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Creditor's Protection and Bank Loans: market power and bankruptcy reform's effects

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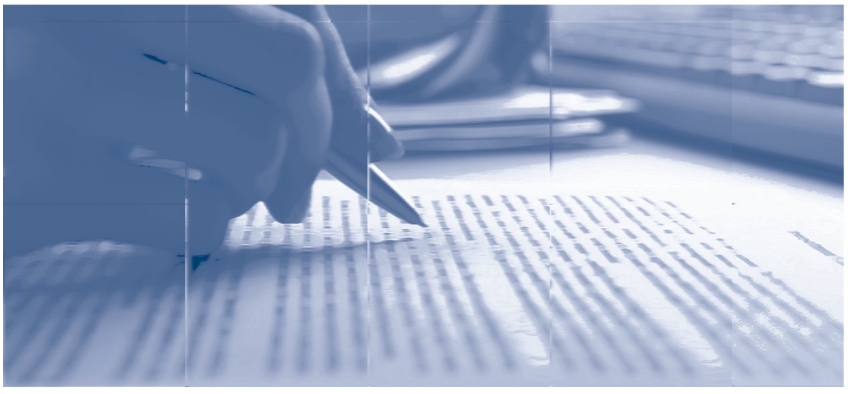

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Non-technical Summary

Increased creditor protection and its consequences on credit markets has long been the focus of academic studies. Economic research shows that better conditions to recover debt lead to a larger credit supply and better price conditions, producing effects on the real economy such as an expansion in investment.

On the other hand, the effect on interest rates of an increase in creditor protection may be limited or absent in credit markets which lack competition. Financial institutions, as regular firms operating under a monopolistic market, can choose to use their market power and not transmit an improvement in their loan recovery rate to the interest rate or to the spread of the loans.

This paper empirically investigates how this degree of market power can influence the effects of an increase in creditor protection on the interest rate and the spread of bank loans. Brazil is a perfect testing ground to this study because in 2005 a new bankruptcy law was approved. That new legislation improved corporate creditor protection and the bankruptcy system's efficiency.

The results show a potential reducing effect of 736 basis points of the bankruptcy law on the average of the interest rate charged in collateralized corporate loans, compared with uncollateralized loans to consumers. However, this potential reduction had not been reached. The friction caused by market power, measured by a market concentration index, decreased 27.5% of this potential effect of the bankruptcy reform in the interest rate of new corporate credit operations. When we consider the spread over the interest rate term structure, the Brazilian Bankruptcy Reform had a potential direct effect of reducing the spread in 638 basis-points, but market power, measured by a concentration index, hinders 23.6% of this potential knock down on the spread. Similar results are obtained when using a competition index.

Our results therefore show that an institutional reform that increases creditors' protection has a positive effect on credit condition, but market power may diminish this effect considerably. The results presented indicate the importance of promoting competition in the credit market.

Sumário Não Técnico

Já há alguns anos, estudos acadêmicos têm examinado os efeitos do aumento da proteção aos credores nos mercados de crédito. Esses estudos mostram que melhores condições para recuperar as dívidas levam a uma maior oferta de crédito e taxas de juros menores, produzindo efeitos na economia real tal como a expansão dos investimentos.

Por outro lado, os efeitos nas condições dos empréstimos de uma maior proteção ao credor podem ser limitados, ou mesmo ausentes, em mercados pouco competitivos. Instituições financeiras, como firmas atuando em um mercado monopolista, podem decidir usar seu poder de mercado e não transmitir uma melhora na recuperação de crédito para suas taxas de juros ou para o *spread*.

Este artigo investiga empiricamente como o nível de poder de mercado pode afetar o impacto de um aumento da proteção ao credor nas taxas de juros e *spreads* dos empréstimos bancários. O Brasil é um campo privilegiado para esse estudo porque em 2005 uma nova lei de falências foi aprovada. Essa legislação melhorou a proteção ao credor corporativo e a eficiência do sistema de falências.

Os resultados mostram um efeito potencial da lei de falência de reduzir em 736 pontos base a média da taxa de juros de empréstimos com garantias para pessoas jurídicas, em comparação a empréstimos sem garantias para pessoas físicas. No entanto, essa redução potencial não foi alcançada. A fricção causada pelo poder de mercado, medida por um índice de concentração, reduziu em 27,5% do efeito potencial da lei na taxa de juros média de novas operações de crédito com garantias para pessoas jurídicas. Quando se considerou o *spread* sobre a estrutura de termo da taxa de juros em vez da taxa de juros, a reforma da lei de falências de 2005 tinha um efeito potencial direto de 638 pontos base, mas o poder de mercado, medido por um índice de concentração, reduziu esse efeito potencial no *spread* em 23,6%. Resultados similares são obtidos no texto quando se utiliza um índice de competição.

Nossos resultados mostram que uma reforma institucional que aumente a proteção dos credores tem um efeito positivo nas condições de crédito, mas o poder de mercado pode diminuir consideravelmente esse efeito. Os resultados encontrados indicam a importância da promoção da concorrência no mercado de crédito.

Creditor's Protection and Bank Loans: market power and bankruptcy reform's effects

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Abstract

This paper empirically investigates how market power in the credit market can change the magnitude of the effects of an increase in creditor protection on the interest rate and the spread of bank loans. To do so, we explore the improvement in the creditor protection produced by a new bankruptcy law approved in early 2005 in Brazil. Using monthly data on bank interest rates for corporate and consumer loans, we find that market concentration hampers 27.5% of the potential reducing effect of the law in the interest rate of new corporate credit operations. If we consider the average market concentration over all credit lines (treated and control groups), then the hampering effect represents 295 basis points, or 40.1%. Similar results are obtained when using Panzar and Rosse (1987) competition measure. The results show that an institutional reform that increases creditors protection has a positive effect on credit condition, but the concentration/competition structure of the market may diminish these effects considerably.

Keywords: Bank Competition, Creditor's Protection Reforms, Interest Rate of Loans.
JEL Classification: G21, G33, L11.

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1 Introduction

Increased creditor protection and its consequences for the credit and debt markets on the real economy has long been the focus of academic, government and multilateral organizations studies. Theoretical economic research shows that better conditions to recover debt or force repayment of loans lead to a larger credit supply and better price conditions (Aghion and Bolton, 1992; Hart and Moore, 1994, 1998). Indeed, an increase in credit volume and a decrease in the cost of credit are key expected outcomes when creditor protection is bolstered (La Porta et al., 1997).

The potential benefits of creditor protection reforms to credit market motivated several countries, particularly emerging countries, to implement local reforms in the legal environment to ensure higher levels of creditor and investor protection. For instance, the Chinese government implemented in 2007 the Enterprise Bankruptcy Law to address firm insolvency problem in the country (Ho and Lee, 2010). Reforms of the bankruptcy system were also implemented in Russia in 1997, with a significant step toward "pro-creditor" rules (Vitryansky, 1999). Not only ex-socialist economies changed their legal systems in the direction of protecting creditors and investors, countries such as South Korea in 1997, and Italy and Brazil in 2005 took the same path. In the case of South Korea, e.g., recent studies have found evidence that the reforms contributed to productivity growth following the 1997 economic crisis by allowing inefficient firms to exit, by encouraging new entries (Cirmizi et al., 2010) and by inducing surviving firms to become more efficient (Lim and Hahn, 2003).

At the same time, a collection of academic research is fundamentally concerned with bank concentration and credit market competition. Saunders and Schumacher (2000) found evidence that margins (or pure spreads) were affected by the market structure in OECD countries. Non-competitive market structures appear to explain the high margins charged by credit institutions in some countries (Bikker and Haaf, 2002).

This paper empirically investigates how the degree of market power can change the effects of an increase in creditor protection on the interest rate and the spread of loans. Brazil is a perfect testing ground to study our research question for at least two reasons: First, a new bankruptcy law was approved by the Brazilian Congress in early 2005, which improved creditor protection in corporate debt transactions and the bankruptcy system's efficiency; second, the degree of competition in the Brazilian credit market is quite diverse, and depends on local conditions (Coelho, De Melo, Rezende, 2013), on the set of products offered by creditors (Barbosa et al., 2015), and on the type of credit (Andrade, 2015).

From banking oligopoly pricing theory, one can show that the effects of an increase in creditor protections may be limited or absent on interest rates in credit markets which lack com-

petition. Intuitively, credit institutions with some market power can inefficiently price credit operations and thus do not transfer the benefits of higher creditor protection to borrowers. So, in a monopolistic-competitive credit market, a reduction in the cost of loans induced by an increase in creditor protection does not necessarily lead to a reduction in the cost for borrowers. Financial institutions, as regular firms operating under a monopolistic market, can choose to use their market power and not transmit cost reductions to the interest rate or to the spread of the loans. Hence, the effects on loan interest rate of institutional reforms that improve creditor protection will depend on the degree of competition in the credit market.

To investigate such an empirical prediction, we propose an estimation methodology based on a modified differences-in-differences method. The traditional differences-in-differences method uses an interaction variable between two constructed dummies: (i) the dummy of treated observations, which assumes the value of one when the observation is in the treatment group, and (ii) the time dummy of the exogenous event, which assumes the value of one when the data are observed in the period after the event. We introduce a second interaction variable, in addition to the traditional interaction term, to identify how market power in the credit market affects the impact of the law. This new term is the interaction of our empirically measure of market concentration - or of competition depending on the model - with the interaction variable of the differences-in-differences standard model. This term intends to capture how market power determines the effect of the new bankruptcy law on our treatment group of observations. In our differences-in-differences estimation, we use the Brazilian Bankruptcy Reform (BBR) as an exogenous event that affects collateralized corporate loans (treatment group), but that does not affect consumer loans (control group). Our estimation is able to show and quantify how concentration and the lack of perfect competition in the credit market can hamper the effects of an increase in creditor protection on the interest rate and the spread of loans. This paper follows both the Structure-Conduct-Performance hypothesis, which argues that higher concentration in the loan market causes a less competitive conduct (see Degryse and Ongena, 2008), and the New Empirical Industrial Organization approach of Panzar and Rosse (1987) to measure competition conditions.

We apply that methodology to monthly data provided by the Central Bank of Brazil (BCB), which contains information on bank interest rates for corporate and consumer loans, volume of credit, market power indicators, and other important covariates. That data cover information on credit lines affected by the BBR (corporate loans) and those not affected by the law (consumer loan) before and after the BBR was enacted in June 2005. We will assess market power in the Brazilian bank industry using a multi-product approach, which considers different credit types, with different credit risks, as different markets.

We find that the BBR could knock down the interest rate by 736 basis points relative to our control group of operations. However, this potential reduction had not been reached because of market power. We also estimated the friction caused by market power in the credit market, when measured by a concentration index, which is 202 basis points. If we compare with the potential effect of the law, it represents 27.5% of this potential effect.[1] We can then conclude that market power measured by a concentration index hampers 27.5% of the potential reducing effect of the law in the interest rate of new corporate credit operations. If we consider the average market power over all credit lines (treated and control groups), then the liming effect represents 295 basis points, or 40.1%.

Similar results are estimated when we consider the spread over the interest rate term structure instead of the interest rate. The BBR had a direct effect of 638 basis-points of the spread, but the market power measured by a concentration index hinders 23.6% of this potential knock down.

Our results are robust to alternative definitions of the credit market size and different concentration measures, such as HHI, C4, Market Share, and to Panzar and Rosse (1987) H-statistics competition measure. To deal with the criticism that the degree of bank competition is endogenous to market conditions, we search for evidence of endogeneity caused by a possible simultaneous effect of the BBR on interest rates and on one of our proxies for market power. We construct a simulated data set, where we maintain constant HHI. This generated data set simulates an artificial market condition of no influence of the BBR on our proxy for market power. We estimate our empirical model with this new data set and compare it with the estimations with original data set. The results suggested that the BBR has not affected our proxy for competition. We also processed two falsification tests. First we check whether our empirical model captures the correct period of the BBR's effects by simulating unreal events. In a second falsification test, we check whether our empirical model is sensitive to the randomization of our proxy. In both tests, we find the expected results.

Our results therefore show that an institutional reform that increases creditors protection has a positive effect on credit condition for firms, but market power matters.

This paper is organized as follows. Section 2 presents the institutional background and the literature review. Section 3 presents a theoretical model which formally shows that an increase in creditor protections may have limited or no effect on interest rates in credit markets which lack competition. Section 4 describes the empirical strategy, and Section 5 presents the data set. Section 6 shows the main estimations and findings. Section 7 presents our robustness tests. Section 8 concludes. A supplementary material section with additional tables and figures can be

[1]When we measure the lack of perfect competition by Panzar and Rosse (1987) methodology, this value is 31.7%.

found in the Appendix.

2 Institutional Background and Literature Review

The Brazilian Bankruptcy Reform. Until 2005 the procedures for reorganization and liquidation of a company were governed by the Federal Law no. 7,661 of 1945. If that standards were a regulatory framework for its time (Lisboa et al., 2005), it did not fulfill the contemporary needs of the Brazilian economy. Although the previous legislation was created to prevent bankruptcies and failures, in practice, it proved to fail to recover insolvent companies. It occurred because the 1945 legislation gave preference to labor demands and tax at the expense of creditors of the financial market. The settlement system was hard and time-consuming, so that at the end of the process the company assets lose most of its value.

The Federal Law no. 11,101, issued on February 9, 2005 by the Brazilian National Congress, implemented the BBR, the Recovery and Bankruptcy Companies Act. The law became public in February 2005, but it became legally effective on June 6 of the same year (120 days after its approval). The main feature of the new legislation was to replace the norms that used to consider bankruptcy as a penalty for companies that did not fulfill its duty of a good payer. It was central to enabling the continuity of business enterprises, preserving them as production units capable of generating employment and income, by overcoming their economic and financial distress. For this the spirit of the law was to encourage cooperation between creditors and borrowers in building a recovery plan through a tool created called extrajudicial recovery.

The first 75 articles of Law no. 11,101 are basically dedicated to the regulation of a situation which a solvent company is under financial distress and aims to recover. The possibility of extrajudicial recovery authorizes private and informal negotiations between debtor and creditors, reducing the transaction costs involved in finding a solution for the unpaid debts. The new legislation determines the creation of a creditors' assembly to approve, reject or modify the business recovery plan submitted by the company administrator. In the case of rejection, bankruptcy is decreed.

Once the business reorganization plan is approved by the creditors, the entrepreneur remains in the exercise of company management. However, their actions and behaviors become audited by a group of creditors. If the entrepreneur deviates from the plan of actions, then the bankruptcy of the company will be decreed and enacted. In the case that both creditors and debtor seek to recover the company, the bankruptcy of the company never happens. From the point of view of the debtor, that is the best way to keep their business, enabling the company to preserve its

heritage. For creditors, the overcoming of the financial distress of a debtor company increases the expected return of the funding provided in the previous stage, enabling new loans in the future.

In the case that the creditors understand that the rehabilitation of the company is not possible, then the law creates conditions for an easy, fast, and efficient liquidation of company's assets (e.g., auctioning of firm's assets), minimizing losses and reducing the effects of bankruptcy for creditors. These changes favored the protection of creditors.

Broadly speaking, the new bankruptcy law maintained reorganization and liquidation as a continuous legal process, such that a firm that invokes the right to the legal reorganization process can be judicially conducted to the liquidation process. Considering both processes, we highlight the relevant legal changes introduced by the new Brazilian bankruptcy law that improved the recovery rate of secured credit and reduced the probability of default, by comparing the new and the old Brazilian bankruptcy legislation. We do not exhaustively describe all dimensions of the new bankruptcy law, but we aim to explain the main modifications in the legislation that improved creditor protection and reduced the cost of credit operations.

Regarding the new reorganization plan regulated in the new legislation, we will compare it with the formal agreement called concordat, which was in the previous legislation. As we will explain, the changes in the legislation reduced the cost of credit by hampering the ability of insolvent firms to strategically default and by encouraging the efficient reorganization of viable businesses. Basically, the Federal Law no. 11,101 substituted the recuperation period for the concordat period, which, after the new law, might be implemented under two different legal terms, the *extra-judicial recuperation* process and the *judicial recuperation process*. In the first, the decisions are privately negotiated and the judicial system only provides the enforcement mechanisms to guarantee that the agents will accomplish the deal. In the second, a state court conducts the reorganization process of private negotiations between all creditors under legal rules. Both processes, judicial and extra-judicial ones, require that shareholders prove the firm's viability.

Tables 1 summarizes the relevant changes in the reorganization processes addressed by the new legislation.

[Table 1]

As mentioned before, the new bankruptcy law also addressed the liquidation process. The new legislation altered two important issues: the absolute priority rule and the values of employees' claims. The new rule defines the following order of priority: labor benefits limited to 150 minimum wages; secured loans with real collateral limited to the market value of the collateral;

taxes; other credit with specific legal privileges; and, finally, unsecured claims. The secured credits were at a huge disadvantage before June/2005, when collateral was simply liquidated to pay employees' claims and taxes.

Additionally, loans, claims and taxes generated after the court has agreed upon the recuperation period have priority over obligations that arose before the court decision under the new legal rules. These obligations follow the same order of priority we described above.

Table 2 describes the new liquidation process and compares it with the previous legislation.

[Table 2]

In a nutshell, the new bankruptcy law maintains reorganization and liquidation as a continuous legal process, such that a firm that invokes the right to the legal reorganization process can be judicially conducted to the liquidation process.

Literature Review. The estimation of the impacts of the BBR on the credit markets and on the capital structure of firms have been object of several empirical studies. Araujo et al. (2012), for instance, report positive effects on the total amount of debt and long-term debt using the accounting information of publicly traded firms. They also pointed to reductions in the cost of debt financing of Brazilian firms between 7.8% and 16.8%.[2] Barbosa et al. (2017) find that, besides the reduction in the rate of non-performing loan, the new Brazilian bankruptcy law induced a significant impact on the expansion of credit concessions to corporations after 2005, although the total volume of credit has not been affected. They also show that the law was not effective in reducing default and interest rates.

Ponticelli and Alencar (2016) find evidence that firms in municipalities with less congested courts incurred in greater growth in the use of secured loans, as well as a greater expansion in investment and in the value of output after the BBR.[3]

Assunção et al. (2014) investigate the change in legislation related to collateral. Particularly, they exploit the Brazilian federal law 10,931, enacted in August/2004. That law reformed the pledge legislation and improved creditor's rights over repossessed assets. The new law established a more efficient extra-judicial procedure for credit institutions that sell repossessed assets and terminates debt defaults. The authors use borrower-level data from a large private bank, which covers auto loans during the August/2003-July/2005 period, ending one month after the BBR became legally effective (June/2005). With respect to auto loans, they find that the law reduced

[2]That work uses a difference-in-difference methodology and firm information from Argentina, Mexico and Chile as a control group.

[3]In this working paper, we do not study the different impacts of the BBR on loans at each municipality.

the credit spread by 9.4%, increased credit maturity by 6% and increased leverage on consumer income by 7.5%. However, the authors also find that, following August/2004, borrowers are 18.8% more likely to be 90 days late on at least one installment.

3 Theoretical Foundations

Overview. Our theoretical model is based on two important assumptions. First, we assume the Bankruptcy Reform contributed to reduce lending costs. That happens because the new legal procedures governing liquidation and reorganization increased the recovery rate of secured credit and reduced the probability of default by a more efficient reorganization process and/or by providing less incentive for firms to strategically default. Our second assumption is that credit institutions and banks have some market power in the credit/loan market.

The Model. Consider a two-period risk-neutral economy with firms that seek credit to undertake a project. Banks are the only source of credit and have unlimited funding to lend. Their unit gross cost of funding is $C_F > 1$. In the first period, firms demand credit and sign a standard debt contract with banks. In the second period, firms pay back banks, if their project succeeds. Otherwise, they fail in paying the debt in full.

Firms' aggregate demand for credit depends on the interest rate charged by the bank R_B (gross interest rate) in loan contracts. The function $I(R_B)$ represents the firms' aggregate demand for credit, such that $I^{'}(R_B) < 0$. For simplicity, we assume $I^{''}(R_B) = 0$. This demand has an inverse function $R_B(I)$, such that $R_B^{'}(I) < 0$, and $R_B^{''}(I) = 0$. All borrowed resources by firms are invested in their project. Firms' project succeeds with probability of success $p \in (0, 1)$.

Firm pays $R_B(I)$ to banks, if their projects succeeds. However, if firms' project fails, then banks recover only a fraction $\delta \in (0, 1)$ of the amount lent to firms. Hence, in our setting, the probability of default is equal to $d = (1 - p)$ and the recovery rate is δ.

In our economy banks have market power. Accordingly, each bank faces a downward-sloping demand curve for credit. The market power is represented $\lambda \in (0, 1)$ such that, as in Bresnahan (1982), the perceived marginal revenue of a bank with market power λ can be expressed by

$$MR_p^{\lambda} = R_B(I)p + (1 - p)\delta + \lambda pIR_B'(I). \tag{1}$$

Note that, if the market power is absent, $\lambda = 0$, and then perceived marginal revenue is equal to the expected revenue per unit of credit: $R_B(I)p + (1-p)\delta$. In this case, the equilibrium condition corresponds to a perfect competitive equilibrium. However, in the monopoly market,

λ is equal to one, the perceived marginal revenue thus coincides with the monopolist marginal revenue.[4] So, the degree of competition in this industry can be measured by λ.

