categories on the basis of the *Score* variable: (i) "safe" (*Score* =1,2), (ii) "solvent" (*Score* =3,4), (iii) "vulnerable" (*Score* =5,6), and (iv) "risky" (*Score* =7,8,9). *Leverage* is defined as the ratio of debt (both short- and long-term) over total assets, as taken from balance sheet data.

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 firm age suggests, the sample includes not only newly created firms, but also relatively old 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. At the lowest quartile, firms are solvent, but at the median, firms are already classified as vulnerable by banks.

IV. Theoretical and Empirical Framework

A naive comparison of financing conditions of firms before and after the legal changes could be misleading, because such differences might also reflect unobserved economic conditions. We therefore examine the impact of the reforms on the financing conditions of firms by employing a differences-in-differences methodology. We introduce a simple theoretical framework to motivate our empirical strategy and to explain the choice of the control group. Moreover, this framework helps to illustrate the theoretical predictions that we bring to the data in our empirical analysis.

A. Testable Predictions

Assume the economy is populated by risk-neutral banks and firms. As is standard in the corporate finance literature we assume that banks operate in perfectly competitive financial markets and firms have all the bargaining power. Each firm is identified by its investment project, which can be either *safe* or *risky*.[17] Firms need banking capital to finance their projects. All investment projects last two periods, with the difference that the *safe* ones always succeed whereas the *risky* ones might fail, with some probability at the end of the first period. In the case of first period failure, the continuation of the *risky* projects depends on the bankruptcy code: either the project is automatically liquidated following failure, or the law may allow the entrepreneur to open a reorganization procedure. Again, this applies only to *risky* firms, because the *safe* ones never fail.

As we document below, banks in our sample can identify those companies that carry out projects with almost no probability of default (*safe*), and those with projects that are likely to fail (*risky* types). This naturally maps into our DID framework, as the latter assesses how the introduction of each new bill has had an impact on the spread between two groups of firms: one group that comprises all firms logically unaffected by bankruptcy codes because never at risk of failure (*control* group), and one group of firms whose cost of finance depends on bankruptcy law because their business project is at risk of failure (*treatment* group).

[17] To simplify matters, in our framework the project type is not chosen by firms but is assigned by nature.

Decree 35—Reorganization Procedures The reform of the reorganization procedure has reinforced an entrepreneurs' right to open a restructuring phase either in-court or out-of-court while staying in control of the firm. To understand the impact of this reform on spreads, we distinguish between two scenarios for the contracting environment.

In the first scenario we consider, agents in the economy negotiate in the absence of agency costs. Following this presumption, a strand of the literature on bankruptcy has 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, the conflicts between creditors would be exacerbated (Gertner and Scharfstein (1991)). This is demonstrated by the following example: if the continuation value of a risky project is positive following first period failure, the efficient decision from the banks' point of view features 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 procedure of negotiation a problem of strategic holdout may arise. If a single bank negotiates a haircut to let the firm continue, all the others have an incentive to free-ride and preserve the value of their claims. Therefore, under this scenario the introduction of a renewed reorganization phase should have reduced the interest rate difference between *safe* and *risky* firms.

In the second scenario, the contracting environment is characterized by a problem of repeated agency costs. This agency problem reduces the value of the risky projects' pledgeable income to the bank.[18] Indeed, the literature has 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, consider a risky project that fails at the end of the first period because the entrepreneur has behaved opportunistically. In these circumstances, the optimal contract would require the project's termination. However, if the project'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 on the first-period contracting stage: the entrepreneur knows that behaving opportunistically does not harm his chances to complete the project, therefore he requires a larger agency rent to implement the project, and this reduces the bank's pledgeable income.

Prediction 1. *The introduction of a reorganization procedure can either increase or reduce the interest rates' difference between firms into the* risky *and into the* safe *groups. This depends on whether the gains from creditor coordination offset the costs caused by the agency problem.*

The structured reorganization phase means reduced creditors' conflicts. Since these remain

[18] For instance, this may be consistent with a model in which the entrepreneur needs to put effort into a risky project (and this decision is unobservable and unverifiable), otherwise the success probability of the project is lower and the entrepreneur gains private benefits. Note that by pledgeable income we mean the surplus delivered by a project net of the cost related to the investment allotment and private benefits (Tirole (2006)).

despite the agency problem, the next corollary follows.

Corollary 1. *The higher the number of a firm's bank relations, and the lower a firm's loan concentration, the greater should be the decrease in interest-rates differences due to gains from creditor coordination.*

Law 5—Liquidation Procedure Law 5 has considerably improved creditors' ability to take coordinated decisions and control the phase of liquidation. At the same time, the law prescribes that the failed entrepreneur is dismissed from the venture. Independent of the presence of asymmetric information, we expect that these changes will result in larger recovery rates for the banks and reduced interest rate spreads between *safe* and *risky* firms.

Prediction 2. *The reform of the liquidation procedures should have reduced the interest rates' difference between* risky *and* safe *firms.*

As for Decree 35, the reduction in interest-rate differences should be stronger if there are greater potential coordination gains.

B. Empirical Framework and Predictions

Our dependent variable of interest is the firm's cost of finance which we measure through the interest rate charged on newly issued loans. This is the main source of investment financing for firms in Italy. Unlike measures of the average cost of finance, the interest rate on newly issued loans should directly capture the impact of the legal changes.

Differences-In-Differences In our theoretical framework, we argued that the cost of finance for firms with a zero probability of distress was not affected by the bankruptcy code. Hence, changes in the financing conditions of these firms should only reflect changes in the bankruptcy-free cost of finance, and allow the econometrician to account for unobserved changes in market fundamentals. This suggests that assignment to treatment and control groups in the DID setting should be based on a measure of the perception of the firm's default risk **at** the time a funding contract is negotiated.

The identification strategy takes advantage of a feature of Italian bank lending: Italian banks observe a common Z-score (henceforth Score) to measure the default probabilities of firms. Our idea is to compare interest rates for firms that, on the basis of Score, are considered at no risk of default with those for which banks perceive a non-zero probability of default. Since Score will play the crucial role of assignment variable in our empirical strategy, we discuss in greater detail its computation, timing, and release in what follows.

The first advantage of our assignment variable is that the same firm Score is observed by all the banks, and they use it before making loan decisions. The second advantage of our assignment

variable is that the algorithm for the computation of Score did not change in response to the bankruptcy reform. A third advantage of Score is that it is predetermined at the moment of the reform. Indeed, the Score of a firm in a given year is, due to accounting rules and data collection requirements, computed on the basis of lagged balance sheet information. This implies that firms, at the time of the reforms, could not self-select into Score categories based on the anticipated costs or benefits of the same reforms.

Empirical Features of Score Figure 3 summarizes the key features of our assignment variable. The top-left panel of Figure 3 is taken from Panetta et al. (2007)[19] and plots the Score variable against an indicator of actual default incidence. The remaining figures are computed on the basis of our pre-reform sample. The top-right panel of Figure 3 plots the distribution of firms into each Score category. The bottom panels plot the Score variable against the interest-rate spreads on loans (bottom-left) and credit lines (bottom-right).

[Figure 3]

The top left panel of Figure 3 shows that Score is an accurate predictor of actual default incidence among Italian firms. Firms with a Score of three in a given year have a probability of defaulting within the next two years (i.e., during years t or $t+1$) of less than 1%, but this probability rises to 10% for firms with a Score of 7. The top right panel of Figure 3 shows that there are relatively few firms at the extremes 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. The panels at the bottom show that there is a strong positive relation between Score and interest rates on loans and credit lines. The best Score in terms of creditworthiness is on average associated with a loan interest rate of 4%, whereas the worst category has an average loan interest rate of around 5%. Note also that in most figures the main distinction seems to be between between Score one to four, not Score five to nine.

Specification and Hypothesis Testing These empirical patterns suggest, as a first step, that we should assign firms in Score categories one to four to the control group, and compare them to a treatment group composed of firms in Score categories five to nine. This classification has two advantages. First, it mirrors the split of the Score categories at which bankruptcy rates and interest-rate spreads start to increase significantly. Secondly, it enables the construction of larger treatment and control groups, and so limits the influence of extreme observations.

Figure 4 gives a graphical representation of our empirical framework. There are potentially three relevant dates. The first threshold corresponds to the announcement and implementation of Decree 35 in the first quarter of 2005. The second threshold corresponds to the announcement

[19] Panetta et al. (2007) analyzes the importance of merger informational effects on bank lending between 1988 and 1998.

of a future reform on liquidation procedures at the beginning of the third quarter of 2005.Q3. The last threshold corresponds to the announcement and implementation of Law 5 on liquidation procedures in the first quarter of 2006. β, γ and δ correspond respectively to estimates of the differences in the dependent variable between treatment and control group across these thresholds, whereas α represents baseline differences before the reform.

[Figure 4]

The left panel and right panels depict the two distinct scenarios outlined in the theoretical framework. Under the first scenario β and δ are both negative, i.e., they decrease the spreads between treatment and control groups across reforms. Under the alternative scenario β is positive and δ negative, i.e., the reorganization reform increased spreads, while the liquidation reform decreased them. In both cases the sign of γ is undetermined, as it potentially captures anticipation effects of the liquidation reform.

Multivariate Analysis Let Y_{ijlt} denote the interest rate to firm i by bank j on loan l at time t.

