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BANKRUPTCY REFORMS IN THE MIDST OF THE GREAT RECESSION: THE SPANISH EXPERIENCE.

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Abstract

We make use of a unique data set of corporate insolvencies in Spain to assess the effectiveness of the four reforms to the Spanish bankruptcy code implemented during the Great Recession (2008-2013). One of the reforms decreased the average duration of insolvency procedures by increasing the appeal of private workouts as an alternative to formal bankruptcy. Two of the reforms increased the percentage of reorganisations by increasing the quality of insolvency administrators and reducing the costs of financial distress. The impact was larger in firms with lower liquidation values and higher going concern values, suggesting an increase in ex-post efficiency. By contrast, two of the reforms did not achieve their goals and failed to have any robust impact on those dimensions. Our research illustrates the important role that insolvency administrators may play in the design of an efficient bankruptcy system, as well as the need for a legal framework that supports out-of-court workouts as an alternative to formal bankruptcies. More generally, our results highlight the importance of evaluating bankruptcy reforms before assessing their impact on other dimensions such as credit, firm financing and investment.

Keywords: bankruptcy, reorganisation, liquidation, reforms, duration analysis.

JEL Classification: G33, C41, K22.

1. Introduction

Bankruptcy procedures are important determinants of the development of capital markets (La Porta *et al*. 1997, 1998), firm financing and investment (Rajan and Zingales, 1995, Davydenko and Franks, 2008, Acharya *et al*., 2011), innovation (Acharya and Subramanian, 2009) and entrepreneurship (Armour and Cumming, 2008). A well-functioning bankruptcy system reorganises viable businesses and liquidates non-viable ones, while it preserves lenders' incentives to provide credit by protecting creditor rights and deterring borrowers' moral hazard (Hart, 2000). However, as shown by Djankov *et al.* (2008), insolvency institutions usually perform poorly. Reforms to the bankruptcy code are therefore necessary, especially during economic downturns, as the number of insolvencies rise (Cirmizi *et al.*, 2010).

In this paper we study the effects of the reforms to the bankruptcy code in Spain during the Great Recession (2008-2013).[1] The reforms were prompted by a severe economic crisis which, by dramatically increasing the number of bankruptcy filings (from 1,000 a year to 9,000) and congesting courts, made apparent the dysfunctional features of the insolvency law. Specifically, before the reforms the Spanish bankruptcy system was characterised by lengthy and costly procedures [Van Hemmen (2007, 2014), Consejo General del Poder Judicial (2007, 2014)] that resulted in the firm's piecemeal liquidation in about 95% of the cases[2] [Van Hemmen (2014), Celentani *et al.*, (2010), Banco de España (2014)].

The reforms to the Spanish bankruptcy code consisted of four distinct laws (one passed in 2009, one in 2012 and two in 2014)[3] that aimed to decrease the duration of bankruptcy procedures and to increase the percentage of successful reorganisations. The 2009 and 2012 reforms extended the scope for simplified procedures, which were cheaper and faster proceedings that were originally designed only for SMEs. Those reforms also created an early liquidation scheme in the spirit of US Chapter 7, so that the debtor or the insolvency administrator could propose a liquidation plan at the onset of the insolvency proceeding without the need of a reorganisation attempt first. Moreover, the 2012 reform sought to improve the performance of insolvency trustees, whose perceived quality was very low (Celentani *et al*., 2010). In particular, it reduced from three to one the number of insolvency administrators to eliminate coordination

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[1] In Spain, during the Great Recession (2008-2013), real GDP fell by more than 8%, the unemployment rate reached 26% (from 10%), credit to the non-financial private sector fell by more than 18% and real housing prices dropped by 35%.

[2] The piecemeal liquidation of the firm's assets is the optimal bankruptcy outcome in the cases in which the liquidation value of the assets is higher than the firm's going concern value. But 95% of bankruptcies resulting in liquidation is basically a corner solution, which is not likely to be the optimal solution, as this would imply that no bankrupt firm is a viable business.

[3] There were also two reforms of the *personal* bankruptcy code, in 2013 and 2015. We omit them from the description of the reforms because this paper focuses on the insolvency of non-financial corporations.

problems and to reduce the cost of the procedure, it increased their professionalisation by tightening the requirements for being appointed and it allowed professional partnerships to be appointed administrators to increase the competition in the market.

The March 2014 reform facilitated court-approved refinancing agreements -a sort of private workout that is verified and approved by a judge in order to enjoy some special rights- making them an appealing alternative to in-court bankruptcy procedures. The reform limited claw-back provisions, which had previously allowed judges to nullify out-of-court agreements, and suspended debt collection actions during the negotiations between the debtor and creditors. Moreover, court-approved refinancing agreements could be imposed to dissident creditors if certain voting majorities were reached, which reduced hold-out problems, and the fresh money provided in a refinancing agreement enjoyed superpriority. The September 2014 reform facilitated in-court reorganisations by removing stringent creditor reimbursement requirements set in the original law.[4] The arrangements could also be imposed on dissident preferred creditors (preferential and secured creditors) if some voting majorities were met.

The empirical analysis takes advantage of a rich database containing the dates of the key phases of each bankruptcy procedure (declaration of bankruptcy, court approval of the reorganisation agreement or the liquidation plan, closure of the bankruptcy process) and balance-sheet and other firm-level information of about 14,000 firms that filed for bankruptcy between 2004 and 2016. In particular, we consider that a bankrupt firm i is treated by reform n, $REFORM_i^n = 1$ and untreated by the next reform $n+1$, $REFORM_i^{n+1} = 0$, if the bankruptcy procedure started after the entry into force of that reform and before the entry into force of the next one. For instance, consider the 2009 reform, which entered into force on 1 April 2009, the 2012 reform, which entered into force on 1 January 2012, and a bankruptcy process that started on 1 June 2009 and ended on 1 June 2012. Such procedure would be treated by the 2009 reform ($REFORM_i^{2009} = 1$) and untreated by the 2012 reform ($REFORM_i^{2012} = 0$).

We use linear probability models (LPM)[5] and duration models to estimate the impact of each reform on the probability of reorganisation and on the average duration of bankruptcy procedures. We address three identification challenges. First, as a large percentage of the duration observations are right-censored, applying straight OLS to the entire sample and treating the censored observations as if they were uncensored, or excluding censored cases altogether, would yield biased and inconsistent estimates (Wooldridge, 2002). By contrast, duration models, by expressing the log-likelihood function as a weighted average of the sample density of completed bankruptcy spells and the survivor function of uncompleted spells, yield consistent estimates.

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[4] Under the original law, an agreement required a voting majority of 50% of ordinary claims, its debt haircut could not exceed 50% and its debt moratorium could not exceed 5 years. Following the reform, a reorganisation agreement could contain debt haircuts higher than 50%, debt moratoria between 5 and 10 years, debt-equity swaps and dations in payment if it was endorsed by at least 65% of ordinary credit.

[5] In robustness, probit models have also been used, yielding similar results. See the Supplement for details.

Second, our complete sample comprises firms that filed for bankruptcy under very different macroeconomic and financial conditions, implying that the respective control and treated groups may differ in some unobservable characteristics. Moreover, one may think that the time a firm has spent in an adverse economic environment before filing for bankruptcy influences the insolvency process, so that comparing firms that filed for bankruptcy, say, in 2008 and 2013 may be misleading. We address this challenge by employing a threshold approach and restricting the analysis to companies that filed for bankruptcy within a six-month time window around the entry into force of each reform. For instance, for the analysis of the 2009 reform, which entered into force on April 1, 2009, we use the bankruptcies that were initiated between January 1, 2009 and June 30, 2009. This enables us to compare firms that filed for bankruptcy in similar macroeconomic and financial conditions but under different insolvency regimes.

The third identification challenge is the possibility of strategic bankruptcy filings. In particular, if firms can time their filings (e.g., delaying the onset of the bankruptcy process to take advantage of an expected reform), assignment to the treatment and control groups will not be random. Nevertheless, we find this mechanism very unlikely because, under the Spanish bankruptcy law, the debtor and the firm management are under a legal duty to file for bankruptcy in a short period of time after insolvency starts, or otherwise they risk facing serious personal liabilities.[6] In addition, if they do not file for bankruptcy, but the creditors do, the rule is that firm management will be taken over by the court-appointed insolvency administrator. Monthly data on the number of business bankruptcies in Spain do not suggest the widespread use of strategic filings either, as there is not bunching around the dates of entry into force of the reforms.

Nevertheless, one should be cautious when making a casual interpretation of our estimates. In particular, the identification strategy is limited by the lack of a quasi-experimental setting. Ideally, the evaluation of the reforms would be assessed by comparing the changes in outcomes (duration of bankruptcy, probability of reorganisation) of Spanish firms around the reforms with the changes in outcomes of non-Spanish firms in the same time period. This could be done parametrically, as in a classical differences-in-differences estimation, in which firms from neighbouring countries (Portugal, France) could be used as a control group, while Spanish firms would be the treatment group. The advantage of such a diff-in-diff estimation is that it would control for all the confounding events that happened at the same time as the bankruptcy reforms and had a similar impact on the two groups (e.g. sovereign debt crisis). However, the lack of publicly available micro data on international bankruptcies prevents us from carrying out such a strategy. Hence, our analyses rely on post-pre reform comparisons, which could pick up the effect of other confounding factors such as the sovereign debt crisis or other policy measures implemented by the Spanish government or the European Central Bank during the Great Recession. The threshold analysis approach, in which we restrict the estimation samples to thin time windows

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[6] See section 4 for details.

around the entry into force of each reform, mitigates, but does not eliminate, this concern.

Our results suggest that two of the reforms may have a sizeable effect on the probability of reorganisation and on the average length of bankruptcy procedures, while two of them had no robust impact. First, the March 2014 reform is associated with a decrease in the duration of bankruptcy procedures by at least 21%. This effect may be due to the improvement in the legal framework of court-approved refinancing agreements. While the number of firms that reach a refinancing agreement with their creditors is quite low[7], these companies are much larger than most of the firms that file for formal bankruptcy[8], suggesting that, by increasing the appeal of refinancing agreements as an alternative to formal bankruptcy, the March 2014 reform may free resources of the bankruptcy courts, reducing their congestion and decreasing the duration of bankruptcy procedures. Second, the March 2014 reform is also associated with an increase in the probability of reorganisations by around 6 percentage points, which is a large effect when taking into account that only 7% of the sample bankruptcies resulted in a reorganisation.[9] This result suggests that, by decreasing the average length of bankruptcy procedures, the reform reduced the costs of financial distress and contributed to preserve firms' going concern value, therefore increasing the probability of reorganisations.

Third, the 2012 reform is associated with an increase in the probability of reaching a reorganisation agreement by, at least, 5 percentage points. This effect may be a result of the changes to the appointment and composition of insolvency trustees enacted by the 2012 reform. In particular, our results are consistent with the theoretical analysis by Ayotte and Yun (2007), who show that the optimal bankruptcy law becomes more debtor-friendly as judicial ability –the capacity of judges and insolvency trustees to discern between viable and non-viable firms- rises, which leads to a higher percentage of efficient reorganisations.

Nevertheless, the fact that some reforms increased the probability of reorganisation does not necessarily imply efficiency gains, as a reorganisation is an inefficient outcome when the firm's going concern value is lower than their assets' liquidation value. To address this question we proxy the firm's liquidation value with the percentage of tangible fixed assets over total assets[10] and the firm's going concern value with ROA[11], and interact these variables with the reform dummies. The results indicate that the positive effect of the reforms on the probability of reorganisation was higher in firms with lower liquidation values and higher going concern values, which suggests an increase in ex-post efficiency.

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[7] Between 100 and 200 a year. Source: Van Hemmen (2014a).

[8] For instance, in 2013, the average total assets of the firms that reached a refinancing agreement were worth 177 million euros, while those of the firms that filed for bankruptcy were worth 6 million euros (Van Hemmen, 2014a).

[9] This percentage is in line with previous studies. For instance, Van Hemmen (2014) finds that between 5% and 10% of the firms in his sample reached a reorganisation during the period 2006-2012.

[10] As in Rajan and Zingales (1998).

[11] We cannot use Tobin's q because the majority of companies are privately held.

Finally, neither the 2009 reform nor the September 2014 reform seems to have any robust impact on the performance of bankruptcy procedures. In particular, the 2009 reform failed to speed up bankruptcy proceedings despite introducing procedural changes –prevalence of simplified procedures, early liquidation schemes- that were supposed to reduce the bottlenecks in the system. The September 2014 reform failed to increase the percentage of successful reorganisations despite removing some constraints of the agreements, maybe because these constraints were not binding.[12]

This paper contributes to the growing literature that investigates how bankruptcy reforms affect firm outcomes such as firm financing and investment (Scott and Smith, 1986; Hackbarth *et al*., 2015; Rodano *et al*., 2016; Ponticelli and Alencar, 2016; Araujo *et al*. 2012; Vig, 2013; Cerqueiro *et al*., 2016).[13] Our paper differs from these studies in two important ways. First, while the literature has mainly focused on the pro-creditor or pro-debtor orientation of the reforms, we analyse legal changes that did not substantially changed the relative rights of creditors and debtors, but attempted to enhance the efficiency of the whole process (for instance, by increasing the quality of insolvency administrators or facilitating out-of-court workouts). Second, the literature has sought to establish a link between bankruptcy reforms and firm financing and investment *assuming* the reforms were effective and achieved the goals they were designed for.[14] Nevertheless, as many policies and legal changes turn out to be unsuccessful, we believe it is necessary to take a step back and test their effectiveness in the first place. This is the main contribution to the literature of this article, the evaluation of the impact of the reforms on the functioning of the bankruptcy system by isolating their effects from those of other legal changes and from the changing macroeconomic environment.

The rest of the paper is organised as follows. Section 2 describes the main characteristics of the Spanish bankruptcy code and its reforms. Section 3 explains the

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[12] That would be the case if, before the reform, agreed debt haircuts were substantially lower than 50% and debt moratoria were substantially lower than 5 years, i.e., the limits set by the original bankruptcy code.