The static equilibrium conditions are derived from the equilibrium condition, and characterized by $I^* = I(\lambda, p, \delta)$ and $R_B^* = R_B(\lambda, p, \delta)$, which are obtained when perceived marginal revenue, in (1), is equal to the funding cost of banks, which is equal to C_F. The equations below characterize the equilibrium conditions:

$$R_B(I)p + (1-p)\delta + \lambda p R_B^{'}(I)I = C_F, \tag{2}$$

$$R_B^{'}(I)p + \lambda p R_B^{''}(I)I \leq 0. \tag{3}$$

From these conditions, we can establish the implications that we aim to test in this paper. The first set of testable implications, denominated as direct effects of the Bankruptcy Reform, are described by the following expressions:

$$\frac{\partial R_B}{\partial p} < 0 \qquad \text{and} \qquad \frac{\partial R_B}{\partial \delta} < 0. \tag{4}$$

The second set of testable implications, denominated cross partial effects of the Bankruptcy Reform, are described by the following expressions:

$$\frac{\partial^2 R_B}{\partial \lambda \partial \delta} = \frac{(1-p)}{p(1+\lambda)^2} > 0 \qquad \text{and} \qquad \frac{\partial^2 R_B}{\partial \lambda \partial p} = -R_B^{'}(I)\frac{p}{p(1+\lambda)^2} > 0. \tag{5}$$

The direct effect indicates that an increase in the probability of a firm succeeds, p, and an increase in the recovery rate of loans, δ, will lead to a reduction in the price of loans or interest rate R_B. If the bank expects an increase in the recovery rate or in the probability that firms succeed, then the profit maximization problem of banks indicates that, in equilibrium, banks tend to reduce the interest rate charged on firm's loans.

However, a secondary effect comes from the cross-partial derivatives. Considering the market power λ, the cross effect with respect to the probability of success on the interest rate R_B is positive, we derive similar predictions with respect to the recovery rate, δ. That means that a reduction in the interest rate R_B induced by creditor's reform will be lower in markets in which banks have higher market power. As a result, we will have only a limited effect in reducing the cost of lending when banks have some market power.

[4]This equilibrium result is similar to one described by Bresnahan (1982), where MR_p is the perceived marginal revenue of a firm. Under perfect competition, $MR_p^c = R_B(I)p + (1-p)\delta$; under monopoly, $MR_p^m = R_B(I)p + (1-p)\delta + pIR_B^{'}(I)$, and when firms have market power λ, $MR_p^\lambda = R_B(I)p + (1-p)\delta + \lambda pIR_B^{'}(I)$.

Considering the institutional changes promoted by Brazilian bankruptcy law, we intuitively interpret that some of them might affect the recovery rate, δ, and others might have a impact on the probability of default, $d = (1 - p)$. The cross-partial derivatives have a positive sign either for the market power interaction with respect to the recovery rate or with respect to the probability of success.

Nevertheless, since the BBR simultaneously affects the probability of default $d = (1-p)$ and the recovery rate, represented by δ, our empirical strategy will not allow us to disentangle the effects. Meanwhile, the theoretical model predicts a positive cross effect if the Brazilian credit market operates in a non perfect competitive banking environment, notwithstanding that the Brazilian Bankruptcy Reform promoted a cost reduction by increasing creditors' recovery rates in bankruptcy or by reducing the probability of default.

4 Empirical Strategy and Testable Implications

The Brazilian Bankruptcy Reform, regulated by the Federal Law 11,101/2005, provided a natural experiment that allows us to identify the effects of an increase in the creditor protection changes in the credit market. An interaction between the law's effects and a proxy for market power will permit us to identify how the lack of competition limits the possible reducing effect of the BBR on interest rates. Our work aims to estimate the different impacts of the law on interest rates in credit lines with different levels of competition.

As explained in the Introduction, we propose an estimation methodology based on a modified differences-in-differences method. The traditional differences-in-differences method uses an interaction variable between two constructed dummies: (i) the dummy of treated observations, which assumes the value of one when the observation is in the treatment group, and (ii) the time dummy of the exogenous event, which assumes the value of one when the data are observed in the period after the event. We introduce a second interaction variable, in addition to the traditional interaction term, to identify how concentration/competition in the credit market affects the impact of the law. This new term is the interaction of our proxy for market power with the interaction variable of the differences-in-differences standard model. This term intends to capture how market power determines the effect the new bankruptcy law on our treatment group of observations.

Our treatment group will only consider credit transactions between financial institutions and firms. All these credit transactions are collateralized. Our collateralization concept does not consider fiduciary guarantees; we only classify an operation as collateralized if the collateral is

real estate, automobiles, deliverable commodities, receivables or assets that can be recovered in a bankruptcy context.

Our control group consists of all credit transactions for consumers not related to payroll-attached repayments. The database includes only directly contracted loans between credit institutions and a natural person without collateral. We exclude the payroll-attached loans because they started having singular dynamics, reduction in interest rates and increase in the volume of personal credit, after its progressive implementation in December 2013 (Coelho, De Melo and Funchal, 2012).[5]

Our time dummy for the exogenous event considers the month that Federal Law 11,101 became legally effective, June/2005.

Accordingly, our econometric model is described by the following equation:

$$\begin{aligned} Y_{blrct} &= \beta_0 + \beta_1 \Lambda_{lrct} + \beta_2 dmLaw_t + \beta_3 T_{blrct} dmLaw_t + \beta_4 \Lambda_{lrct} T_{blrct} + \beta_5 \Lambda_{lrct} dmLaw_t + \\ &+ \beta_6 \Lambda_{lrct} T_{blrct} dmLaw_t + \sum_{c=1}^{C} \varphi_c BankControls_{bt} + \sum_{m=1}^{M} \mu_m MacroControls_t + \\ &+ \sum_{f=1}^{F} \phi_f dmYear_t + \sum_{h=1}^{H} \phi_h dmMonth_t + \eta_{b,l,r,c} + \varepsilon_{b,l,r,c,t}, \end{aligned} \tag{6}$$

where Y_{blrct} is our outcome variable (interest rate or bank spread) by a credit institution or bank b, credit type l, credit risk class r, and whether the operations are collateralized, $c = 1$, or not, $c = 0$, at time t. Our outcome variables will be constructed by the credit contract data a weighted mean of the interest rate/spread of the contracted credit operations.

The first term Λ_{lrct} is the proxy for market power. We compute it by credit type, credit risk class and collateralized or uncollateralized loans. This variable captures market power variations.

The variable $dmLaw_t$ is a dummy variable for the Brazilian Bankruptcy Reform. The variable assumes the value of 0 before June/2005 and 1 after. The dummy variable for the treatment group of observations is T_{blrct}. This variable assumes the value of 1 if the credit transaction refers to collateralized loans to firms (our treatment group) and 0 if the credit transaction refers to uncollateralized consumer credit. The interaction variable $T_{blrct} dmLaw_t$ is the coefficient that identifies the treatment effect β_3 in the standard differences-in-differences method. This term captures the direct effect of the new law on the treated group of observations. If the Brazilian Bankruptcy Reform increased the probability of firms succeeding and/or increased the recovery rate perceived by credit institutions, we expect a negative value for the estimated coefficient $\widehat{\beta}_3$. This coefficient aims to capture the direct effect of our theoretical model.

[5]Payroll dependent loans were created in December 2003 when the Brazilian Congress passed a law that allows banks to offer loans with repayment through automatic payroll deduction, turning future income into collateral.

The aim of the other three terms in the equation (6) is to estimate the cross partial effects. Our formulation considers interactions with the empirical proxies for market power, Λ_{lrct}. The simple economic model from the previous section shows us testable implications of the effect of a change in market power λ, given a change in the probability of default or in the recovery rate. We attempt to capture these effects by introducing the interaction variables with the empirical measure of market power, which is $\Lambda_{lrct}T_{blrct}dmLaw_t$. Specifically, to capture cross effects we have to introduce other terms in the standard difference-in-difference equation, $\Lambda_{lrct}T_{blrct}$ and $\Lambda_{lrct}dmLaw_t$, which are necessary covariates to enable us to estimate our coefficient of interest, β_6.

This coefficient β_6 aims to capture the interactions of market power with the recovery rate and the probability of default. We capture this effect with the interactive term $\Lambda_{lrct}T_{blrct}dmLaw_t$. From our economic model, $\frac{\partial^2 R_B}{\partial\lambda\partial\delta} > 0$ and $\frac{\partial^2 R_B}{\partial\lambda\partial p} > 0$ are both positive. So, we expect β_6 to be positive as well. This formulation is not able to distinguish between those two cross effects, but the signs of both partial derivatives are positive. As a consequence, we expect a positive sign for the estimated coefficient β_6.

We also consider controls for credit institutions $BankControls_{b,t}$ and macroeconomic control variables $MacroControls_t$. The dummies $dmYear_t$ and $dmMonth_t$ control for year and month fixed effects. We assume that there exists an error term with a time-invariant effect, $\eta_{b,l,r,c}$, and a unique constant intercept for all samples, β_0, which we can estimate by simple fixed effects methodology.

5 The Data Set and Descriptive Statistics

This paper uses information from all credit contracts listed in the Credit Registration System of the Central Bank of Brazil (BCB). The Credit Registration System, denominated Sistema de Informações de Crédito (SCR), is a database maintained by the BCB which contains information on all loans contracted and portfolio credit information from every credit institution in the country.[6,7]

Our data set contains information on the average interest rate per bank loan contract, calculated by the Central Bank using data from the SCR. It also comprises information on the accounting information provided by banks to the Central Bank. Differently from the interest

[6]During the sample period, the information is available for debtors with obligation greater than BRL 5,000.00 at the same credit institution.

[7]The tasks of collecting, matching and processing all supervisory data were conducted in secured sites inside the Central Bank of Brazil with direct supervision by its staff. Data were completely anonymized to safeguard bank secrecy.

rate data, the banking accounting data is publicly available. Both data sets were available for us on a monthly basis from July 2004 to December 2007.

The Brazilian banking regulation has specific rules for certain deposit lines. These rules regulate the resource destination. For example, savings deposits have a mandatory percentage that the financial institutions must lend to real estate and housing lines of credit. Another part of some deposits must finance the agriculture sector. The part of the deposits and saving deposits that do not have a mandatory destination is labeled "free resources". Our data set will only consider credit operations funded with free resources. Banks are able to decide the volume and price of every credit operation considered on our data set.

In our empirical strategy, we will not consider every type of credit operation as a specific market, but we group similar credit lines together, and then we consider aggregated credit lines to compose what we call as "specific market". The credit institutions classify their loans by regulatory unified rules. The BCB receives the classification by individual operations. Table 3 shows 10 credit type categories. Credit type 5, for instance, joins hot money, overdrafts and other credit types with working capital.

[Table 3]

Credit types from 1 to 4 are loans to consumers. Credit type 1 joins all automatic overdraft credit type to consumers. Credit type 2 joins goods financing operations. It includes loans for domestic utilities acquisition and retail credit types with leased assets, excluding vehicles. Credit type 3 consists of vehicle financing to consumers, including leasing operations with vehicles. We will aggregate other credit types to consumers in credit type 4.

Credit types 5 to 10 are corporate loans. Credit type 6 aggregates commercial bills discount operations, which means corporate credit types with receivables, such as duplicates, warranties, and credit card receivables. Following similar criteria to the consumer's credit types, we aggregate leasing operations and goods financing operations not related to vehicles in credit type 7. Leasing operations associated with vehicles are found in credit type 8. Credit type 10 aggregates loans related with trade financing, export or imports. Finally, we will aggregate other credit types in credit type 9.

We construct a monthly-based panel data set that assembles bank accounting information and credit operation information. We will consider each aggregated credit type as a specific credit market.

Below we describe our outcome variables, the covariates and other key measures in our empirical investigation.

5.1 Outcome Variables and Covariates

Outcome Variables. As described in our empirical strategy, we use Y_{blrct} as our outcome variable. It represents the weighted average interest rate for contracted credit transactions. We will also use the weighted average spread over the Interest Rate Term Structure (IRTS) represented as S_{blrct} as another outcome variable.

The outcome variables, interest rate or spread, will be from new credit operations: loans contracted in the month of observation. We are able to observe these variables by financial institutions, credit type, risk class and collateralized operations for each month.

We construct the interest rate for contracted credit transactions by weighting the contracted interest rate of individual credit operations by the size of the credit operations. Equation (7) shows how that outcome variable will be calculated:

$$Y_{blrct} = \frac{\sum_i^I CAop_{iblrct} R_{iblrct}}{\sum_i^I CAop_{iblrct}}, \tag{7}$$

where $CAop_{iblrct}$ is the accounting value, R_{iblrct} is the informed contracted interest rate for a borrower i, and I is the number of individual credit operations.

We also calculate the spread over the IRTS on a weighted basis. In order to do so, we first need to calculate the weighted maturity of the credit operations (WMat), and then calculate the spread over the IRTS regarding the interest rate observed in the yield curve with the same maturity. Equation (8) shows how we will proceed the construction of the variable S_{blrct}:

$$S_{blrct} = \frac{1 + Y_{blrct}}{1 + IRTS_{WMat_blrct}}, \tag{8}$$

where $WMat_{blrct} = \frac{\sum_i^I CAop_{iblrct} Mat_{iblrct}}{\sum_i^I CAop_{iblrct}}$.

$WMat_{blrct}$ is the credit contract maturity weighted by the size of the credit operation, and $IRTS_{WMat_blrct}$ is the interest rate in the yield curve with the same maturity as $WMat_{blrct}$. The reference for our IRTS construction is the future contracts of the interbank interest rate negotiated in the BMFBovespa, São Paulo.[8]

We also calculate the loan size. Equation (9) shows how we will proceed the construction of the variable $CAop_{iblrct}$:

$$CAop_{blrct} = \frac{\sum_i^I CAop_{iblrct}}{I}. \tag{9}$$

[8]The interbank interest rate market in Brazil works with futures derivatives contracts. These contracts are similar to an interest rate swap contract that exchanges a fixed payment for a floating payment at a pre-determined day of liquidation. We use flat forward criteria to interpolate the interest rate of the futures contracts to construct our yield curve based on the monthly mean of the market close price.

We will not access the individual characteristics of each operation, as we weighted variables.

Measures of Concentration and Competition. The main results of this paper will be presented for the Herfindahl-Hirschman Index(HHI), a measure of concentration and a proxy for market power. HHI is equal to the quadratic sum of the firms' market shares: $\sum_{n=1}^{N}(MarketShare_n)^2$.

We start by using the finest criteria to define the market size in our dataset. To aggregate the credit operations into a market definition, we sum credit operations into the same credit type, as shown in Table 3, with the same risk credit category, and we also differentiate if the operation is collateralized or not.

For example, we will consider as one definition of a market size the sum of all overdraft operations with consumers (Credit Type 1) classified as risk rating AA without collateral.[9] Similar but collateralized operations will be considered as a different market. The following equation formalizes our market share definition.[10]

$$HHI_{blrct} = \sum_{1}^{B}\left(\frac{ContractedCredit_{blrct}}{\sum_{1}^{B} ContractedCredit_{blrct}}\right)^2 \tag{10}$$

Our main results will be presented using the HHI, but, for robustness verifications, we will also present results with another measure of concentration, the market share and the $C4$ (the sum of the market share of the four largest lenders in a given credit type), and a measure of competition, the H-Statistic proposed by Panzar and Rosse (1987).

Credit Risk of Loan Contracts. We use the internal risk classification informed by each credit institution for every credit transaction. The Brazilian banking regulation imposes a standard classification for credit risk. Resolution 2,682/99 of the BCB established classification forms, principals and necessary internal controls. Brazilian credit institutions must classify the credit risk of each borrower and specific credit risk of each operation using standardized rating categories. The best risk category is AA. The other categories follow a single letter classification from A to H. In this paper we do not use credit operations with a risk classification of H, because loan defaults are rated as H. The regulation demands a double classification, and the credit institutions classify the borrowers and the operations. We use the operational risk rating.

The supervisory departments of the BCB are the institutional structures responsible for

[9] AA is the lowest risk level of credit operations in Brazil. See below for further explanation.

[10] We will not use the normalized Herfindahl-Hirschman Index because we attempt to compare different credit type concentrations. The normalized index measures the same for markets with 2 or a hundred participants if they share the market equally. For our model, we wish to differentiate these markets. If we have only two banks, then we want our proxy measure for market power to reflect this market as less competitive than a market with a hundred participants.

regulatory enforcement. The departments timely verify whether credit institutions are complying with applicable regulations. Once the credit institutions operate under the same institutional environment and they receive the necessary regulation enforcement, we assume the comparability of the credit risk categories among banks.

5.2 Descriptive Statistics

We detailed describe all variables that we use in this paper in Table 4. Table 5 lists the number of credit institutions and observations by month. We noted that the available data present observations that indicate the presence of outliers, such as credit operations informed with unrealistic interest rate values. For this reason, we exclude outlier observations. We detail the outlier detection method in the next section.

Table 5 also shows the number of observations after we excluded outliers.[11] It also lists the number of credit institutions and observations by month, and the fraction of excluded observations. Tables 7 to 10 show descriptive statistics of the dependent variables and the control variables. We divided the sample into two periods, before and after the BBR has become effective. As presented in the institutional background section, the studied event occurred on 6th June, 2005. The statistics in the first part of that table use the sub-sample from July/2004, the first monthly panel data, up to May/2005. The statistics of the period after the BBR cover the monthly panel data from June/2005 until December/2007, our last observed month. We reported the descriptive statistics after excluding the outliers.

[Table 7 Here]

Tables 8 to 9 exhibit the dependent variables statistics by treated group and non-treated group.

[Table 8 Here]

[Table 9 Here]

We report the mean and the standard deviation of the control variable in Table 10. We also report the descriptive statistics of the interactions between HHI and the dummy of the treated observation and the dummy of the event.

[Table 10 Here]

[11] Tables 6 presents abbreviation and variable names abbreviations and symbols.

5.3 Outliers Treatment

We choose to treat the outliers with a well-known algorithm proposed by Hadi (1994). Since we do not aim to discuss the literature related to outlier issues, we have chosen to use a well-consolidated procedure. Hadi's algorithm considers a centrality measure on a multidimensional perspective and proposes a dispersion measure based on the correlation matrix of the variables. In a comparison to four other algorithms, the Hadi's algorithm has performed better on complex databases (Hawkins et al., 2002).

The procedure is not as flexible as non-parametric algorithms, but specialized work corroborated its efficiency, explaining why it is frequently used. We also considered the computational intensity of non-parametric algorithms applied to our database with more than 20,000 observations.

We treated for outliers only in the outcome variable with a univariate distribution treatment. The level of treatment is 1% using Hadi's algorithm. Table 11 shows some statistics of the excluded outliers.

[Table 11 Here]

The outliers represent credit operations with interest rate over a 183.67% year yield. We believe in mistyping causes or operational errors. The mean of the interest rate without the outliers are 36.14% y.y.

6 Estimation Results and Findings

We estimate the differences-in-differences model proposed in equation (6) to investigate the BBR effects on interest rates and the spreads charged on loans to firms. Tables 12 and 13 report our main results. The estimated models use different sets of observations or control variables. Model (1) uses only dummies of year fixed-effect and month fixed-effect control variables. We excluded the outlier observations from the set of observations to estimate Model (1). In Model (2), we introduced all the control variables, but we estimate the model without excluding the outliers. Model (3) comprises our main results. To estimate this model, we consider all control variables and we exclude the outlier observations. We estimate the last model using a subset of observations. We truncated the period of estimation from July/2004 to April/2006 by keeping eleven months before the BBR (before June/2005) and after the BBR (after June/2005, inclusive).

We analyze two estimated coefficients: The coefficient of the regressor *Dummy of BBR*×*Dummy of Treated Group*, which we denoted as $\widehat{\beta}_3$ in equation (6), that is the direct effect of the BBR; and

the coefficient of the regressor $HHI_{\text{Credit Type, Risk Collateral}} \times$ *Dummy of BBR*$\times$*Dummy of Treated Group*, which we designated as $\widehat{\beta}_6$ in equation (6).

Analyzing the direct effects of the BBR, we find that the bankruptcy reform pushes down the interest rate charged to new contracted loans to firms. Looking at model (3) reported in Table 12, we find that the Brazilian Bankruptcy Reform could knock down the interest rate 736 basis points relative to our control group of operations.[12] However, this potential reduction had not been reached because of concentration in the Brazilian credit market, which we associate here with lack of competition. We also estimated a friction caused by the concentration of the market, a proxy for competition conditions, as the coefficient $\widehat{\beta}_6$ of the interaction variable $\Lambda_{lrct} T_{blrct} dmLaw_t$. The calculated value is $\widehat{\beta}_6 = 0.1083$. We find the effect of this coefficient on the dependent variable by multiplying the value of $\widehat{\beta}_6$ by the average of the HHI index of the treatment group in the period after the BBR in Table 9. We find the value of 202 basis points. If we compare with the potential effect of the law, it represents 27.5% of this potential effect. We can address that concentration, a proxy for the lack of competition, hampers 27.5% of the potential reducing effect of the law in the interest rate of new corporate credit operations.