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

where $Treatment_i$ is a dummy variable equal to one for firms that, in 2004, have a Score between five and nine, 0 otherwise. $After\ Reorganization$, $Interim\ Period$ and $After\ Liquidation$ are time dummies associated to the thresholds of the reforms described in the previous paragraph. These dummies take the value 0 before the date of the reform and one afterwards. The model includes also a rich set of loan and firm characteristics. X_{ijlt} are loan characteristics such as maturity, collateral, or loan size. 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. ϵ_{ijlt} denotes the error term, clustered at the firm level.

We estimate two versions of this model: one specification including only quarter and industry fixed effects, and a second specification including $Firm \times Bank$ fixed effects. In the former case, we allow for composition effects in treatment and control groups whereas in the latter case, we exploit specific variation within the firm-bank relationships. Note that we separately address

composition effects and market participation as outcomes of the reforms.[20]

V. Results

A. Cost of Finance

Differences-In-Differences Plots Figure 5 provides a first insight into changes of average interest rate set on newly issued loans between the second quarter of 2004 and the fourth quarter of 2007. The left panel of figure 5 separately plots average interest rates on loans for control firms (black line, square) and average interest rates on loans for treated firms (red line, triangle). The right panel plots the difference in average interest rates on loans between the two groups of firms for each quarter. Vertical lines represent legislative reforms that occurred in the first quarter of 2005 for Decree 35 and in the first quarter of 2006 for Law 5.

[Figure 5]

The left panel of figure 5 shows that average loan interest rates increased between the beginning of 2004 and the end of 2007. During this period, the average loan interest rate of control firms increased from 3.89 percentage points in the second quarter of 2004 to 6.09 percentage points in the last quarter of 2007. Similarly, average interest rates charged on loans of treated firms increased from 4.46 to 6.49 percentage points during the same period.

The right panel of figure 5 shows that differences in average loan interest rates before Decree 35 were stable at around 57 basis points. The fact that loan rates of both groups of firms were on similar time trends before the first reform seems to validate the common trend assumption embedded in the DID setting. When Decree 35 was announced at the beginning of 2005 the difference in loan rates increased slightly, before experiencing a significant drop of approximately ten basis points upon the announcement of Law 5. This suggests that anticipation effects in the 'intermediate' period might complicate the empirical assessment of the liquidation reform.[21] After Law 5 was passed, differences then decreased again to around 45 basis points. 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. Columns 1 and 3 of table III control for loan and firm characteristics, whereas columns 2 and 4 also include $Firm \times Bank$ fixed effects.

[20] We thank Laurent Bach for enlightening discussions on this issue.

[21] For instance, in a press release to ANSA (Italian press agency) in November 2005, Giuseppe Zadra (the general director of the Italian Banks Association) stated that the approach taken by the government with respect to the reform of the liquidation procedure was perfectly agreeable, but it was still necessary to implement it as soon as possible.

[Table III]

Our results reject the prediction that both reforms decreased the marginal cost of loan financing of firms. The DID estimates of the impact of the reorganization reform suggest that the reform increased the cost of loan financing for treated firms relative to control firms. While the difference is small and not statistically significant in the cross section, it increases to 4.3 basis points when exploiting variation within firm-bank relationships. The increase in interest rates is especially strong in columns 3 and 4 when comparing control group firms to a subsample of treated firms that are perceived to be significantly more likely to default. Indeed, the seven basis points increase in the cost of financing of treated firms following Decree 35, corresponds to an increase of conditional baseline spreads of 17.5%. In principle, the introduction of a reorganization procedure gives rise to two opposite effects. The first effect is to lower interest payments because of efficiency gains from greater creditor coordination. At the same time, reorganization might exacerbate the debtor's incentives to behave in an opportunistic way, and thus increase the ex-ante cost of financing. Our results therefore show that worse repayment incentives outweigh efficiency gains from greater creditor coordination.

The liquidation reform decreased interest rate differences. This result has an intuitive rationale, since the reform of the liquidation procedure made the distribution of liquidation proceeds faster and more orderly, and creditors expected improved recovery rates in bankruptcy. The magnitude of the coefficient is close to the estimates of the reorganization reform and suggests that these effects could empirically wash out when assessing simultaneous reforms. Finally, estimates of the differences in the interim period hint at the presence of anticipation effects in the cross section.[22]

The analysis in Table III comprises a number of controls at the firm and contractual level. Although we do not make causal statements on their interpretation, we can still discuss their impact and possible interpretation. The existence of either real, personal, or other guarantees as opposed to no guarantees increases loan rates. This is consistent with Strahan (1999), Davydenko and Franks (2008), and Santos (2010). Maturity decreases interest rates: this idea was presented in the discussion of descriptive statistics. Our evidence suggests that the size of a loan decreases interest rates. The larger size of a loan may generate more credit risk, but it can also allow a decrease in rates due to economies of scale in processing and monitoring. Turning to firm characteristics, we find that firms with higher leverage face higher interest rates. Sales significantly decrease rates as in Santos (2010), whilst age and group affiliation have no significant impact.[23]

[22]We find that treatment effects are relatively higher for short-term as opposed to medium- and long-term loans. We also find weak evidence that secured credit is relatively worse off than unsecured credit after the introduction of reorganization. Results are available on request.

[23]In robustness checks we address feedback effects on covariates by leaving out loan and financing characteristics from the specification. The reason is that, unlike balance sheet characteristics, these financing variables are likely to respond quickly to the costs and benefits of legal changes. Results remain qualitatively similar. Results are

Creditor Coordination Gains To further link our empirical evidence to the theoretical framework, we exploit heterogeneity in the benefits of both reforms. While the scope for opportunistic behaviour is in principle common across firms, benefits from coordination are not. We construct two indicators of creditor-coordination problems. The first is the number of bank relations of a firm, and the second is a Herfindahl index of loan concentration. The use of a Herfindahl index allows us to take into account that certain bank links are negligible in terms of amounts granted. The indicators are computed in 2004, since afterwards they might have changed as a consequence of the reforms. Table IV re-estimates our DID specification for subsamples split on the basis of 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 number of banks indicator. The costs of the reform were mainly borne by firms with a small number of bank relations. For firms with less than four bank relations, interest rates significantly increased following the introduction of reorganization, while not decreasing significantly following the reform of the liquidation procedures. In the subsample of firms with a high number of bank relations, reorganization had a significantly smaller and statistically non-significant impact. This contrasts with a decrease of seven basis points in loan rates after the second reform. The assumption that the coefficients of both reforms were equal across samples is rejected, lending support to the idea that the benefits of both reforms mainly accrued to firms with high gains from coordination. This conclusion is confirmed if loan concentration is used to split the sample.

Credit Lines We extend our analysis to the cost of finance of credit lines. A credit line contract involves the bank providing the firm with a sum of money at a certain interest rate. In turn, the firm can use the money when needed. Although credit lines represent a significantly smaller fraction of total bank financing, they present two advantages in our empirical analysis. First of all, the interest rate on a credit line is observed across time, whereas a loan interest rate is only observed at loan origination. Second, for credit lines, banks can typically retain the right to modify the pricing terms of the relationship at the occurrence of contract-specified events.

The left panel of figure 6 plots average credit-line interest rates for control (black line, square) and treatment (red line, triangle) firms. The right panel plots the difference in average interest rates on credit lines for each quarter.

[Figure 6]

The patterns in credit-line rates are consistent with those on loan interest rates. We again find a stable level difference in the pre-reform period of approximately 80 basis points followed by an

available on request.

increase in the difference following Decree 35. Interestingly, the drop in interest rates for credit lines occurs precisely at the moment of the Law 5 reform. This is consistent with automatic renegotiation mechanisms being in place for credit lines, which are therefore less subject to anticipation effects.

We next exploit the fact that credit lines are easier to track empirically by plotting changes in average quarterly interest rates on credit lines within each Score category in the quarter preceding and following the reforms. The left panel of figure 7 focuses on the announcement of Decree 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 announcement of Law 5 and plots changes in interest rates between 2005.Q4-2005.Q3 (black line, square) and 2006.Q1-2005.Q4 (green line, triangle).

[Figure 7]

The black line (square) on the left panel of Figure 7 shows that credit-line interest rates in the two quarters preceding Decree 35 remained stable across the entire Score range. Even after the announcement of the reorganization procedure credit-line rates remained unchanged for lower Score categories. Only firms in higher Score categories experienced an increase in their average interest rates. Whereas the interest rate for a firm in Score category eight did not change before Decree 35, interest rates immediately increased by approximately 20 basis points at the announcement of Decree 35. The right panel of Figure 7 shows that Law 5 reversed interest rate movements. In the two quarters 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 Decree 35 had not yet vanished. Immediately after Law 5 was passed, within Score interest rates decreased most significantly for higher default risks.

Finally, we estimate our cost of finance specification for credit lines in table V. Since credit lines are a more homogeneous financing instrument we only have amounts used and granted in our data in terms of specific information about credit lines.

[Table V]

Table V confirms our previous findings on loan interest rates. Credit-line interest rates increased by eight to eleven basis points following Decree 35, but decreased by three to six basis points following the reform of liquidation procedures. One interesting difference between the estimates on loans and credit lines is their magnitudes. Whereas the net effect of the sequential legal changes nearly washed out for loans, credit lines displayed a significantly larger increase in interest rates following Decree 35.[24]

[24]We check the robustness of our results on credit lines by restricting the sample to actively used credit lines. The results remain unchanged.

B. Alternative Interpretations

We now address concerns related to the causal interpretation of our DID estimates on the pricing of a loan contract. The first issue is related to unobserved demand shocks which differentially affect treatment and control groups. The second issue is related to the existence of a credit boom during the sample period, which again would differentially affect both groups of firms.