[13] Scott and Smith (1986) find that the additional monitoring and expected foreclosure costs imposed by the 1978 US bankruptcy reform were passed on to small businesses in the form of higher loan rates for non-corporate and unsecured borrowers. Hackbarth *et al*. (2015) study the impact of the same reform in stock returns and credit spreads. They find that, by shifting bargaining power in financial distress from debtholders to shareholders, the reform reduced returns of distressed stocks and increased credit spreads of riskier relative to safer firms. Rodano *et al*. (2016) study the reforms of the bankruptcy code in Italy (2005 and 2006) and find that the pro-debtor provisions that facilitated reorganisation agreements increased interest rates and reduced investment, while the pro-creditor provisions that speeded up liquidation procedures reduced interest rates and spurred investment. Ponticelli and Alencar (2016) study a pro-creditor bankruptcy reform in Brazil in 2005 and find that firms operating in municipalities with less congested courts experienced a larger increase in the use of secured loans to manufacturing firms, as well as a larger increase in investment and output in the years after the reform. Araujo *et al*. (2012) also study the bankruptcy reform in Brazil and find that the reform substantially increased both total debt and long-term debt, while it led to a significant reduction in the cost of debt. By contrast, in response to a reform that strengthened creditor rights in India, Vig (2013) finds that firms reacted by reducing their holdings of secured debt and total debt, by reducing their leverage and investment and by increasing liquidity hoarding in order to reduce the threat of inefficient liquidations. Cerqueiro *et al*. (2016) study a legal reform that reduced collateral values by abolishing the special priority rights of floating liens in Sweden. They find that banks responded to the exogenous decrease in collateral values by increasing interest rates, tightening credit limits and reducing the intensity of their monitoring, spurring borrower delinquency on outstanding claims.

[14] Obviously, this literature presents some *descriptive evidence* that suggests that the reforms were successful in dimensions such as percentage of reorganisations, duration of procedures and credit recovery rates. However, what is missing is some *conditional evidence* that shows a clear link between the reforms and those dimensions.

sample and the construction of the variables. Section 4 explains the identification strategy and the econometric models that are used. Section 5 displays the main results. Section 6 concludes. The appendices complement the analyses that are shown in the main text.

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2. Institutional background

2.1 The 2004 Spanish bankruptcy before the reforms

In Spain, insolvency procedures are ruled by the Bankruptcy Act (*Ley Concursal*, LC in what follows) since its entry into force on September 1 2004.[15] The LC replaced a very chaotic, inefficient and archaic regime –mostly in the 1885 Commercial Code, but also in an earlier Commercial Code from 1829.

There is only one in-court bankruptcy proceeding, the *concurso de acreedores*, a reorganisation procedure that resembles US Chapter 11, though there is a simplified version for SMEs (*concurso abreviado*) that is cheaper and faster.[16] The system may also serve individuals, although in practice their use is marginal (less than 300 cases a year).[17]

Although the Law stated that the normal solution to bankruptcy was reorganisation, most procedures resulted in liquidation. According to Celentani *et al.* (2010), between 2004 and 2008 only 5% of the bankrupt firms reached a reorganisation agreement with their creditors; according to Van Hemmen (2014), between 2006 and 2012 the annual percentage of reorganisations ranged between 5% and 10%. Figure 1 shows that the percentage of liquidations in Spain was higher than in France, U.K and US, and roughly the same as in Italy.[18]

Bankruptcy procedures were also criticised for being costly and lengthy. Figure 2 shows that direct bankruptcy costs used to eat up 14.5% of firms' total assets in Spain, a much lower figure than the Italian one but much higher than that of countries such as France, the U.K and the US. Figure 3 shows that the duration of bankruptcy procedures in Spain was much higher than that of its European counterparts except for Italy, averaging 21 months before the crisis and 36 months during the crisis. The poor performance of the Spanish bankruptcy system may explain why bankruptcy was seldom used by distressed firms in Spain, as documented by Celentani *et al.* (2010) and García-Posada and Mora-Sanguinetti (2014); in fact, before the economic crisis, Spain had one the lowest business bankruptcy rates (number of business bankruptcy filings over firm exits) of the world (Figure 4).

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[15] For a detailed explanation of the law see Celentani *et al.* (2010).

[16] For instance, the length of some procedural steps is half of that in ordinary proceedings.

[17] Source: Bankruptcy Proceedings Statistics, National Statistics Institute.

[18] According to Rodano *et al.* (2016), in the early 2000s only 2% of all new bankruptcy proceedings involved a reorganisation in Italy. That figure rose to 10% in 2009 thanks to the 2005 bankruptcy reform.

2.2 The reforms

The Great Recession and the ensuing rise in bankruptcy filings (Figure 5) greatly increased court workload and judicial backlogs and made apparent some of the dysfunctions of the LC. Since then six reforms have attempted to solve some of these problems. In what follows, we will summarise the main features of the four reforms that have been implemented to improve the performance of the insolvency procedures of non-financial corporations, which are our subject of study.[19]

2.2.1 The 2009 and 2012 reforms: simplified procedures, early liquidation schemes and insolvency administrators.

Against this backdrop, the 2009 and 2012 reforms extended the scope for simplified procedures. In particular, the original LC established that only firms with simplified accounts, no audited books and liabilities less than or equal to € 1,000,000 could use the simplified procedure. That figure was raised to € 10,000,000 in the 2009 reform[20], while the 2012 reform[21] introduced much more flexible criteria.[22] As a result, the percentage of simplified procedures rose from 47% in 2008 to 78% in 2012.[23]

The reforms also created an early liquidation scheme (*liquidación anticipada*) à la US Chapter 7 in order to streamline the cases in which the obvious solution was the firm's liquidation. According to the 2009 reform, the debtor could propose an early liquidation plan at the onset of the insolvency proceeding without the need of a reorganisation attempt first.[24] The 2012 reform established that the insolvency administrator could also start the liquidation if the firm was not active. Along the same lines, in order to save judicial resources, the bankruptcy procedure was opened and closed in the same deed if the firm's assets were not worth enough to cover the costs of the procedure itself, the so-called "express bankruptcy".[25]

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[19] The other two reforms, which were passed in 2013 and 2015, changed personal bankruptcy procedures.

[20] Royal Decree Law 3/2009, of March 27 on urgent measures on tax, financial and bankruptcy matters given the evolution of the economic situation.

[21] Law 38/2011, of October 10 that reforms the Bankruptcy Law 22/2003, of July 9. The law came into force on January 1, 2012, except for some provisions, mainly related with court-approved refinancing agreements, which came into force on October 11, 2011.

[22] Specifically, if any of several criteria were met (less than 50 creditors; liabilities not above € 5,000,000; assets not above € 5,000,000; anticipated restructuring agreement; foreseen sale of the firm as a going concern) then the firm could use a simplified procedure.

[23] Source: Bankruptcy Proceedings Statistics, National Statistics Institute.

[24] The original bankruptcy law states that the "normal" solution to bankruptcy is the reorganization of the firm. Hence, before the 2009 reform, a reorganization phase was always opened, even though neither the debtor nor the creditors were obliged to submit reorganisation proposals.

[25] The costs of the procedure are preferential credits that rank above any creditor's claim in the distribution of liquidation proceedings. Hence, in an "express bankruptcy" expected creditor recovery rates are zero.

One of the factors that could explain the low performance of bankruptcy procedures was the system of appointment of insolvency administrators, whose perceived quality was very low (Celentani *et al*., 2010). Administrators play a major role during the bankruptcy process, as they take over management when the court so decides –more commonly in creditors' initiated procedures[26]- and in the remaining cases they oversee current management, and have to authorize all transactions outside day to day business of the firm. They also draw the list of assets and creditors, have to give an opinion on all restructuring plans that may be presented and are in charge of drafting the liquidation plan of the firm's assets, unless the debtor himself has presented an early liquidation plan that has obtained court approval.

Before the reforms, the general rule was that there were three court-appointed insolvency administrators (in the simplified procedure, just one): a practising lawyer; an auditor, economist or commercial expert (*titulado mercantil*); and an unsecured creditor, either ordinary or privileged. The 2012 reform sought to streamline the system by establishing a single insolvency administrator.[27] This may decrease coordination problems (e.g., conflicts among administrators) and may lead to important cost savings.[28] Moreover, it increased their professionalisation by tightening the requirements for being appointed, demanding professional experience and background in the field.[29] This may increase their capacity to make sound business decisions and to discern between viable and non-viable firms. Finally, professional partnerships (e.g. consulting firms) could be appointed administrators as long as they comprised, at least, a practising lawyer and an auditor, economist or commercial expert. This measure may increase competition in the market for insolvency administrators and improve their average quality.

2.2.2 The March 2014 reform: court-approved refinancing agreements.

The March 2014 reform[30] streamlined and facilitated court-approved refinancing agreements (*acuerdos de refinanciación*) -a sort of private workout that is verified and approved by a judge in order to enjoy some special rights- making them an appealing alternative to in-court bankruptcy procedures. The original LC established claw-back

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[26] Both the debtor and the creditors may file for bankruptcy. In practice, about 94% are so-called voluntary filings, on the debtor's initiative. The debtor and the firm managers are encouraged to file early through different means. If they do not file, but the creditors do, the rule is that firm management will be taken over by court-appointed representatives.

[27] Except for very large procedures in terms of annual turnover, debt, number of creditors or number of employees, in which the court may appoint a large ordinary or privileged unsecured creditor as a second administrator.

[28] Administrators are compensated over the debtor's assets, on a variable basis depending essentially on the value of the assets and the volume of credit. As many criticisms were raised against excessive compensation, the LC was changed in 2009 to fix a cap on the level of compensation. No performance incentives (neither in restructuring nor in liquidation) are built into this compensation scheme.

[29] In particular, 5 years of professional experience as a lawyer, economist, commercial expert or auditor with proven experience in bankruptcy.

[30] Royal Decree Law 4/2014, of March 7 for urgent measures on refinancing and restructuring of corporate debt.

provisions[31] that allowed judges to nullify out-of-court agreements unless some stringent conditions[32] were met. In addition, the agreements had to be approved by the court for an automatic stay to take place, which created a cumbersome and lengthy procedure. The reform limited claw-back provisions and suspended debt collection actions during the negotiations between the debtor and creditors.[33] Moreover, court-approved refinancing agreements could be imposed to dissident creditors if certain voting majorities were reached, which reduced hold-out problems, and the fresh money provided in a refinancing agreement enjoyed superpriority.

2.2.3 The September 2014 reform: in-court reorganisations.

The September 2014 reform[34] facilitated in-court reorganisations by broadening the allowed terms of the bankruptcy agreement. In particular, the original LC set very rigid criteria, namely, an agreement required a voting majority of 50% of ordinary claims, its debt haircut could not exceed 50% and its debt moratorium could not exceed 5 years. In addition, following the reform, a reorganisation agreement that was endorsed by at least 65% of ordinary credit could contain debt haircuts higher than 50%, debt moratoria between 5 and 10 years, debt-equity swaps and dations in payment. The arrangements could also be imposed on dissident preferred creditors (preferential and secured creditors) if some voting majorities were met.[35]

Table 1 summarises the main features of the bankruptcy reforms explained above, while Figure 6 shows the timeline of the reform process.

3. Data and variables

3.1 Dependent variables

Our sample period starts on the entry into force of the LC, 1 September 2004 and ends on the last date in which we received bankruptcy data, 10 August 2016. Data come from two sources: Mercantile Registers and the Bank of Spain's Central Balance Sheet Data Office. Mercantile Registers provide the records of the bankrupt companies, namely, their name, tax identification number, legal form and five key dates of bankruptcy proceedings (day-month-year):

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[31] The LC allowed the provision of collateral to be clawed back when there was evidence that the refinancing was meant to favour one creditor to the detriment of the rest or when the court believed that the refinancing did not help the firm. If the collateral was clawed back, the creditor's priority could be lowered to subordinated credit if there was a finding of bad faith.

[32] In particular, the arrangement had to be agreed by 3/5 of existing credit and approved by an independent expert appointed by the Commercial Registry.

[33] For a maximum period of three months.

[34] Royal Decree Law 11/2014, of September 5, on urgent measures in insolvency matters.

[35] For an arrangement to become binding on preferred creditors, a reinforced majority of the claims in the same class as the preferred creditor must vote for it. Four classes of creditors were established within each category of preferred creditor: labour creditors, public creditors, financial creditors and other creditors (e.g., trade creditors).

1. Court declaration of bankruptcy: start of the process, once the petition for bankruptcy has been accepted by the judge.
2. Court approval of reorganisation agreement: the judge approves a reorganisation plan[36] that is supported by a majority of creditors.
3. Start of the liquidation phase: if no reorganisation plan is presented or reaches approval, or if the approved plan fails.
4. Court approval of liquidation plan: the judge approves the liquidation plan proposed either by the insolvency administrator or by the debtor.
5. Closure of the bankruptcy process.

By combining the above dates we can build the two dependent variables of our analysis, the duration of the bankruptcy process (DURATION) and the outcome of the process (REORGANISATION). In the case of bankruptcies that resulted in liquidation, DURATION is the difference, in days, between the date of the closure of the bankruptcy process and the date of the court declaration of bankruptcy. By contrast, in the case of bankruptcies that resulted in reorganisation, DURATION is the difference between the date of approval of the reorganisation agreement and the date of the court declaration of bankruptcy. We make that distinction because we consider bankruptcy duration a measure of the efficiency of the process (Djankov *et al*., 2008). Hence, it does not seem reasonable to include in the duration of a bankruptcy procedure the time spent by the firm in honouring the reorganisation agreement, as it depends on a free deal between the debtor and the creditors, rather than on court workload or the speed of different procedural steps. Otherwise, a longer duration could be due to better terms and conditions of the reorganisation agreement (e.g., longer debt moratorium) and it would not indicate any judicial delays or court backlogs. In the case of unfinished bankruptcy procedures, DURATION is the difference between the last date when we received bankruptcy data (10 August 2016) and the date when the court declared the company's insolvency. In other words, DURATION is right-censored for some observations.

More specifically, 60% of right-censored. In this context, OLS regressions lead to biased and inconsistent estimates (Wooldridge, 2002). To illustrate the problem, Figure 7 shows the evolution of the average duration of bankruptcy procedures and the percentage of censored observations by date of bankruptcy declaration. In that figure we can see a downward trend since 2008. While we cannot rule out that this trend is partly caused by the reforms of the Bankruptcy Act –in fact, that's the goal of this research- it seems clear that another factor that plays a crucial role on it is the mere passing of time. For very recent bankruptcy procedures (e.g. those starting in 2015Q4) we can only observe either a part of their duration (censored observations) or, by construction, a very short complete duration. This sort of sample selection bias renders OLS invalid because average observed duration underestimates average true duration.

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[36] A reorganisation plan may be proposed both by the debtor and by the creditors. Data show that in virtually all cases –nearly 97%- it is the debtor who has the initiative of the plan (Celentani *et al.*, 2010).