The mean of the annual interest rate of all contracted operations after the bankruptcy law is 36.33%, as shown in Table 7. Thus, the estimated potential reduction impact of the BBR represents 736 basis points down or 19.2% of the average interest rate. This is a considerable effect. Araujo et al. (2012) suggest a reduction of approximately 16% in the cost of debt financing. Those authors used accounting data of 698 publicly traded firm from 1999 to 2009 and calculated the cost of debt financing based on the accounting information.

We also estimated the effects with the outlier observations into the sample, as shown in model (2). The outliers considerably affected the coefficient $\widehat{\beta}_6$. The point estimation jump from 0.1083 in model (3) to 0.2020 in model (2) and the values are not statistically equal. We also calculate model (4) of the tables with a symmetric sub-sample of panel-data, which is the manner in which we take the same number of months before and after the BBR. The point estimation is $\widehat{\beta}_6 = 0.130$, and the standard deviation [0.032] with respect to the interest rate as the dependent variable. The result is statically similar to the results of model (3). Considering the spread as our outcome variable, we also estimate statistically comparable results. However, the expanded sample allows us to increase our degree of freedom, whether we consider the closest view around the BBR event, or we consider all available data, the $\widehat{\beta}_6$ estimated value corroborates our second testable hypothesis. If we consider the average market power over all credit lines (treated and control group), the liming effect represents 295 basis points, or 40.1%.

[12] We estimate this effect by coefficient $\widehat{\beta}_3$. The coefficient of the interaction variable, $T_{b,l,r,c,t} dmLaw_t$, captures the treatment effect on the treated observations.

Table 13 investigates the direct effect of the BBR on the spread charged over the interest rate term structure of the interbank money market. The BBR has a direct effect of 638 basis points on the spread, but concentration, measured by the HHI, hinders 150 basis points or 23.6% of this potential reduction on the spread of the treated group.

The direct effect of the law estimated as coefficient $\widehat{\beta}_3$ of the interaction variables holds statistically similar results for the symmetric sub-sample, Model (4). The point estimation are even closer than the results for $\widehat{\beta}_6$ for both tables 12 and 13.

We can see that the results predicted by the theory are present in our estimations and corroborate the testable hypothesis of our economic model. The practical perspective is a relevant estimated effect. An institutional reform for creditors' protection has a positive effect on credit condition for firms, but market concentration, as a proxy to competition conditions, matters. The potential effect of the reform seems limited by market power in the credit sector.

7 Robustness Tests

We have made a series of additional tests to be sure that our results are robust. Each test aims to call into question the main results by addressing different problems when we apply the differences-in-differences methodology (Bertrand et al., 2004).

We aim to verify the consistency of coefficients $\widehat{\beta}_3$ and $\widehat{\beta}_6$, our main interaction variables. We also aim to verify if the results are robust to changes in the definition of some variables. For instance, we expect that these coefficients keep the same mathematical sign when we change our empirical proxy for the market power and we also expect to do not find any effects when we apply the placebo time events instead of the real BBR event.

In the first set of tests, we change the definition of market to calculate the new market share measures, and also the new HHI. In the second set of tests, we replace the HHI as market power proxy by C_4, market share and Panzar-Rosse H-Statistics. We also implement two falsification tests and estimate equation (6) with placebo exogenous event in the first falsification test, and we randomize the market power measure in our second falsification test. The next sections briefly report the tests and resume our methodology to construct them.

7.1 Coarse Definitions of Market Power and HHI

In this section, we consider a different aggregated level of our main concentration measure. Here we use coarser measures of market definition, which consider each credit type as a singular credit

market.[13]

Our main results used a definition of market size to calculate the HHI considering that credit operations are in the same credit market when they have the same categorized credit type, with the same risk class and if the credit operation are collateralized or not. Now, we use a higher aggregation level. We consider only differentiation by credit types. We consider all operations in the same credit type to construct the size of the market for each period. We end with ten credit markets. The size of each market is the sum of the new credit operations in the same credit type.

We recalculated the HHI considering the credit type as the market definition. We sum all operations informed only by credit type categories related in Table 3, the participation of the credit institution is the total value of the contracted credit operations by each credit type in a given period. The HHI calculated in this section is now:

$$HHI_{lt} = \sum_{1}^{B} \left(\frac{ContractedCredit_{blt}}{\sum_{1}^{B} ContractedCredit_{blt}} \right)^2. \tag{11}$$

This concept of market size results in less variability once we have only ten markets by each set of panel data. The results, shown in Tables 14 and 15, are statistically significant, presenting the same mathematical signs we estimated in our main results.

Naturally, the estimated coefficients are not identical. As we take a different market concept, the market share and the index number of the HHI have another magnitude, but the coefficients $\widehat{\beta}_3$ and $\widehat{\beta}_6$ are strongly significant, and they have the mathematical signs we expect. If we compare the new $\widehat{\beta}_6$ value, of 0.2032 from model (3) in Table 14, it is higher than the $\widehat{\beta}_6$ value with the HHI differentiating markets by credit type, risk class and collateral. Nonetheless, the estimated coefficients are different, the limiting effect of market power remains statistically close.

The mean of the variable $\Lambda_{lt}T_{blt}dmLaw_t$ also has a different value compared with the $\Lambda_{lrct}T_{blrct}dmLaw_t$ variable, as reported in Table 10. The variable $\Lambda_{lt}T_{blt}dmLaw_t$ has a mean of 0.1437 and standard deviation of [0.055] for the treated group of credit operations in the period following June/2005. Multiplying this mean by the estimated coefficient results in 291 basis points. The coefficient $\widehat{\beta}_3 = -0.0786$ indicates the potential effect of the law. The limiting effect is 37.0%. Compared with the 201 basis point estimated on Table 12 and considering the standard deviation, the final effect of market power on the collateralized loans to firms' after the BBR are statistically similar, whether we aggregate the market definition by credit type or if we disaggregate by credit risk class and by collateralized and non-collateralized loans.

[13]We described the credit types used in this paper in Table 3.

7.2 Others Measures of Concentration, and a Measure of Bank Competition

Others Concentration Measures. Our main results use the Herfindahl-Hirschman Concentration Index - HHI as proxy for a measure of market power. We use other common measures of concentration, including market share and C4. As in our main results for the HHI, we calculated these new measures considering each market as having the same type of credit type, the same risk class rating, and collateral category, for each panel data. The construction of Market Share and C4 are analogous for the HHI in Section 5.1.

$$MarketShare_{blrct} = \frac{ContractedCredit_{blrct}}{\sum_1^B ContractedCredit_{blrct}}, \tag{12}$$

$$C4_{blrct} = \sum_{b=1}^{B} MarketShare_{blrct}, \qquad \text{such that} \qquad MarketShare_{blrct} > MarketShare_{(b+1)lrct}. \tag{13}$$

We report the results with C4 and Market Share as proxies for market power in Tables 16 to 23.

We investigate the coefficients of the interaction variables, $T_{blrct}dmLaw_t$ and $\Lambda_{lrct}T_{blrct}dmLaw_t$. For C4 and Market Share, the test corroborates our first testable hypothesis involving the direct effect of the BBR reducing the interest rate and the spread. The coefficient of the variable $T_{blrct}dmLaw_t$ is negative and has a p-value less than 5%.

When we investigate the coefficient of the variable $\Lambda_{lrct}T_{blrct}dmLaw_t$, our estimations do not necessarily corroborate our previous results. Using C4, model (2) is the only configuration that shows a statistically significant coefficient with the expected mathematical sign in Tables 16 and 17 . Models (3) and (4) do not present statistically significant values. Even though model (2) corroborates our Second Hypothesis, we do not treat the outlier to calculate this model. Using Market Share, the results are inconclusive. We report these results in Tables 20 and 21. Model (4) in Table 20 with a sub-sample and the interest rate as a dependent variable results in $\widehat{\beta}_6 = 0.0558$, but the p-value is higher than 5%, and model (2), not treated for outliers, shows the opposite results, and both are not statistically significant at 5%. If we examine our sample, the variable $MkS_{\text{Credit Type, Risk, Collateral}} \times$ *Dummy of BBR*$\times$*Dummy of Treated Group* has a mean of 0.0710 and a standard deviation of [0.1365] for the treated group of observation. This high standard deviation may explain the inconclusive results of this part of the estimations.

To investigate these inconclusive results, we change the market definition to follow the same

methodology reported in the previous subsection. The aggregated definition of the credit market allows us to observe a different set of results. We report the estimated coefficients in Tables 18 and 19 for C4, and in Tables 22 and 23 for Market Share.

We compare Model (3) estimations with our main results. We highlight the coefficient of interest in the tables. The interaction variables are now $T_{blrct}dmLaw_t$ and $\Lambda_{lrct}T_{blrct}dmLaw_t$. The first variable is the regressor of the direct effect of the law, and its estimated coefficient assumes the expected values. The estimated coefficients of the second variable now assume the expected values. With C4, we estimate $\widehat{\beta}_6 = 0.1299$ (Model (3) in Table 18), with Market Share, we estimate $\widehat{\beta}_6 = 0.1308$ (Model (3) in Table 22) using interest rate as the dependent variable. Both coefficients are statistically significant and corroborate our second testable hypothesis. The mathematical sign and the statistical significance are not sensitive if we change the dependent variable for the spread.

We cannot compare the results of the model with C4 or Market Share using the aggregated market definition with the models using HHI with the same market definition, but we can compare the hampering effect of our proxies of market power on the interest rate charged on loans to firms. Model (3), Table 18, presents a reducing effect of the BBR on the interest rate of 1371 basis points, but the estimated hampering effect of C4 (market power) is 817 basis point or 59,6% of the potential effect of law.[14] These numbers are higher than we calculated using HHI as the proxy for market power. If we take one standard deviation in the confidence interval, we can consider the hampering effect of C4 as 584 basis points, which indicates that market power, measured by a proxy, hinders 42.6% of the potential reducing effects of the Brazilian Bankruptcy Reform. The results are close to the results we estimated using HHI with either aggregated or non-aggregated market definitions.

Despite the fact that the model estimated with C4 and Market Share with the largest disaggregation market definition is not conclusive, the models that consider credit types as markets present strong results that corroborate our main results. The estimated coefficients points to similar numeric effects.

Bank competition measure as a proxy for market power. In our previous results, we used the Herfindahl-Hirschman Index HHI, C4 and Market Share, as proxies for market power, to estimate the interaction effect of concentration with the Brazilian Bankruptcy Reform on loan interest rates.

Although concentration is frequently used as a proxy for market power, concentration is not

[14] We consider the mean of the variable $C4_{\text{Credit Type}}$ of the treated group of observation after June/2005 and apply the same method of calculation we used earlier.

a sufficient condition to define competitive or monopolistic behavior of firms and can incorrectly access market power (Bresnahan, 1982).

As we cannot observe market power or competition intensity, several authors have attempted to find alternative ways to measure competition. Some efforts aim at new structural models or new empirical models to assess the market competition structure without using concentration indexes. We base the estimations of this section on the one proposed by Panzar and Rosse (1987), who developed a measure of competition, named as H-Statistic.

Since this paper does not aim to extensively describe the model developed by Panzar and Rosse, we will only highlight some relevant aspects of the Panzar and Rosse measure. The H-Statistics is related to competition intensity as shown in Table 35:

[Table 35 Here]

The H-Statistic is a sum of the gross revenue elasticities with respect to input prices. Panzar and Rosse show that this statistic is negative when firms are exhibiting monopolist or collusive behavior and operate in the high inelastic part of the demand curve. When firms are price takers, the H-Statistic tends to be equal to 1, and when the firms are engaged in monopolistic competition, the H-Statistic assumes a value between 0 and 1.

We face important challenges when using Panzar and Rosse in our differences-in-differences econometric model. First, we need to estimate H-Statistics for the different credit markets, since the same credit institution operates with a variety of credit types, previously classified in ten credit type categories. Second, we need to replace our measure of bank concentration by the Panzar and Rosse H-Statistic in our differences-in-differences econometric model. In the supplementary material we describe a two-stage estimation procedure that we developed to use Panzar and Rosse in our differences-in-differences econometric model. That procedure will require the use of a bootstrapped correction procedure.

In the second stage of our econometric, our estimation for β_6 are $\widehat{\beta}_6 = -0.0356$ using the interest rate as the outcome variable (Model (3) in Table 24), and $\widehat{\beta}_6 = -0.0325$ using the spread over IRTS as the outcome variable (Model (3) in Table 25). Both estimated coefficients are statistically significant, although they are not bootstrap corrected. Models (1) and (2) also show similar coefficients with considerable statistical significance. We estimated Model (4) with a shorter period of observation, from July/2004 to Apr/2006, and our coefficient of interest has no statistical significance for this period. However, the bootstrapped estimation presents statistical significance, as shown in Tables 26 and 27, model (4bs).

To understand the meaning of the coefficient β_6 in those estimations, we must examine how we use the Panzar and Rosse statistics to capture the market power effect in our differences-in-

differences estimation. In the previous section, we used HHI and we latently assumed that the perfect competition conditions implied that HHI was equal to zero. At this part of the paper, we use H-Statistics as a proxy for market power, which implies that this measure of competition is equal to 1 under perfect competition conditions. Using H-Statistics, the calculation of the impact of the lack of competition on the dependent variable requires one more step. We must compare the estimated Multi-Product-H statistic with the Multi-Product-H value under conditions of perfect competition.

The differences-in-differences econometric model captures the limiting effect of the market power by the interaction of three variables, $\Lambda_{lt}T_{blrct}dmLaw_t$. As we use the estimated $Multi-\widehat{Product}-H$ as a proxy for Λ_{lt}, if $Multi-\widehat{Product}-H$ is equal to 1 under perfect competition, then the interaction variables become $T_{blrct}dmLaw_t$. In a perfect competition scenario, the predicted impact this interaction variable will be the fraction of treated observations after the Brazilian Bankruptcy Reform because the proxy for market power tends to 1. To calculate the expected effect of the H-Statistic on the dependent variable, we might calculate $\widehat{\beta}_6 E[\Lambda_{lt}T_{blrct}dmLaw_t] = \widehat{\beta}_6 E[T_{blrct}dmLaw_t]$ because $E[\Lambda_{lt}] = 1$ under perfect competition. However, we are interested in the effect of competition on the interest rate of corporate loans, our treatment group, so $T_{blrct} = 1$, and after the BBR, $dmLaw_t = 1$. In other words, the effect of the H-Statistics on the interest rate of corporate loans under perfect competition is exactly the estimated coefficient $\widehat{\beta}_6$. As $\max\{H-Statistics\}$ is theoretically equal to 1 and $\widehat{\beta}_6 < 0$, we have the larger reducing effect of this term on the interest rate if the market operates under perfect competition.

However the foregoing is not the entire potential effect of the law. To calculate this effect we must observe the coefficient $\widehat{\beta}_3$. The potential effect of the law is $\widehat{\beta}_3 + \widehat{\beta}_6$ because perfect competition does not eliminate the direct effects of the law estimated by the term, $\beta_3 T_{blrct}dmLaw_t$.

In a monopolistic competition scenario $Multi-\widehat{Product}-H$ is less than 1, if the market operates near a monopoly maximization behavior, theoretically the statistic could assume: $Multi-\widehat{Product}-H < 0$. To calculate the estimated impact of the lack of competition, when we use the $Multi-\widehat{Product}-H$ to measure the competition level of the market, we must observe the expected value of the estimated statistics after the BBR, or $E[Multi-\widehat{Product}-H|dmLaw = 1]$, then we multiply by $\widehat{\beta}_6$. We can calculate the estimated total effect of the law by $\widehat{\beta}_3 + \widehat{\beta}_6 E[Multi-\widehat{Product}-H|dmLaw = 1]$. As H-Statistic is less than 1, when the market operates under monopolistic competition or monopoly or collusive conditions, and $\widehat{\beta}_6 < 0$, the lack of competition limits the total effect of the law.

The estimated coefficient to *Dummy of BBR* $\times$ *Dummy of Treated Group* is $\widehat{\beta}_3 = -0.0301$

(Model (3) in Table 24). If we observe the estimated results from the previous section, this coefficient is considerably smaller in magnitude. We found previously the impact of 736 basis point on the interest rate change on the firm's collateralized credit operations, whereas for now, this coefficient represents 301 basis points. The missing point here is the variation range of our market power measure. When we use HHI as a market power measure, the statistics tend to zero as the market becomes more competitive, and to 1 in when the market is monopolistic. In contrast, using the H-Statistics, the measure tends to one as the market become more competitive. We wish to compare the actual competitive effect with a simulated perfect competitive environment, or the estimated effect when Multi-Product-H tends to 1.

In this scenario, the interaction variable, $Multi-\widehat{Product}-H_{blt} \times$ *Dummy of Treated Group*$\times$*Dummy of BBR*, converges to *Dummy of Treated Group*$\times$*Dummy of BBR*, and the final effect will be $\widehat{\beta}_3 + \widehat{\beta}_6$, the sum of the estimated coefficient that captures the effects of the BBR with our treated credit operations. If we look at the estimated coefficients of model (3) in Table 24, we have $\widehat{\beta}_3 = -0.0301$ and $\widehat{\beta}_6 = -0.0356$, which results in a potential reduction of 657 basis points in the interest rate and is statistically near to the 736 basis points of our former results reported in the previous section. The impact of the lack of competition comes from the difference of the H - Statistics from 1 to their estimated level.

For the treated operations, the mean of the $Multi-\widehat{Product}-H$ is 0.4159 with standard deviations 0.3236 for the period after the BBR. The difference of the estimated Panzar and Rosse statistic from the theoretical indicator of perfect competitions is 0.5841, given by (1-0.4159). In the perfect competition case, the impact of the BBR is $\widehat{\beta}_3 + \widehat{\beta}_6$, but we estimated the total effect of the law as $\widehat{\beta}_3 + \widehat{\beta}_6 0.5841$, which means that the expected reduction of 657 basis points on the interest rate of corporate loans $(\widehat{\beta}_3 + \widehat{\beta}_6)$ with respect to our control group is now 449 basis points. In other words, the lack of competition limits 31.7% of the potential effect of the law. These results are very close to our estimations in our main findings using HHI as the proxy for market power.

We report the bootstrapped models in Tables 26 and 27. The models (3bs) and (4bs) are respectively models 3 and 4 of Tables 24 and 25.[15] Additionally we report the model (5bs), which is similar to model (3bs) but includes HHI as a control variable. We report the bootstrapped normal confidence interval and the bias corrected confidence interval. We simulated all models with 700 repetitions. The bootstrapped results, with strong statistical significance, are an important confirmation of the consistency of our estimations. For example, the bootstrap procedure achieved a p-value with significance level of the coefficient $\widehat{\beta}_6$ in model (4bs) in Tables

[15]Models 4 and 4bs use a symmetric sub-sample around the month when the BBR became legally effective, i.e. from July/2004 to April/2006.

26 and 27, which did not occur in the estimations without bootstrapping of model (4) (Tables 24 and 25).

The direct impact of BBR on the treated group of observation is estimated by coefficient $\widehat{\beta}_3$. The estimated values of this coefficient are similar in the bootstrapped models. Model (3bs) in Table 26, $\widehat{\beta}_3 = -0.0302$, (4bs), $\widehat{\beta}_3 = -0.0303$ and (5bs) $\widehat{\beta}_3 = -0.0281$. These values are expected once the BBR effects do not change. The $\widehat{\beta}_6$ coefficient, however, assumes different values, which is a consequence of the random variable that measures the competition level on the credit market and the different sample spans of these estimations.[16]

Comparing the value of $\widehat{\beta}_6 = -0.0159$ in model (4bs) (symmetric and smaller sample) with $\widehat{\beta}_6 = -0.0356$ in model (3bs) (our complete sample) in Table 26, we observe that the coefficient suffers a relevant alteration in the point-estimated value. However, the estimated limiting effect of market power on the effects of the BBR is similar to the estimations using the whole period of observation.

The estimated effect of the interaction regressor $Multi - \widehat{Product} - H_{blt} \times$ *Dummy of Treated Group*$\times$*Dummy of BBR* should consider its mean after the BBR, empirically represented by *Dummy of BBR=1*. In model (4bs), the mean of the interaction regressor is 0.3243 (Table 29)[17]. The model (4bs) results indicate a limiting effect of 117 basis points over a potential interest rate reduction of 432 basis points in the period between July/2004 and April/2006. This represents 27,1% of the estimated potential effect of the law and is statistically similar to the estimated limiting effect of 31,7% with the complete data set (model (3bs)).

Tables 25 and 27 show estimations with the mean spread charged on contracted credit operations as our outcome variable. The results also show the relevant impact of the lack of competition on the impact of the BBR on spreads. The bootstrapped estimation of model (3bs) in Table 27 indicates a hampering effect of the lack of competition at the level of 30.9% on the impact of the BBR on the spread.

In summary, we find statistical significant evidence that the market power hampered a considerable part of the BBR effect on reducing the interest rate of corporate loans. Using the H-Statistics, we estimate that the market power limited 31.7% of the potential reduction on the interest rate and 30.9% with respect to spread over the Brazilian Interest Rate Term Structure.

[16]Here we assume exogeneity of our competition measure with respect to the BBR, notwithstanding that this variable varies in different periods.

[17]The calculation of the effect of the coefficient $\widehat{\beta}_6$ on the dependent variables requires the observations of the regressors of interest across the control group and the treated group of credit operations. The supplementary material explains the construction of Tables 28 and 29.