Demand Shocks We interpreted estimates from the DID estimation as being caused by successive reforms of bankruptcy procedures, which affected the expected recovery rates on the side of banks. At the same time, prices of loan contracts may also have changed due to demand shocks. These can be relevant in our empirical strategy, insofar as our treatment and control groups are not randomized. Addressing this issue is difficult, since the price of loan contracts depends on anticipated demand shocks.

To address this issue we rely on our 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. In Figure 8 we provide a first graphical check of the effect of differential demand shocks to treatment and control firms. The left panels of the figure 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.

[Figure 8]

The top panels in figure 8 plot forecasts of sales growth. Between 2001 and 2007, the average forecast of sales growth for treatment group firms was 6-7%, but only 5% for control group firms. As long as these level differences remain constant, they do not invalidate our DID framework. The left 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 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, again, both groups of firms seem to display parallel trends.

To check the robustness of our main results to demand shocks we embed these forecasts into our multivariate DID specification. We proceed as follows: in each year we compute average firm forecasts by industry code (two- and three-digit level) and by size dummies (five categories), Score, or binary treatment group indicator. We assign these average forecasts by industry-size-year and industry-score-year to each firm in our population of firms in the economy. If we cannot

construct an average forecast in a given cell, we assign the industry-year average forecast. We then re-estimate our baseline loan-interest rate specification. Results are presented in table VI.

[Table VI]

Each set of columns is divided according to the assignment criterion: *Sic*Score*, *Sic*Size*, *Sic*TC*. Table VI confirms graphical evidence suggesting that demand factors do not confound our estimates of the impact of the bankruptcy reform. All estimates of the impact of reorganization and liquidation remain similar in 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 results in increases in the price of the loan contract.

Credit Boom An alternative threat to the causal interpretation of our results is the behaviour of international credit markets during the sample period. The argument is that in the period leading up to the crash of Lehman Brothers, credit markets were booming, and riskier firms were able to obtain loans at better conditions. Although this is not consistent with our results on the introduction of the reorganization procedure, credit booms might explain the lower interest rates after the liquidation phase was reformed.

To address this issue we construct a proxy for international credit markets cycles. We collect information on Moody's corporate bond yields from the Federal Reserve Board (`http://www.federalreserve.gov/releases/h15/current/`) and we compute *US BAA/AAA* as the difference between yields on US corporate triple A-rated bonds and Baa-rated bonds. The use of US measures of credit-market cycles has two advantages. First, the US corporate bond market provides a very good first approximation for such credit cycles. Since it is the most liquid bond market, European issuers would often raise capital there, and swap the proceeds immediately into Euros. Second, we need a measure of interest rates which is not affected by the Italian bankruptcy reform. Table VII augments our DID specification by interacting the treatment group dummy with *US BAA/AAA*.

[Table VII]

The magnitude and statistical significance of our estimates are unchanged. International credit market conditions are significant only in the cross-sectional estimates, but not in the fixed-effects estimates. The sign on the coefficient on US spreads would suggest that Italian loan spreads behave counter-cyclically. This result is not surprising when considering not only the sluggish growth of the Italian economy during the sample period, but also the fact that Italian banks have not been greatly affected by the 2009 financial crisis.[25]

[25] More precisely, no bank needed the intervention of the Italian government during the recent financial crisis.

C. Other Robustness Checks

Specifications We used the Score variable in 2004 in order to divide firms into treatment and control groups. This specification not only allowed us to construct more equally sized treatment and control groups, but also mirrored the split of Score categories at which bankruptcy rates and interest-rate spreads start significantly to increase. Table VIII provides robustness checks of our treatment-effect specification.

[Table VIII]

The first column interacts the reforms with the 2004 Score instead of the binary treatment and control-group definition. Our results suggest that the relative interest-rate difference between the 1st and the 9th category increased by 16 basis points after Decree 35, and decreased by 13.5 basis points after the liquidation reform. The second column excludes firms that changed treatment group afterwards, on the basis of their 2004 Score variable. One should note that, as long as the switching behaviour into these groups occurs on the basis of lagged balance-sheet variables, our identification strategy should not be affected. Results in column 2 are similar in magnitudes and precision to our previous results. The last column classifies firms into treatment and control group on the basis of their yearly Score indicator. This addresses the concern that the decrease in interest rates following Law 5 might be driven by attrition in the treatment-group sample.

Bank Composition A final robustness check relates to composition effects of a firm's banking relationships. If firms mitigate the consequences of reforms by matching with different banks then it would be necessary to account for such changes, as well. Table IX re-estimates our baseline regression, including two measures of a firm's banking relationships. The first is an indicator of change in the number of bank relationships, the second is an indicator of change in the identity of a firm's banks.

[Table IX]

Our main results remain very similar with respect to our baseline regression. Column 3 includes both of our indicators for a firm's banking relationships. Our estimates suggest that changes in the identity of banks in the portfolio are associated with lower interest rates, but that these changes do not confound our estimates on the bankruptcy reforms.

Anticipation Effects In Decree 35 Graphical analysis of the DID plots suggested that the level differences between treatment and control-group firms were stable before Decree 35. But these differences in interest rates might be misleading, as the aggregate effect can veil anticipation effects for parts of the interest rate distribution. For instance, anticipation effects may have existed for the top quantiles of the interest-rate distribution.

[Figure 9]

To address this concern, we plot the distribution of interest-rate differences between treatment and control-group firms for the two quarters preceding Decree 35. The left panel of figure 9 plots interest rate differences in the second quarter of 2004 (blue line) and the third quarter of 2004 (red line). The right panel these differences in the third quarter of 2004 (blue line) and the fourth quarter of 2004 (red line).[26] The right panel clearly shows that the distribution of interest rate differences were stable in the last and second to last quarter before the reform. The interest rate difference between a firm at the 20th percentile of the treatment distribution and a firm at the 20th percentile of the control distribution was approximately 50 basis points in the third and fourth quarter of 2004. The left panel shows that there is again no clear pattern of interest rate differences between the second and third quarter of 2004.[27]

VI. Additional Evidence: Credit Constraints & Non-Price Effects

So far the focus of our analysis has been on the impact of the two bankruptcy procedures in terms of interest rates charged on a loan contract of an Italian small- or medium-sized enterprise. However, it is also possible that these procedures modified choices on non-price dimensions.

Credit Constraints The reform of the liquidation procedure is likely to have relaxed financing constraints and increased participation in the credit market. This was partly reflected in differences in magnitude and significance between our cross-sectional and fixed effects specifications. While within firm-bank, estimates identify the impact of the reforms using only observations of firms with continued access to banking finance, cross-sectional estimates allow for identification of firm observations observed only after the reforms. It is therefore not surprising that the increase in interest rates following the introduction of reorganization procedures was significantly smaller and statistically not significant in the cross section, while the decreases in interest rates after the liquidation were larger and statistically significant in the cross-sectional specification.

To further investigate the issue we use complementary information coming from Invind, the annual survey of manufacturing firms managed by the Bank of Italy. Although the survey is collected only for a subsample of approximately 1,500 firms it has the advantage of containing information about loan rejections, which is not provided in the Central Credit Register. More specifically, 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 demanded more credit but was was rejected.[28]

[26] We bootstrap the sample so as to estimate confidence intervals on the differences in interest rates.

[27] In unreported regressions we implement placebo experiments to show in a regression framework that interest rates did not change prior to the first reform.

[28] Note that the concept of credit constraints is potentially broader. In principle it also includes those firms that were discouraged from applying in the first place. Since 2004, the Bank of Italy also includes a question

Figure 10 plots the credit constraints of Italian manufacturing firms between 2001 and 2007. The left panel separately plots the share of credit-constrained control firms (black line, square) and the share of credit-constrained treatment firms (red line, triangle). The right panel plots the difference in the share of credit-constrained firms between the two groups of firms for each year.

[Figure 10]

Figure 10 shows that the share of credit-constrained firms significantly decreased after 2004 for the treatment group, but remained stable for the control group. Similar to Guiso and Parigi (1999), we find that before the bankruptcy reform, the share of credit-constrained firms in the treatment group was approximately 10%. This share decreased to around 5% in 2006 and 2007. The share of credit-constrained firms in the control group remained stable across time at around 1%. The left panel shows that the difference in the share of credit-constrained firms decreased by approximately four percentage points from 2001 to 2007, the bulk of the variation occurring in 2005/2006. In appendix X we show that the drop in credit constraints is statistically significant and not confounded by other factors. This result is particularly interesting because, by standard revealed preference argument, this change was welfare-enhancing.

Number of Bank Relations Our results, linking the benefits of both reforms to gains from creditor coordination, imply that the cost of multi-bank lending has decreased as a result of the reforms. We explore whether this implication is empirically verifiable.

The left panel of Figure 11 separately plots the average number of bank relations of control firms (black line, square), and the average number of bank relations of treated firms (red line, triangle). The right panel plots the difference in the average number of bank relations between the two groups of firms for each quarter.

[Figure 11]

Figure 11 shows that the number of bank relations of treated firms has increased significantly more than the bank relations of control firms. At the beginning of the sample period, the difference in the number of bank relations was around 0.25, but this difference increased to 0.4 at the end of the sample period. The increase in the relative number of bank relations occurs at the moment of the liquidation reform.

on such implicit constraints. The results remain robust even with the inclusion of this more general definition of credit constraints.