We measure the outcome of the bankruptcy procedure with a dummy variable, REORGANISATION, which equals 1 if the bankruptcy ends in reorganisation and 0 if it ends in liquidation. The latter case includes both the bankruptcies that have gone straight to liquidation because no reorganisation plan was presented or approved by the creditors and failed reorganisation attempts, in which the bankrupt firm failed to comply with the terms and conditions of the restructuring agreement.

Figure 8 shows the evolution of the percentage of reorganisations by date of court declaration. The vertical lines indicate the date of entry into force of each of the reforms. We can observe that the behaviour of the series is quite volatile in the first years of the sample (2005-2008), which is due to the limited number of bankruptcies. In the following years (2009-2011) the average percentage of reorganisations is around 6%. After the entry into force of the 2012 reform, the series exhibits an upward trend to reach values between 8% and 10% in the forthcoming years. Finally, the series has a downward trend in the last years of the sample (2014-2016) because, on average, it takes more time to reach a reorganisation agreement than to start the liquidation phase, which implies that reorganisations are underrepresented in quite recent bankruptcies.

Figure 8: percentage of reorganisations by date of bankruptcy declaration
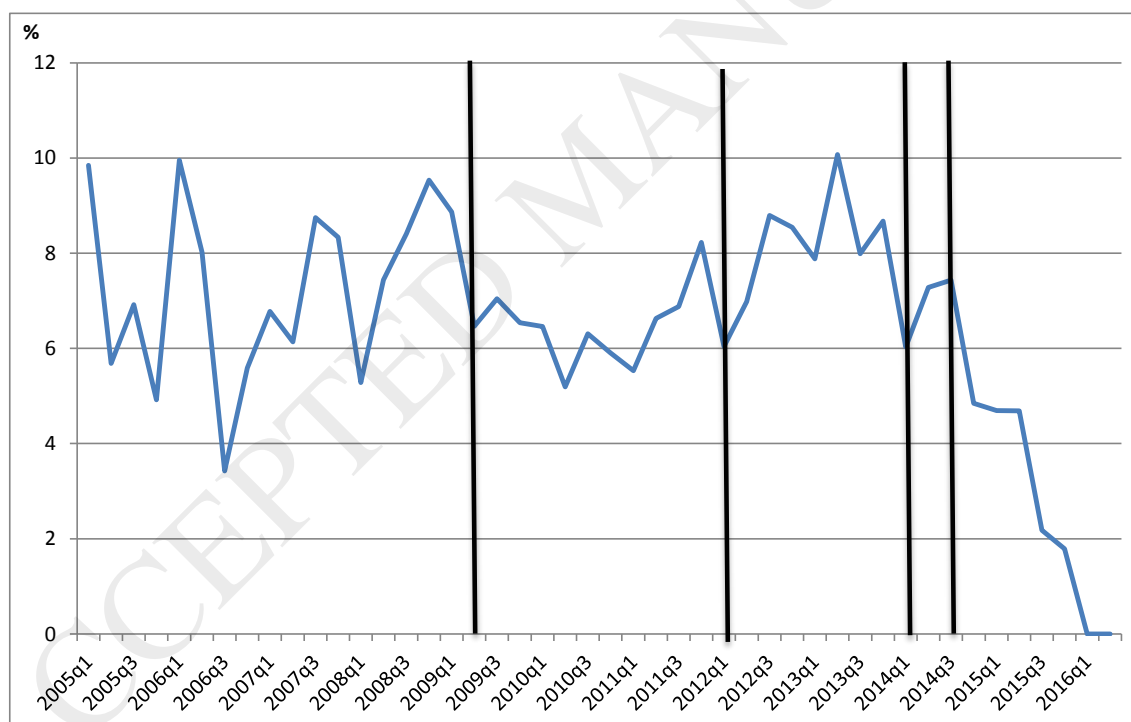
Note: the vertical lines indicate the date of entry into force of each of the reforms.

3.2 Key independent variables

Our key covariates are dummy variables that indicate whether a bankruptcy procedure is treated or not by each reform. In particular, we consider that a bankrupt firm i is treated by reform n, $REFORM_i^n = 1$, and untreated by the next reform $n+1$, $REFORM_i^{n+1} = 0$,

if the bankruptcy procedure started after the entry into force of that reform and before the entry into force of the next one. For instance, a bankruptcy process that starts on 1 June 2009 and ends on 1 June 2012 would be treated by the 2009 reform ($REFORM_i^{2009} = 1$) and untreated by the 2012 reform ($REFORM_i^{2012} = 0$). Figure 9 illustrates the values that each dummy would take depending on the date of bankruptcy declaration. As each reform dummy switches back to zero when the next reform starts, a bankruptcy procedure is uniquely treated by one reform (by no reform in the case of bankruptcies initiated before April 1, 2009) and untreated by the rest of them. In this way, *we measure the effect of each reform relative to the pre-existing legal regime.*

Alternatively, by setting each dummy equal to zero prior to each legal change and one thereafter, *we could estimate the cumulative effect of the reforms relative to the no-reform period* (2004-2009). However, as we will see in the next section of this paper, our identification strategy, which relies on comparing the outcomes of firms whose date of bankruptcy declaration is "close", does not allow implementing this alternative specification.

Moreover, notice that we regard as an untreated unit any bankruptcy that was initiated before the entry into force of the corresponding reform. We have two main reasons to do that. The first one is that bankruptcy reforms in Spain have been characterised by little retroactivity. The second one is logical. Using the previous example, a bankruptcy process that starts on 1 June 2009 and ends on 1 June 2012, if we regarded it as treated by the 2012 reform, we would be relating a three-year procedure to that reform, despite the fact that most of the procedure, two years and a half, took place under a different insolvency framework.

3.3 Controls

We construct the control variables using data from the Bank of Spain's Central Balance Sheet Data Office. In particular, we use balance sheet information on the year before the firm's bankruptcy declaration. Firm's age (LOG(AGE+1)) is the natural log of the difference, in years, between the year of bankruptcy declaration and the incorporation year, plus 1. Firm's size is measured either by the natural log of total assets plus 1 (LOG(TOTAL ASSETS+1)) or by the natural log of the number of employees plus 1 (LOG(EMPLOYMENT+1)). We measure profitability by the ratio of net income and total assets (RETURN ON ASSETS, ROA). LEVERAGE is the ratio of total debt to total assets. Liquidity is captured by the ratio of current assets to current liabilities (CURRENT RATIO). We proxy financial distress with two variables, the ratio of Ebitda to interest expenses (INTEREST COVERAGE RATIO) and NEGATIVE EQUITY, a dummy that equals 1 if the firm's total assets are lower than the firm's total debt. Following Rajan and Zingales (1995)[37], we proxy the firm's liquidation value by TANGIBILITY, which is the weight of tangible fixed assets (land, buildings, machinery, etc) in the firm's total assets. We build a set of industry dummies based on

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[37] According to Rajan and Zingales (1995), tangible fixed assets are expected to have a higher liquidation value than intangibles (e.g. goodwill).

the NACE classification. Finally, we construct a dummy variable that equals 1 in the case of "express bankruptcy"[38] (EXPRESS BANKRUPTCY).

We also know the location of the firm's registered office. This is important because the Bankruptcy Act establishes that the competent Mercantile Court[39] must be placed in that location. Hence we include province[40] dummies. In addition, in order to control for regional macroeconomic conditions we include the province's unemployment rate in the quarter before that of the bankruptcy declaration (UNEMPLOYMENT RATE), which has been detrended with a Hodrick-Prescott filter. Finally, in order to capture the congestion of Mercantile Courts, we use the province's bankruptcy rate[41] in the quarter before that of the bankruptcy declaration (BANKRUPTCY RATE).

Table 2 shows the descriptive statistics of the variables. The average duration of a bankruptcy procedure is 1,200 days, i.e., 40 months, but notice that this sample mean is not representative of the population expectation, as 61% of observations are right-censored. A 7% of firms achieve a successful reorganisation, while 93% result in liquidation. While we have observations on about 45,000 bankruptcies, we only have firm-level information on 12,000-14,000 cases, depending on the variable. Using that information we can see that the average firm is relatively old (15 years) and it is small (16 employees and a € 4 million-worth balance sheet). As expected, the average firm is in financial distress. The ROA is negative and large, indicating substantial losses. The INTEREST COVERAGE RATIO is well below 1 (the usual threshold that indicates problems to meet debt payments). CURRENT RATIO is also below 1, suggesting liquidity problems. The average firm is heavily leveraged, as its debt exceeds 100% of its assets. Finally, 6% of the procedures are "express bankruptcies".

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[38] In an "express bankruptcy", the bankruptcy procedure is opened and closed in the same deed because the firm's assets are not worth enough to cover the costs of the procedure itself.

[39] Mercantile courts are specialised in commercial matters such as bankruptcy, industrial and intellectual property, patents, etc.

[40] In Spain there are 17 regions (*Comunidades Autónomas*) that comprise 50 provinces (*provincias*).

[41] Computed as the ratio of business bankruptcy filings to number of firms in each province.

Table 3 displays the descriptive statistics of the main variables for the subsamples of bankruptcies that resulted either in liquidation (REORGANISATION=0) or in reorganisation (REORGANISATION=1). As in Davydenko and Franks (2008) and Van Hemmen (2014), we find that the firms that obtain a reorganisation agreement are larger and older than those that end up in liquidation. This may be explained by the lower asymmetric information problems between the debtor and the creditors in the case of large and old firms, as they have to file more detailed balance sheets and they have a longer track record in the market. We also observe that the financial condition of the firms that reach a reorganisation agreement is less deteriorated (lower leverage, higher ROA, higher interest coverage ratio, higher current ratio). As long as past performance signals future performance, we may expect those firms to have a higher going concern value, implying that creditors are more willing to make concessions in a debt restructuring agreement in order to preserve the company's value. Reorganised firms also have substantially higher values of TANGIBILITY than liquidated ones. This may be explained by the fact that those assets can be pledged as collateral for the new debt incurred by the firm in its activities after the insolvency declaration (debtor-in-possession financing) and that, by reducing liquidity problems, make more likely an agreement with the original creditors.

In addition to cross-section variability, the data have substantial time variation. Table 4 shows the mean values of the variables by period of bankruptcy filing, where the periods are those that were depicted in Figure 9, i.e., those generated by the entry into force of the successive bankruptcy reforms. Table 4 reveals a progressive deterioration of the key financials, with the worst values corresponding to period D (from March 8, 2014 to September 6, 2014) in terms of ROA, LEVERAGE, NEGATIVE EQUITY and CURRENT RATIO.

In order to provide unconditional evidence of the impact of the reforms on the duration of bankruptcy procedures, Figure 10 displays Kaplan-Meier (KM) estimates. In each graph, we measure the effect of each reform relative to the pre-existing legal regime. For instance, in the first graph we restrict the sample period to September 2004-January 2012, so that REFORM 2009=0 for those bankruptcies that started before the 2009 reform (between September 2004 and April 2009) and REFORM 2009=1 for those bankruptcies that started after the 2009 reform and before the next legislative change (between April 2009 and January 2012). The KM statistic is a non-parametric estimate of the survivor function S(t), which is the probability of "survival" past time t.[42] In our empirical application, a bankruptcy procedure "survives" if it remains open and "fails" if it ends. Hence, a downward shift of the reform is associated with shorter durations. For instance, in the case of the reform of March 2014, about 93% (90%) of bankruptcies initiated before (after) the reform remained open after 400 days. By means of a log-rank test we can reject the null hypothesis that both KM curves are equal, which suggests that the reform of March 2014 had a significant impact on the duration of bankruptcy

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[42]In particular, the KM estimator is $S(t) = \prod_{j \mid t_j \leq t}(\frac{n_j - d_j}{n_j})$, where n_j is the number of individuals at risk at time t_j and d_j is the number of failures at time t_j.

procedures. By contrast, we cannot reject that hypothesis in the case of the other reforms.

4. Identification strategy and econometric models

In order to study the impact of the four reforms of the Bankruptcy Act on the probability of reaching a reorganisation, we have estimated linear probability models by OLS[43] such as:

$$Y_i = X_i'\beta + \rho REFORM_i^n + \varepsilon_i \tag{1}$$

where Y_i is a dummy that equals 1 if the firm i reached a reorganisation agreement with its creditors –and it did not fail in honouring it later on-, X_i' is a vector of controls, $REFORM_i^n$ equals 1 if firm i filed for bankruptcy after the entry into force of the reform n and ε_i is a stochastic disturbance that captures all the factors that are unobserved by the researcher.

In order to study the impact of the reforms on the duration of bankruptcy procedures we have estimated log-normal duration models[44] by maximum likelihood:

$$\log(T_i) = X_i'\beta + \rho REFORM_i^n + u_i \tag{2}$$

$$W_i = min\{\log(T_i), C_i\} \tag{3}$$

$$u_i | X_i, C_i \sim Normal(0, \sigma^2) \tag{4}$$

where $\log(T_i)$ is the duration of the bankruptcy procedure, in logs. Equation (3) means that we only observe $\log(T_i)$ if it is less than its censoring value C_i, otherwise we observe C_i. Equation (4) implies that, for each random draw i, $\log(T_i)$ given X_i and C_i has a $Normal(X_i'\beta + \rho REFORM_i^n, \sigma^2)$ distribution, which implies that T_i given X_i and C_i has log-normal distribution.

As previously mentioned, a large number of our observations are right-censored. In this context, if we apply straight OLS to the entire sample and treat the censored observations as if they were uncensored, or if we exclude censored cases altogether, then our estimates would be biased and inconsistent (Wooldridge, 2002). By contrast, duration models, by expressing the log-likelihood function as a weighted average of the sample density of completed bankruptcy spells and the survivor function of uncompleted spells[45], yield consistent estimates. We have chosen a log-normal specification to allow for non-monotonic duration dependence, as the estimated

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[43] In robustness, we have estimated probit models by maximum likelihood. See Supplement.

[44] Notice that a log-normal duration model is equivalent to a censored normal regression model in which the dependent variable is the natural log of time. See Wooldridge (2002) for details.

[45] See Cameron and Trivedi (2005), page 587.

unconditional hazard has an inverted bathtub shape (i.e., it first rises with time and then decreases, see Figure 11).[46]

We take two approaches to estimate the impact of each reform. In a first approach, we measure the effect of each reform relative to the pre-existing legal regime. For instance, for the analysis of the 2009 reform we restrict the sample period to September 2004-January 2012, so that the variable *REFORM 2009* takes the value zero for those bankruptcies that started before the 2009 reform (between September 2004 and April 2009) and takes the value one for those bankruptcies that started after the 2009 reform and before the next legislative change (between April 2009 and January 2012). In terms of Figure 9, we use regions A and B for the analysis of the 2009 reform, regions B and C for the analysis of the 2012 reform, and so on.