7.3 Constant Market Power Test

One possible issue with our estimations is the fact that the new bankruptcy law might simultaneously affect the competitive conditions of the Brazilian bank lending market, beyond reducing bank costs, such as the recovery rate. If we face a simultaneous effect of the BBR, we have a serious endogeneity problem in our estimations, once we no longer use any econometric model that addresses an endogeneity regressor, such as instrumental variable (IV) estimations. To look for some evidence that we do not have endogeneity in our market power proxy, we construct a simple test that might indicate this problem. Here present this test using the HHI concentration index, because we had decided that estimations using HHI as a market power proxy would be our main results.

If the BBR affected the competition conditions in the Brazilian bank lending market, we expect that the HHI will be affected after June/2005. The BBR should alter the dynamics of the HHI.

This test simulates an absolute exogeneity condition of the market power with respect to the Brazilian Bankruptcy Reform (BBR). We simulate this condition by freezing the HHI one month before the BBR became effective. As a practical matter, we replace all HHI observed from June/2005 to December/2007, our last observed month, by the HHI observed in May/2005, one month before the BBR became legally effective. We keep the same HHI for all observations over all panel data related to the months after June/2005. Formally,

$$\widetilde{\Lambda}_{lrct} = \begin{cases} \Lambda_{lrct}, & \text{if } \ t < May/2005 \\ \Lambda_{lrcMay/2015}, & \text{if } \ t \geq May/2005 \end{cases} \tag{14}$$

The new constructed variable $\widetilde{\Lambda}_{lrct}$ substitutes for the observed variable. This procedure eliminates all time variability of our market power measure after BBR. As a consequence, the test no longer considers any possible endogenous variation of our market power proxy, HHI, caused by the new legal environment. The sub-sample from June/2005 to December/2007 keeps the variation of all other independent variables.

We report the test in Tables 30 and 31. The regressor with the simulated HHI shows the estimated coefficients we seek to test. The new value for the interactions of the HHI with the treated observation is statistically close to our previous results. Our previous results in Section 6 attributes 0.1083 to $\widehat{\beta}_6$, and standard deviation [0.031] (Model (3) in Table 12), whereas this test shows 0.1381 [0.033] (Model (3) in Table 30) using the interest rate as the outcome variable. With the spread as the outcome variable, we also obtain statistically close results to the ones in the Section 6, which was $\widehat{\beta}_6 = 0.0812$ [0.021], and now the estimation using the simulated

sample presents $\widehat{\beta}_6 = 0.1058$ [0.029].[18]

If the law affected the HHI after June/2005, the estimations results presented in Tables 30 and 31 should have indicated the estimated coefficient statistically divergent from our main results in Tables 12 and 13. However, they seem to be the same. So, the tests show that if HHI is endogenous, this is not driving the results that we obtained. Another interpretation may be that these results suggest that the BBR has not affected competition.

7.4 Falsification Tests

We use two additional tests to check for the validity of our estimated effects. First, we introduce a placebo event by estimating the empirical model using a dummy variable that assumes the value of 1 in different months, simulating the BBR dummy in false periods. Second, we randomized the concentration index over the cross-section dimension.

7.4.1 Placebo Test

In this section, we consider false months to the effectiveness of the BBR. We replace the real date of the exogenous event in the differences-in-differences empirical equation, June/2005, by other times. In this manner, we simulate the BBR effect from an imaginary period. We replace the real date by another date before and after the correct month. We expect that this test will not capture any effect of the BBR.

The placebo test consists on replacing the dummy variable $dmLaw_t$ of the month when the bankruptcy law effects became effective by a placebo dummy. This dummy variable simulates a placebo event on a different month. The dummy variable for the BBR event assumes the value 1 from June/2005, the correct month the BBR became legal effective, until the last observed month, December/2007. The placebo dummy variables assign the value 1 from other months on. We simulated four dummy variables. Respectively, each of them turned into value 1 six and nine month before the correct date, and six and nine months after.

This test is also relevant to address the effect of Federal Law 10.931 on the auto loans spread (Assunção et al., 2003). We also consider auto loans on our database, among other operations. The reducing effect of the credit spread shown by Assunção et al. (2003) is a concerning point; thus, we study a new event nine months after Federal Law 10.931 was enacted, and we expect that

[18] An alternative testable result is the coefficient of the interaction variable $T_{blrct}dmLaw_t$. Our estimations using the new constructed variable should not affect this coefficient in the case of exogeneity. If we are facing an endogeneity problem and the BBR are simultaneously determining the spread or the interest rate and the competition level after the time event, our main results would be inconsistent and we would expect statistically divergent coefficients, which does not seem to be the case.

this law affected all credit operations in our database (July/2004 to December/2007) and does not contribute to the misidentification of the BBR effect. Nonetheless, we test September/2004 as a placebo event, and we find no evidence that the new collateral legislation affects our results.

This test is somewhat different from Rosenbaum (2002). He examines the effect of the placebo variable on a post-treatment period excluding the month before the real event. We expect that the estimated effect of the interaction variable to have no statistical significance. To conduct a placebo test, we divide our sample into two different periods. The first sub-sample covered the period before the BBR became effective, from July/2004 to May/2005, and the second sub-sample from August/2005 to December/2007. We exclude the data panels for June/2005 and July/2005 from both sub-samples.

We included placebo dummy variables for the period before the BBR using the first sub-sample; for the period after the BBR, we used the second sub-sample. Table 32 shows the results of the placebo test using the mean of contracted interest rate as the outcome variable, and Table 33 using the mean of spread as the outcome variable. The reported models (1) and (2) regress dummies considering placebo events six and nine months before the studied event, respectively. Models (3) and (4) considered placebo events six and nine months after.[19]

The variables of interest are the interactions between the Treated Group and the simulated time dummy variable representing the placebo event (D*ummy Placebo of BBR*×*Dummy of Treated Group*) and the additional interaction with the Market Power measure, HHI, ($HHI_{\text{Credit Type, Risk, Collat}}$ ×*Dummy Placebo of BBR*×*Dummy of Treated Group*). The results are not statistically significant for any placebo variable or its interactions. The coefficients do not even have a stable sign.

Our main concern is statistically significant coefficients estimated for the interactions with the placebo dummies. These results could put our main results into question. As none of the tested placebo events is able to reveal similar results, we have support to the hypothesis that the theoretically predicted effect occurred only in the months around the BBR.

7.4.2 Randomized Procedure over Market Power Measure

The second falsification test is the randomization of the market power proxy. When we randomized our market power measure, we expect that the estimated coefficients, $\widehat{\beta}_1$, $\widehat{\beta}_4$, $\widehat{\beta}_5$ and $\widehat{\beta}_6$, of our main results remain statistically significant in comparison with the new confidence interval. We obtain this new interval from 400 estimations each, using an HHI random value.

[19] Abadie, Diamond, and Hainmueller (2010) processed a similar placebo with two sub-samples for the periods before and after the event of interest but with a synthetic control group.

Using a uniform distribution, we randomized the HHI within panels; in other words, for each cross section we randomly switch the HHI between our markets. This procedure does not randomize between the months. We replace the original value of HHI with a new value uniformly sorted from the original sample of HHI values for the same month. The randomization mixes treated and non-treated observations only for the market power measure. Practically, we implement an algorithm that uniformly sorts the HHI from the original dataset and replaces it in a new dataset, then we estimate equation (6). We repeat this procedure 200 times to construct the histogram in Table 34. Once the sample lost its original configuration, we expected no longer to capture the market power effects. We then build a distribution of the estimated coefficients.

We use model (3) of Tables 12 and 13 with both outcome variables: interest rate and spread. The first four graphics in Table 34 show the results using the interest rate as an outcome variable, and the next four using the spread as our outcome variable. We report the histogram of the estimated coefficients: $\widehat{\beta}_1$ of HHI, $\widehat{\beta}_4$ of *HHI*×*Dummy Treated Group*, $\widehat{\beta}_5$ of *HHI*×*Dummy of BBR* and $\widehat{\beta}_6$ of *HHI*×*Dummy of BBR*×*Dummy Treated Group*. The red vertical line in each histogram represents our main results from Tables 12 and 13. The two dash-dot lines are the 5th and 95th percentiles.

Comparing our main results with respect to the confidence interval of the randomization test, we find that the two coefficients of interest $\widehat{\beta}_1$, which indicates the market power effect, and $\widehat{\beta}_6$, which is our estimation of the limiting effect on market power, both remain statistically significant. When we use the spread as the dependent variable, the significance of $\widehat{\beta}_6$ is lower than 5%, as shown in Figure 34, but we calculate the p-value at 7.5%.

The randomization test indicates that our results are not falsified by random variation of the market power measure.

8 Conclusion and Final Remarks

In this paper we presented a simple economic model and the testable hypothesis on how the lack of competition in the lending market limits the effects of an increase in creditor protection. Using the Brazilian Bankruptcy Reform of 2005 as an exogenous event, and assuming that the new bankruptcy law has improved the recovery rate of corporate credits or lower the probability of firms default, we used a differences-in-differences estimation method to test the economic hypothesis predicted by our economic model.

We estimated the limiting effect of market power on the effects of the BBR on the interest rate charged by credit institutions. We find a potential reducing effect of 736 basis points of

the bankruptcy law on the average of the interest rate charge of collateralized corporate loans compared with uncollateralized loans to consumers. Our main contribution is the estimations of the hampering effect of market power on that potential reduction on the interest rate. We find that the market power, measured by the concentration index HHI as a proxy, reduces 27.5% of the potential effect of the Brazilian Bankruptcy Reform on interest rates of corporate loans.

Similar results are estimated when we consider the spread over the interest rate term structure instead of the interest rate. The BBR had a direct effect of 638 basis-points on the spread, but the market power, measured by the HHI, reduces 23.6% of this potential knock down.

Our results are robust to alternative definitions of the credit market size and other concentration measures, such as C4, Market Share, and also to the competition measure of Panzar-Rosse (1987). We also searched for evidence of endogeneity of the market power, caused by a possible simultaneous effect of the BBR on the interest rate and on one our proxies of market power (HHI). We constructed a simulated data set, where we maintained constant HHI. This generated data set simulated an artificial market condition of no influence of the BBR on the market power. We estimated our empirical model with this new data set and we found statistically similar results to our coefficients of interest. These results suggest that the BBR had not affected our market power proxy.

We also processed two falsification tests. First we checked whether our empirical model captured the correct period of the BBR's effects by simulating unreal events. In a second falsification test, we checked whether our empirical model is sensitive to the randomization of our proxy to the market power. For both test, we found the expected results.

The main conclusion of the paper is that market power considerably limited the effects on loan interest rates of the new Bankruptcy Law that increased creditor protection in Brazil. This result seems to be robust.

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Appendix

Table 1: Brazilian Bankruptcy Reform legal changes - Reorganization Process

Before the BBR - The Concordat Right	After the BBR - The Recuperation Period
Creditors must prove business inviability and require the liquidation of the firm.	Shareholders must prove business viability.
None of creditors' debts can be treated under different conditions.	Some creditors can be treated out of the recuperation plan, if others creditors accept.
The business control of shareholders in the concordat period was a legal right. Creditors must prove fraud or reckless administration to take over business control or to require a new administrator.	Shareholders can keep business control - if creditors and workers support it - but can lose such control if there is non-compliance with the business plan or by court decision in the judicial recuperation period.
The old legislation does not address the automatic stay.	Automatic Stay: firm has the right to suspend for 180 days any issue of a secured creditor to recover an asset of production after declaration of the *judicial recuperation period*. Leased assets can be included in the automatic stay period.
The revoked legislation does not address the priority of creditors or suppliers that support the firm operation in the concordat period. Court decisions.	Absolute priority to supplier and lenders that traded with the firm in the *judicial recuperation period*.

Table 2: Brazilian Bankruptcy Reform legal changes - Liquidation Process

Before the BBR	After the BBR
Employee's benefits and salaries were unlimited.	The employees' salaries, labor rights and work accident compensations are absolute priorities over all liabilities, but limited to 150 minimum wages.
Employee's benefits and salaries were the absolute priority in the liquidation process followed by debts owed the government: taxes, fines and fees. The legislation allowed liquidation of secured assets to pay government debts and employees.	The secured loans are now second in the legal priority list, as that priority is limited by the collateral market value. However, if the asset placed as collateral is sold, the owner of the respective debt has absolute priority, limited to the sale value, which prioritizes collateralized loans over employee claims.
Creditor's claims, debts or obligations with suppliers generated in the recuperation period do not have any priority in the liquidation.	Creditor's and Investor's claims - along with debts to the government and suppliers - generated in the recuperation period have priority in the liquidation process.

Table 3: Markets or Credit Types

Description	Number
Overdraft - Consumers	1
Leasing and Goods Financing - Consumers	2
Vehicle Financing - Consumers	3
Loans and Other Credit Types - Consumers	4
Working Capital; Overdraft and Supplier Financing - Firms	5
Commercial Papers Discount - Firms	6
Leasing and Goods Financing - Firms	7
Vehicle Financing - Firms	8
Loans and Other Credit Types - Firms	9
Trade Finance: Import and Export - Firms	10

Table 4: Used variables and its description

unit	Variables	Description
%	β_0	Intercept
%	*Market Share - Credit Portfolio*	Market Share of the credit market portfolio. The variable considers all credit operations. We considered the present value of the credit operations without provision charge or market value adjustments.
n.a.	*Dummy of BBR*	Dummy variable for the studied event, the variable assume de value 0 before June/2004 and the value 1 after the Brazilian Bankruptcy Reform became effective.
n.a	*Dummy of Treated Group*	Dummy variable for the control group, the variable assume the value 1 for observation of loans to firms, and 0 for observation of contracted loan to individual without collateral.
n.a.	$HHI_{CreditType,Risk,Collateral}$	Herfindahl-Hirschman Index taking credit type, risk class rating, and collateral differentiation by each monthly panel. MkS is the Market Share. $HHI_{l,r,c,t} = \sum_{b=1}^{B}(MkS_{b,l,r,c,t})^2$.
n.a.	$C4_{CreditType,Risk,Collateral}$	C_4 Index is the sum of the four largest market shares. The calculation considerer credit type, risk class rating, and collateral differentiation by each monthly panel. $C4_{l,r,c,t} = \sum_{b=1}^{4} MkS_{b,l,r,c,t} \perp MkS_{b,l,r,c,t} > MkS_{b+1,l,r,c,t}$
n.a.	$MkS_{CreditType,Risk,Collateral}$	Market Share taking credit type, risk class rating, and collateral differentiation by each monthly panel. $MKS_{b,l,r,c,t} = \frac{Contracted\,Credit_{b,l,r,c,t}}{\sum_{1}^{B} Contracted\,Credit_{b,l,r,c,t}}$
% by year-end	*Interest Rate Term Strutucture*	The ITRS is the forward interest rate from the yield curve of the Brazilian interbank money market. We calculated the weighted mean maturity of the credit operations and considered forward interest rate with the same maturity on the IRTS. We calculate the interest rate that adequately complies with the credit maturity using the flat forward interpolation technique. We used the monthly mean of the close price of future contracts.
% by year-end	*Overnight Interbank Interest Rate*	Monthly mean of the overnight interbank interest rate. The information provided by the Cetip. www.cetip.com.br.
% by year-end	*Volatility of Overnight Interbank Interest Rate*	Standard Deviation of the overnight interbank interest rate. Monthly mean of daily volatility.
BRL Million	*Gross Domestic Product*	Proxy for Gross Domestic Product calculated by Brazilian Central Bank on monthly basis. Temporal Series 4380 available at https://www3.bcb.gov.br/sgspub/consultarvalores/telaCvsSelecionarSeries.paint.
n.a.	*Industrial Production Index*	Industrial Production Index calculated on monthly basis by the Getulio Vargas Foundation - Brazilian Economics Institute: IBRE-FGV.
n.a.	*Inflation Index*	Index Number - IPCA. The IPCA (consumer price index) is the official inflation index used for the inflation target regime of the monetary policy.
n.a.	*Basel Capital Index*	Basel index is the risk-weighted assets over the capital. The credit institutions calculate the Basel Index and monthly inform to the Brazilian Central Bank. The calculation methodology was a standard procedure regulated by the Resolution 2.099/94 issued by the Central Bank of Brazil. At the specific studied period, the Brazilian Central Bank do not authorized internal capital model.
n.a.	*Liquidity Index*	The liquidity index considers accountability information from the document 4010. The liquidity index considered securities and bond without restriction to sell, and interbank assets over total assets. $ILiq = \frac{Securities\,and\,Federal\,Bonds\,free\,of\,charge + Deposits\,and\,Assets\,with\,financial\,institutions + Interbank\,Assets - Reselling\,Agrement\,(short\,position)}{Total\,Assets - Reselling\,Agrement\,(short\,position)}$
n.a.	*Total Monthly Revenue over Net Capital*	We consider the total receipts of the financial institution on monthly based informed to the Central Bank of Brazil. The capital information is not weighted or adjusted. $IRev = \frac{Total\,Revenue}{Net\,Capital}$
n.a.	*Total Defaulted Credit Operation*	Credit operations that are overdue by more than 90 day over total credit portfolio. We consider the present value of the loans without provision and market adjustment.
days	*Mean Maturity*	The Mean Maturity is the weighted mean maturity calculated considered as the individual observation. $WMat_{b,l,r,c,t} = \frac{\sum_{i}^{l} CAop_{i,b,l,r,c,t} * MatD_{i,b,l,r,c,t}}{\sum_{i}^{l} CAop_{i,b,l,r,c,t}}$
BRL Million	*Net Capital*	Net Capital is the accountability balance information.
n.a.	*Dummy of Public Bank*	Dummy variable for the public controlled credit institution. The variable assume the value 1 if the institution is controlled by the public government, and zero otherwise.
BRL Million	*Total Revenue of Credit Operation*	$TRCred = Credit\,Operation\,Income + Exchange\,Income\,from\,Trade\,Finance\,Operations + Leasing\,Operation\,Net\,Income$
BRL Million	*Total Funding Expenses*	$TFundExp = Funding\,Expenses + Bank\,Funding\,Intermediation\,Expenses$
BRL Million	*Total Personal Expenses*	$TPersExp = Wage + Social\,Beneficit\,Expenses + Profit\,Participation$
BRL Million	*Total Fixed Capital*	$TFixK = Permanent - Leased$
n.a.	*Cost of Funding*	$CFund = \frac{TFundExp}{Shareholder\,Equity}$
n.a.	*Cost of Fixed Capital*	$CFixK = \frac{TFixK}{Shareholder\,Equity}$
n.a.	*Cost of Wages*	$CWage = \frac{TPersExp}{Shareholder\,Equity}$
n.a.	*Provision Rate*	$ProvBS = \frac{Balance\,Sheet\,Provision\,to\,Credit\,Operations}{Shareholder\,Equity}$
n.a.	*Profitabity*	$Profitabilty = \frac{Net\,Profit + Interest\,on\,Equities}{Shareholder\,Equity}$
n.a.	*Market Share TA*	$MkSTA_{b,t} = \frac{Total\,Asscts_{b,t}}{\sum_{b}^{B} Total\,Assets_{b,t}}$
n.a.	*HHI TA*	$HHITA_{b,t} = \sum_{b}^{B}(MKSAt_{b,t})^2$
%	*Market Share - Credit Portfolio*	The same concept described above and use as control variable to estimate the *MulitProduct* - H statistic
%	*HHI - Credit Portfolio*	$HHITA_t = \sum_{b}^{B}(MKSCP_{b,t})^2$ - Herfindahl-Hirschman Index calculated with respect to *Market Share - Credit Portfolio*

Table 5: Number of banks and observations by Month

panel (months)	No. of banks	No. of observations	No of observations Excluding Outliers	% *Outliers*
2004-Jul	73	1,270	1,255	1.20%
2004-Aug	71	1,312	1,299	1.00%
2004-Sep	71	1,250	1,238	1.00%
2004-Oct	67	1,245	1,232	1.00%
2004-Nov	66	1,259	1,243	1.30%
2004-Dec	70	1,299	1,287	0.90%
2005-Jan	71	1,245	1,231	1.10%
2005-Feb	66	1,169	1,154	1.30%
2005-Mar	71	1,284	1,282	0.20%
2005-Apr	63	1,266	1,255	0.90%
2005-May	64	1,329	1,317	0.90%
2005-Jun	73	1,331	1,320	0.80%
2005-Jul	72	1,333	1,324	0.70%
2005-Aug	69	1,359	1,352	0.50%
2005-Sep	70	1,338	1,323	1.10%
2005-Oct	72	1,326	1,318	0.60%
2005-Nov	72	1,359	1,353	0.40%
2005-Dec	74	1,383	1,379	0.30%
2006-Jan	70	1,325	1,315	0.80%
2006-Feb	73	1,314	1,290	1.80%
2006-Mar	70	1,371	1,349	1.60%
2006-Apr	73	1,263	1,240	1.80%
2006-May	70	1,305	1,284	1.60%
2006-Jun	73	1,401	1,380	1.50%
2006-Jul	78	1,662	1,597	3.90%
2006-Aug	82	1,829	1,762	3.70%
2006-Sep	85	2,049	1,972	3.80%
2006-Oct	87	1,863	1,790	3.90%
2006-Nov	94	2,057	1,988	3.40%
2006-Dec	83	1,595	1,561	2.10%
2007-Jan	70	948	924	2.50%
2007-Feb	75	1,295	1,276	1.50%
2007-Mar	65	1,306	1,257	3.80%
2007-Apr	88	2,033	1,969	3.10%
2007-May	105	2,138	2,057	3.80%
2007-Jun	95	2,213	2,149	2.90%
2007-Jul	90	2,185	2,096	4.10%
2007-Aug	102	2,190	2,125	3.00%
2007-Sep	77	1,467	1,451	1.10%
2007-Oct	76	1,313	1,301	0.90%
2007-Nov	76	1,408	1,397	0.80%
2007-Dec	80	1,443	1,437	0.40%
2004-Jul to 2007-Dec	3,192	62,330	61,129	2%