VII. Conclusion

We contribute to the empirical analysis of bankruptcy by disentangling i) the impact of the introduction of a reorganization procedure from, ii) the impact of the liquidation design on the cost of debt finance borne by small- and medium-sized firms. We exploit the staggered nature of the Italian bankruptcy law reform of 2005 and 2006, and examine the impact of the legislation using a loan-level dataset covering the universe of firm funding contracts. We reach two major results. The first is that the introduction of reorganization in bankruptcy increases the cost of funding: this result is supported by the literature on incomplete contracts and renegotiation, which shows that granting a second chance to an entrepreneur in distress will translate into lower incentives for that entrepreneur to behave with care. The second result is that the reform of the liquidation procedure to reinforce banks' rights triggers a significant reduction of the cost of finance. Overall, we document that the reform of the Italian bankruptcy law has relaxed the share of credit-constrained entrepreneurs in the economy.

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VIII. Appendix A: Data Organisation and Sample Selection

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.[29] We drop all new loans with an amount smaller than 1,000 Euro and extreme percentiles of the term loan interest-rate distribution.[30] 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 on the credit-line level and is possibly subject to substantial measurement error.[31]

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 then 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.[32] Every year of balance-sheet data is matched with quarterly credit information. The final dataset is of quarterly frequency, and runs from the second quarter of 2004 to the last quarter of 2007, for a total of 202,964 firms and 1,097 banks.

[29] 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 period t of the contract. 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 type 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.

[30] 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.

[31] Results are robust to the inclusion of the first quarter.

[32] Firms above this threshold had access to a different set of procedures that were also reformed during the same period.

IX. Appendix B: Bankruptcy Codes in the United States and Europe

In the United States, Chapter 7 and Chapter 11 of the bankruptcy law provide the federal discipline that regulates corporate insolvency procedures. The objective of Chapter 11 is to protect a bankrupt firm from pressure from outsiders while it is coping with a process of rehabilitation. The entrepreneur can file unilaterally for Chapter 11 at the prospect of potential distress. Once in Chapter 11, the entrepreneur must devise a restructuring plan to be submitted to creditors.[33] Creditors can propose an alternative plan to the entrepreneur's and then vote on the restructuring project in a ballot described by a system of qualified majorities. By rejecting the plan, creditors can reverse the restructuring procedure into a Chapter 7 liquidation process.

The post-reform Italian reorganization procedure shares important features with Chapter 11. In both cases, 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. However, within Chapter 11 the judge has stronger supervision powers, for instance the firm can undertake new financial operations only under the approval of the judge. Moreover, the judge in Chapter 11 can decide whether to concede an extension to the period of time during which the entrepreneur can invoke the automatic stay and devise a restructuring plan, whereas in the Italian case the law does not impose any deadline.

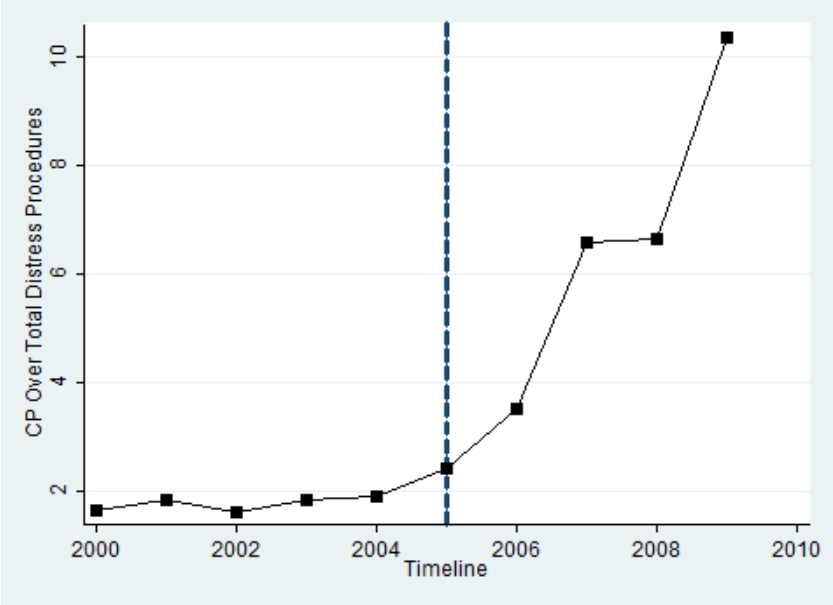
In the early 2000s the European Commission tried to stimulate European adoption of bankruptcy codes inspired by Chapter 11.[34] Accordingly several countries have reformed their bankruptcy codes. However, we were particularly interested by the fact that the Italian policy reform came in piecemeal, over 2005-2006. This has allowed us to disentangle the effect of the new reorganization procedure from that of the new liquidation procedure. For example, in July 2005 the French legislator reformed corporate bankruptcy law by simultaneously introducing a new procedure of reorganization and strengthening creditors' enforcement rights. The fact that the two changes were implemented at the same time makes it difficult to distinguish the effects of each reform. Moreover, in September 2004, the reform of Spanish bankruptcy law introduced a unified court-supervised procedure whereby parties may settle before the liquidation phase starts, whereas in the pre-reform regime there were two separate avenues to deal with insolvency.

X. Appendix C: Tables and Figures

[33] More specifically, entry into Chapter 11 opens the debtor-in-possession phase, during which the entrepreneur has the right to stop payments to existing investors (automatic stay) and also search for new funds. To facilitate this, the law prescribes that investors willing to finance bankrupt firms are privileged in the reimbursement of their claims at the end of the restructuring process, i.e., they can be repaid before (even senior) existing investors.

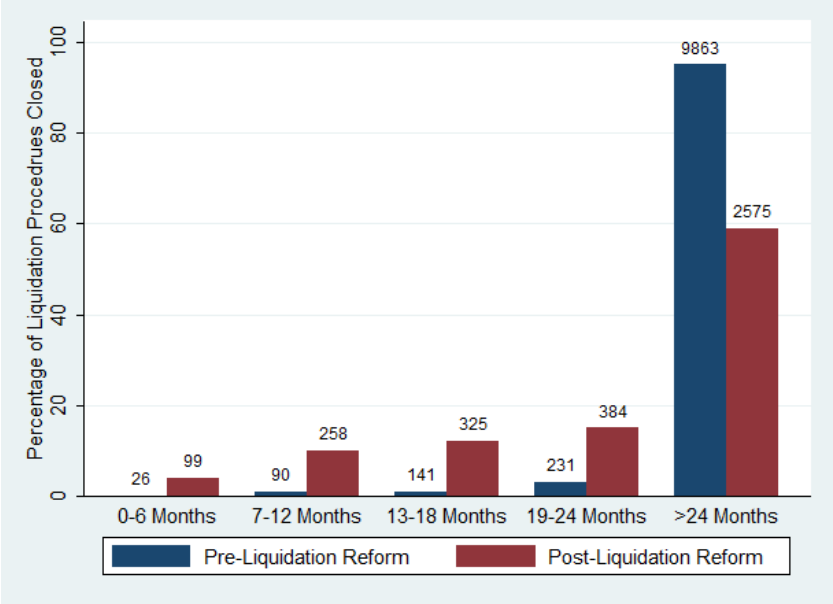
[34] The belief of the Commission was that a harsh approach to financial distress would deter risk-taking, experimentation, and innovation. See the website $http://ec.europa.eu/enterprise/entrepreneurship/sme2chance/$.

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



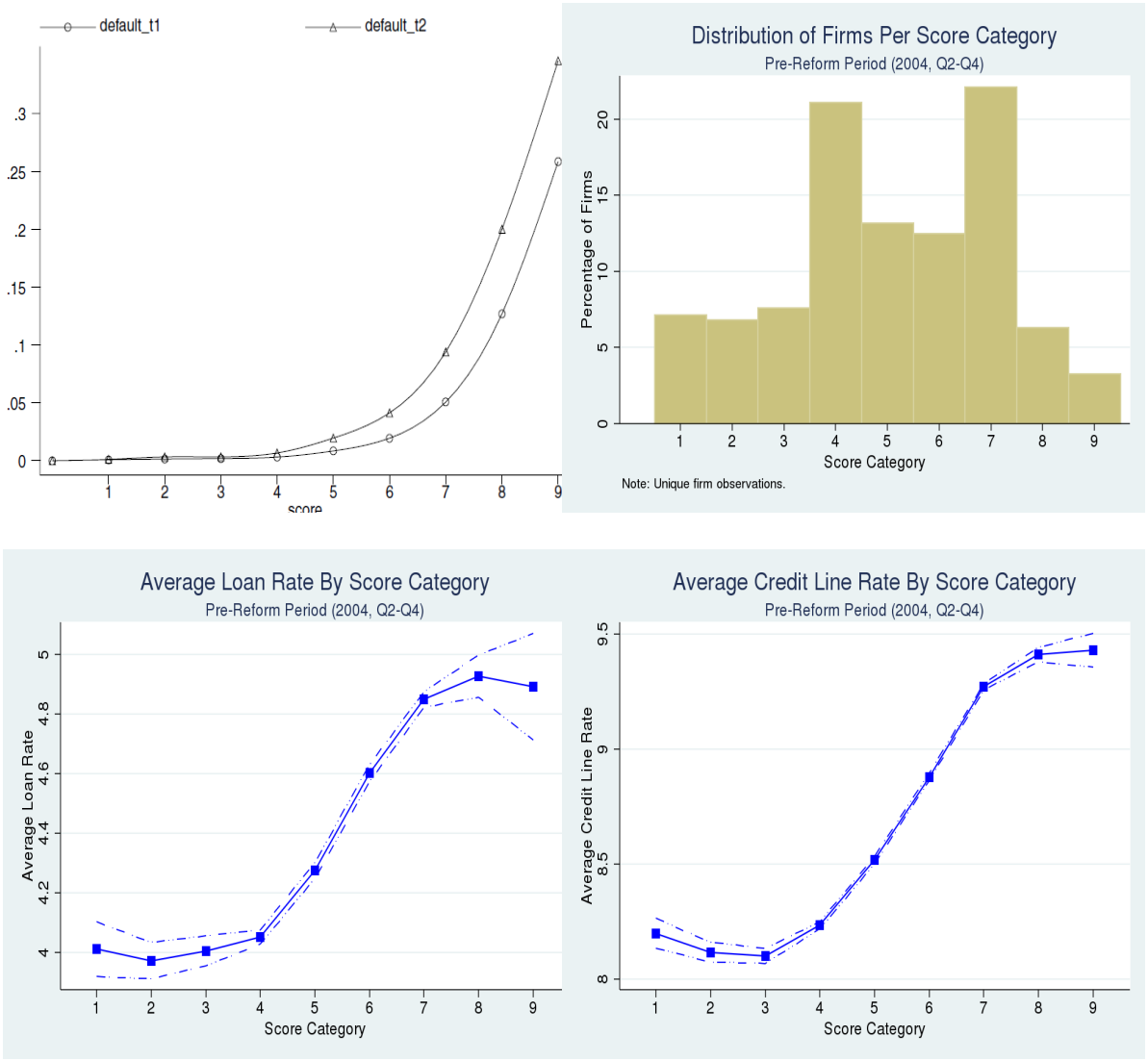
Note: Plot of the ratio between the number of opened procedures of Concordato Preventivo over the total number of opened procedures. Source: Chamber of Commerce.