The problem of the first approach is that we may compare firms that filed for bankruptcy under very different macroeconomic and financial conditions, implying that the respective control and treated groups may differ in some unobservable characteristics. For instance, for the analysis of the 2009 reform we use firms that filed for bankruptcy during a period of economic expansion (2004-2007) and during a period of recession (2008-2009). Moreover, one may think that the time a firm has spent in an adverse economic environment before filing for bankruptcy influences on the insolvency process, so that comparing firms that filed for bankruptcy, say, in 2009 and 2013 may be misleading. Hence, in a second approach, we employ a threshold analysis: we restrict the sample to companies that file for bankruptcy within a six-month time window around the entry into force of each reform. For instance, for the analysis of the 2009 reform, which entered into force on April 1, 2009, we use the bankruptcies that were initiated between January 1, 2009 and June 30, 2009. This enables us to compare firms that filed for bankruptcy in similar macroeconomic and financial conditions but under different insolvency regimes.[47] Notice that this approach is similar to an event study methodology, in which some outcome variable (e.g. stock prices) is measured before and after some event (e.g. monetary policy announcement). An event study relies on the use of high frequency data to study the evolution of the outcome variable in a narrow window around the event, say 2 or 3 days. We undertake a similar approach, but the different nature of our data (bankruptcy filings, not stock prices) means that the windows around the event cannot be so extremely narrow.

In addition, notice that laws are discussed and are usually anticipated (by press articles, rumours, etc).[48] Therefore, another identification challenge is the possibility of strategic

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[46] We have also estimated log-logistic models, obtaining results –available upon request- that are very similar to the ones displayed in the paper. The estimated gamma parameter is less than 1, implying that the hazard function is non-monotonic (first increases and then decreases).

[47] Moreover, regression models may also violate the common support assumption if the covariate values of treated and control units are very different. As Table 4 shows significant variation of the variables across time, we also alleviate this concern by limiting our estimations to short periods of time.

[48] Most of the reforms entered into force on the day after their publication in the Official State Gazette (BOE). The exception is the Law 38/2011, of 10 de October, which mostly entered into force on 1 January 2012 although it was

bankruptcy filings. In particular, if firms can time their filings (e.g., delaying the onset of the bankruptcy process to take advantage of an expected reform), assignment to the treatment and control groups will not be random. Nevertheless, we find this mechanism very unlikely because of several reasons. First, under the Spanish bankruptcy law the debtor and the firm management are under a legal duty to file for bankruptcy in a short period of time after insolvency starts, which limits the scope of strategic filings. In particular, the debtor and the firm management are under a legal duty to file in two months from actual insolvency, and this will be presumed after three months of default in tax and social security contributions or salaries. If they do not file in the prescribed time, there will be a presumption that insolvency is not without fault, which may imply serious personal liabilities for management.[49] Second, if they do not file, but the creditors do, the rule is that firm management will be taken over by the court-appointed insolvency administrator. Third, the data do not suggest the widespread use of strategic filings. Figure 12 depicts the monthly number of business bankruptcies in Spain according to our database. The dates of entry into force of each reform are indicated by vertical lines in the figure. The widespread use of strategic filings to take advantage of the new reforms would reflect in an abnormally low number of bankruptcy filings just before the entry into force of each bankruptcy reform and an abnormally high number just after it. However, there does not seem to be bunching around those dates.

Finally, one should be cautious when making a casual interpretation of our estimates. In particular, the identification strategy is limited by the lack of a quasi-experimental setting. Ideally, the evaluation of the reforms would be assessed by comparing the changes in outcomes (duration of bankruptcy, probability of reorganisation) of Spanish firms around the reforms with the changes in outcomes of non-Spanish firms in the same time period. This could be done parametrically, as in a classical differences-in-differences estimation, in which firms from neighbouring countries (Portugal, France) could be used as a control group, while Spanish firms would be the treatment group, i.e., the set of firms affected by the reforms.[50] The advantage of such a diff-in-diff estimation is that it would control for all the confounding events that happened at the same time as the bankruptcy reforms and had a similar impact on the two groups (e.g. sovereign debt crisis). However, the lack of publicly available micro data on international bankruptcies prevents us from carrying out such a strategy. Hence, our analyses rely on post-pre reform comparisons, which could pick up the effect of other confounding factors such as the sovereign debt crisis or other policy measures implemented by the Spanish government or the European Central Bank during the Great

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published in the BOE on 11 October 2011. In that case, we have tested for possible anticipation effects by using the publication date, rather than the date of entry into force, in complementary analyses, but the results –available upon request- do not indicate the existence of those effects.

[49] The Bankruptcy Act contains some presumptions of fault on the part of the debtor or its managers, and taking them into account, and considering the evidence presented, the court may declare the bankruptcy to be fortuitous (*concurso fortuito*) or guilty (*concurso culpable*). A finding of guilt may imply a judgment against the individual manager involving incapacitation to run a company from 2 to 15 years, payment of damages to the firm or to creditors and the obligation to face the unpaid sums in favour of the creditors.

[50] A good example of a diff-in-diff estimation for the analysis of bankruptcy reforms is Araujo et al. (2012).

Recession. The threshold analysis approach, in which we restrict the estimation samples to thin time windows around the entry into force of each reform, mitigates, but does not eliminate, this concern.

5. Main results

In this section we highlight the most interesting results of the empirical analysis. The complete analysis of each bankruptcy reform is displayed in Appendix A.

5.1 Reforms and duration of bankruptcy procedures

In general, the reforms did not have a significant impact on the duration of bankruptcy procedures, with one important exception, the reform of March 2014. As shown in Table 5, the coefficient on the reform dummy is negative and significant, and its size (in absolute value) increases when the sample is restricted to a six-month window around the entry into force of the reform. Specifically, according to the estimates of columns 3 and 4, the reform is associated with a decrease in average duration of 20%. Similar conclusions are drawn by inspecting the predicted hazard functions. Figure 13 shows the predicted hazard functions evaluated at the regressors' means and at the values 0 and 1 of the dummy REFORM MARCH 2014, i.e., the hazard function of the mean firm treated by the reform (REFORM MARCH 2014=1) –the red line- and the hazard function of the mean firm untreated by the reform (REFORM MARCH 2014=0) -the blue line-. We can see that the red line is, for any duration, above the blue line, which indicates that the reform of March 2014 is associated with an increase in the probability of bankruptcy termination.

These results may be due to the fact that the reform of March 2014 improved certain aspects of the legal framework for court-approved refinancing agreements (*acuerdos de refinanciación*), making them an appealing alternative to in-court bankruptcy procedures, as explained in Section 2. Although the number of firms that reach refinancing agreements with their creditors is very small (between 100 and 200 per annum), they are much larger than the majority of those entering insolvency proceedings; for example, in 2013, the average assets of those that obtained a refinancing agreement were €117 million, while the average assets of firms subject to insolvency proceedings were €6 million (Van Hemmen, 2014). Hence, by increasing refinancing agreements as an alternative to insolvency proceedings, the March 2014 reform may have freed up mercantile court resources, reducing their congestion and, therefore, the duration of insolvency proceedings.

Finally, the coefficients on the controls have, when significant, the expected sign. Older firms have shorter bankruptcy procedures, probably because long relationships with their creditors and suppliers and a long track record in the market reduce asymmetric information problems. Larger firms undergo longer procedures, probably because they have a more complex capital structure. Higher ROA is associated with shorter duration because it increases the probability of a reorganisation agreement and because the procedures that result in a reorganisation are shorter than those that result in a liquidation (see Table 3). "Express bankruptcies", as expected, have a much shorter duration.

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5.2 Reforms, probability of reorganisation and ex-post efficiency.

The 2012 reform and the reform of March 2014 may increase the probability of reaching a reorganisation agreement, while the other two reforms had no significant impact on this dimension. Table 6 displays the marginal effects of each regressor on the probability of reorganisation, which have been estimated with a LPM.[51] Columns (1) and (2) show the results, for two different specifications, when we measure the effect of the 2012 reform relative to the pre-existing legal regime (the 2009 reform). The estimated impact of the 2012 reform is very small and statistically insignificant. However, notice that this estimate may be biased due to unobserved macroeconomic and financial conditions at the time of the bankruptcy filing. Hence, columns (3) and (4) show the results when we restrict the sample to bankruptcy filings between 1 October 2011 and 1 April 2011, i.e., 3 months before/after the entry into force of the 2012 reform. Using that subsample the coefficient on the 2012 reform becomes positive and significant at a 5%. According to the estimates, the reform is associated with an increase in the probability of reorganisation of at least 5.7 percentage points, a sizeable increase with a semielasticity of about 0.8 from its unconditional mean (7%). This is consistent with the unconditional evidence displayed in Figure 8, which shows that the percentage of reorganisations increased after the entry into force of the 2012 reform.

These effects may be a result of the changes to the appointment and composition of insolvency trustees effected by the 2012 reform, as explained in section 2. Previously, the general rule was that there were three insolvency administrators (a lawyer; an auditor, economist or commercial graduate, and an unsecured creditor), all of whom were appointed by the judge hearing the bankruptcy proceedings. Following the reform, there is generally only one single trustee (except in very complex insolvencies, when a large unsecured creditor is appointed as a second administrator). This may have reduced problems of coordination (e.g. conflicts between trustees) and has probably involved cost savings, factors that would be conducive to the reaching of a reorganisation agreement. In addition, the reform sought to increase the professionalism of insolvency trustees by tightening the requirements to become an administrator, relating to experience and specific training, which may have increased the capacity to distinguish between viable and non-viable firms. Finally, legal persons that have at least one practising lawyer and one auditor, economist or commercial graduate on their staff (e.g.

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[51] Similar results are obtained with a probit model. See Supplement.

consultancies) could be appointed as insolvency trustees, which could boost the competition in the market for administrators and raise their average quality.

The coefficients on the controls have, when significant, the expected sign. Larger and older firms have a higher probability of reorganisation, suggesting that asymmetric information problems play an important role. A higher proportion of tangible fixed assets and a lower leverage ratio are also associated with a higher probability of a restructuring agreement. With respect to the province-level controls, the positive coefficient on the unemployment rate may be due to the fact that the judge and the insolvency administrators may be more sensitive to the company's winding up, with the ensuing destruction of jobs, when the unemployment rate is high. Hence, they may persuade creditors to accept a reorganisation plan that preserves unemployment.[52]

Nevertheless, while the 2012 reform may increase the probability of reorganisation, this does not necessarily mean an efficiency gain, as a reorganisation is an inefficient outcome when the firm's going concern value is lower than their assets' liquidation value. To address this question we proxy the firm's liquidation value with TANGIBILITY and the firm's going concern value with ROA[53], and we interact these variables with the dummy for the 2012 reform. The results, summarised in Table 7, show a negative and significant coefficient on the interaction between reform 2012 and TANGIBILITY, while the coefficient on the interaction between reform 2012 and ROA is not significant. These results indicate that the effect of the 2012 reform on the probability of reorganisation was higher in firms with a lower liquidation value, which suggests an increase in ex-post efficiency (i.e., to restructure those firms with going concern value higher than the liquidation value and to liquidate those in which the opposite occurs). For instance, consider that a firm has low liquidation value if its value of TANGIBILITY is the 25th percentile (3%) and that has high liquidation value if its value of TANGIBILITY is the 75th percentile (46.7%). According to column (4) of Table 7, the impact of the 2012 reform on the probability of reorganisation is 12.2 pp for the firm with low liquidation value and only 4.3 pp for the firm with high liquidation value.

These results are consistent with the theoretical analysis by Ayotte and Yun (2007), who argue that the trade-off between ex-ante and ex-post efficiency depends on the skills of insolvency trustees and judges. Ayotte and Yun (2007) start from the observation that bankruptcy laws either allocate significant control rights to third parties, such as judges or insolvency administrators, or allow them to mediate in the allocation of these rights to debtors and creditors.[54] In their model, the debtor and the creditor agree to contractually allocate control rights contingent on the report of a third party, the insolvency trustee, regarding the viability of the business. Given that a judge/administrator can act on information that arrives after contracts are written (e.g. recent evolution of cash flows) and can make decisions based on "soft" information that

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[52] Under the Spanish law, cram downs are not possible, i.e., the judge cannot impose a reorganisation plan without creditors' approval.

[53] We cannot use Tobin's q because the majority of companies are privately held.

[54] For instance, in US Chapter 11 and in Spain judicial approval is required for most major actions, such as the terms of new financing, the rights of secured creditors to seize collateral and the final approval of a reorganisation plan.

is difficult to describe and that is therefore not contractible, judicial discretion can potentially enhance the efficiency of contracts.[55] In this setting, Ayotte and Yun (2007) find that, when the ability of administrators is high, the law should be debtor-friendly and allow "honest but unlucky" managers to remain in control of their firms, preventing inefficient liquidations that would otherwise occur.[56] By contrast, when the quality of insolvency administrators is low, the ex-post efficiency gains of judicial discretion are lower and the optimal insolvency law should be more creditor-oriented in the sense that it should assign ample control rights to creditors to promote the ex-ante availability of credit. Hence, our results suggest that an increase in the quality of insolvency administrators resulted in an improvement in the ex-post efficiency of the bankruptcy system in Spain, which led to a higher percentage of reorganisations.

A similar analysis is displayed in Table 8 for the March 2014 reform, indicating that the reform is associated with an increase in the probability of a reorganisation of around 6 percentage points.[57] This result suggests that, by decreasing the average length of bankruptcy procedures, the reform may reduce the costs of financial distress[58] and contributed to preserve firms' going concern value, therefore increasing the probability of reorganisations. But again, to draw conclusions about efficiency we need to interact the reform dummy with the proxies for firms' liquidation and going concern values, TANGIBILITY and ROA. The results, summarised in Table 9, show that the coefficient on the interaction between the reform and TANGIBILITY is not significant, while the

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[55] This remains true under the reasonable assumption that judges have inferior information ex-post that both managers and creditors. What is important is that judges or administrators provide a technology to include soft information in contractual agreements.

[56] In the model of Ayotte and Yun (2007), creditors have an ex-post liquidation bias because future cash flows are unverifiable and the debtor, who is the firm manager, is wealth-constrained. Creditors, if given control of the firm, would prefer to sell the firm to the manager, who would efficiently run it as a going concern, rather than liquidating the assets. However, as the debtor is cash constrained, such a transfer is not possible, implying the liquidation of the firm by creditors.

[57] While the unconditional evidence (Figure 8) only shows a small and temporary increase in the proportion of reorganisations after the entry into force of that reform, note that this type of evidence cannot construct the counterfactual scenario, namely, what would have happened if the reform had not taken place. Our regression estimates suggest that the proportion of reorganisations would have decreased in the absence of the reform.