Table 6: Abbreviation and variable names abbreviations and symbols

CAop	Present value of the credit operation. The discount yield is the contracted interest rate informed by the credit institution.
$T_{b,l,r,c,t}$	Dummy of Treated Group.
$Y_{b,l,r,c,t}$	Dependent Variable - Mean of contracted interests rate.
$S_{b,l,r,c,t}$	Dependent Variable - Mean of contracted bank spread.
$\Lambda_{b,l,r,c,t}$	Market Power measure - We assume HHI as proxy for market power, but some tests made with C4 and Market Share.
$T_{b,l,r,c,t}$	Dummy for treated observations.
Dummy of BBR * Dummy of Treated Group	Interaction variable represented into the econometric model as $T_{b,l,r,c,t}dmLaw_t$
$HHI_{CreditType,Risk,Collateral}$ * Dummy of Treated Group*	Interaction variable represented into the econometric model as $\Lambda_{b,l,r,c,t}T_{b,l,r,c,t}$
$HHI_{CreditType,Risk,Collateral}$ * Dummy of BBR	Interaction variable represented into the econometric model as $\Lambda_{b,l,r,c,t}dmLaw_t$
$HHI_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	Interaction variable represented into the econometric model as $\Lambda_{b,l,r,c,t}T_{b,l,r,c,t}dmLaw_t$
$HHIcn_t$	HerfindahlHirschman Index of credit type n at period t. The index is calculated onmarket level and we use this notation on the times series analysis. We alsouse this variable on panel data analysis, as $HHI_{CreditType}$ when we tested for different market aggregation of the HHI calculation.
MkS	Market Share.
IRTS	Interest Rate Term Structure.
DI1d	Overnight interbank interest rate.
VolDI1	Volatility of Overnight Interbank Interest Rate.
GDP	Gross Domestic Product.
Pind	Industrial Production Index.
Inflation or IPCA	Official Inflation Index for Inflation Target Politics.
IBasel	Basel Capital Index.
ILiq	Liquidity Index.
IRev	Total Monthly Revenue over Net Capital.
Def90d	Total Defaulted Credit Operation.
WMat	Mean Maturity.
$RTCred_{bt}$	Total Revenue of Credit Operations of the bank b on month t
ω_{bt}	Vector of Input Prices of Bank b on month t
$Z_{b,t}$	Vector of control variable of bank b on month t used to estimate the H-Statistic.
η_b	Fixed effect of bank b. We also used $\eta_{b,l,r,c}$ to represent the fixed effect,when we consider fixed effect of credit type, l, risk class, r or collateralized credit operation, c.
$TRCred_{bt}$	Total Revenue of credit operations of bank b in month t
$TFundExp_{b,t}$	Total Funding Expenses of Bank b in month t
$TPersExp_{bt}$	Total Personal Expenses of Bank b in month t
$TFixK_{b,t}$	Total Fixed Capital of Bank b in month t
dmMultProd	Vector of dummies of credit market. The variable assume value 1 if the credit institution informed to the Central Bank of Brazil at least one credit operation traded with our control group or with treated group.
$dmMktn_{bt}$	Dummy of credit type or credit market n. The variable assume the value 1 if the credit institutions b informed at least one credit operation in credit type n in month t.
$dmMktt n_t$	Dummy of credit type or credit market l. The variable assume the value 1 if the lending is contracted using the credit type l.
MkSCrdOp	Market Share - Credit Portfolio. Market Share with respect to the credit portfolio of the credit institution. The variable considers the credit operations on the credit institution balance sheet.
τ_n	Coefficients of the Dynamic Panel Estimator of intercept and time endogenous regressors, lagged regressors.
$D.HHI_t$	1st Difference of the HHI time series.

Table 7: Descriptive Statistics - Dependent Variables

Variables	**Before Bankruptcy Reform**					**After Bankruptcy Reform**				
	Obs	Mean	Sd.Dv.	Min	Max	Obs	Mean	Sd.Dv.	Min	Max
$Y_{b,l,r,c,t}$	6655	0.3614	0.2602	0	1.8127	22590	0.3633	0.2837	0	1.8279
$S_{b,l,r,c,t}$	6620	0.1529	0.2174	-0.1648	1.3905	22402	0.1933	0.2433	-0.1646	1.5238

Table 8: Descriptive Statistics - Dependent Variables (Control group)

Variables	**Before Bankruptcy Reform**					**After Bankruptcy Reform**				
	Obs	Mean	Sd.Dv.	Min	Max	Obs	Mean	Sd.Dv.	Min	Max
$Y_{b,l,r,c,t}$	1782	0.4395	0.3115	0	1.7724	7184	0.4711	0.3583	-	1.8261
$S_{b,l,r,c,t}$	1781	0.22	0.2637	-0.1647	1.3202	7142	0.292	0.3101	-0.1644	1.5189

Table 9: Descriptive Statistics - Dependent Variables (Treated group)

Variables	**Before Bankruptcy Reform**					**After Bankruptcy Reform**				
	Obs	Mean	Sd.Dv.	Min	Max	Obs	Mean	Sd.Dv.	Min	Max
$Y_{b,l,r,c,t}$	4873	0.3329	0.2323	0	1.8127	15406	0.3131	0.2241	0	1.8279
$S_{b,l,r,c,t}$	4839	0.1281	0.1919	-0.1648	1.3905	15260	0.147	0.1875	-0.1646	1.5238

Table 10: Descriptive Statistics - Control Variables and Dummies

	Before BBR			After BBR		
Control Variables	**Obs.**	**Mean**	**Sd. Dv.**	**Obs.**	**Mean**	**Sd. Dv.**
Market Share - Credit Portfolio	6620	0.0215	0.0337	22402	0.0258	0.0398
$HHI_{CreditType,Risk,Collateral}$	6620	0.2524	0.1433	22402	0.2753	0.1605
$C4_{CreditType,Risk,Collateral}$	6620	0.6683	0.2046	22402	0.6899	0.2036
$MkS_{CreditType,Risk,Collateral}$	6620	0.0841	0.1473	22402	0.0776	0.1448
Interest Rate Term Structure	6620	0.1787	0.0112	22402	0.1407	0.0266
Overnight Interbank Interest Rate	6620	0.1749	0.0138	22402	0.1457	0.0289
Volatility of Overnight Interbank Interest Rate	6620	0.0018	0.0009	22402	0.0013	0.0012
Gross Domestic Product	6620	169.6801	5.8324	22402	206.1822	18.0957
Industrial Production Index	6620	110.6983	6.4425	22402	118.5726	7.9421
Inflation Index	6620	2,399	47.8 898	22402	2,605	69.8346
Basel Capital Index	6614	0.2376	0.23	22400	0.2028	0.1835
Liquidity Index	6108	0.2791	0.1485	20815	0.2772	0.1458
Total Monthly Revenue over Net Capital	6620	0.0575	0.1573	22402	0.0585	0.0734
Total Defaulted Credit Operation	6200	0.0186	0.0561	21696	0.0303	0.1605
Mean Maturity	6620	346.057	368.5779	22402	414.375	430.8747
Net Capital	6620	2.7821	3.9043	22402	4.3234	6.5374
Dummies						
Dummy of BBR	6620	0	0	22402	1.0000	0
Dummy of Treated Group	6620	0.731	0.4435	22402	0.6812	0.466
Dummy of Public Bank	6620	0.1718	0.3772	22402	0.2006	0.4005
Dummy for Collateralized Operations	6620	0.731	0.4435	22402	0.6812	0.466
Interactions						
*Dummy of BBR * Dummy of Treated Group*	6620	0	0	22402	0.6812	0.466
*HHICredit Type, Risk, Collateral * Dummy of Treated Group*	6620	0.179	0.1557	22402	0.1856	0.1834
*HHICredit Type, Risk, Collateral * Dummy of BBR*	6620	0	0	22402	0.2753	0.1605
*HHICredit Type, Risk, Collateral * Dummy of BBR * Dummy of Treated Group*	6620	0	0	22402	0.1856	0.1834

Table 11: Detected outliers on the sample

Variables	**Before Bankruptcy Reform**					**After Bankruptcy Reform**				
	Obs	Mean	Sd.Dv.	Min	Max	Obs	Mean	Sd.Dv.	Min	Max
$Y_{b,l,r,c,t}$	58	2.1549	0.3496	1.8367	3.2441	464	2.6882	0.9501	1.8421	7.9072
$S_{b,l,r,c,t}$	35	1.8047	0.3271	1.381	2.6625	308	2.1301	0.6095	1.4214	6.0057

Table 12: Main Results - HHI and Bankruptcy Reform Effect on Mean Interest Rate

	(1)	(2)	(3)	(4)
R-sq: within	0.0311	0.0402	0.0465	0.0453
Test F	F(20,26743)	F(33,23859)	F(33,23555)	F(32,10522)
	42.88	30.3	34.83	15.61
Independent Variables				
β_0	0.2052***	0.7833	0.4531	0.3938
	[0.009]	[0.686]	[0.477]	[1.121]
Market Share - Credit Portfolio	4.0087***	5.2588***	2.0405***	5.1715***
	[0.245]	[0.366]	[0.265]	[0.600]
$HHI_{CreditType,Risk,Collateral}$	0.0713***	0.1536***	0.0881***	0.0826***
	[0.023]	[0.034]	[0.024]	[0.030]
Dummy of BBR	0.0824***	0.1060***	0.0863***	0.0678***
	[0.008]	[0.013]	[0.009]	[0.012]
Dummy of BBR * Dummy of Treated Group	-0.0707***	-0.0836***	-0.0736***	-0.0708***
	[0.009]	[0.013]	[0.009]	[0.012]
$HHI_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	-0.0575**	-0.0998**	-0.0621**	-0.0708***
	[0.029]	[0.044]	[0.031]	[0.036]
$HHI_{CreditType,Risk,Collateral}$ * Dummy of BBR	-0.0960***	-0.2204***	-0.1091***	-0.1328***
	[0.023]	[0.035]	[0.024]	[0.025]
$HHI_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.0925***	0.2020***	0.1083***	0.1307***
	[0.029]	[0.044]	[0.031]	[0.032]
Interest Rate Term Structure		-0.1267	-0.0990	-0.0941
		[0.235]	[0.163]	[0.200]
Overnight Interbank Interest Rate		1.1106***	1.0320***	0.7836**
		[0.304]	[0.211]	[0.314]
Volatility of Overnight Interbank Interest Rate		8.6189***	5.5937***	4.2250
		[1.558]	[1.084]	[3.292]
Gross Domestic Product		0.0045***	0.0035***	0.0021
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0024**	-0.0014*	0.0019
		[0.001]	[0.001]	[0.002]
Inflation Index		-0.0005**	-0.0003**	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0326*	0.0275**	0.0293*
		[0.018]	[0.013]	[0.016]
Liquidity Index		0.0034	-0.0120	-0.0594***
		[0.020]	[0.014]	[0.022]
Total Monthly Income Over Net Capital		-0.0318**	-0.0305***	0.0037
		[0.015]	[0.010]	[0.011]
Total Defaulted Credit Operation		0.024	0.0234	0.0110
		[0.010]	[0.007]	[0.011]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0121	0.0072	0.0110
		[0.000]	[0.001]	[0.002]
Dummy of Public Bank		0.0278	0.0225	-0.0121
		[0.172]	[0.119]	[0.102]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

The econometric models use differences-in-differences method with panel data. We estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. The Brazilian Bankruptcy Reform is effective from June/2005. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006.(a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 13: Main Results - HHI and Bankruptcy Reform Effect on Mean Spread over IRTS

	(1)	(2)	(3)	(4)
N Obs	29,022	26,132	25,800	11,790
R-sq: within	0.0371	0.047	0.0523	0.0581
Test F	F(20,26550)	F(33,23859)	F(33,23555)	F(32,10522)
	51.110	35.680	39.390	20.270
Independent Variables				
β_0	0.0882***	0.7508	0.4398	0.3763
	[0.007]	[0.599]	[0.416]	[0.952]
Market Share - Credit Portfolio	3.5017***	4.6322***	1.7590***	4.4319***
	[0.209]	[0.320]	[0.231]	[0.509]
$HHI_{CreditType,Risk,Collateral}$	0.0524***	0.1200***	0.0655***	0.0734***
	[0.019]	[0.080]	[0.021]	[0.025]
Dummy of BBR	0.0705***	0.0915***	0.0744***	0.0584***
	[0.007]	[0.011]	[0.008]	[0.010]
Dummy of BBR * Dummy of Treated Group	-0.0664***	-0.0722***	-0.0638***	-0.0610***
	[0.008]	[0.012]	[0.008]	[0.008]
$HHI_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	-0.0402	-0.0675*	-0.0376	-0.0626**
	[0.025]	[0.038]	[0.027]	[0.030]
$HHI_{CreditType,Risk,Collateral}$ * Dummy of BBR	-0.0853***	-0.1815***	-0.0868***	-0.1146***
	[0.020]	[0.030]	[0.021]	[0.022]
$HHI_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.0758***	0.1601***	0.0812***	0.1121***
	[0.025]	[0.030]	[0.021]	[0.027]
Interest Rate Term Structure		-1.1738***	-1.1413***	-1.0699***
		[0.205]	[0.142]	[0.170]
Overnight Interbank Interest Rate		0.9837***	0.9081***	0.6389***
		[0.266]	[0.184]	[0.266]
Volatility of Overnight Interbank Interest Rate		7.6038***	4.8968***	3.4584
		[1.362]	[0.946]	[2.795]
Gross Domestic Product		0.0040***	0.0031***	0.0017
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0022**	0.0031***	0.0017
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003**	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0220	0.0179	0.0243*
		[0.016]	[0.011]	[0.014]
Liquidity Index		0.0082	-0.0061	-0.0503***
		[0.018]	[0.012]	[0.019]
Total Monthly Income Over Net Capital		-0.0276**	-0.0274***	0.0040
		[0.013]	[0.009]	[0.009]
Total Defaulted Credit Operation		0.0210	0.0203	0.0094
		[0.008]	[0.005]	[0.005]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0111	0.0067	0.0094
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0241	0.0197	-0.0151
		[0.150]	[0.104]	[0.086]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 12. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 14: Robustness - Coarse Definitions of Market Power - HHI - Interest Rate as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0263	0.0409	0.0472	0.0474
Test F	F(20,25802)	F(33,23859)	F(33,23555)	F(32,10522)
	34.910	30.850	35.380	15.630
Independent Variables				
β_0	0.2550***	0.9419	0.5215	0.3774
	[0.009]	[0.687]	[0.477]	[1.121]
Market Share - Credit Portfolio	2.2282***	5.2614***	2.0248***	5.0927***
	[0.256]	[0.366]	[0.265]	[0.601]
$HHI_{CreditType}$	0.0135	0.2557***	0.0148	0.3656***
	[0.045]	[0.066]	[0.047]	[0.071]
Dummy of BBR	0.0867***	0.1282***	0.0898***	0.0125
	[0.009]	[0.014]	[0.010]	[0.019]
Dummy of BBR * Dummy of Treated Group	-0.0715***	-0.1064***	-0.0786***	-0.0219
	[0.011]	[0.016]	[0.011]	[0.018]
$HHI_{CreditType}$ * Dummy of Treated Group	-0.0072	-0.2063**	-0.0086	-0.4044***
	[0.063]	[0.098]	[0.068]	[0.094]
$HHI_{CreditType}$ * Dummy of BBR	-0.2050***	-0.4957***	-0.1922***	0.0747
	[0.046]	[0.069]	[0.048]	[0.085]
$HHI_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.1987***	0.4829***	0.2032***	-0.0120
	[0.066]	[0.099]	[0.069]	[0.103]
Interest Rate Term Structure		-0.0582	-0.0722	-0.0586
		[0.238]	[0.165]	[0.207]
Overnight Interbank Interest Rate		1.0180***	0.9896***	0.8199***
		[0.305]	[0.212]	[0.314]
Volatility of Overnight Interbank Interest Rate		7.8913***	4.7306***	4.5503
		[1.574]	[1.096]	[3.290]
Gross Domestic Product		0.0040***	0.0031***	0.0020
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0019*	-0.0010	0.0020
		[0.001]	[0.001]	[0.002]
Inflation Index		-0.0006**	-0.0003	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0313*	0.0262**	0.0294*
		[0.018]	[0.013]	[0.016]
Liquidity Index		0.0032	-0.0114	-0.0598***
		[0.020]	[0.014]	[0.022]
Total Monthly Income Over Net Capital		-0.0308**	-0.0296***	0.0041
		[0.015]	[0.010]	[0.011]
Total Defaulted Credit Operation		0.0249	0.0237	0.0093
		[0.010]	[0.007]	[0.007]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0120	0.0071	0.0110
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0264	0.0212	-0.0121
		[0.172]	[0.119]	[0.102]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. We calculated the HHI Index on the Credit Type level. The market power measure does not differentiate competition by risk class or by collateralized operations. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 15: Robustness - Coarse Definitions of Market Power - HHI - Spread over IRTS as Dependent Variable

	(1)	(2)	(3)	(4)
N Obs	28,028	26,132	25,800	11,790
R-sq: within	0.0287	0.0476	0.0529	0.0583
Test F	F(20,25613)	F(33,23859)	F(33,23555)	F(32,10522)
	37.820	36.120	39.880	20.340
Independent Variables				
β_0	0.1373***	0.8505	0.4670	0.3563
	[0.008]	[0.600]	[0.417]	[0.952]
Market Share - Credit Portfolio	1.9428***	4.6255***	1.7380***	4.3610***
	[0.219]	[0.320]	[0.231]	[0.510]
$HHI_{CreditType}$	0.0021	0.1962***	-0.0057	0.3270***
	[0.038]	[0.058]	[0.041]	[0.060]
Dummy of BBR	0.0751***	0.1086***	0.0756***	0.0086
	[0.007]	[0.013]	[0.009]	[0.016]
Dummy of BBR * Dummy of Treated Group	-0.0707***	-0.0860***	-0.0S631***	-0.0165
	[0.009]	[0.014]	[0.010]	[0.015]
$HHI_{CreditType}$ * Dummy of Treated Group	-0.0500	-0.1215	0.0389	-0.3562***
	[0.054]	[0.086]	[0.059]	[0.079]
$HHI_{CreditType}$ * Dummy of BBR	-0.1864***	-0.4014***	-0.1431***	0.0748
	[0.040]	[0.060]	[0.042]	[0.072]
$HHI_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.1879***	0.3490***	0.1175*	-0.0234
	[0.056]	[0.087]	[0.061]	[0.087]
Interest Rate Term Structure		-1.1280***	-1.1299***	-1.0421***
		[0.208]	[0.144]	[0.175]
Overnight Interbank Interest Rate		0.9039***	0.8697***	0.6721**
		[0.267]	[0.185]	[0.267]
Volatility of Overnight Interbank Interest Rate		6.8729***	4.0784***	3.7522
		[1.376]	[0.956]	[2.794]
Gross Domestic Product		0.0035***	0.0027***	0.0017
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0017*	-0.0010	0.0017
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003*	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0209	0.0170	0.0244*
		[0.016]	[0.011]	[0.014]
Liquidity Index		0.0079	-0.0056	-0.0507***
		[0.018]	[0.012]	[0.019]
Total Monthly Income Over Net Capital		-0.0269**	-0.0267***	0.0043
		[0.013]	[0.009]	[0.009]
Total Defaulted Credit Operation		0.0216	0.0206	0.0078
		[0.008]	[0.006]	[0.006]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0110	0.0066	0.0094
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0221	0.0181	-0.0147
		[0.150]	[0.104]	[0.086]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 14. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 16: Robustness - Other Concentration Measures - C4 and Bankruptcy Reform Effects on Mean Interest Rate