Figure 2: Duration of Liquidation Procedures Before and After Law 5 Reform



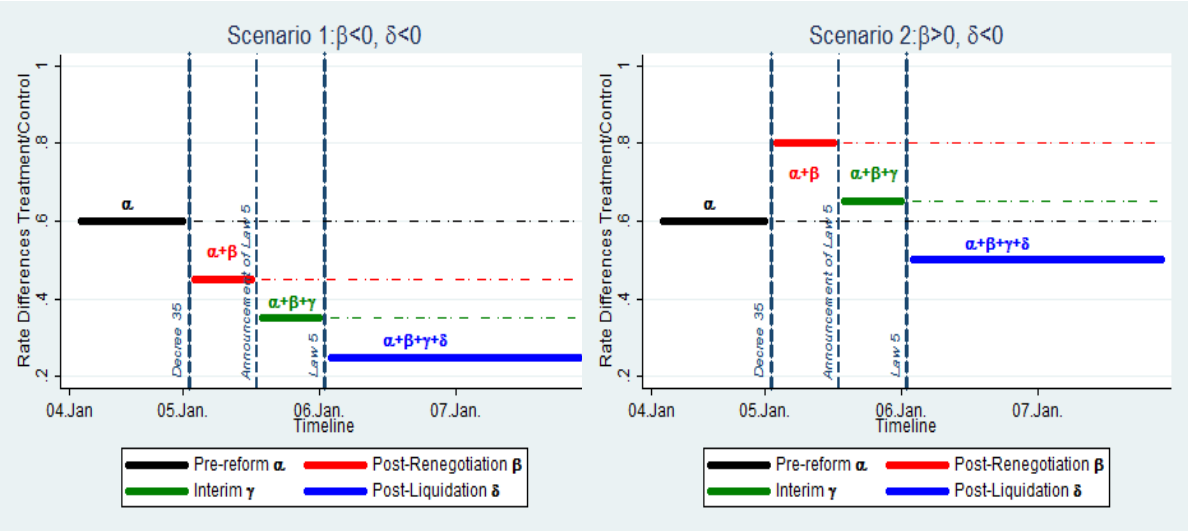
Note: Plot of the percentage of liquidation procedures closed within X months before and after Law 5 reform. Totals reported on top of bars. Source: Unicredit.

Figure 3: Characteristics of the Score Assignment Variable



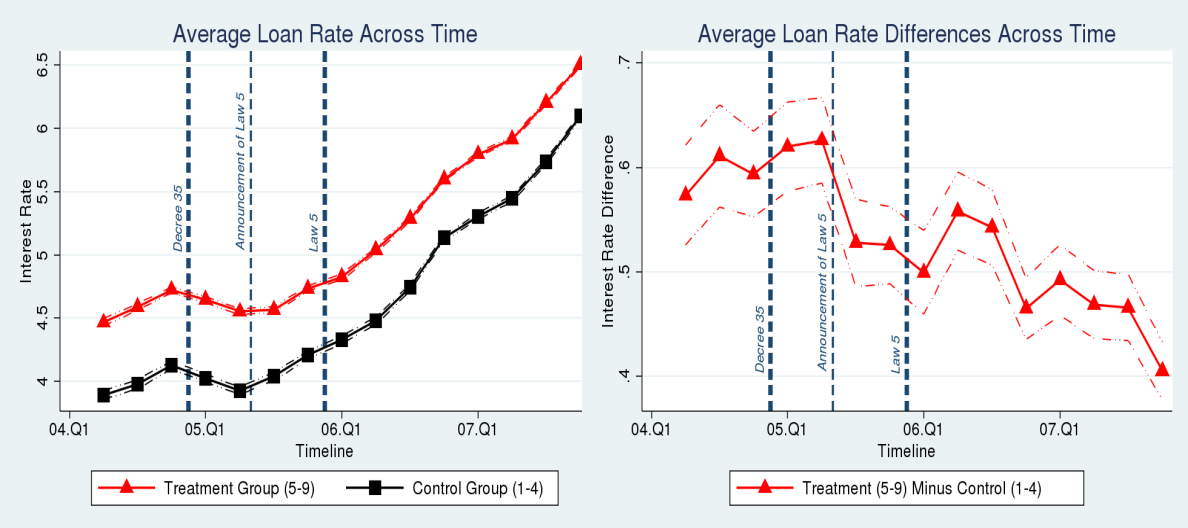
*Note:*The top left panel is taken from Panetta et al. (2007) who, using the same data for the period between 1988 to 1998, plots the Score variable against an indicator of default within the next one (circle) and two years (triangle). The top right panel plots, for our pre-reform sample (2004.Q2-2004.Q4), 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: Treatment Effects from Differences-In-Differences Specification.



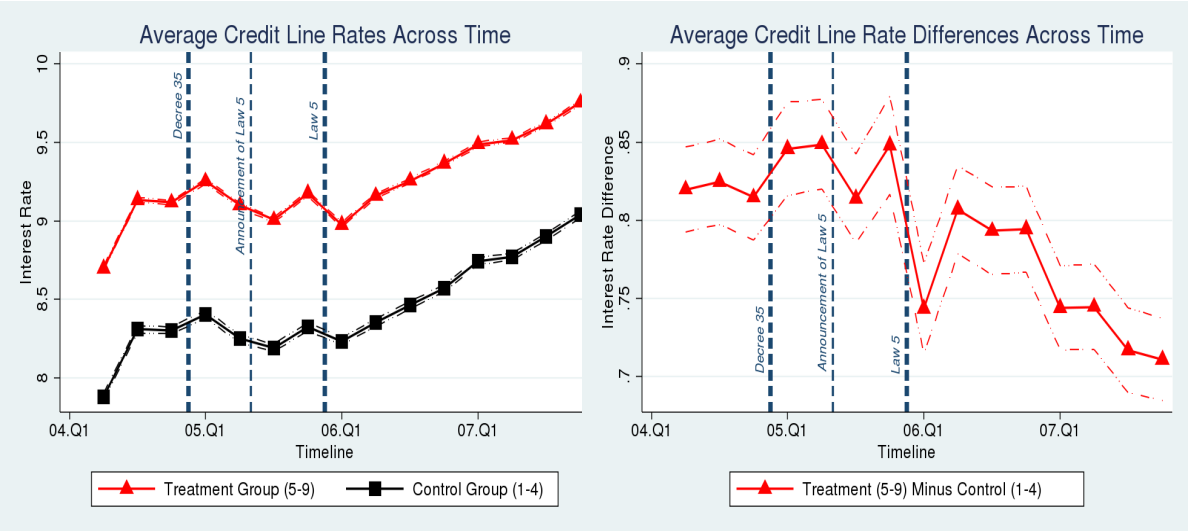
*Note:*Graphical representation of treatment effects across reforms. α, β, γ and δ correspond to estimates of the differences in the dependent variable between treatment and control group across time. Vertical lines represent legislative reforms that occurred in the first quarter of 2005 for Decree 35, and in the first quarter of 2006 for Law 5. The left panel illustrates the hypothesis that both reforms lowered the interest rate differences between treatment and control groups. The right panel illustrates the alternative hypothesis that the renegotiation reform increased the interest rate differences between treatment and control groups.