[58] These include both direct bankruptcy costs (attorneys' and auditors' fees, legal fees, etc) and indirect costs such as higher borrowing costs, foregone investment opportunities, loss of relationships with suppliers and customers and loss of profitability as financial distress requires management attention and might lead to reduced attention on the operations of the company.

coefficient on the interaction between the reform and ROA is positive and significant in all specifications. These results indicate that the effect of the March 2014 reform on the probability of reorganisation was larger in firms with higher going concern values, which suggests an increase in ex-post efficiency. For instance, consider that a firm has low going concern value if its value of ROA is the 25th percentile (-38.3%) and that has high going concern value if its value of ROA is the 75th percentile (-2.3%). According to column (4) of Table 7, the impact of the March 2014 reform on the probability of reorganisation is 6.9 pp for the firm with high going concern value and only 0.1 pp for the firm with low going concern value.

6. Robustness: competing risk models for bankruptcy results

Assessing the effects of the successive Spanish bankruptcy law reforms requires taking into account not only their impact on the time needed to resolve bankruptcy procedures, but also on their final outcome, i.e., either a reorganisation agreement or a liquidation.

In previous sections, we analysed through a LPM the effect of each reform on the probability of a reorganisation agreement. Also, by means of a duration model, we evaluated how each successive bankruptcy reform affected the pace of insolvency resolution procedures, without distinguishing those that ended in reorganisation from those that resulted in liquidation. However, since the economic consequences in terms of efficiency associated with the occurrence of each outcome (reorganisation or liquidation) are relevant, in this section we supplement the analysis through the estimation of a competing risk model to analyse the effect of each reform on the duration of reorganisation and liquidation procedures. The competing risk survival framework allows the estimation of the effect of the four reforms to the bankruptcy code both on the probability of each potential outcome and on the average time needed for ending the bankruptcy procedures.

Specifically, there are three potential exclusive outcomes when a company files for bankruptcy: i) reorganisation agreement, ii) liquidation, iii) "express bankruptcy". Since we cannot observe more than one of them for the same company, competing risk models are the most suitable econometric setup to analyse jointly the effect of the reforms on the outcome reached and on the required time to resolve a bankruptcy process.

For each of these three possible outcomes, {T1, T2, T3} represent latent survival times. We only observe T=min(T1, T2, T3), i.e., the duration of the event that occurs first. Following Prentice *et al.* (1978), we estimate a duration model for each competing risk, considering the alternative outcomes as a censure in the event of interest.

Additionally, as in previous sections, our identification strategy relies in a threshold analysis that limits the sample to companies that file for bankruptcy within a three-

month time window around the entry into force of each reform. We also keep the same set of covariates considered in previous sections.[59]

According to Table 10, the March 2014 reform is associated with a decrease in average duration by about 42%-57% in the bankruptcy procedures that resulted in a reorganisation agreement, while it had no statistically significant effect on the duration of the procedures that resulted in the firm's liquidation. For the other reforms, we find no robust evidence that indicates a significant impact on the duration of any bankruptcy outcome. We interpret this result as in the previous section, where we found that these reforms had no impact on the duration of bankruptcy procedures. The detailed results for the 2009, 2012 and September 2014 reforms are shown in tables C1, C2 and C3 in Appendix C, respectively.

7. Conclusions

In this paper we study the effects of four reforms to the bankruptcy code in Spain during the Great Recession (2008-2013) that aimed to enhance the efficiency of insolvency procedures. Our results suggest that two of the reforms may have a sizeable impact on the probability of reorganisation and on the average length of bankruptcy procedures, while two of them had no robust impact on these dimensions.

First, the reform of March 2014, by improving the legal framework of court-approved refinancing agreements –private workouts that are verified by a judge- may lead to a significant decrease in the duration of bankruptcy procedures. While the number of firms that reach a refinancing agreement with their creditors is quite low, these companies are much larger than most of the firms that file for formal bankruptcy, suggesting that, by increasing the appeal of refinancing agreements as an alternative to formal bankruptcy, the reform may free resources of the bankruptcy courts, reducing their congestion and decreasing the duration procedures.

Second, the reform of March 2014, by decreasing the average length of bankruptcy procedures, may reduce the costs of financial distress and contributed to preserve firms' going concern value, therefore increasing the probability of reorganisations. Third, the 2012 reform, by increasing the average quality of insolvency administrators, may lead to a significant increase in the probability of reaching a reorganisation agreement. This result is consistent with the theoretical analysis by Ayotte and Yun (2007), who show

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[59] The complete analysis of each bankruptcy reform is displayed in the Appendix C.

that the optimal bankruptcy law becomes more debtor-friendly as judicial ability –i.e., the capacity of judges and insolvency trustees to discern between viable and non-viable firms- rises, which leads to a higher percentage of efficient reorganisations.

Nevertheless, while some reforms may increase the probability of reorganisation, this does not necessarily imply efficiency gains, as a reorganisation is an inefficient outcome when the firm's going concern value is lower than their assets' liquidation value. To address this question we interact proxies for firms' liquidation values and firms' going concern values with the reform dummies. The results indicate that the positive effect of the reforms on the probability of reorganisation was higher in firms with lower liquidation values and higher going concern values, which suggests an increase in ex-post efficiency.

Finally, neither the 2009 reform nor the September 2014 reform seem to have any robust impact on the performance of bankruptcy procedures, despite introducing procedural changes that were supposed to reduce the bottlenecks in the system and removing some legal constraints to reorganisation agreements.

While this paper studies the Spanish experience, our results are not confined to Spain, as the reforms to the bankruptcy code share some important features with those implemented in other OECD countries such as Italy, France and Brazil. We therefore propose a methodology that could be used to assess the effectiveness of similar reforms in other countries, as some flaws such as lengthy procedures and the excessive incidence of liquidations are common to many legal systems (Djankov *et al*., 2008). In particular, our research illustrates the important role that judges and insolvency administrators may play in the design of an efficient bankruptcy system, as well as the need for a legal framework that supports out-of-court workouts as an alternative to formal bankruptcies. More generally, our paper underlines the importance of evaluating bankruptcy reforms before analysing their effect on other dimensions such as investment, interest rates and capital structure.

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Figure 1: percentage of firms subject to insolvency proceedings that are liquidated
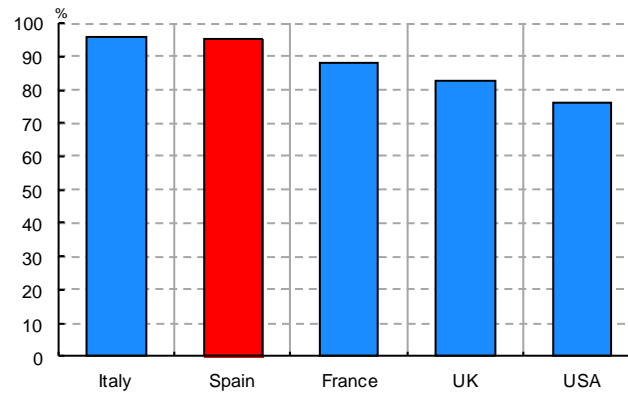
The data for Spain, France and the United States are for 2004-2008, the data for Italy are for 2004-2007, the data for United Kingdom are for 2004-2012. Sources: Celentani *et al*. (2010), The Insolvency Service, United States Courts.

Figure 2: direct costs of insolvency proceedings
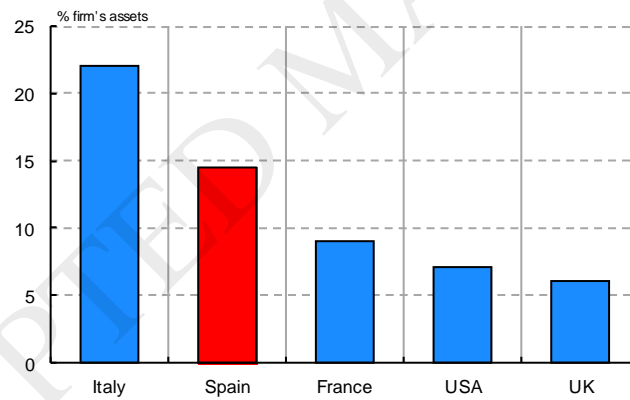
All data for 2008. Source: Doing Business (World Bank).

Figure 3: duration of insolvency proceedings
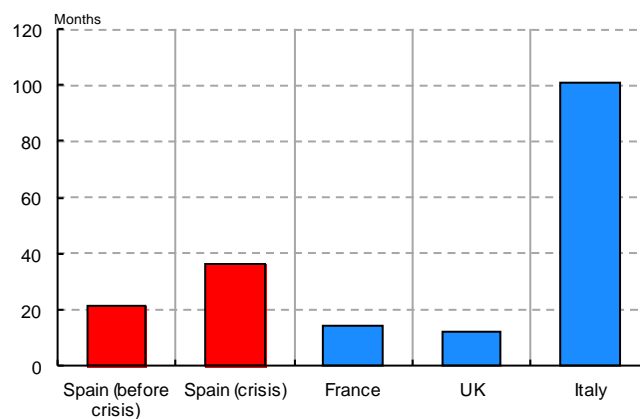
The data for Spain are for 2007 (before crisis) and 2012 (during crisis), data for France and Italy are for 2007 and for the UK are 2006. Source: Consejo General del Poder Judicial (2012), Ministère de la Justice (2010), Istat.

Figure 4: business bankruptcy rate
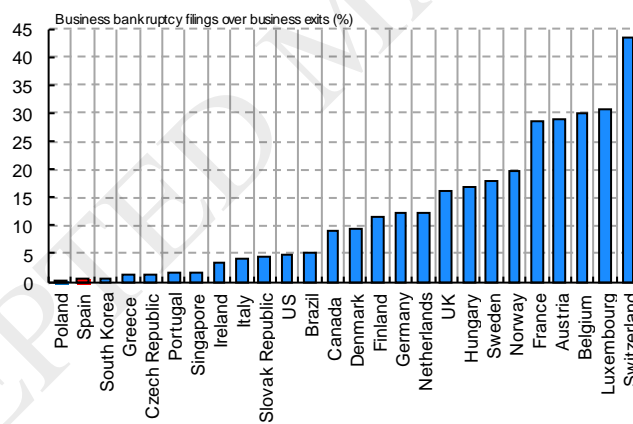
All data are for 2006. Sources: Eurostat, OECD, national sources and Euler Hermes (2007).

Figure 5: number of bankruptcy filings in Spain
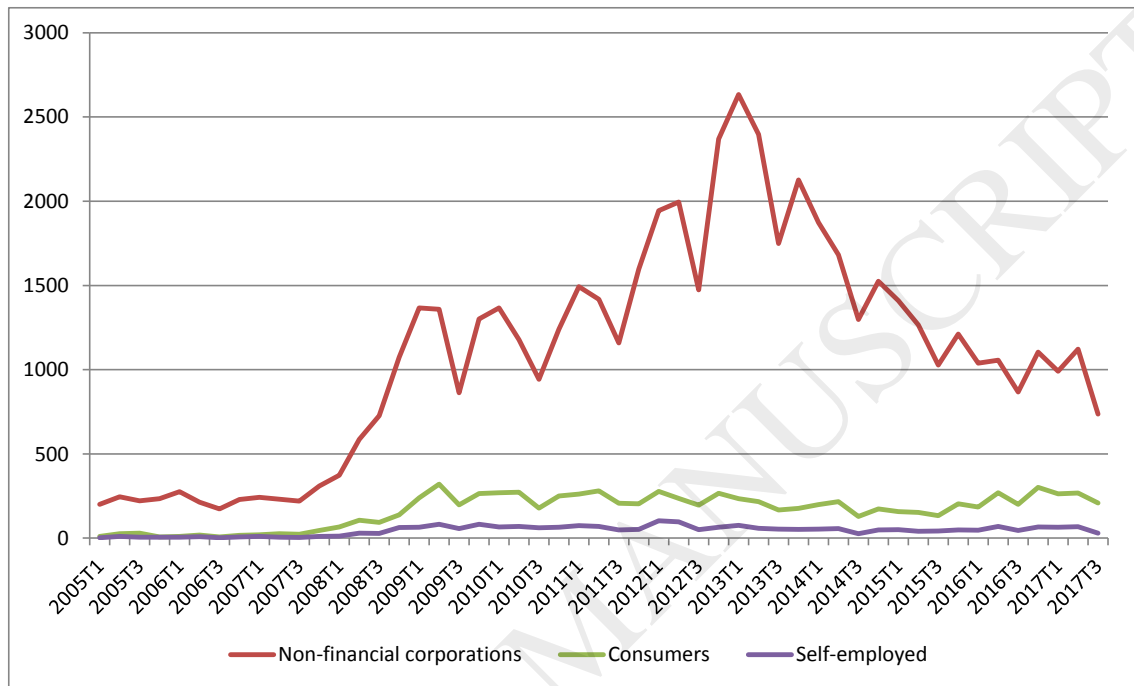
Source: National Statistics Institute.