	(1)	(2)	(3)	(4)
N Obs	29,245	26,132	25,800	11,790
R-sq: within	0.0322	0.04	0.0472	0.0452
Test F	F(20,26743)	F(33,23859)	F(33,23555)	F(32,10522)
	44.460	30.110	35.350	15.580
Independent Variables				
β_0	0.22255***	0.8584	0.4774	0.3164
	[0.010]	[0.685]	[0.476]	[1.121]
Market Share - Credit Portfolio	4.0390***	5.1687***	2.0197***	5.1976***
	[0.245]	[0.368]	[0.266]	[0.612]
$C4_{CreditType,Risk,Collateral}$	-0.0714***	-0.0063	-0.0457**	-0.0612***
	[0.018]	[0.028]	[0.020]	[0.021]
Dummy of BBR	0.0268**	0.0444**	0.0434***	-0.0008
	[0.013]	[0.021]	[0.015]	[0.018]
Dummy of BBR * Dummy of Treated Group	-0.0451***	-0.0969***	-0.0660***	-0.0316*
	[0.015]	[0.024]	[0.017]	[0.018]
$C4_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	0.0760***	-0.0249	0.0439*	0.083***
	[0.022]	[0.034]	[0.023]	[0.025]
$C4_{CreditType,Risk,Collateral}$ * Dummy of BBR	0.0459	0.0014	0.0206	0.0490
	[0.019]	[0.029]	[0.020]	[0.022]
$C4_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	-0.0039	0.1000***	0.0299	-0.0100
	[0.022]	[0.034]	[0.024]	[0.026]
Interest Rate Term Structure		-0.2155	-0.1306	-0.1846
		[0.235]	[0.163]	[0.200]
Overnight Interbank Interest Rate		1.2668***	1.0885***	0.8635***
		[0.304]	[0.211]	[0.313]
Volatility of Overnight Interbank Interest Rate		8.7643***	5.5664***	4.2012
		[1.548]	[1.076]	[3.289]
Gross Domestic Product		0.0048***	0.0036***	0.0020
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0026**	-0.0015**	0.0019
		[0.001]	[0.001]	[0.002]
Inflation Index		-0.0006**	-0.0004**	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0318*	0.0269**	0.0280*
		[0.018]	[0.013]	[0.015]
Liquidity Index		0.0029	-0.0122	-0.0624***
		[0.020]	[0.014]	[0.022]
Total Monthly Income Over Net Capital		-0.0340**	-0.313***	0.0036
		[0.015]	[0.010]	[0.011]
Total Defaulted Credit Operation		0.0237	0.0230	0.0101
		[0.010]	[0.007]	[0.007]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0128	0.0075	0.0139
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0235	0.0250	-0.0144
		[0.172]	[0.119]	[0.102]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The econometric models use differences-in-differences method with panel data. We estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The C4 Index is the proxy measure for market power. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006. (a) All estimations consider an intercept term. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 17: Robustness - Other Concentration Measures - C4 and Bankruptcy Reform Effects on Mean Spread over IRTS

	(1)	(2)	(3)	(4)
N Obs	29,022	26,132	25,800	11,790
R-sq: within	0.0377	0.0469	0.0531	0.0579
Test F	F(20,26550)	F(33,23859)	F(33,23555)	F(32,10522)
	52.060	35.580	40.010	20.210
Independent Variables				
β_0	0.1058***	0.8078	0.4530	0.3089
	[0.008]	[0.599]	[0.416]	[0.952]
Market Share - Credit Portfolio	3.5181***	4.5535***	1.7365***	4.4588***
	[0.209]	[0.322]	[0.232]	[0.520]
$C4_{CreditType,Risk,Collateral}$	-0.0608***	-0.0011	-0.0336	-0.0520***
	[0.016]	[0.025]	[0.017]	[0.018]
Dummy of BBR	0.0261**	0.0439**	0.0440***	-0.0013
	[0.011]	[0.018]	[0.013]	[0.015]
Dummy of BBR * Dummy of Treated Group	-0.0450***	-0.0898***	-0.0641***	-0.0013
	[0.013]	[0.021]	[0.014]	[0.015]
$C4_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	0.0632***	-0.0220	0.0354*	0.0681***
	[0.019]	[0.029]	[0.020]	[0.021]
$C4_{CreditType,Risk,Collateral}$ * Dummy of BBR	0.0333	-0.0037***	0.0107	0.0430
	[0.016]	[0.025]	[0.017]	[0.018]
$C4_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	-0.0037	0.0901***	0.0315	-0.0098
	[0.019]	[0.030]	[0.021]	[0.022]
Interest Rate Term Structure		-1.2514***	-1.1688***	-1.1479***
		[0.205]	[0.142]	[0.170]
Overnight Interbank Interest Rate		1.1205***	0.9580***	0.7077***
		[0.266]	[0.184]	[0.266]
Volatility of Overnight Interbank Interest Rate		7.7342***	4.8737***	3.4357
		[1.353]	[0.939]	[2.793]
Gross Domestic Product		0.0042***	0.0032***	0.0017
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0023**	-0.0014**	0.0016
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003**	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0212	0.0174	0.0232*
		[0.016]	[0.011]	[0.014]
Liquidity Index		0.0078	-0.0062	-0.0529***
		[0.018]	[0.012]	[0.019]
Total Monthly Income Over Net Capital		-0.0295**	-0.0281***	0.0040
		[0.013]	[0.009]	[0.009]
Total Defaulted Credit Operation		0.0207	0.0201	0.0086
		[0.008]	[0.006]	[0.006]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0117	0.0070	0.0119
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0200	0.0216	-0.0171
		[0.150]	[0.104]	[0.086]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 16. (a) All estimations an include intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 18: Robustness - Coarse Definitions of Market Power - C4 - Interest Rate as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0263	0.0407	0.0469	0.045
Test F	F(20,25802)	F(33,23859)	F(33,23555)	F(32,10522)
	34.850	30.680	35.100	15.480
Independent Variables				
β_0	0.2565***	0.8956	0.4940	0.3168
	[0.013]	[0.687]	[0.477]	[1.019]
Market Share - Credit Portfolio	2.2354***	5.2736***	2.0330***	5.3080***
	[0.256]	[0.366]	[0.265]	[0.605]
$C4_{CreditType}$	0.0036	0.1609***	0.0014	0.1082**
	[0.028]	[0.041]	[0.029]	[0.050]
Dummy of BBR	0.1448***	0.2324***	0.1317***	0.1132***
	[0.018]	[0.028]	[0.019]	[0.030]
Dummy of BBR * Dummy of Treated Group	-0.1327***	-0.2191***	-0.1301***	-0.1371***
	[0.022]	[0.033]	[0.023]	[0.032]
$C4_{CreditType}$ * Dummy of Treated Group	-0.0038	-0.1072**	0.0088	-0.0883
	[0.034]	[0.052]	[0.036]	[0.059]
$C4_{CreditType}$ * Dummy of BBR	-0.1402***	-0.2880***	-0.1122***	-0.1297***
	[0.028]	[0.041]	[0.029]	[0.041]
$C4_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.1430***	0.3009***	0.1299***	0.1660***
	[0.035]	[0.052]	[0.037]	[0.047]
Interest Rate Term Structure		0.0074	-0.0307	-0.0019
		[0.236]	[0.163]	[0.203]
Overnight Interbank Interest Rate		0.9553***	0.9506***	0.6673**
		[0.306]	[0.212]	[0.316]
Volatility of Overnight Interbank Interest Rate		8.5012***	4.8935***	3.9312
		[1.591]	[1.108]	[3.290]
Gross Domestic Product		0.0043***	0.0032***	0.0019
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0023**	-0.0012	0.0019
		[0.001]	[0.001]	[0.002]
Inflation Index		-0.0006**	-0.0003*	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0329*	0.0269**	0.0289*
		[0.018]	[0.013]	[0.016]
Liquidity Index		0.0016	-0.0118	-0.0581***
		[0.020]	[0.014]	[0.022]
Total Monthly Income Over Net Capital		-0.0307**	-0.0295***	0.0040
		[0.015]	[0.010]	[0.011]
Total Defaulted Credit Operation		0.0250	0.0237	0.0113
		[0.010]	[0.007]	[0.007]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0120	0.0071	0.0106
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0285	0.0218	-0.0123
		[0.172]	[0.119]	[0.102]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. We calculated the C4 Index on the Credit Type level. The market power measure does not differentiate competition by risk class or by collateralized operations. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 19: Robustness - Coarse Definitions of Market Power - C4 - Dependent Variable: Spread over IRTS as Dependent Variable

	(1)	(2)	(3)	(4)
N Obs	28,028	26,132	25,800	11,790
R-sq: within	0.0289	0.0474	0.0526	0.0577
Test F	F(20,25613)	F(33,23859)	F(33,23555)	F(32,10522)
	38.110	35.960	39.620	20.130
Independent Variables				
β_0	0.1430***	0.8181	0.4492	0.2922
	[0.011]	[0.600]	[0.417]	[0.866]
Market Share - Credit Portfolio	1.9481***	4.6348***	1.7444***	4.5427***
	[0.219]	[0.320]	[0.231]	[0.513]
$C4_{CreditType}$	-0.0142	0.1243***	-0.0096	0.1091**
	[0.024]	[0.036]	[0.025]	[0.043]
Dummy of BBR	0.1303***	0.1913***	0.1059***	0.0901***
	[0.015]	[0.024]	[0.017]	[0.025]
Dummy of BBR * Dummy of Treated Group	-0.1285***	-0.1711***	-0.0972***	-0.1096***
	[0.019]	[0.029]	[0.020]	[0.027]
$C4_{CreditType}$ * Dummy of Treated Group	-0.0023	-0.0577	0.0359	-0.0892*
	[0.029]	[0.046]	[0.032]	[0.050]
$C4_{CreditType}$ * Dummy of BBR	-0.1299***	-0.2299***	-0.0813***	-0.1015***
	[0.023]	[0.036]	[0.025]	[0.035]
$C4_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.1333***	0.2239***	0.0815**	0.1308***
	[0.030]	[0.046]	[0.032]	[0.040]
Interest Rate Term Structure		-1.0757***	-1.0972***	-0.9889***
		[0.206]	[0.143]	[0.173]
Overnight Interbank Interest Rate		0.8534***	0.8412***	0.5354**
		[0.267]	[0.185]	[0.268]
Volatility of Overnight Interbank Interest Rate		7.4780***	4.2793***	3.1791
		[1.391]	[0.967]	[2.794]
Gross Domestic Product		0.0038***	0.0028***	0.0016
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0020**	-0.0012*	0.0016
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003*	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0224	0.0176	0.0239*
		[0.016]	[0.011]	[0.014]
Liquidity Index		0.0065	-0.0061	-0.0492***
		[0.018]	[0.012]	[0.019]
Total Monthly Income Over Net Capital		-0.0268**	-0.0266***	0.0043
		[0.013]	[0.009]	[0.009]
Total Defaulted Credit Operation		0.0217	0.0205	0.0096
		[0.008]	[0.006]	[0.006]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0111	0.0066	0.0091
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0238	0.0184	-0.0146
		[0.150]	[0.104]	[0.086]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 18. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 20: Robustness - Other Concentration Measures - Market Share and Bankruptcy Reform Effects - Dependent Variable: Mean Interest Rate

	(1)	(2)	(3)	(4)
N Obs	29,245	26,132	25,800	11,790
R-sq: within	0.0308	0.0394	0.046	0.0453
Test F	F(20,26743)	F(33,23859)	F(33,23555)	F(32,10522)
	42.460	29.640	34.450	15.600
Independent Variables				
β_0	0.2116***	0.8034	0.4442	0.3264
	[0.008]	[0.685]	[0.477]	[1.121]
Market Share - Credit Portfolio	3.9851***	5.1515***	1.9670***	5.4119***
	[0.246]	[0.368]	[0.266]	[0.610]
$MkS_{CreditType,Risk,Collateral}$	0.0448**	0.0244	0.0446*	0.0046
	[0.022]	[0.035]	[0.024]	[0.029]
Dummy of BBR	0.0595***	0.0523***	0.0584***	0.0408***
	[0.006]	[0.010]	[0.007]	[0.011]
Dummy of BBR * Dummy of Treated Group	-0.0457***	-0.0242***	-0.0420***	-0.0418***
	[0.005]	[0.008]	[0.006]	[0.006]
$MkS_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	-0.0391	0.0759*	-0.0249	-0.0467
	[0.029]	[0.045]	[0.032]	[0.036]
$MkS_{CreditType,Risk,Collateral}$ * Dummy of BBR	-0.0207***	-0.0568***	-0.0072***	-0.0906***
	[0.022]	[0.034]	[0.024]	[0.025]
$MkS_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	-0.0139	-0.0833*	-0.0411	0.0558*
	[0.029]	[0.045]	[0.031]	[0.033]
Interest Rate Term Structure		-0.1976	-0.1141	-0.1580
		[0.235]	[0.163]	[0.200]
Overnight Interbank Interest Rate		1.1976***	1.0504***	0.8611***
		[0.304]	[0.211]	[0.313]
Volatility of Overnight Interbank Interest Rate		8.3913***	5.4338***	4.3253
		[1.550]	[1.078]	[3.290]
Gross Domestic Product		0.0045***	0.0035***	0.0021
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0024**	-0.0014*	0.0018
		[0.001]	[0.001]	[0.002]
Inflation Index		-0.0005**	-0.0003*	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0336*	0.0279**	0.0272*
		[0.018]	[0.013]	[0.016]
Liquidity Index		0.0013	-0.0128	-0.0609***
		[0.020]	[0.014]	[0.022]
Total Monthly Income Over Net Capital		-0.0336**	-0.0315***	0.0056
		[0.015]	[0.010]	[0.011]
Total Defaulted Credit Operation		0.0233	0.0230	0.0104
		[0.010]	[0.007]	[0.007]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0128	0.0074	0.0142
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0228	0.0213	-0.0167
		[0.172]	[0.119]	[0.102]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The econometric models use differences-in-differences method with panel data. We estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The Market Share is the proxy measure for Market Power. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006. (a) All estimations consider an intercept term. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 21: Robustness - Other Concentration Measures - Market Share and Bankruptcy Reform Effects - Dependent Variable: Mean Spread over IRTS

	(1)	(2)	(3)	(4)
N Obs	13,492	26,132	25,800	11,790
R-sq: within	0.0367	0.0463	0.0519	0.0581
Test F	F(19,12107)	F(33,23859)	F(33,23555)	F(32,10522)
	24.300	35.110	39.060	20.290
Independent Variables				
β_0	0.0562***	0.7623	0.4271	0.3170
	[0.014]	[0.599]	[0.416]	[0.952]
Market Share - Credit Portfolio	4.9879***	4.5336***	1.6873***	4.6518***
	[0.477]	[0.322]	[0.232]	[0.518]
$MkS_{CreditType,Risk,Collateral}$	0.0163	0.0107	0.0274	0.0021
	[0.022]	[0.031]	[0.021]	[0.024]
Dummy of BBR	0.0530***	0.0465***	0.0512***	0.0353***
	[0.006]	[0.009]	[0.006]	[0.009]
Dummy of BBR * Dummy of Treated Group	-0.0427	-0.0235***	-0.0385***	-0.0364***
	[0.005]	[0.007]	[0.005]	[0.005]
$MkS_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	-0.0320	0.0758*	-0.0101	-0.0378
	[0.027]	[0.040]	[0.028]	[0.030]
$MkS_{CreditType,Risk,Collateral}$ * Dummy of BBR	-0.0969***	-0.0422***	0.0025	-0.0810***
	[0.020]	[0.030]	[0.021]	[0.022]
$MkS_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	0.0846***	-0.0810**	-0.0459*	0.0511*
	[0.026]	[0.039]	[0.027]	[0.028]
Interest Rate Term Structure		-1.2379***	-1.1573***	-1.1246***
		[0.205]	[0.142]	[0.170]
Overnight Interbank Interest Rate		1.0637***	0.9286***	0.7052***
		[0.266]	[0.184]	[0.266]
Volatility of Overnight Interbank Interest Rate		7.3863***	4.7399***	3.5551
		[1.355]	[0.941]	[2.793]
Gross Domestic Product		0.0039***	0.0031***	0.0018
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0021**	-0.0013**	0.0015
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003*	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0228	0.0183	0.0225*
		[0.016]	[0.012]	[0.019]
Liquidity Index		0.0065	-0.0066	-0.0517***
		[0.018]	[0.012]	[0.019]
Total Monthly Income Over Net Capital		-0.0292**	-0.0283***	0.0057
		[0.013]	[0.009]	[0.009]
Total Defaulted Credit Operation		0.0204	0.0201	0.0088
		[0.008]	[0.006]	[0.006]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0117	0.0068	0.0121
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0193	0.0182	-0.0189
		[0.150]	[0.104]	[0.086]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 20. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 22: Robustness - Coarse Definitions of Market Power - Market Share - Interest Rate as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0255	0.0479	0.0477	0.049
Test F	F(20,25802)	F(33,23859)	F(33,23555)	F(32,10522)
	33.730	36.400	35.740	16.950
Independent Variables				
β_0	0.2516***	0.77757	0.4643	0.3813
	[0.008]	[0.682]	[0.476]	[1.015]
Market Share - Credit Portfolio	2.1763***	5.1303***	1.9785***	5.3713***
	[0.257]	[0.366]	[0.265]	[0.601]
$MkS_{CreditType}$	0.2508***	0.8969***	0.3092***	-0.1033
	[0.049]	[0.066]	[0.050]	[0.070]
Dummy of BBR	0.0658***	0.1096***	0.0752***	0.0479***
	[0.006]	[0.010]	[0.007]	[0.011]
Dummy of BBR * Dummy of Treated Group	-0.0489***	-0.0797***	-0.0561***	-0.0440***
	[0.006]	[0.008]	[0.006]	[0.006]
$MkS_{CreditType}$ * Dummy of Treated Group	-0.2137***	0.6755***	-0.1993***	-0.0287
	[0.061]	[0.091]	[0.066]	[0.085]
$MkS_{CreditType}$ * Dummy of BBR	-0.2199***	-0.9070***	-0.2687***	-0.2879***
	[0.048]	[0.064]	[0.048]	[0.050]
$MkS_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.1670***	0.6476**	0.1308**	0.1316**
	[0.058]	[0.084]	[0.061]	[0.063]
Interest Rate Term Structure		-0.1229	-0.119	-0.1361
		[0.234]	[0.162]	[0.199]
Overnight Interbank Interest Rate		1.1524***	1.0590***	0.8516***
		[0.303]	[0.211]	[0.312]
Volatility of Overnight Interbank Interest Rate		8.7276***	5.5104***	4.5764
		[1.541]	[1.076]	[3.285]
Gross Domestic Product		0.0045***	0.0035***	0.0022
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0024**	-0.0014*	0.0018
		[0.001]	[0.001]	[0.002]
Inflation Index		-0.0005**	-0.0003**	-0.0004
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0342*	0.0279**	0.0245
		[0.018]	[0.013]	[0.016]
Liquidity Index		-0.0065	-0.0153	-0.0558**
		[0.020]	[0.014]	[0.022]
Total Monthly Income Over Net Capital		-0.0302**	-0.0311***	0.0098
		[0.015]	[0.010]	[0.011]
Total Defaulted Credit Operation		0.0234	0.0229	0.0101
		[0.010]	[0.007]	[0.007]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0132	0.0077	0.0199
		[0.001]	[0.001]	[0.003]
Dummy of Public Bank		0.0346	0.0248	-0.0174
		[0.171]	[0.119]	[0.102]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. We calculated the Market Share on the Credit Type level. The market power measure does not differentiate competition by risk class or by collateralized operations. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 23: Robustness - Coarse Definitions of Market Power - Market Share - Spread over IRTS as Dependent Variable

	(1)	(2)	(3)	(4)
N Obs	28,028	26,132	25,800	11,790
R-sq: within	0.0271	0.0541	0.0534	0.0618
Test F	F(20,25613)	F(33,23859)	F(33,23555)	F(32,10522)
	24.300	35.110	39.060	20.290
Independent Variables				
β_0	0.1292***	0.7391	0.4436	0.3639
	[0.007]	[0.597]	[0.416]	[0.862]
Market Share - Credit Portfolio	1.8922***	4.5324***	1.7098***	4.6077***
	[0.220]	[0.320]	[0.232]	[0.510]
$MkS_{CreditType}$	0.2091***	0.7474***	0.2549***	-0.0944
	[0.042]	[0.058]	[0.043]	[0.060]
Dummy of BBR	0.0550***	0.0953***	0.0658***	0.0411***
	[0.005]	[0.009]	[0.006]	[0.009]
Dummy of BBR * Dummy of Treated Group	-0.0487***	-0.0707***	-0.0508***	-0.0379***
	[0.005]	[0.007]	[0.005]	[0.005]
$MkS_{CreditType}$ * Dummy of Treated Group	-0.1996***	0.5656***	-0.1691***	-0.0175
	[0.052]	[0.079]	[0.057]	[0.072]
$MkS_{CreditType}$ * Dummy of BBR	-0.1796***	-0.7628***	-0.2192***	-0.2473***
	[0.041]	[0.056]	[0.042]	[0.043]
$MkS_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	0.1447***	0.5343***	0.0981*	0.1108**
	[0.049]	[0.073]	[0.053]	[0.054]
Interest Rate Term Structure		-1.1748***	-1.1551***	-1.1061***
		[0.204]	[0.142]	[0.169]
Overnight Interbank Interest Rate		1.0262***	0.9367***	0.6971***
		[0.265]	[0.184]	[0.265]
Volatility of Overnight Interbank Interest Rate		7.6761***	4.8071***	3.7695
		[1.348]	[0.939]	[2.789]
Gross Domestic Product		0.0040***	0.0031***	0.0018
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0022**	-0.0013**	0.0015
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003**	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0232	0.0181	0.0202
		[0.016]	[0.011]	[0.014]
Liquidity Index		-0.0003	-0.0090	-0.0473**
		[0.018]	[0.012]	[0.019]
Total Monthly Income Over Net Capital		-0.0265**	-0.0280***	0.0093
		[0.013]	[0.009]	[0.009]
Total Defaulted Credit Operation		0.0204	0.0200	0.0086
		[0.008]	[0.006]	[0.006]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0120	0.0071	0.0171
		[0.001]	[0.001]	[0.002]
Dummy of Public Bank		0.0295	0.0214	-0.0196
		[0.150]	[0.104]	[0.086]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 22. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 24: Multi-Product-H: Interest Rate as Dependent Variable - Without Bootstrapping