Figure 5: Differences-in-Differences Plot of Loan Interest Rates



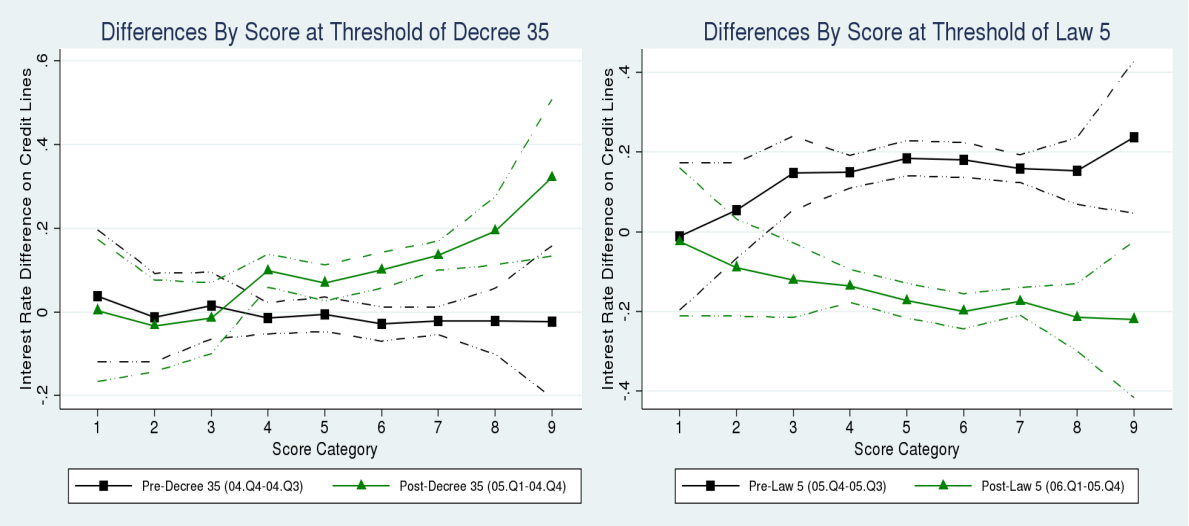
Note: The left panel of the figure separately plots average interest rates on loans for control firms (black line) and average interest rates on loans for treated firm categories (red line). The right panel plots the difference in average interest rates on loans between the two groups of firms for each quarter. Vertical lines represent legislative reforms that occurred in the first quarter of 2005 for Decree 35, and in the first quarter of 2006 for Law 5.

Figure 6: Differences-in-Differences Plot of Credit Line Interest Rates



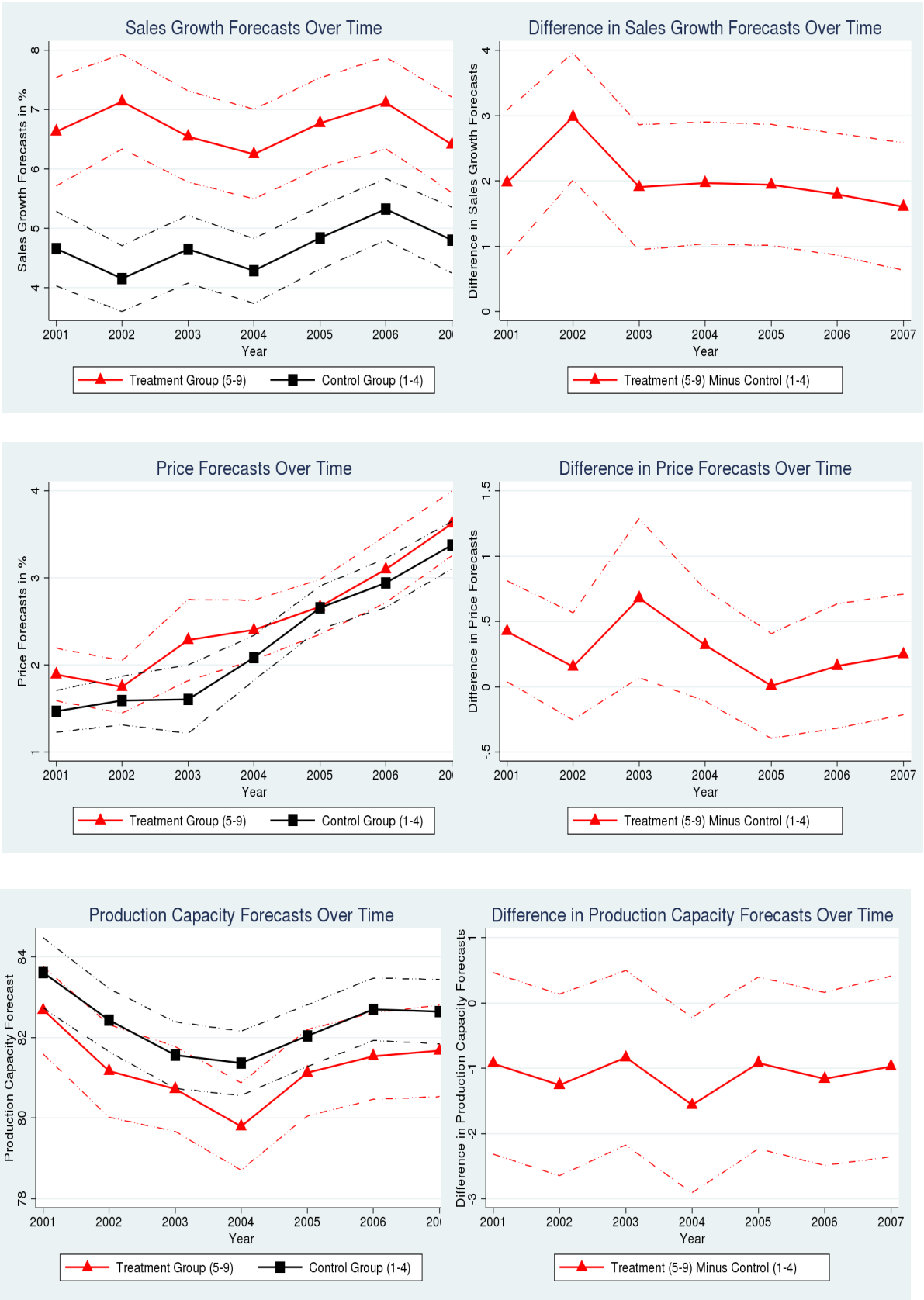
Note: The left panel of the figure separately plots average interest rates on credit lines for control firms (black line) and average interest rates on credit lines for treated firm categories (red line). The right panel plots the difference in average interest rates on credit lines between the two groups of firms for each quarter. Vertical lines represent legislative reforms that occurred in the first quarter of 2005 for Decree 35, and in the first quarter of 2006 for Law 5.

Figure 7: Within Score Variations At Threshold of Reforms



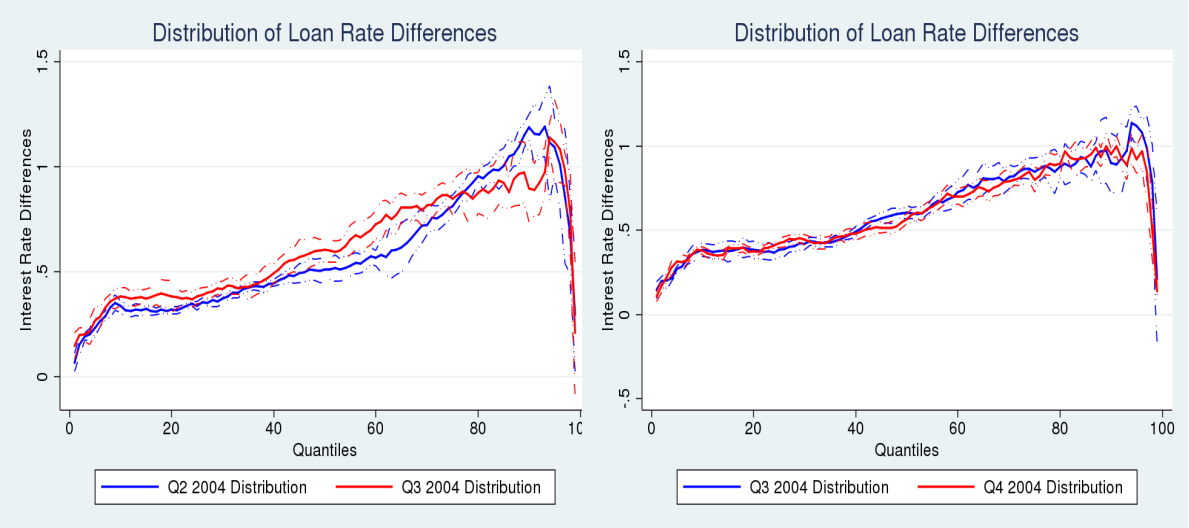
*Note:*The figure plots changes in average quarterly interest rates on credit lines within each Score category in the quarter preceeding and following the reforms. The left panel focuses on the announcement of Decree 35 and plots changes in interest rates between 2004.Q4-2004.Q3 (black line) and 2005.Q1-2004.Q4 (green line). The right panel focuses on the announcement of Law 5 and plots changes in interest rates between 2005.Q4-2005.Q3 (black line) and 2006.Q1-2005.Q4 (green line).