Figure 6: timeline of the business bankruptcy reform process
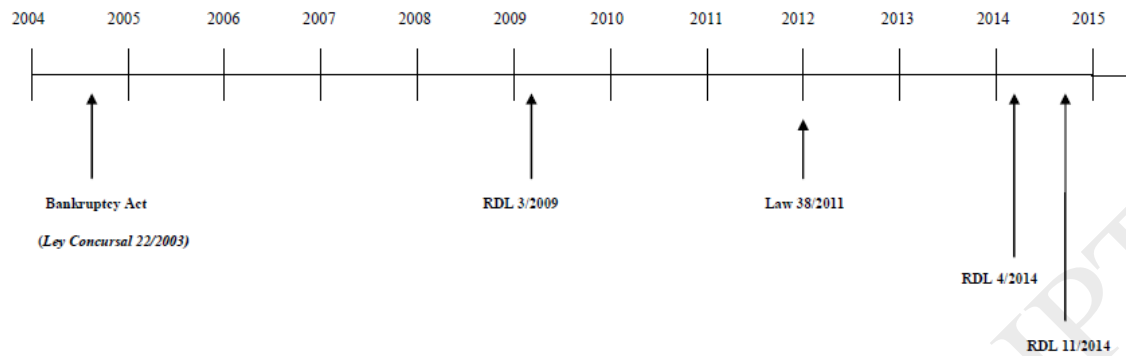
Figure 7: Average duration of bankruptcy procedures and percentage of censored observations by date of bankruptcy declaration
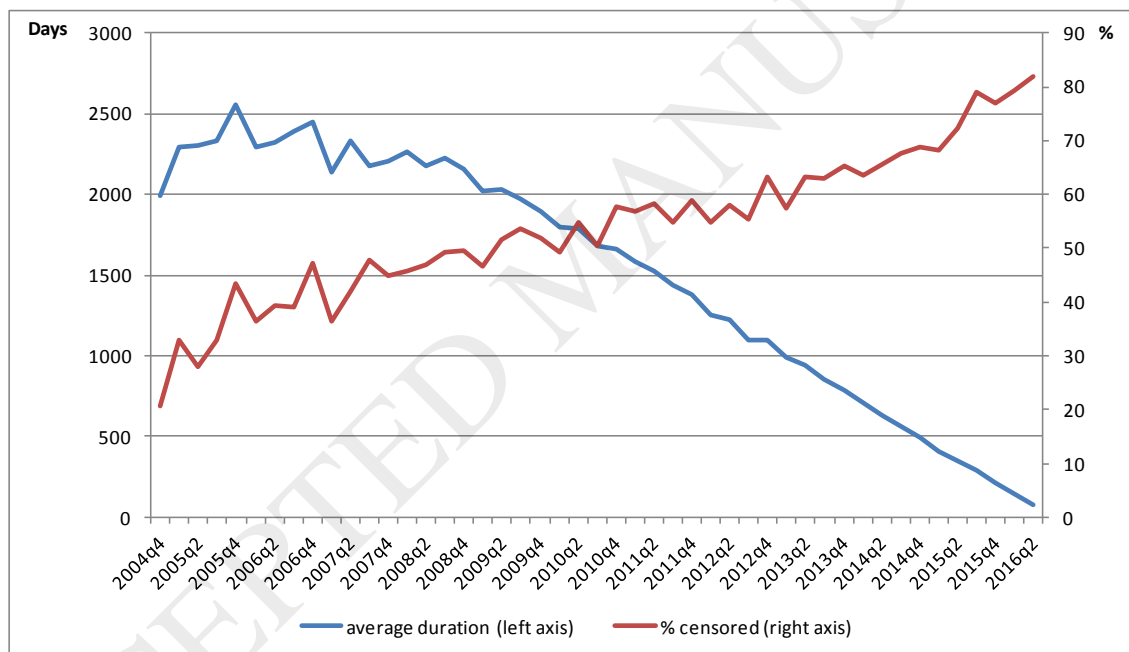
Source: authors' own elaboration

Figure 8: percentage of reorganisations by date of bankruptcy declaration
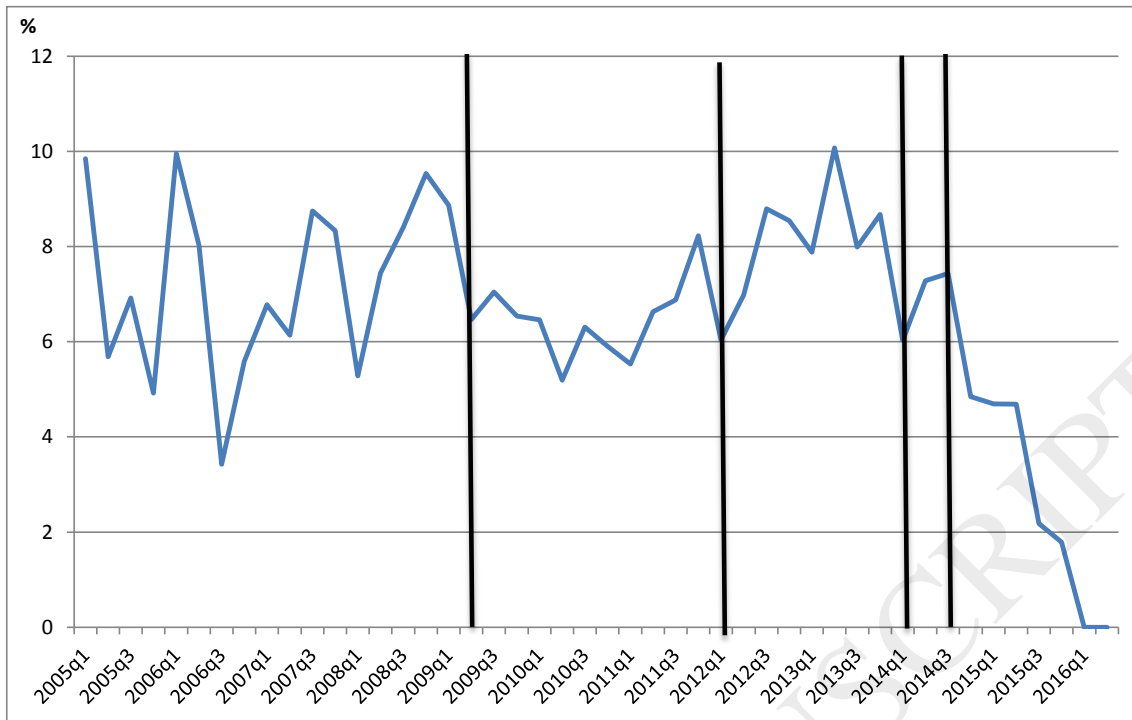
Note: the vertical lines indicate the date of entry into force of each of the reforms.

Figure 9: key covariates by date of bankruptcy declaration

Reform 2009=0
Reform 2012=0
Reform 2014 March=0
Reform 2014 Sept=0

Reform 2009=1
Reform 2012=0
Reform 2014 March=0
Reform 2014 Sept=0

Reform 2009=0
Reform 2012=1
Reform 2014 March=0
Reform 2014 Sept=0

Reform 2009=0
Reform2012=1
Reform 2014 March=1
Reform 2014 Sept=0

Reform 2009=0
Reform 2012=0
Reform 2014 March=0
Reform 2014 Sept=1

A   B   C   D   E

*Bankruptcy Act
(1 de September 2004)*

*RDL 3/2009
(1 de April 2009)*

*Law 38/2011
(1 January 2012)*

*RDL 4/2014
(8 March 2014)*

*Law 11/2014
(7 September)*

Figure 10: Kaplan Meier estimators of the reforms
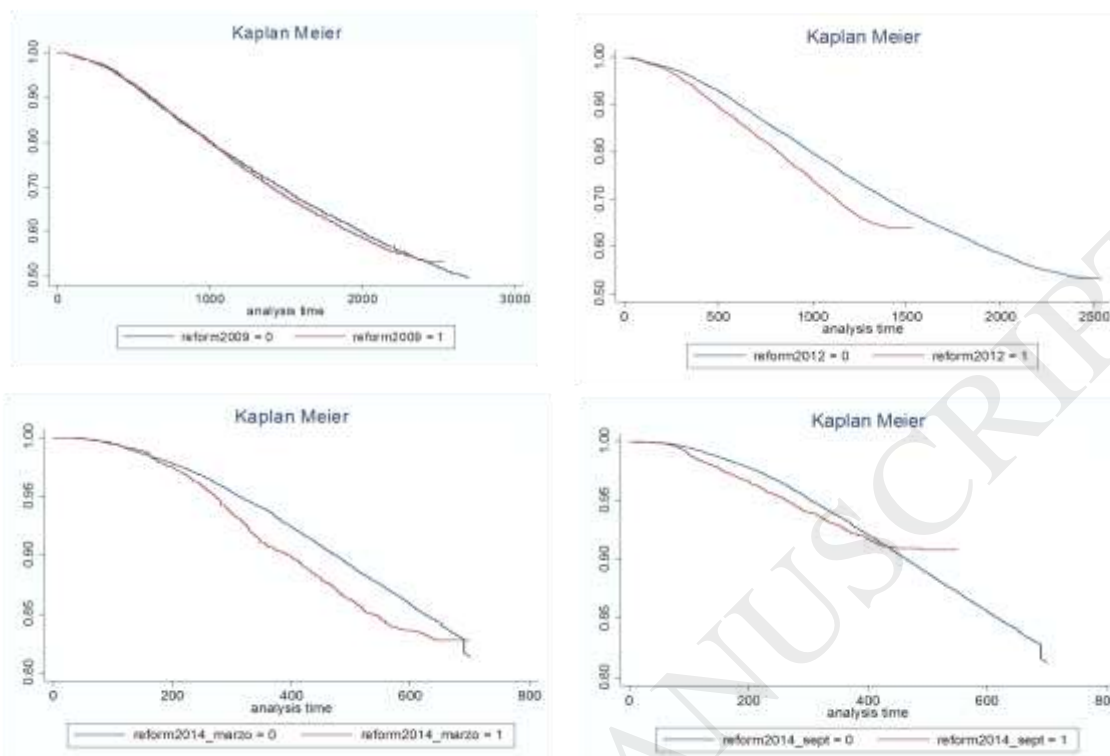
Each graph measures the effect of each reform relative to the pre-existing legal regime. In the first graph the sample period is September 2004-January 2012, so that REFORM 2009=0 for those bankruptcies that started before the 2009 reform (between September 2004 and April 2009) and REFORM 2009=1 for those bankruptcies that started after the 2009 reform and before the next legislative change (between April 2009 and January 2012). In the second graph the sample period is April 2009-March 2014. In the third graph the sample period is January 2012-September 2014. In the fourth graph the sample period is March 2014-June 2016. "Express bankruptcies" are excluded.

Figure 11: unconditional hazard (whole sample)
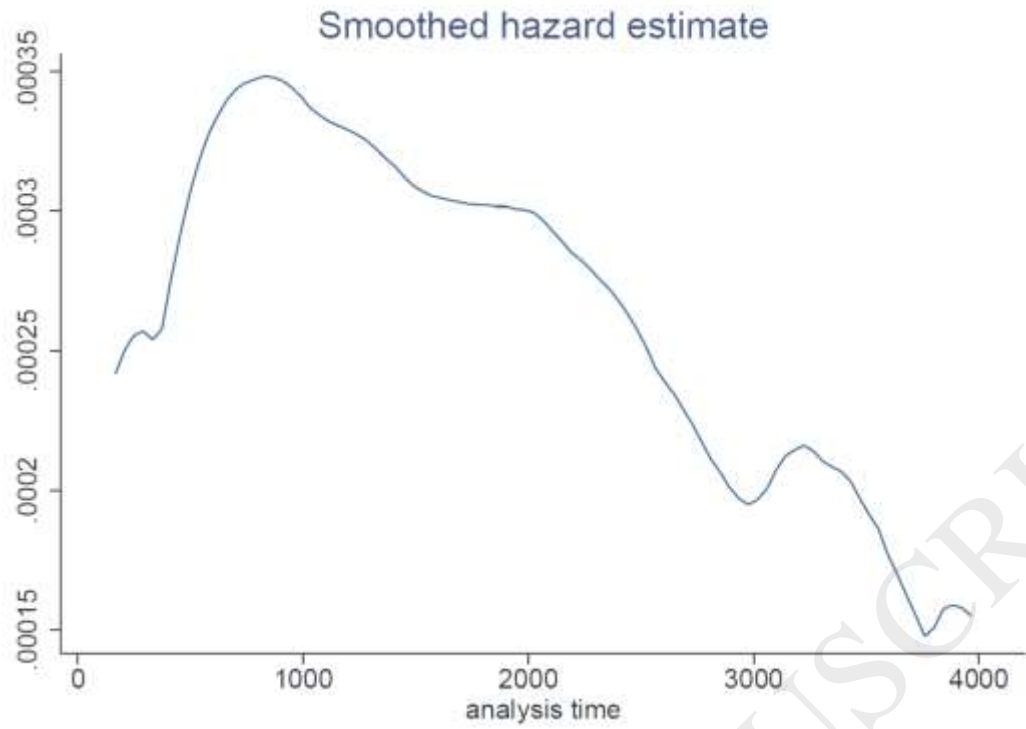
Figure 12: monthly number of business bankruptcy filings and bankruptcy reforms

Note: the vertical lines indicate the date of entry into force of each of the reforms.

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Figure 13: predicted hazards for treated and untreated bankruptcies by the reform of March 2014
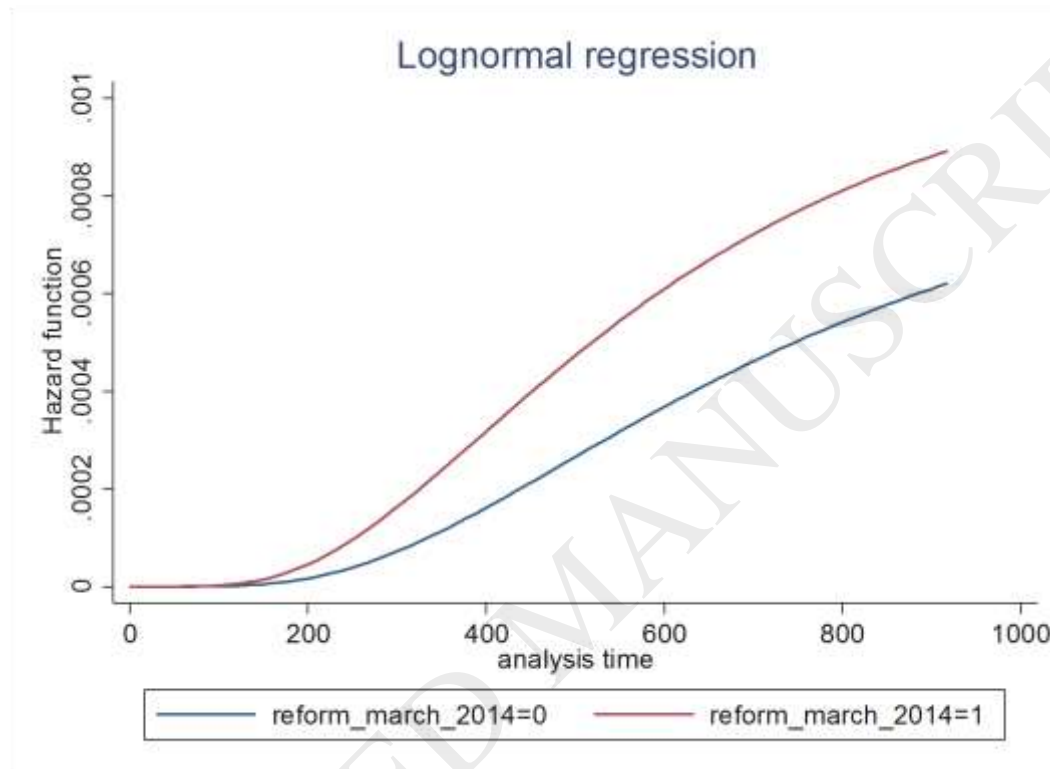
Table 1: main features of the reforms of the 2004 Bankruptcy Act

Reform	Entry into force	Main characteristics
2009	April 1, 2009	-Wider use of simplified procedures. -Early liquidation by debtor. -Limit to the remuneration of insolvency administrators.