	(1)	(2)	(3)	(4)
N Obs	29,245	26,132	25,800	11,790
R-sq: within	0.0323	0.0386	0.0463	0.0431
Test F	F(20,2481)	F(33,2239)	F(33,2211)	F(32,1235)
	15.240	11.350	12.440	5.510
Independent Variables				
β_0	0.2073***	0.9600	0.6128	0.2184
	[0.043]	[0.638]	[0.442]	[1.052]
Market Share - Credit Portfolio	3.9394**	5.1686**	1.9853	4.9933***
	[1.724]	[2.107]	[1.518]	[1.286]
$HPeR_{CreditType}$	-0.0019	-0.0085	-0.0047	-0.0121**
	[0.004]	[0.007]	[0.006]	[0.005]
Dummy of BBR	0.0442***	0.0361**	0.0464***	0.0235
	[0.012]	[0.017]	[0.013]	[0.016]
Dummy of BBR * Dummy of Treated Group	-0.0308**	-0.0145	-0.0301**	-0.0303**
	[0.014]	[0.018]	[0.014]	[0.013]
$HPeR_{CreditType}$ * Dummy of Treated Group	0.0144	0.0211	0.0133	0.0068
	[0.009]	[0.014]	[0.010]	[0.010]
$HPeR_{CreditType}$ * Dummy of BBR	0.0372	0.0278	0.0299	0.0198
	[0.011]	[0.015]	[0.012]	[0.013]
$HPeR_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	-0.0379***	-0.0335*	-0.0356**	-0.0159
	[0.013]	[0.018]	[0.015]	[0.015]
Interest Rate Term Structure		-0.1801	-0.1292	-0.1448
		[0.234]	[0.191]	[0.309]
Overnight Interbank Interest Rate		1.1168***	1.0087***	0.7664**
		[0.259]	[0.196]	[0.324]
Volatility of Overnight Interbank Interest Rate		8.3729***	5.3483***	4.2677
		[1.622]	[1.131]	[3.008]
Gross Domestic Product		0.0039***	0.0029***	0.0016
		[0.001]	[0.001]	[0.002]
Industrial Production Index		-0.0021*	-0.0011*	0.0024*
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0006**	-0.0004**	-0.0003
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0329	0.0278	0.0288
		[0.021]	[0.018]	[0.022]
Liquidity Index		0.0025	-0.0123	-0.0599**
		[0.025]	[0.019]	[0.025]
Total Monthly Income Over Net Capital		-0.0300*	-0.0284**	0.0044
		[0.016]	[0.013]	[0.010]
Total Defaulted Credit Operation		0.0236	0.0232	0.0103
		[0.010]	[0.009]	[0.003]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0121	0.0071	0.0110
		[0.002]	[0.002]	[0.005]
Dummy of Public Bank		0.0227	0.0232*	-0.0161
		[0.014]	[0.014]	[0.018]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. We used a two-stage model to calculate the Panzar and Rosse H Statistic. Our first stage estimates the H-Statistic as the sum of input price elasticity. We use credit type dummies to captures the specific credit type contribution to the H-Statistic. The estimated H-Statistics is the generated regressor to market power in the second stage. The Brazilian Bankruptcy Reform is effective in June/2005. (1) The estimations include only year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (2) The estimations include controls, year fixed-effect and month fixed-effect. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, year fixed-effect and month fixed-effect. The model considers a sub-sample from Jul/2004 to Apr/2006. The outlier observations of interest rate are not excluded. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 25: Multi-Product-H: Spread over IRTS as Dependent Variable - Without Bootstrapping

	(1)	(2)	(3)	(4)
N Obs	29,022	26,132	25,800	11,790
R-sq: within	0.039	0.0456	0.0525	0.0558
Test F	F(20,2451)	F(33,2239)	F(33,2211)	F(32,1235)
	7.350	1,404.620	8.960	7.070
Independent Variables				
β_0	0.0904**	0.9227*	0.5959	0.1756
	[0.038]	[0.554]	[0.386]	[0.896]
	(0.019)	(0.096)	(0.123)	(0.845)
Market Share - Credit Portfolio	3.4417**	4.5576**	1.7141	4.2808***
	[1.552]	[1.897]	[1.359]	[1.100]
$HPeR_{CreditType}$	-0.0017	-0.0057	-0.0027	-0.0101**
	[0.004]	[0.006]	[0.005]	[0.004]
Dummy of BBR	0.0356***	0.0327**	0.0410***	0.0197
	[0.010]	[0.014]	[0.011]	[0.014]
Dummy of BBR * Dummy of Treated Group	-0.0348***	-0.0158	-0.0289**	-0.0273**
	[0.012]	[0.015]	[0.012]	[0.011]
$HPeR_{CreditType}$ * Dummy of Treated Group	0.0051	0.0158	0.0093	0.0041
	[0.008]	[0.012]	[0.009]	[0.008]
$HPeR_{CreditType}$ * Dummy of BBR	0.0382	0.0267	0.0286	0.0167
	[0.009]	[0.013]	[0.011]	[0.011]
$HPeR_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	-0.0299***	-0.0305*	-0.0325**	-0.0110
	[0.011]	[0.016]	[0.013]	[0.013]
Interest Rate Term Structure		-1.2256***	-1.1732***	-1.1164***
		[0.203]	[0.165]	[0.263]
Overnight Interbank Interest Rate		0.9857***	0.8847***	0.6038**
		[0.226]	[0.171]	[0.275]
Volatility of Overnight Interbank Interest Rate		7.3622***	4.6554***	3.5450
		[1.427]	[0.985]	[2.569]
Gross Domestic Product		0.0033***	0.0024***	0.0012
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0018*	-0.0010*	0.0021*
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003**	-0.0002
		[0.000]	[0.000]	[0.000]
Basel Capital Index		0.0224	0.0183	0.0239
		[0.018]	[0.015]	[0.019]
Liquidity Index		0.0071	-0.0067	-0.0508**
		[0.022]	[0.017]	[0.021]
Total Monthly Income Over Net Capital		-0.0260*	-0.0255**	0.0045
		[0.014]	[0.012]	[0.008]
Total Defaulted Credit Operation		0.0207	0.0203	0.0088
		[0.009]	[0.008]	[0.002]
Mean Maturity		-0.0001***	-0.0001***	-0.0001***
		[0.000]	[0.000]	[0.000]
Net Capital		0.0111	0.0066	0.0094
		[0.002]	[0.002]	[0.004]
Dummy of Public Bank		0.0200*	0.0207*	-0.0184
		[0.012]	[0.012]	[0.015]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 24. (a) All estimations consider a intercept term. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 26: Multi-Product - H Statistic: Bootstrap Correction - Interest Rate as Dependent Variable

	(3bs)	(4bs)	(5bs)
Number of Replications	700	700	700
c	0.5313	0.1873	-0.1475
	{-0.4604 1.5230}	{-1.8789 2.2535}	{-1.3344 1.0394}
	| − 0.5395 1.3197|	| − 2.0621 2.1019|	| − 1.3921 0.8318|
Market Share - Credit Portfolio	1.9863***	4.9933***	2.2343***
	{0.9011 3.0715}	{3.3907 6.5960}	{1.0990 3.6696}
	|0.8137 3.0695|	|3.2758 6.5072|	|0.9514 3.1904|
$HHI_{CreditType}$			-0.0585**
			{-0.1086 -0.0084}
			| − 0.1053 − 0.0064|
$HPeR_{CreditType}$	-0.0048	-0.0121**	-0.0018
	{-0.0172 0.0076}	{-0.0231 -0.0012}	{-0.0162 0.0125}
	| − 0.0432 − 0.0001|	| − 0.0447 − 0.0085|	| − 0.0367 0.0037|
Dummy of BBR	0.0475***	0.0344	0.0524***
	{0.0303 0.0646}	{-0.0852 0.1539}	{0.0347 0.0701}
	|0.0302 0.0564|	| − 0.0883 0.1473|	|0.0345 0.0640|
Dummy of BBR * Dummy of Treated Group	-0.0302***	-0.0303***	-0.0281***
	{-0.0433 -0.0171}	{-0.0437 -0.0170}	{-0.0426 -0.0135}
	| − 0.0306 − 0.0218|	| − 0.0391 − 0.0086|	| − 0.0323 − 0.0126|
$HPeR_{CreditType}$ * Dummy of Treated Group	0.0133*	0.0068	0.0078
	{-0.0001 0.0267}	{-0.0045 0.0182}	{-0.0081 0.0237}
	|0.0106 0.0475|	|0.0021 0.0401|	|0.0015 0.0665|
$HPeR_{CreditType}$ * Dummy of BBR	0.0305***	0.0198***	0.0259***
	{0.0161 0.0449}	{0.0057 0.0338}	{0.0099 0.0418}
	|0.0363 0.0438|	|0.0201 0.0550|	|0.0351 0.0588|
$HPeR_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	-0.0356***	-0.0159**	-0.0278***
	{-0.0509 -0.0203}	{-0.0305 -0.0014}	{-0.0452 -0.0105}
	| − 0.0493 − 0.0493|	| − 0.0491 − 0.0118|	| − 0.0675 − 0.0431|
Interest Rate Term Structure	-0.1182	-0.1448	0.1546
	(0.475)	(0.492)	(0.402)
	{-0.4423 0.2060}	{-0.5576 0.2679}	{-0.2070 0.5162}
	| − 0.4660 0.2083|	| − 0.5151 0.2813|	| − 0.2409 0.4863|
Overnight Interbank Interest Rate	0.9287***	0.7664**	0.2691
	{0.3791 1.4783}	{0.1345 1.3982}	{-0.4041 0.9423}
	|0.2995 1.2635|	|0.0078 1.2706|	| − 0.5900 0.7258|
Volatility of Overnight Interbank Interest Rate	5.3781***	4.2677	4.2912***
	{3.1153 7.6410}	{-2.7691 11.3046}	{1.8284 6.7540}
	|3.0296 7.5139|	| − 2.6737 10.8306|	|1.8796 6.6494|
Gross Domestic Product	0.0030***	0.0016	0.0034***
	{0.0015 0.0044}	{-0.0017 0.0049}	{0.0018 0.0049}
	|0.0010 0.0041|	| − 0.0017 0.0045|	|0.0016 0.0046|
Industrial Production Index	-0.0011	0.0024	-0.0018**
	{-0.0025 0.0003}	{-0.0008 0.0055}	{-0.0034 -0.0002}
	| − 0.0023 0.0006|	| − 0.0002 0.0066|	| − 0.0032 − 0.0001|
Inflation Index	-0.0003	-0.0003	0.0000
	{-0.0007 0.00001}	{-0.0012 0.0007}	{-0.0005 0.0005}
	| − 0.0006 0.0002|	| − 0.0011 0.0008|	| − 0.0004 0.0005|
Basel Capital Index	0.0279**	0.0288	0.0281*
	{0.0012 0.0545}	{-0.0081 0.0657}	{-0.0019 0.0582}
	| − 0.0008 0.0508|	|0.0005 0.0623|	| − 0.0066 0.0571|
Liquidity Index	-0.0125	-0.0599***	-0.0111
	{-0.0355 0.0105}	{-0.1028 -0.0169}	{-0.0364 0.0142}
	| − 0.0345 0.0106|	| − 0.1031 − 0.0145|	| − 0.0408 0.0105|
Total Monthly Income Over Net Capital	-0.0286	0.0044	-0.0459***
	{-0.0513 -0.0059}	{-0.0164 0.0252}	{-0.0715 -0.0204}
	| − 0.0480 − 0.0077|	| − 0.0153 0.0267|	| − 0.0647 − 0.0184|
Total Defaulted Credit Operation	0.0233	0.0103	0.0210
	{-0.0102 0.0567}	{-0.0222 0.0428}	{-0.0073 0.0492}
	|0.0090 0.0631|	| − 0.0141 0.0453|	|0.0084 0.0523|
Mean Maturity	-0.0001***	-0.0001***	-0.0001***
	{-0.0001 -0.0001}	{-0.0001 -0.0001}	{-0.0001 -0.0001}
	| − 0.0001 − 0.0001|	| − 0.0001 − 0.0001|	| − 0.0001 − 0.0001|
Net Capital	0.0071***	0.0110***	0.0066***
	{0.0054 0.0088}	{0.0058 0.0162}	{0.0049 0.0082}
	|0.0054 0.0089|	|0.0054 0.0156|	|0.0051 0.0082|
Dummy of Public Bank	0.0236	-0.0161	0.0310
	{-0.0138 0.0610}	{-0.0619 0.0298}	{-0.0080 0.0700}
	|0.0000 0.0783|	| − 0.0775 0.0181|	|0.0000 0.0754|
Year Fixed Effect	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. We used a two-stage model to calculate the Multi-Product - H based on the Panzar and Rosse H-Statistics. The estimated Multi-Product - H used in the second stage. This table reports the results of the second stage with bootstrapping correction. The Brazilian Bankruptcy Reform is effective in June/2005. (3bs) The estimations include controls, year fixed-effect and month fixed-effect. The model uses the same specification of model (3). (4bs) The estimations include controls, year fixed-effect and month fixed-effect. We assume the BBR effectiveness from June/2005. The model considers a sub-sample from Jul/2004 to Abr/2006. The model uses the same specification of model (4) (5bs) The estimations includes the HHI control variable. Both models (3bs) and (5bs) use the complete sample period from Jul/2004 to Dec/2007. (a) All estimations consider an intercept term. Year Fixed Effect and Month Fixed Effect in all models. (b) 95% Normal Bootstrapped confidence interval, ||95% Bias corrected Bootstrapped Confidence Interval. (c) $*p < 0.1$, $**p < 0.05$, $***p < 0.01$ with respect to normal confidence interval.

Table 27: Multi-Product - H Statistic: Bootstrap Correction - Spread over IRTS as Dependent Variable

	(3bs)	(4bs)	(5bs)
Number of Replications	700	700	700
c	0.4947	0.1508	-0.1102
	{-0.3975 1.3869}	{-1.6755 1.9771}	{-1.1355 0.9151}
	| − 0.5422 1.1669|	| − 1.8424 1.7111|	| − 1.2982 0.6077|
Market Share - Credit Portfolio	1.7153***	4.2808***	1.9336***
	{0.6921 2.7384}	{2.8728 5.6888}	{0.7958 3.0713}
	|0.5322 2.5950|	|2.9501 5.7418|	|0.6312 2.9186|
$HHI_{CreditType}$			-0.0488**
			{-0.0949 -0.0027}
			| − 0.0916 − 0.0035|
$HPeR_{CreditType}$	-0.0027	-0.0101*	-0.0004
	{-0.0139 0.0084}	{-0.0203 0.0001}	{-0.0126 0.0118}
	| − 0.0318 0.0012|	| − 0.0364 − 0.0064|	| − 0.0203 0.0081|
Dummy of BBR	0.0422***	0.0287	0.0464***
	{0.0280 0.0564}	{-0.0797 0.1371}	{0.0309 0.0620}
	|0.0287 0.0497|	| − 0.0899 0.1298|	|0.0287 0.0566|
Dummy of BBR * Dummy of Treated Group	-0.0290***	-0.0273***	-0.0277***
	{-0.0402 -0.0177}	{-0.0390 -0.0157}	{-0.0403 -0.0151}
	| − 0.0282 − 0.0254|	| − 0.0353 − 0.0146|	| − 0.0316 − 0.0174|
$HPeR_{CreditType}$ * Dummy of Treated Group	0.0092	0.0041	0.0041
	{-0.0024 0.0208}	{-0.0057 0.0138}	{-0.0088 0.0170}
	|0.0055 0.0303|	|0.0000 0.0339|	| − 0.0003 0.0434|
$HPeR_{CreditType}$ * Dummy of BBR	0.0294***	0.0167***	0.0256***
	{0.0169 0.0419}	{0.0039 0.0295}	{0.0121 0.0391}
	|0.0322 0.0322|	|0.0175 0.0371|	|0.0368 0.0368|
$HPeR_{CreditType}$ * Dummy of BBR * Dummy of Treated Group	-0.0325***	-0.0110*	-0.0254***
	{-0.0454 -0.0196}	{-0.0234 0.0014}	{-0.0395 -0.0113}
		| − 0.0341 − 0.0074|	| − 0.0359 − 0.0359|
Interest Rate Term Structure	-1.1613***	-1.1164***	-0.9693***
	{-1.4356 -0.8870}	{-1.4602 -0.7726}	{-1.2846 -0.6540}
	| − 1.4482 − 0.9318|	| − 1.3973 − 0.7132|	| − 1.2982 − 0.6852|
Overnight Interbank Interest Rate	0.7986***	0.6038**	0.2465
	{0.3229 1.2743}	{0.0637 1.1439}	{-0.3381 0.8310}
	|0.1605 1.0361|	| − 0.0335 1.0613|	| − 0.3724 0.6148|
Volatility of Overnight Interbank Interest Rate	4.6875***	3.5450	3.6286***
	{2.7048 6.6703}	{-2.2273 9.3173}	{1.3985 5.8586}
	|2.6565 6.4515|	| − 1.8683 9.4272|	|1.2180 5.7943|
Gross Domestic Product	0.0025***	0.0012	0.0029***
	{0.0013 0.0038}	{-0.0016 0.0040}	{0.0016 0.0042}
	|0.0011 0.0036|	| − 0.0024 0.0033|	|0.0010 0.0039|
Industrial Production Index	-0.0010	0.0021	-0.0016**
	{-0.0023 0.0003}	{-0.0006 0.0048}	{-0.0030 -0.0003}
	| − 0.0021 0.0004|	| − 0.0000 0.0052|	| − 0.0028 − 0.0001|
Inflation Index	-0.0003	-0.0002	0.0000
	{-0.0006 0.00001}	{-0.0010 0.0006}	{-0.0004 0.0005}
	| − 0.0005 0.0002|	| − 0.0009 0.0007|	| − 0.0003 0.0005|
Basel Capital Index	0.0184	0.0239	0.0171
	{-0.0038 0.0406}	{-0.0091 0.0568}	{-0.0088 0.0429}
	| − 0.0042 0.0399|	|0.0018 0.0527|	| − 0.0115 0.0397|
Liquidity Index	-0.0069	-0.0508***	-0.0051
	{-0.0266 0.0129}	{-0.0862 -0.0153}	{-0.0263 0.0160}
	| − 0.0277 0.0111|	| − 0.0828 − 0.0127|	| − 0.0294 0.0141|
Total Monthly Income Over Net Capital	-0.0257	0.0045	-0.0415***
	{-0.0469 -0.0046}	{-0.0124 0.0215}	{-0.0649 -0.0181}
	| − 0.0421 − 0.0058|	| − 0.0102 0.0226|	| − 0.0593 − 0.0152|
Total Defaulted Credit Operation	0.0203	0.0088	0.0184
	{-0.0069 0.0476}	{-0.0193 0.0368}	{-0.0060 0.0428}
	|0.0090 0.0490|	| − 0.0147 0.0433|	|0.0052 0.0430|
Mean Maturity	-0.0001***	-0.0001***	-0.0001***
	{-0.0001 -0.0001}	{-0.0001 -0.0001}	{-0.0001 -0.0001}
	| − 0.0001 − 0.0001|	| − 0.0001 − 0.0000|	| − 0.0001 − 0.0001|
Net Capital	0.0066***	0.0094***	0.0061***
	{0.0051 0.0081}	{0.0050 0.0138}	{0.0046 0.0077}
	|0.0050 0.0080|	|0.0053 0.0138|	|0.0046 0.0076|
Dummy of Public Bank	0.0212	-0.0184	0.0290
	{-0.0127 0.0552}	{-0.0600 0.0233}	{-0.0076 0.0656}
	|0.0000 0.0697|	| − 0.0735 0.0099|	|0.0000 0.0668|
Year Fixed Effect	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 26. (a) All estimations consider an intercept term. Year Fixed Effect and Month Fixed Effect in all models. (b) 95% Normal Bootstrapped confidence interval, ||95% Bias corrected Bootstrapped Confidence Interval. (c) $*p < 0.1$, $**p < 0.05$, $***p < 0.01$ with respect to normal confidence interval.

Table 28: Descriptive Statistics - Control Group of Observations - Symmetric Sub-sample from July/2004 to April/2006

	Before BBR			After BBR		
Dependent Variable	**Obs.††**	**Mean**	**Sd. Dv.**	**Obs.**	**Mean**	**Sd. Dv.**
$Y^{\dagger}_{b,l,r,c,t}$	1946	0.4424	0.3100	1946	0.5131	0.3322
$S^{\dagger}_{b,l,r,c,t}$	1944	0.2220	0.2619	1940	0.2904	0.2784
Interactions						
MultProduct - $H_{b,l,t}$	1946	0.4230	0.4882	1946	0.2276	0.3977
*Dummy of BBR * Dummy of Treated Group*	1946	0	0	1946	0	0
MultProduct - $H_{b,l,t}$ * *Dummy of Treated group*	1946	0	0	1946	0	0
MultProduct - $H_{b,l,t}$ * *Dummy of BBR*	1946	-0.0008	0.0150	1946	0.2276	0.3977
MultProduct - $H_{b,l,t}$ * *Dummy of Treated group * Dummy of BBR*	1946	0	0	1946	0	0

This table presents the number of observations (Obs.), mean and standard deviation the estimated MultProduct-H statistic to the 2nd Stage of our Econometric Strategy. The statistic considers the sub-sample of observations from July/2004 to April/2006.