Figure 8: Differences-in-Differences Plot of CEO Forecasts



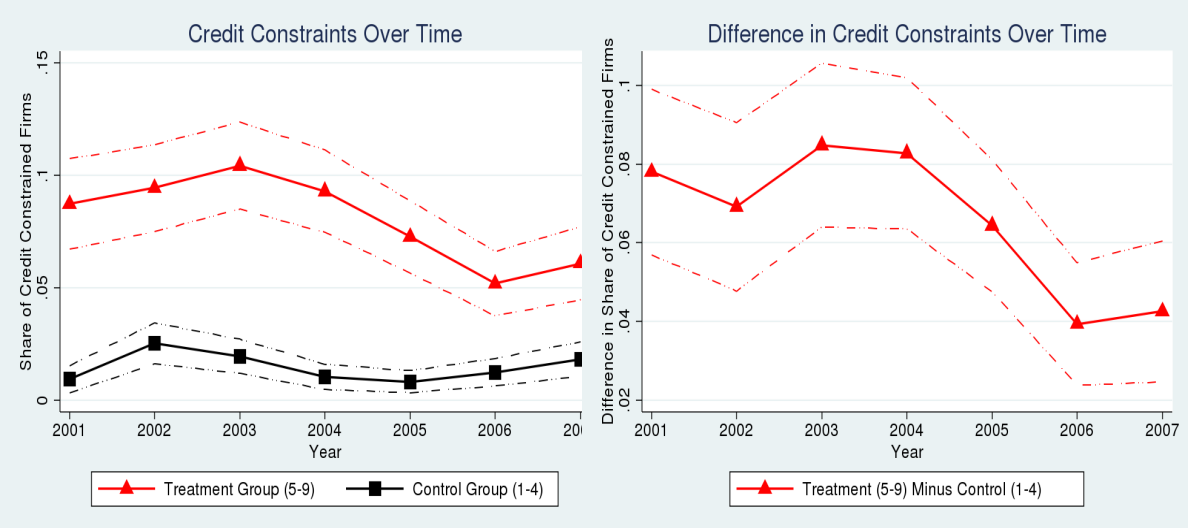
Note: The figure uses information from the Invind survey of manufacturing firms between 2001 and 2007. The left panels of the figure separately plot average forecasts for control firms (black line, square) and treated firm categories (red line, triangle). The right panels plot the difference in forecasts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

Figure 9: Anticipation Effects in 2004?



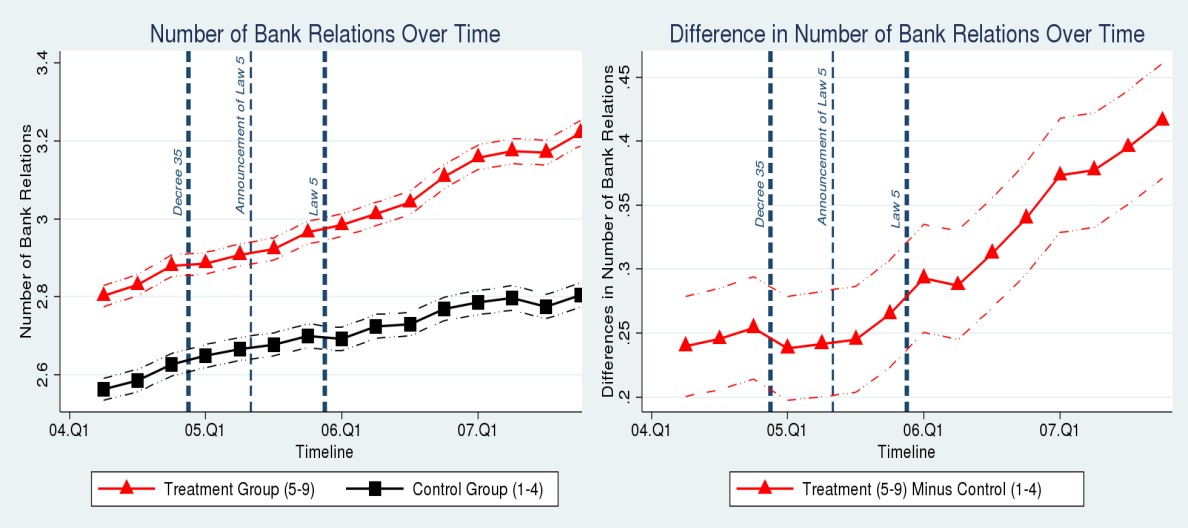
Note: The figure plots interest rate differences at each percentile of the distribution of treatment and control groups. The left panel plots interest rate differences in the second quarter of 2004 (blue line) and the third quarter of 2004 (red line). The right panel these differences in the third quarter of 2004 (blue line) and the fourth quarter of 2004 (red line). We bootstrap the sample so as to estimate confidence intervals on the differences in interest rates.

Figure 10: Differences-in-Differences Plot of Credit Constraints



Note: The figure uses information from the Invind survey of manufacturing firms between 2001 and 2007. We classify a firm as credit-constrained if it demanded more credit but was was rejected. The left panel separately plots the share of credit-constrained control firms (black line, square) and the share of credit-constrained treatment firms (red line, triangle). The right panel plots the difference in the share of credit-constrained firms between the two groups of firms for each year.

Figure 11: Differences-in-Differences Plot of Number of Bank Relations



Note: The left panel separately plots the average number of bank relations of control firms (black line, square), and the average number of bank relations of treated firms (red line, triangle). The right panel plots the difference in the average number of bank relations between the two groups of firms for each quarter. Vertical lines represent legislative reforms that occurred in the first quarter of 2005 for Decree 35, and in the first quarter of 2006 for Law 5.

Table I: Nominal Interest Rates on Newly Issued Loans and Credit Lines

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

Notes: 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 Rate* is gross annual interest rate inclusive of participation fees, loan origination fees, monthly service charges, and late fees. *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, and more than 5 years. *Guarantee* is a set of binary variables indicating whether the loan had no collateral (Unsecured), only real collateral (Real), only personal collateral (Personal), both (Real+Personal), 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 quarter.

Table II: Financing Structure & Balance Sheet Information

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

Notes: Pooled data for the period 2004-2007. Observations are at the firm-year level and monetary values are expressed in KE (1,000 Euros). *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 the firms' total amount of credit lines granted divided by the total amount of bank financing granted for all categories (Loans, Credit Lines, Backed Loans). *Backed Loans/Tot. Bank Fin.* is the firms' total amount of loans granted backed by account receivables and divided by the total amount of bank financing granted for all categories (Loans, Credit Lines, Backed Loans). *Total Bank Fin. / Assets* is the 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 current year and the year of incorporation of the firm. *Total Sales* is firm 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 Reforms on Loan Interest Rates

Dependent Variable: Interest Rates on Loans

	All Firms		1-4 vs 7-9	
	(1)	(2)	(3)	(4)
Treatment	0.246***		0.401***	
	(0.021)		(0.028)	
After Reorganization*Treatment	0.028	0.043***	0.069***	0.067***
	(0.019)	(0.016)	(0.024)	(0.021)
Interim Period*Treatment	-0.059***	0.005	-0.102***	-0.005
	(0.016)	(0.014)	(0.020)	(0.017)
After Liquidation*Treatment	-0.036**	-0.045***	-0.074***	-0.049***
	(0.015)	(0.014)	(0.019)	(0.018)
Real Guarantee	0.151***	-0.015	0.170***	-0.012
	(0.022)	(0.028)	(0.027)	(0.034)
Personal Guarantee	0.297***	0.036***	0.279***	0.029
	(0.013)	(0.014)	(0.016)	(0.018)
Personal+Real Guarantees	0.175***	-0.191***	0.141***	-0.231***
	(0.020)	(0.025)	(0.024)	(0.032)
Personal+Real Guarantees	0.327***	0.042***	0.321***	0.030*
	(0.020)	(0.013)	(0.026)	(0.018)
Maturity: 1-5 Years	-0.243***	-0.285***	-0.234***	-0.295***
	(0.010)	(0.012)	(0.013)	(0.016)
Maturity: >5 Years	-0.413***	-0.511***	-0.413***	-0.515***
	(0.012)	(0.016)	(0.015)	(0.021)
Log Size of Loan	-0.212***	-0.085***	-0.215***	-0.093***
	(0.005)	(0.003)	(0.006)	(0.004)
Credit Lines/Tot.Fin.	-0.161**	0.143**	-0.130	0.154*
	(0.066)	(0.071)	(0.080)	(0.090)
Loans/Tot.Fin.	-0.330***	-0.156***	-0.262***	-0.128***
	(0.034)	(0.039)	(0.041)	(0.048)
Log Value Added	0.035***	-0.013	0.036**	-0.014
	(0.012)	(0.013)	(0.014)	(0.017)
Leverage	0.678***	0.481***	0.516***	0.458***
	(0.055)	(0.085)	(0.061)	(0.101)
Log Total Assets	0.215***	0.123***	0.178***	0.121***
	(0.015)	(0.027)	(0.018)	(0.036)
Log Total Sales	-0.427***	-0.166***	-0.381***	-0.132***
	(0.017)	(0.024)	(0.020)	(0.029)
Age of Firm	-0.011	-0.100	-0.009	-0.149*
	(0.010)	(0.068)	(0.013)	(0.079)
Group Ownership	-0.008	0.013	0.017	0.056
	(0.046)	(0.048)	(0.060)	(0.074)
Firm*Bank FE	No	Yes	No	Yes
Industry FE	Yes	-	Yes	-
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.501	0.559	0.518	0.552
N	226422	183498	132436	104782

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates. Columns 1 and 2 use the entire range of Score observations. Columns 3 and 4 use 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 above 4 in 2004. See Table I and II for the definition of the remaining variables. Omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot.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	
	Low	High	Low	High
After Reorganization*Treatment	0.079***	0.022	0.024	0.075**
	(0.029)	(0.020)	(0.019)	(0.030)
Interim Period*Treatment	-0.008	0.015	0.024	-0.021
	(0.024)	(0.016)	(0.016)	(0.025)
After Liquidation*Treatment	-0.011	-0.073***	-0.073***	-0.006
	(0.022)	(0.018)	(0.018)	(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
	F-Test for Homogeneus Treatment Effect Across Splits			
	0.0227		0.0210	

The table reports split OLS estimation of the impact of the bankruptcy reforms on loan interest rates. Columns 1 and 2 splits 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. Columns 1 and 2 splits the sample into *Low* versus *High* on the basis of the median *Loan Concentration*. *Loan Concentration* is computed in 2004 as 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 above 4 in 2004. See Table I and II for the definition of the remaining variables. Omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot.Fin." in the case of financing structure variables. F-Test is a partial F(2,32406) test on 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 on Credit Lines Interest Rates