2012	January 1, 2012[60]	-Wider use of simplified procedures. -Early liquidation by insolvency administrator. -"Express bankruptcy" -Single insolvency administrator. -Greater professionalisation of administrators. -Professional partnerships can be appointed administrators.
March 2014	March 8, 2014	-Court-approved refinancing agreements are facilitated: limits to claw-back provisions, automatic stay, imposition to dissident creditors, superpriority financing.
September 2014	September 7, 2014	-In-court bankruptcy arrangements are facilitated: broadening of arrangement terms, imposition to dissident preferred creditors.

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[60] The Law 38/2011, of October 10 came into force on January 1, 2012, except for some provisions, mainly related with court-approved refinancing agreements, which came into force on October 11, 2011.

Table 2: descriptive statistics

	Number obs.	Mean	Std. deviation	Minimum	Maximum
Duration (days)	46,428	1,228.05	866.39	1.00	4,339.00
Reorganisation	32,491	0.07	0.26	0.00	1.00
Reform 2009	46,428	0.25	0.43	0.00	1.00
Reform 2012	46,428	0.41	0.49	0.00	1.00
Reform March 2014	46,428	0.23	0.42	0.00	1.00
Reform September 2014	46,428	0.17	0.37	0.00	1.00
Age	14,894	15.10	10.40	0.00	202.00
Log(Age+1)	14,894	2.58	0.67	0.00	5.31
Total Assets	14,894	4,093.08	40,281.26	0.00	27,27,696.00
Log(Total Assets+1)	14,889	6.58	1.68	0.00	13.54
Employment	14,894	15.64	47.54	0.00	1,859.00
Log(employment+1)	14,894	1.97	1.26	0.00	7.53
ROA	13,983	-26.92	36.47	-177.53	128.42
Tangibility	14,679	27.78	28.38	0.00	100.00
Leverage	13,761	106.47	47.69	0.00	291.18
Negative Equity	14,894	0.47	0.50	0.00	1.00
Current Ratio	13,697	0.96	0.71	0.00	4.01
Interest Coverage Ratio	12,536	-5.79	10.69	-50.73	38.25
Express Bankrupcy	46,428	0.06	0.24	0.00	1.00
Unemployment Rate	46,428	0.57	1.97	-6.66	9.97
Bankruptcy rate	46,165	5.26	3.17	0.00	43.15

Table 3: descriptive statistics by reorganisation/liquidation

Bankruptcies that result in liquidation (REORGANISATION=0)

Variable	Number obs.	Mean	Std. deviation	Minimum	Maximum
DURATION	30,207	1425.45	803.37	1.00	4339.00
REFORM 2009	30,207	0.28	0.45	0.00	1.00
REFORM 2012	30,207	0.41	0.49	0.00	1.00
REFORM MARCH 2014	30,207	0.17	0.37	0.00	1.00
REFORM SEPTEMBER 2014	30,207	0.12	0.32	0.00	1.00
LOG(AGE+1)	10,250	2.59	0.66	0.00	4.81
LOG(TOTAL ASSETS+1)	10,250	6.64	1.55	0.00	13.48
LOG(EMPLOYMENT+1)	10,250	2.02	1.24	0.00	7.53
ROA	9,679	-27.60	36.57	-177.53	125.33
TANGIBILITY	10,104	27.54	28.05	0.00	100.00
LEVERAGE	9,547	106.73	46.89	0.00	291.14
NEGATIVE EQUITY	10,250	0.47	0.50	0.00	1.00
CURRENT RATIO	9,447	0.97	0.71	0.00	4.01
INTEREST COVERAGE RATIO	8,733	-5.97	10.59	-50.73	37.40
UNEMPLOYMENT RATE	30,207	0.64	1.93	-6.66	8.55
BANKRUPTCY RATE	30,015	5.18	3.12	0.00	43.15

Bankruptcies that result in reorganisation (REORGANISATION=1)

Variable	Number obs.	Mean	Std. deviation	Minimum	Maximum
DURATION	2,284	548.72	323.18	1.00	2871.00
REFORM 2009	2,284	0.25	0.43	0.00	1.00
REFORM 2012	2,284	0.47	0.50	0.00	1.00
REFORM MARCH 2014	2,284	0.11	0.31	0.00	1.00
REFORM SEPTEMBER 2014	2,284	0.06	0.23	0.00	1.00
LOG(AGE+1)	1,000	2.80	0.63	0.69	5.31
LOG(TOTAL ASSETS+1)	1,000	7.80	1.54	1.39	13.30
LOG(EMPLOYMENT+1)	1,000	2.51	1.37	0.00	7.27
ROA	987	-15.55	25.45	-177.47	84.83
TANGIBILITY	990	37.61	29.39	0.00	100.00
LEVERAGE	987	88.70	33.17	0.00	248.63
NEGATIVE EQUITY	1,000	0.26	0.44	0.00	1.00
CURRENT RATIO	931	1.05	0.71	0.00	4.00
INTEREST COVERAGE RATIO	929	-2.82	8.28	-46.23	33.87
UNEMPLOYMENT RATE	2,284	0.74	1.99	-6.66	6.96
BANKRUPTCY RATE	2,253	5.18	3.23	0.00	43.15

Table 4: mean values by period of bankruptcy filing.

Variable	PERIOD A	PERIOD B	PERIOD C	PERIOD D	PERIOD E
Duration (days)	2,202.17	1,694.10	1,002.16	625.12	320.84
Reorganisation	0.08	0.06	0.08	0.07	0.04
Age	13.44	14.26	16.12	15.91	15.03
Log(Age+1)	2.43	2.53	2.66	2.64	2.55
Total Assets	3,905.79	4,643.77	4,888.58	1,711.34	1,886.22
Log(Total Assets+1)	6.84	6.86	6.63	6.12	5.85
Employment	25.71	16.96	14.22	10.96	10.19
Log(employment+1)	2.36	2.08	1.92	1.70	1.64
ROA	-22.69	-24.81	-28.64	-34.02	-27.48
Tangibility	23.11	28.56	29.27	29.38	25.50
Leverage	105.73	105.38	107.13	109.10	106.48
Negative Equity	0.43	0.45	0.49	0.52	0.50
Current Ratio	0.93	1.01	0.95	0.87	0.94
Interest Coverage Ratio	-3.86	-4.97	-6.37	-7.10	-7.20
Express Bankrupcy	0.00	0.00	0.06	0.13	0.17
Unemployment Rate	-1.67	0.95	1.75	1.40	-0.95
Bankruptcy rate	1.85	4.42	7.26	6.70	4.68

The table shows the sample averages in each of the periods depicted in Figure 9. Period A goes from September 1, 2004 to March 31, 2009. Period B goes from April 1, 2009 to December 31, 2011. Period C goes from January 1, 2012 to March 7, 2014. Period D goes from March 8, 2014 to September 6, 2014. Period E goes from September 7, 2014 to August 10, 2016.

Table 5: the reform of March 2014 and the duration of bankruptcy procedures

DEP. VARIABLE	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM MARCH 2014	-0.141***	-0.134***	-0.208***	-0.197**
	(0.054)	(0.051)	(0.075)	(0.078)
LOG(AGE)	-0.001	-0.003	-0.136**	-0.116*
	(0.031)	(0.031)	(0.067)	(0.070)
LOG(TOTAL ASSETS)	0.080***	0.079***	0.140***	0.135***
	(0.020)	(0.019)	(0.047)	(0.045)
ROA	0.000	-0.000	-0.002**	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
TANGIBILITY	0.000	0.000	0.001	0.000
	(0.001)	(0.001)	(0.002)	(0.002)
LEVERAGE	0.001**		0.001	
	(0.000)		(0.001)	
NEGATIVE EQUITY		0.098**		-0.062
		(0.046)		(0.066)
CURRENT RATIO	-0.002	-0.002	0.080	0.064
	(0.031)	(0.032)	(0.070)	(0.062)
INTEREST COVERAGE RATIO	-0.001	-0.000	-0.005	-0.006
	(0.001)	(0.001)	(0.005)	(0.005)
EXPRESS BANKRUPTCY	-7.208***	-7.208***	-6.880***	-6.886***
	(0.122)	(0.126)	(0.121)	(0.097)
UNEMPLOYMENT RATE	-0.008	-0.008	0.053	0.050
	(0.013)	(0.013)	(0.039)	(0.039)
BANKRUPTCY RATE	-0.008	-0.009	-0.088***	-0.079***
	(0.007)	(0.007)	(0.027)	(0.025)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	4,801	4,906	543	563
Log pseudolikelihood	-4040.64	-4128.74	-298.22	-315.59
Period	*1 Jan 2012 - 6 Sep 2014*	*1 Jan 2012 - 6 Sep 2014*	*8 Dec 2013- 8 Jun 2014*	*8 Dec 2013- 8 Jun 2014*

Estimator: Maximum Likelihood of a log-normal duration model. Dependent variable: log(DURATION)
Clustered standard errors in parentheses. Cluster level: province. *** p<0.01, ** p<0.05, * p<0.1

Table 6: the 2012 reform and the probability of reorganisation

DEP. VARIABLE	(1) REORGANISATION	(2) REORGANISATION	(3) REORGANISATION	(4) REORGANISATION
REFORM 2012	0.0046	0.0051	0.0546**	0.0602**
	(0.0082)	(0.0083)	(0.0238)	(0.0225)
LOG(AGE)	0.0178***	0.0190***	0.0028	0.0082
	(0.0058)	(0.0060)	(0.0182)	(0.0174)
LOG(TOTAL ASSETS)	0.0415***	0.0411***	0.0314**	0.0309**
	(0.0038)	(0.0040)	(0.0132)	(0.0136)
ROA	-0.0002	-0.0000	0.0002	0.0007*
	(0.0001)	(0.0001)	(0.0005)	(0.0004)
TANGIBILITY	0.0006***	0.0006***	0.0001	0.0003
	(0.0002)	(0.0002)	(0.0004)	(0.0004)
LEVERAGE	-0.0006***		-0.0010*	
	(0.0002)		(0.0005)	
NEGATIVE EQUITY		-0.0453***		-0.0639*
		(0.0122)		(0.0379)
CURRENT RATIO	0.0008	0.0022	-0.0046	-0.0019
	(0.0074)	(0.0073)	(0.0178)	(0.0182)
INTEREST COVERAGE RATIO	0.0004	0.0002	-0.0001	-0.0001
	(0.0003)	(0.0003)	(0.0015)	(0.0016)
UNEMPLOYMENT RATE	0.0093***	0.0089***	0.0134*	0.0151**
	(0.0025)	(0.0025)	(0.0070)	(0.0070)
BANKRUPTCY RATE	0.0034**	0.0037**	0.0045	0.0087
	(0.0014)	(0.0014)	(0.0149)	(0.0149)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	5,983	6,078	686	695
R-squared	0.1	0.1	0.21	0.21
Period	1 Apr 2009 - 7 Mar 2014	1 Apr 2009 - 7 Mar 2014	1 Oct 2011- 1 Apr 2012	1 Oct 2011- 1 Apr 2012

Estimator: OLS. Dependent variable: dummy for reorganisation agreement.
Clustered standard errors in parentheses. Cluster level: province. *** p<0.01, ** p<0.05, * p<0.1

Table 7: the 2012 reform and the probability of reorganisation

(interactions with Tangibility and ROA)

DEP. VARIABLE	(1) REORGANISATION	(2) REORGANISATION	(3) REORGANISATION	(4) REORGANISATION
REFORM 2012	0.1151***	0.1281***	0.1148***	0.1273***
	(0.0334)	(0.0338)	(0.0352)	(0.0351)
REFORM 2012*TANGIBILITY	-0.0018**	-0.0018**	-0.0017**	-0.0018**
	(0.0008)	(0.0008)	(0.0008)	(0.0009)
REFORM 2012*ROA	0.0002	0.0005	0.0003	0.0005
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
LOG(AGE)	0.0017	0.0075	0.0055	0.0115
	(0.0182)	(0.0176)	(0.0167)	(0.0160)
LOG(TOTAL ASSETS)	0.0327**	0.0321**		
	(0.0133)	(0.0137)		
LOG(EMPLOYMENT)			0.0274*	0.0261*
			(0.0142)	(0.0145)
ROA	0.0001	0.0004	0.0004	0.0007
	(0.0005)	(0.0005)	(0.0005)	(0.0005)
TANGIBILITY	0.0009	0.0010*	0.0011*	0.0012*
	(0.0005)	(0.0006)	(0.0006)	(0.0006)
LEVERAGE	-0.0010*		-0.0010*	
	(0.0005)		(0.0005)	
NEGATIVE EQUITY		-0.0673*		-0.0644
		(0.0382)		(0.0394)
CURRENT RATIO	-0.0026	-0.0005	0.0041	0.0062
	(0.0182)	(0.0185)	(0.0188)	(0.0196)
INTEREST COVERAGE RATIO	0.0000	0.0000	0.0002	0.0002
	(0.0015)	(0.0015)	(0.0015)	(0.0016)
UNEMPLOYMENT RATE	0.0131*	0.0151**	0.0170**	0.0189**
	(0.0071)	(0.0071)	(0.0074)	(0.0073)
BANKRUPTCY RATE	0.0066	0.0108	0.0060	0.0100
	(0.0148)	(0.0148)	(0.0141)	(0.0143)
PROVINCE DUMMIES	*YES*	*YES*	*YES*	*YES*
INDUSTRY DUMMIES	*YES*	*YES*	*YES*	*YES*
Observations	686	695	686	695
R-squared	0.2169	0.2177	0.2109	0.2115
Period	1 Oct 2011- 1 Apr 2012	1 Oct 2011- 1 Apr 2012	1 Oct 2011- 1 Apr 2012	1 Oct 2011- 1 Apr 2012

Estimator: OLS. Dependent variable: dummy for reorganisation agreement.