† We also reported this statistics in Table 1: Descriptive Statistics - Dependent Variables.

Table 29: Descriptive Statistics - Treated Group of Observations - Symmetric Subsample from July/2004 to April/2006

	Before BBR			After BBR		
Dependent Variable	**Obs.††**	**Mean**	**Sd. Dv.**	**Obs.**	**Mean**	**Sd. Dv.**
$Y^{\dagger}_{b,l,r,c,t}$	5342	0.3345	0.2321	4973	0.3499	0.2194
$S^{\dagger}_{b,l,r,c,t}$	5305	0.1282	0.1909	4932	0.1465	0.1810
Interactions						
MultProduct - $H_{b,l,t}$	5342	0.4144	0.2777	4973	0.3243	0.4267
*Dummy of BBR * Dummy of Treated Group*	5342	0.0878	0.2830	4973	1	0
MultProduct - $H_{b,l,t}$ * *Dummy of Treated group*	5342	0.4144	0.2777	4973	0.3243	0.4267
MultProduct - $H_{b,l,t}$ * *Dummy of BBR*	5342	0.0000	0.0486	4973	0.3243	0.4267
MultProduct - $H_{b,l,t}$ * *Dummy of Treated group* * *Dummy of BBR*	5342	0.0000	0.0486	4973	0.3243	0.4267

This table presents the number of observations (Obs.), mean and standard deviation the estimated MultProduct-H statistic to the 2nd Stage of our Econometric Strategy. The statistic considers the sub-sample of observations from July/2004 to April/2006.
† We also reported this statistics in Table 1: Descriptive Statistics - Dependent Variables.

Table 30: Robustness - Constant Market Power - Interest Rate as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0314	0.0402	0.0465	0.0379
Test F	F(20,26438)	F(33,23600)	F(33,23301)	F(32,16928)
	42.900	29.900	34.460	20.830
Independent Variables				
β_0	0.2204***	0.6545	0.4314	2.0394***
	[0.009]	[0.682]	[0.476]	[0.636]
Market Share - Credit Portfolio	3.9853***	5.2740***	2.0100***	1.5342***
	[0.245]	[0.363]	[0.264]	[0.321]
$HHICons_{CreditType,Risk,Collateral}$	-0.0622	0.2015***	-0.0342	-0.0294
	[0.039]	[0.061]	[0.044]	[0.023]
Dummy of BBR	0.0948***	0.0938***	0.0945***	-0.0213*
	[0.009]	[0.014]	[0.010]	[0.012]
Dummy of BBR * Dummy of Treated Group	-0.0813***	-0.0680***	-0.0788***	0.0045
	[0.009]	[0.014]	[0.010]	[0.012]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	0.0636	-0.1611**	0.0484	0.0880***
	[0.045]	[0.070]	[0.049]	[0.029]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR	-0.1553***	-0.1768***	-0.1504***	0.0112
	[0.027]	[0.039]	[0.027]	[0.023]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	0.1449***	0.1439***	0.1381***	-0.0412
	[0.032]	[0.047]	[0.033]	[0.028]
Interest Rate Term Structure		-0.1693	-0.1262	-0.9474***
		[0.233]	[0.162]	[0.193]
Overnight Interbank Interest Rate		1.0833***	1.0043***	-0.5140
		[0.302]	[0.210]	[0.428]
Volatility of Overnight Interbank Interest Rate		8.8718***	5.8852***	4.2519***
		[1.540]	[1.077]	[1.466]
Gross Domestic Product		0.0047***	0.0035***	0.0011
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0027**	-0.0014*	-0.0006
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003*	-0.0007***
		[0.000]	[0.000]	[0.000]
Basel Capital Index		-0.0005**	0.0309**	0.0209
		[0.000]	[0.013]	[0.017]
Liquidity Index		0.0355*	-0.0156	0.0259*
		[0.018]	[0.014]	[0.016]
Total Monthly Income Over Net Capital		-0.0001	-0.0293***	-0.0903***
		[0.020]	[0.010]	[0.016]
Total Defaulted Credit Operation		-0.0328**	0.0248	0.0285
		[0.014]	[0.007]	[0.010]
Mean Maturity		0.0249**	-0.0001***	-0.0001***
		[0.010]	[0.000]	[0.000]
Net Capital		-0.0001***	0.0071	0.0054
		[0.000]	[0.001]	[0.001]
Dummy of Public Bank		0.0211	0.0177	0.0748
		[0.170]	[0.118]	[0.156]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The constant Market Power test simulates an absolute non-endogeneity condition. We maintain the HHI Index on the same values calculated before the Brazilian Bankruptcy Reform. The Brazilian Bankruptcy Reform is effective in June/2005. We expected the estimated coefficient for the Market Power and its interaction to be statistically significant; we also expect similar level of the estimated coefficients, mainly for model (3). (1) The estimations include only fixed-effects of year and month. We exclude the outlier observations from the sample. (2) The estimations include controls, fixed-effects of year and month. We keep the outlier observations on the sample. (3) The estimations include controls, year fixed-effect and month fixed-effect. We exclude the outlier observations from the sample. (4) The estimations include controls, fixed-effects of year and month. We exclude the outlier observations. We symmetrically trunked the monthly data to keep the same number of panels before and after BBR. Models (1), (2) and (3) use the complete sample period from Jul/2004 to Dec/2007, and Model (4) a sub-sample from Jul/2004 to Apr/2006. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 31: Robustness - Constant Market Power - Spread over IRTS as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0388	0.048	0.0541	0.0379
Test F	F(20,26261)	F(33,23600)	F(33,23301)	F(32,16928)
	53.070	36.070	40.370	20.830
Independent Variables				
β_0	0.1016***	0.6402	0.4226	2.0394***
	[0.008]	[0.596]	[0.416]	[0.636]
Market Share - Credit Portfolio	3.4842***	4.6484***	1.7353***	1.5342***
	[0.209]	[0.318]	[0.230]	[0.321]
$HHICons_{CreditType,Risk,Collateral}$	-0.0631*	0.1590***	-0.0417	-0.0294
	[0.033]	[0.053]	[0.038]	[0.023]
Dummy of BBR	0.0801***	0.0809***	0.0815***	-0.0213*
	[0.007]	[0.012]	[0.008]	[0.012]
Dummy of BBR * Dummy of Treated Group	-0.0749***	-0.0583***	-0.0679***	0.0045
	[0.008]	[0.012]	[0.008]	[0.009]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	0.0645*	-0.1201**	0.0581	0.0880***
	[0.038]	[0.061]	[0.043]	[0.029]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR	-0.1328***	-0.1435***	-0.1220***	0.0112
	[0.023]	[0.034]	[0.024]	[0.023]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	0.1189***	0.1086***	0.1058***	-0.0412
	[0.028]	[0.042]	[0.029]	[0.028]
Interest Rate Term Structure		-1.2106***	-1.1647***	-0.9474***
		[0.203]	[0.141]	[0.193]
Overnight Interbank Interest Rate		0.9637***	0.8873***	-0.5140
		[0.264]	[0.184]	[0.428]
Volatility of Overnight Interbank Interest Rate		7.8161***	5.1395***	4.2519***
		[1.347]	[0.940]	[1.466]
Gross Domestic Product		0.0041***	0.0031***	0.0011
		[0.001]	[0.001]	[0.001]
Industrial Production Index		-0.0024**	-0.0013*	-0.0006
		[0.001]	[0.001]	[0.001]
Inflation Index		-0.0005**	-0.0003*	-0.0007***
		[0.000]	[0.000]	[0.000]
Basel Capital Index		-0.0005**	0.0208*	0.0209
		[0.000]	[0.011]	[0.017]
Liquidity Index		0.0243	-0.0092	0.0259*
		[0.016]	[0.009]	[0.016]
Total Monthly Income Over Net Capital		0.0052	-0.0264***	-0.0903***
		[0.018]	[0.009]	[0.016]
Total Defaulted Credit Operation		-0.0285**	0.0217	0.0285
		[0.013]	[0.006]	[0.010]
Mean Maturity		0.0219**	-0.0001***	-0.0001***
		[0.009]	[0.000]	[0.000]
Net Capital		-0.0001***	0.0066	0.0054
		[0.000]	[0.001]	[0.001]
Dummy of Public Bank		0.0178	0.0153	0.0748
		[0.149]	[0.103]	[0.156]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 30. (a) All estimations include intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 32: Robustness - Placebo Test - Interest Rate as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0193	0.0212	0.05	0.0504
Test F	F(23,4634)	F(23,4634)	F(32,16928)	F(32,16928)
	3.970	4.360	27.860	28.050
Independent Variables				
β_0	0.7174	0.7155	1.0493	2.3728***
	[0.466]	[0.466]	[0.695]	[0.722]
Market Share - Credit Portfolio	-1.3457	-1.3620	1.7285***	1.7408***
	[1.223]	[1.220]	[0.365]	[0.365]
$HHICons_{CreditType,Risk,Collateral}$	-0.1076**	-0.1636***	0.0138	-0.0163
	[0.046]	[0.054]	[0.032]	[0.026]
Dummy of BBR	0.0740	0.0759	0.0212	-0.0259
	[0.149]	[0.149]	[0.013]	[0.013]
Dummy of BBR * Dummy of Treated Group	0.0049	-0.0079	-0.0035	0.0074
	[0.013]	[0.016]	[0.013]	[0.010]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	0.1475***	0.1831***	0.0445	0.0779**
	[0.055]	[0.065]	[0.040]	[0.033]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR	0.0789	0.1032	-0.0389***	-0.0041***
	[0.034]	[0.042]	[0.032]	[0.027]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	-0.0658	-0.0692	0.0148	-0.0251
	[0.044]	[0.053]	[0.039]	[0.032]
Interest Rate Term Structure	-0.0989	-0.0424	0.1597	0.2453
	[0.285]	[0.278]	[0.216]	[0.219]
Overnight Interbank Interest Rate	-1.0217	-1.0257	0.3006	-0.6762
	[2.479]	[2.476]	[0.365]	[0.486]
Volatility of Overnight Interbank Interest Rate	-18.1648	-17.9414	4.1115**	5.2389***
	[19.218]	[19.193]	[1.815]	[1.664]
Gross Domestic Product	-0.0008	-0.0008	0.0030***	0.0012
	[0.003]	[0.003]	[0.001]	[0.001]
Industrial Production Index	0.0001	0.0001	-0.0015	-0.0005
	[0.004]	[0.004]	[0.001]	[0.001]
Inflation Index	(omitted)	(omitted)	-0.0005**	-0.0008***
			[0.000]	[0.000]
Basel Capital Index	-0.0028	-0.0029	0.0341*	0.0339*
	[0.018]	[0.018]	[0.019]	[0.019]
Liquidity Index	-0.0190	-0.0172	0.0235	0.0247
	[0.034]	[0.034]	[0.018]	[0.018]
Total Monthly Income Over Net Capital	0.0050	0.0042	-0.1024***	-0.1002***
	[0.010]	[0.010]	[0.018]	[0.018]
Total Defaulted Credit Operation	0.0037	0.0052	0.0325	0.0322
	[0.044]	[0.044]	[0.012]	[0.012]
Mean Maturity	0.0000***	0.0000***	-0.0001***	-0.0001***
	[0.000]	[0.000]	[0.000]	[0.000]
Net Capital	-0.0018	-0.0017	0.0056	0.0056
	[0.007]	[0.007]	[0.001]	[0.001]
Dummy of Public Bank	(omitted)	(omitted)	0.0776	0.0710
			[0.177]	[0.177]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

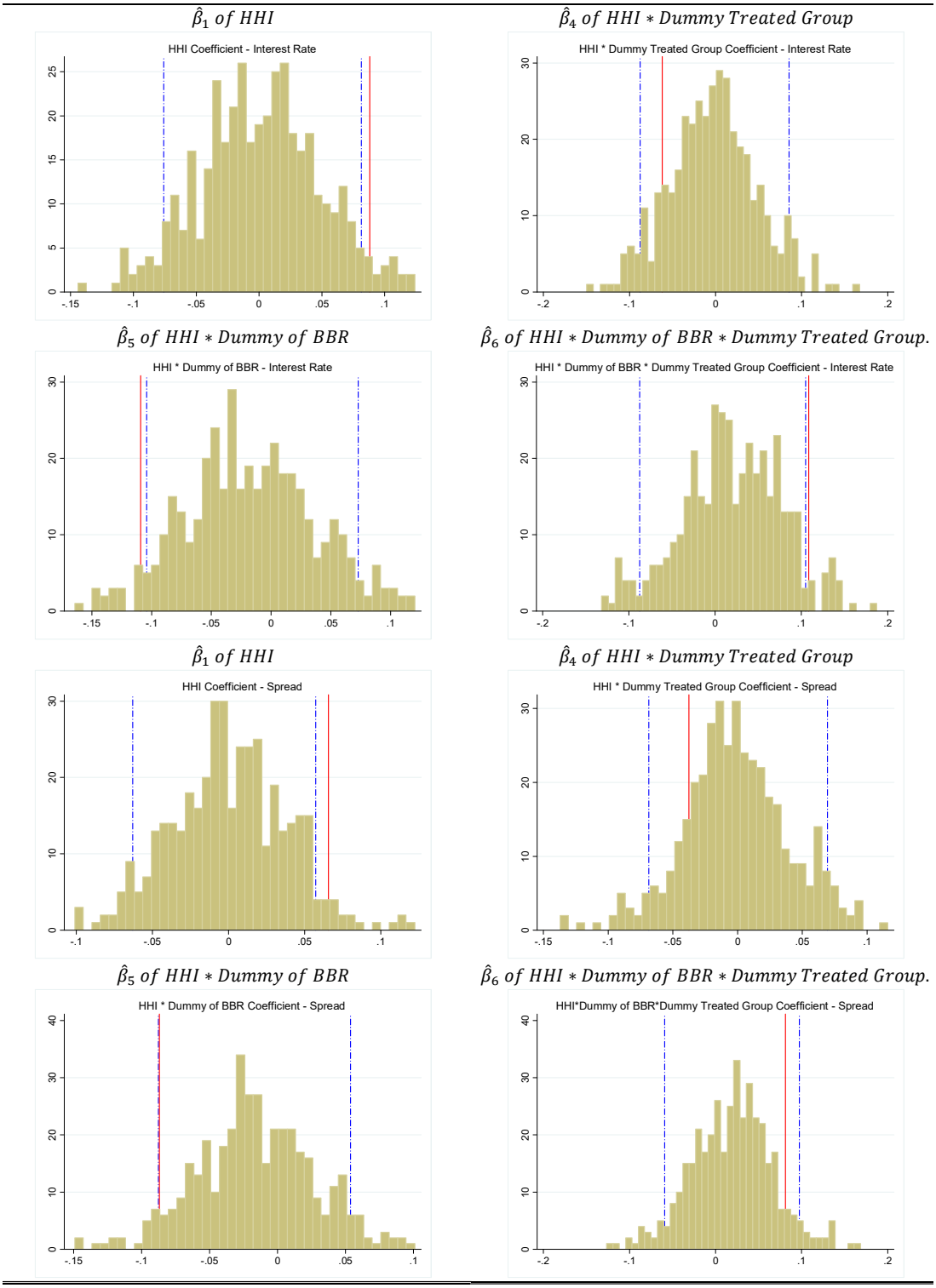
In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Interest Rate of new loan contracts to firms. The placebo test simulates a different month for the Brazilian Bankruptcy Reform - BBR to be effective. We divided the sample in two parts, before and after Jun/2005 and we exclude the observations in June and July 2005. We expected do not have significant effects for the placebo simulations. (1) We introduced a placebo event from December/2004, 6 months before the correct date the BBR became effective. The panel sample covers July/2004 to May/2005. The sample does not have outliers. (2) We introduced a placebo event from September/2004, 9 months before the correct date the BBR became effective. The panel sample covers July/2004 to May/2005. The sample does not have outliers. (3) We introduced a placebo event from December/2005, 6 months after the correct date the BBR became effective. The panel sample covers August/2005 to December/2007. The sample does not have outliers. (4) We introduced a placebo event from Mar/2006, 9 months after the correct date the BBR became effective. The panel sample covers August/2005 to December/2007. The sample does not have outliers. (a) All estimations consider an intercept term. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 33: Robustness - Placebo Test - Spread over IRTS as Dependent Variable

	(1)	(2)	(3)	(4)
R-sq: within	0.0243	0.0263	0.0374	0.0379
Test F	F(23,4634)	F(23,4634)	F(32,16928)	F(32,16928)
	5.010	5.440	20.560	20.830
Independent Variables				
β_0	0.6357	0.6330	0.9114	2.0394***
	[0.396]	[0.396]	[0.612]	[0.636]
Market Share - Credit Portfolio	-1.0571	-1.0828	1.5177***	1.5342***
	[1.039]	[1.036]	[0.321]	[0.321]
$HHICons_{CreditType,Risk,Collateral}$	-0.0845**	-0.1327***	-0.0068	-0.0294
	[0.039]	[0.046]	[0.028]	[0.023]
Dummy of BBR	0.0621	0.0633	0.0189	-0.0213*
	[0.126]	[0.126]	[0.012]	[0.012]
Dummy of BBR * Dummy of Treated Group	0.0041	-0.0064	-0.0047	0.0045
	[0.011]	[0.013]	[0.011]	[0.009]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of Treated Group	0.1156**	0.1473***	0.0623*	0.0880***
	[0.047]	[0.055]	[0.035]	[0.029]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR	0.0640	0.0878	-0.0166***	0.0112
	[0.029]	[0.036]	[0.028]	[0.023]
$HHICons_{CreditType,Risk,Collateral}$ * Dummy of BBR * Dummy of Treated Group	-0.0489	-0.0559	-0.0080	-0.0412
	[0.037]	[0.045]	[0.034]	[0.028]
Interest Rate Term Structure	-1.1086***	-1.0484***	-1.0093***	-0.9474***
	[0.242]	[0.236]	[0.190]	[0.193]
Overnight Interbank Interest Rate	-0.8485	-0.8612	0.3180	-0.5140
	[2.105]	[2.103]	[0.320]	[0.428]
Volatility of Overnight Interbank Interest Rate	-15.2601	-15.0546	3.3173**	4.2519***
	[19.322]	[16.301]	[1.600]	[1.466]
Gross Domestic Product	-0.0007	-0.0006	0.0027***	0.0011
	[0.003]	[0.003]	[0.001]	[0.001]
Industrial Production Index	0.0001	0.0000	-0.0015	-0.0006
	[0.003]	[0.003]	[0.001]	[0.001]
Inflation Index	(omitted)	(omitted)	-0.0004*	-0.0007***
			[0.000]	[0.000]
Basel Capital Index	-0.0036	-0.0038	0.0208	0.0209
	[0.016]	[0.015]	[0.017]	[0.017]
Liquidity Index	-0.0140	-0.0125	0.0250	0.0259*
	[0.029]	[0.029]	[0.016]	[0.016]
Total Monthly Income Over Net Capital	0.0051	0.0045	-0.0925***	-0.0903***
	[0.009]	[0.009]	[0.016]	[0.016]
Total Defaulted Credit Operation	0.0030	0.0043	0.0288	0.0285
	[0.038]	[0.038]	[0.010]	[0.010]
Mean Maturity	0.0000***	0.0000***	-0.0001***	-0.0001***
	[0.000]	[0.000]	[0.000]	[0.000]
Net Capital	-0.0021	-0.0019	0.0054	0.0054
	[0.006]	[0.006]	[0.001]	[0.001]
Dummy of Public Bank	(omitted)	(omitted)	0.0738	0.0748
			[0.156]	[0.156]
Year Fixed Effect	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes

In this table we estimate the Market Power and Bankruptcy Reform effects on the Mean Spread over IRTS of new loan contracts to firms. Table explanations are the same from the ones presented at the end of Table 32. (a) All estimations include an intercept. (b) Robust Standard Deviation in brackets, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 34: Randomization Histogram - Estimated Coefficients of HHI and HHI with Interactions



This figure shows the estimated coefficient of the randomization test. We construct the histograms with the results of 200 regressions. We excluded outlier and we use all observed period, from July/2004 to December/2007. The first four graphics shows the result using the weighted average of the interest rate as dependent variable, and the next four the ones with the spread over the IRTS as dependent variables. We respectively report the histogram of the estimated coefficients: β_1 of HHI, β_4 of HHI×Dummy Treated Group, β_5 of HHI×Dummy of BBR and β_6 of HHI×Dummy of BBR*Dummy Treated Group. The vertical line in each histogram represents the main results of the paper. The two dash-dot lines are the 5th and 95th percentiles.

Table 35: Panzar and Rosse's H-Statistic and Market Competition

Before the BBR	After the BBR
H-Statistic: less or equal to 0	Monopoly or Monopolist Competition
H-Statistic: between 0 and 1	Monopolist Competition
H-Statistic: equal to 1	Perfect Competition

This table relates the predicted value of the H-Statistic posited by Panzar and Rosse (1987) and the respective interpretation of the level of market competition.