Dependent Variable: Interest Rates on Credit Lines

	All Firms		1-4 vs 7-9	
	(1)	(2)	(3)	(4)
Treatment	0.346***		0.632***	
	(0.022)		(0.028)	
After Reorganization*Treatment	0.018	0.086***	0.014	0.112***
	(0.015)	(0.012)	(0.017)	(0.014)
Interim Period*Treatment	-0.003	0.019*	-0.020	0.021*
	(0.013)	(0.011)	(0.014)	(0.012)
After Liquidation*Treatment	-0.056***	-0.028**	-0.129***	-0.066***
	(0.015)	(0.012)	(0.018)	(0.015)
Log Use of Credit Lines	-0.027***	-0.084***	-0.037***	-0.081***
	(0.003)	(0.002)	(0.003)	(0.003)
Log Granted Credit Lines	-0.290***	-0.113***	-0.279***	-0.112***
	(0.002)	(0.002)	(0.003)	(0.003)
Credit Lines/Tot.Fin.	-2.679***	-0.981***	-2.582***	-0.887***
	(0.068)	(0.058)	(0.082)	(0.069)
Loans/Tot.Fin.	-0.551***	-0.285***	-0.528***	-0.248***
	(0.037)	(0.030)	(0.044)	(0.037)
Log Value Added	-0.011	-0.010	0.015	0.007
	(0.013)	(0.011)	(0.016)	(0.013)
Leverage	1.117***	0.891***	0.848***	0.811***
	(0.063)	(0.069)	(0.074)	(0.082)
Log Total Assets	0.336***	0.177***	0.278***	0.194***
	(0.017)	(0.022)	(0.021)	(0.027)
Log Total Sales	-0.467***	-0.213***	-0.428***	-0.216***
	(0.018)	(0.018)	(0.023)	(0.021)
Age of Firm	0.078***	0.320***	0.103***	0.375***
	(0.012)	(0.048)	(0.015)	(0.059)
Group Ownership	-0.356***	0.040	-0.341***	-0.004
	(0.066)	(0.079)	(0.084)	(0.115)
Firm*Bank FE	No	Yes	No	Yes
Industry FE	Yes	-	Yes	-
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.273	0.096	0.284	0.093
N	1570167	1558095	974402	965632

The table reports OLS estimation of the impact of the bankruptcy reforms on credit line interest rates. Columns 1 and 2 use the entire range of Score observations. Columns 3 and 4 use 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 above 4 in 2004. See Table I and II for the definition of the remaining variables. Omitted category is "Backed Loans/Tot.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 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**	0.045**	0.049**	0.043**	0.048**	0.047**	0.044**	0.046**	0.054***
	(0.017)	(0.020)	(0.019)	(0.017)	(0.020)	(0.020)	(0.017)	(0.020)	(0.021)
Interim Period*Treatment	0.010	0.005	0.005	0.009	0.005	0.012	0.009	0.004	0.003
	(0.014)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.014)	(0.016)	(0.017)
After Liquidation*Treatment	-0.046***	-0.038**	-0.045***	-0.047***	-0.039**	-0.046***	-0.046***	-0.039**	-0.047***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)
CEO Forecast	-0.001	-0.002	0.001**	-0.001*	-0.000	0.000	-0.000	-0.001	0.001**
	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(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 OLS estimation of the impact of the bankruptcy reforms on loan interest rates. Each column controls for average one year ahead CEO forecasts *CEO Forecast* on *Sales*, *Prices* and *Capacity*. Each variable is constructed in the subsample as the average of the forecast by *SIC*YEAR*TC*, *SIC*YEAR*SCORE* and *SIC*YEAR*SIZE*. If for a given industry in a year *SIC*YEAR** there were no observations to compute differences by **TC*, **SCORE*, **SIZE* we attributed the *SIC*YEAR* average to these observations. *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: $X \leq 20$, $20 \prec X \geq 50$, $50 \prec X \geq 100$, $100 \prec X \geq 250$, $250 \prec X$. *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 above 4 in 2004. See Table I and II for the definition of the remaining variables. Omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot.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: Impact of Reforms and Credit Cycles

Dependent Variable: Interest Rates on Loans

	All Firms		1-4 vs 7-9	
	(1)	(2)	(3)	(4)
After Reorganization*Treatment	0.034*	0.045***	0.080***	0.070***
	(0.019)	(0.017)	(0.024)	(0.021)
Interim Period*Treatment	-0.040**	0.010	-0.062***	0.004
	(0.017)	(0.014)	(0.021)	(0.017)
After Liquidation*Treatment	-0.034**	-0.045***	-0.070***	-0.048***
	(0.015)	(0.014)	(0.019)	(0.018)
US BAA/AAA*Treatment	-0.133***	-0.031	-0.274***	-0.058
	(0.042)	(0.036)	(0.052)	(0.045)
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	0.501	0.559	0.518	0.552
N	226422	183498	132436	104782

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates. Columns 1 and 2 use the entire range of Score observations. Columns 3 and 4 use 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 above 4 in 2004. *US BAA/AAA* is the difference between yields on US corporate AAA rated bonds and Baa rated bonds. Information on corpororate bond yields comes from `http://www.federalreserve.gov/releases/h15/current/`. See Table I and II for the definition of the remaining variables. Omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot.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 VIII: Alternative Specifications

Dependent Variable: Interest Rates on Loans

	Score	No Switchers	No Switchers No Attrition
After Reorganization*Treatment	0.018***	0.053**	0.055***
	(0.006)	(0.021)	(0.021)
Interim Period*Treatment	-0.000	0.013	0.008
	(0.005)	(0.017)	(0.017)
After Liquidation*Treatment	-0.015***	-0.050***	-0.045***
	(0.005)	(0.017)	(0.017)
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	0.553	0.551
N	183498	137392	142913

The table reports OLS estimation of the impact of the bankruptcy reforms on loan interest rates. Column 1 defines *Treatment* as the Score variable in 2004. Column 2 defines *Treatment* again as a binary variable but excludes observations that changed *Treatment* category on the basis of post-2004 Score. Column 3 defines *Treatment* on the basis of each years' Score but excluding switchers. *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). See Table I and II for the definition of the remaining variables. Omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot.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 IX: Bank Composition

Dependent Variable: Interest Rates on Loans

	(1)	(2)	(3)
After Reorganization*Treatment	0.044***	0.044***	0.044***
	(0.016)	(0.016)	(0.016)
Interim Period*Treatment	0.004	0.004	0.004
	(0.014)	(0.014)	(0.014)
After Liquidation*Treatment	-0.045***	-0.045***	-0.045***
	(0.014)	(0.014)	(0.014)
Bank Composition	-0.016*		0.012
	(0.009)		(0.011)
# of Banks		-0.005	-0.026**
		(0.008)	(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 OLS estimation of the impact of the 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 above 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 the definition of the remaining variables. Omitted categories are "Unsecured" in the case of *Guarantees* and "Backed Loans/Tot.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 X: Actively Used Credit Lines

Dependent Variable: Interest Rates on Credit Lines

	All Firms		1-4 vs 7-9	
	(1)	(2)	(3)	(4)
After Reorganization*Treatment	0.067***	0.134***	0.063***	0.155***
	(0.020)	(0.016)	(0.022)	(0.017)
Interim Period*Treatment	0.014	0.028**	0.006	0.033**
	(0.017)	(0.014)	(0.018)	(0.015)
After Liquidation*Treatment	-0.084***	-0.054***	-0.150***	-0.088***
	(0.020)	(0.016)	(0.023)	(0.018)
Credit Line Controls: Amount Granted and Used				
Firm Controls: Value Added, Leverage, Assets, Sales, Age, Ownership				
Firm*Bank FE	No	Yes	No	Yes
Industry FE	Yes	-	Yes	-
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.304	0.118	0.314	0.113
N	1046600	1028693	652228	640208

The table reports OLS estimation of the impact of the bankruptcy reforms on credit line interest rates for the subsample of firm-bank observations with non-zero overdraft use. Columns 1 and 2 use the entire range of Score observations. Columns 3 and 4 use 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 above 4 in 2004. See Table I and II for the definition of the remaining variables. Omitted category is "Backed Loans/Tot.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 XI: Impact of Reforms on Credit Constraints

Dependent Variable: Is Credit Constrained

	No Covariates		Covariates	
	(1)	(2)	(3)	(4)
After 2004	-0.001	0.007	-0.004	0.007
	(0.005)	(0.006)	(0.008)	(0.010)
Treatment	0.079***		0.051***	
	(0.006)		(0.010)	
After*Treatment	-0.030***	-0.025***	-0.025**	-0.027**
	(0.008)	(0.008)	(0.010)	(0.011)
Leverage			0.066***	0.009
			(0.017)	(0.051)
Log Sales			-0.013***	-0.015
			(0.003)	(0.022)
Cash Stock			-0.034***	-0.041**
			(0.010)	(0.020)
Sales Forecast			0.001***	-0.000
			(0.000)	(0.000)
Firm*Bank FE	No	Yes	No	Yes
Quarterly FE	Yes	Yes	Yes	Yes
R-squared	0.029	0.003	0.034	0.005
N	14767	14767	7620	7620

The table reports OLS estimation of the impact of the bankruptcy reforms on the probability to credit constrained. *Credit Constrained* is defined as wanting more bank financing at current or slightly higher interest rates but having been rejected. *Treatment* is a binary variable indicating whether the loan was made by a firm which had a Score above 4 in 2004. *After 2004* is a binary variable equal to 1 beginning in January 2005. See Table I and II for the 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.