Clustered standard errors in parentheses. Cluster level: province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 8: the March 2014 reform and the probability of reorganisation

DEP. VARIABLE	(1) REORGANISATION	(2) REORGANISATION	(3) REORGANISATION	(4) REORGANISATION
REFORM MARCH 2014	0.0377**	0.0370**	0.0641**	0.0577**
	(0.0172)	(0.0169)	(0.0257)	(0.0252)
LOG(AGE)	0.0166*	0.0182**	0.0468	0.0474
	(0.0086)	(0.0090)	(0.0355)	(0.0345)
LOG(TOTAL ASSETS)	0.0497***	0.0489***	0.0228	0.0197
	(0.0053)	(0.0052)	(0.0199)	(0.0185)
ROA	-0.0002	-0.0001	0.0009**	0.0010**
	(0.0002)	(0.0001)	(0.0004)	(0.0004)
TANGIBILITY	0.0006**	0.0006*	0.0003	0.0002
	(0.0003)	(0.0003)	(0.0005)	(0.0005)
LEVERAGE	-0.0005**		-0.0000	
	(0.0002)		(0.0004)	
NEGATIVE EQUITY		-0.0454**		-0.0013
		(0.0177)		(0.0391)
CURRENT RATIO	0.0067	0.0066	-0.0248	-0.0281**
	(0.0091)	(0.0094)	(0.0148)	(0.0139)
INTEREST COVERAGE RATIO	0.0010*	0.0008*	0.0024	0.0025
	(0.0005)	(0.0005)	(0.0017)	(0.0015)
UNEMPLOYMENT RATE	0.0023	0.0020	-0.0083	-0.0082
	(0.0040)	(0.0038)	(0.0138)	(0.0143)
BANKRUPTCY RATE	0.0059***	0.0061***	0.0184	0.0211
	(0.0017)	(0.0017)	(0.0173)	(0.0134)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	3,764	3,840	419	436
R-squared	0.13	0.13	0.23	0.23
Period	1 Jan 2012 - 6 Sep 2014	1 Jan 2012 - 6 Sep 2014	8 Dec 2013- 8 Jun 2014	8 Dec 2013- 8 Jun 2014

Estimator: OLS. Dependent variable: dummy for reorganisation agreement.
Clustered standard errors in parentheses. Cluster level: province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table 9: the March 2014 reform and the probability of reorganisation
(interactions with Tangibility and ROA)**

DEP. VARIABLE	(1) REORGANISATION	(2) REORGANISATION	(3) REORGANISATION	(4) REORGANISATION
REFORM MARCH 2014	0.0450**	0.0386**	0.0911*	0.0737
	(0.0170)	(0.0170)	(0.0468)	(0.0473)
REFORM MARCH 2014*TANGIBILITY	0.0004	0.0005	0.0013	0.0015
	(0.0005)	(0.0005)	(0.0010)	(0.0010)
REFORM MARCH 2014*ROA	0.0007**	0.0005*	0.0021***	0.0019***
	(0.0003)	(0.0003)	(0.0008)	(0.0007)
LOG(AGE)	0.0161*	0.0180**	0.0468	0.0470
	(0.0086)	(0.0089)	(0.0364)	(0.0354)
LOG(TOTAL ASSETS)	0.0498***	0.0489***	0.0218	0.0184
	(0.0053)	(0.0052)	(0.0202)	(0.0191)
ROA	-0.0003	-0.0002	-0.0003	-0.0001
	(0.0002)	(0.0002)	(0.0006)	(0.0005)
TANGIBILITY	0.0005*	0.0005*	-0.0004	-0.0005
	(0.0003)	(0.0003)	(0.0007)	(0.0007)
LEVERAGE	-0.0006**		-0.0002	
	(0.0002)		(0.0005)	
NEGATIVE EQUITY		-0.0457**		-0.0116
		(0.0177)		(0.0365)
CURRENT RATIO	0.0070	0.0068	-0.0220	-0.0255*
	(0.0089)	(0.0094)	(0.0141)	(0.0131)
INTEREST COVERAGE RATIO	0.0010*	0.0008*	0.0026	0.0027*
	(0.0005)	(0.0005)	(0.0018)	(0.0016)

UNEMPLOYMENT RATE	0.0025	0.0021	-0.0085	-0.0080
	(0.0040)	(0.0039)	(0.0128)	(0.0133)
BANKRUPTCY RATE	0.0058***	0.0061***	0.0148	0.0174
	(0.0017)	(0.0017)	(0.0173)	(0.0135)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	*3,764*	*3,840*	*419*	*436*
Pseudo R-squared	*0.1270*	*0.1263*	*0.2429*	*0.2385*
Period	1 Jan 2012 - 6 Sep 2014	1 Jan 2012 - 6 Sep 2014	8 Dec 2013- 8 Jun 2014	8 Dec 2013- 8 Jun 2014
Estimator: OLS. Dependent variable: dummy for reorganisation agreement.				
Clustered standard errors in parentheses. Cluster level: province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$				

Table 10: the reform of March 2014 and average duration, by bankruptcy outcome

	OUTCOME OF INTEREST: REORGANISATION			
Dependent variable	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM MARCH 2014	**-0.507***	**-0.420***	**-0.498***	**-0.418***
	(0.153)	(0.154)	(0.159)	(0.154)
LOG(AGE)	**-0.322**	**-0.324**	**-0.306**	**-0.294**
	(0.340)	(0.331)	(0.338)	(0.328)
LOG(TOTAL ASSETS)	**-0.075**	**-0.070**		
	(0.103)	(0.106)		
LOG(EMPLOYMENT)			**-0.074**	**-0.093**
			(0.120)	(0.122)
ROA	**-0.005**	**-0.008****	**-0.006**	**-0.008***
	(0.004)	(0.003)	(0.004)	(0.003)
TANGIBILITY	**0.001**	**-0.001**	**0.000**	**-0.002**
	(0.004)	(0.003)	(0.004)	(0.004)
LEVERAGE	**0.005**		**0.005**	
	(0.003)		(0.003)	
NEGATIVE EQUITY		**-0.010**		**0.011**
		(0.231)		(0.242)
CURRENT RATIO	**0.386***	**0.233***	**0.381***	**0.234**
	(0.199)	(0.141)	(0.200)	(0.148)
INTEREST COVERAGE RATIO	**-0.025***	**-0.024***	**-0.026***	**-0.026***
	(0.014)	(0.014)	(0.014)	(0.015)
UNEMPLOYMENT RATE	**0.025**	**0.035**	**0.027**	**0.033**
	(0.157)	(0.157)	(0.161)	(0.162)
BANKRUPCY RATE	**-0.232***	**-0.245***	**-0.240***	**-0.252***
	(0.069)	(0.056)	(0.066)	(0.055)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs				
Period	8 Dec 2013-8 Jun 2014	8 Dec 2013-8 Jun 2014	8 Dec 2013-8 Jun 2014	8 Dec 2013-8 Jun 2014
	OUTCOME OF INTEREST: LIQUIDATION			

Dependent variable	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM MARCH 2014	**-0.115**	**-0.113**	**-0.101**	**-0.096**
	(0.112)	(0.124)	(0.119)	(0.129)
LOG(AGE)	**-0.089**	**-0.078**	**-0.052**	**-0.049**
	(0.102)	(0.095)	(0.094)	(0.088)
LOG(TOTAL ASSETS)	**0.142****	**0.134****		
	(0.056)	(0.058)		
LOG(EMPLOYMENT)			**0.111*****	**0.114*****
			(0.039)	(0.039)
ROA	**0.001**	**-0.001**	**0.001**	**0.000**
	(0.001)	(0.001)	(0.001)	(0.001)
TANGIBILITY	**-0.000**	**-0.000**	**0.002**	**0.001**
	(0.002)	(0.002)	(0.002)	(0.002)
LEVERAGE	**-0.000**		**-0.000**	
	(0.001)		(0.001)	
NEGATIVE EQUITY		**-0.149***		**-0.164****
		(0.079)		(0.069)
CURRENT RATIO	**-0.056**	**-0.067**	**-0.017**	**-0.028**
	(0.060)	(0.061)	(0.069)	(0.066)
INTEREST COVERAGE RATIO	**0.000**	**-0.001**	**0.002**	**0.000**
	(0.004)	(0.004)	(0.004)	(0.004)
UNEMPLOYMENT RATE	**0.047**	**0.046**	**0.051**	**0.047**
	(0.041)	(0.044)	(0.044)	(0.046)
BANKRUPCY RATE	**-0.059**	**-0.053**	**-0.051**	**-0.053**
	(0.039)	(0.037)	(0.038)	(0.037)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs	545	565	545	565
Period	8 Dec 2013-8 Jun 2014	8 Dec 2013-8 Jun 2014	8 Dec 2013-8 Jun 2014	8 Dec 2013-8 Jun 2014

Estimator: Maximum Likelihood log-normal distribution. Dependent variable: log (duration).
Clustering robust standard errors in parenthesis. Clustered by province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix A: impact of the reforms on the probability of reorganisation.
Table A1: impact of the 2009 reform on the probability of reorganisation

DEP. VARIABLE	(1) REORGANISATION	(2) REORGANISATION	(3) REORGANISATION	(4) REORGANISATION
REFORM 2009	-0.0547***	-0.0518***	-0.0814	-0.0580
	(0.0192)	(0.0191)	(0.1223)	(0.1083)
LOG(AGE)	0.0223***	0.0215***	0.0441	0.0401
	(0.0068)	(0.0066)	(0.0308)	(0.0304)
LOG(TOTAL ASSETS)	0.0340***	0.0337***	0.0330*	0.0268
	(0.0043)	(0.0043)	(0.0183)	(0.0213)
ROA	-0.0001	0.0000	-0.0003	-0.0003
	(0.0001)	(0.0001)	(0.0013)	(0.0007)
TANGIBILITY	0.0007**	0.0007**	0.0002	0.0003
	(0.0003)	(0.0003)	(0.0013)	(0.0011)
LEVERAGE	-0.0005***		-0.0009	
	(0.0002)		(0.0008)	
NEGATIVE EQUITY		-0.0340***		-0.1324***
		(0.0107)		(0.0332)
CURRENT RATIO	0.0053	0.0072	0.0801	0.0719*
	(0.0090)	(0.0086)	(0.0489)	(0.0425)
INTEREST COVERAGE RATIO	0.0006	0.0005	-0.0005	-0.0005
	(0.0004)	(0.0004)	(0.0014)	(0.0014)
UNEMPLOYMENT RATE	0.0119***	0.0115***	0.0230	0.0177
	(0.0028)	(0.0026)	(0.0383)	(0.0317)
BANKRUPTCY RATE	0.0051	0.0056	-0.0263	-0.0309
	(0.0039)	(0.0039)	(0.0260)	(0.0263)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	3,737	3,810	337	343
R-squared	0.09	0.09	0.29	0.31

Period	1 Sep 2004 - 31 Dic 2011	1 Sep 2004 - 31 Dic 2011	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009

Estimator: OLS. Dependent variable: dummy for reorganisation agreement.

Clustered standard errors in parentheses. Cluster level: province. *** p<0.01, ** p<0.05, * p<0.1

Period	1 Sep 2004 - 31 Dic 2011	1 Sep 2004 - 31 Dic 2011	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009

Table A2: impact of the September 2014 reform on the probability of reorganisation

DEP. VARIABLE	(1) REORGANISATION	(2) REORGANISATION	(3) REORGANISATION	(4) REORGANISATION
REFORM SEPTEMBER 2014	-0.0302	-0.0309	-0.0381	-0.0405
	(0.0294)	(0.0287)	(0.0403)	(0.0388)
LOG(AGE)	-0.0120	-0.0120	-0.0338	-0.0350
	(0.0102)	(0.0102)	(0.0272)	(0.0286)
LOG(TOTAL ASSETS)	0.0347***	0.0336***	0.0611***	0.0588***
	(0.0110)	(0.0104)	(0.0186)	(0.0182)
ROA	0.0003	0.0003	0.0002	-0.0001
	(0.0003)	(0.0002)	(0.0005)	(0.0005)
TANGIBILITY	0.0004	0.0004	0.0002	0.0001
	(0.0003)	(0.0003)	(0.0004)	(0.0004)
LEVERAGE	-0.0000		0.0001	
	(0.0002)		(0.0003)	
NEGATIVE EQUITY		-0.0030		-0.0217
		(0.0158)		(0.0316)
CURRENT RATIO	-0.0041	-0.0042	-0.0034	-0.0084
	(0.0126)	(0.0125)	(0.0178)	(0.0171)
INTEREST COVERAGE RATIO	0.0004	0.0005	0.0002	0.0004
	(0.0006)	(0.0005)	(0.0014)	(0.0013)
UNEMPLOYMENT RATE	0.0010	0.0012	-0.0092	-0.0094
	(0.0055)	(0.0054)	(0.0125)	(0.0122)
BANKRUPTCY RATE	0.0095	0.0090	0.0073	0.0075
	(0.0058)	(0.0057)	(0.0090)	(0.0090)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	1193	1231	537	544
R-squared	0.15	0.15	0.27	0.27
Period	8 Mar 2014 - 13 June 2016	8 Mar 2014 - 13 June 2016	7 Jun 2014 - 7 Dec 2014	7 Jun 2014 - 7 Dec 2014

Estimator: OLS. Dependent variable: dummy for reorganisation agreement.

Clustered standard errors in parentheses. Cluster level: province. *** p<0.01, ** p<0.05, * p<0.1

DEP. VARIABLE	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM 2009	-0.063	-0.071	0.239	0.139
	(0.062)	(0.063)	(0.183)	(0.176)
LOG(AGE)	-0.004	-0.006	-0.095	-0.095
	(0.023)	(0.022)	(0.092)	(0.096)
LOG(TOTAL ASSETS)	0.121***	0.127***	0.153***	0.158***
	(0.026)	(0.027)	(0.035)	(0.035)
ROA	0.002***	0.001*	0.000	0.002
	(0.001)	(0.001)	(0.002)	(0.001)
TANGIBILITY	0.001	0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.003)	(0.003)
LEVERAGE	0.002***		0.000	
	(0.001)		(0.002)	
NEGATIVE EQUITY		0.150***		0.152*
		(0.045)		(0.083)
CURRENT RATIO	0.006	-0.001	-0.215**	-0.206**
	(0.031)	(0.027)	(0.099)	(0.091)
INTEREST COVERAGE RATIO	-0.002	-0.000	-0.000	-0.002
	(0.002)	(0.002)	(0.003)	(0.003)
EXPRESS BANKRUPTCY	-7.613***	-7.519***		
	(0.093)	(0.088)		
UNEMPLOYMENT RATE	-0.014	-0.015	-0.111*	-0.076
	(0.010)	(0.010)	(0.059)	(0.048)
BANKRUPTCY RATE	0.003	0.008	0.115**	0.114**
	(0.015)	(0.014)	(0.057)	(0.054)
PROVINCE DUMMIES	*YES*	*YES*	*YES*	*YES*
INDUSTRY DUMMIES	*YES*	*YES*	*YES*	*YES*
Observations	4,543	4,640	388	395
Log pseudolikelihood	-4721.49	-4847.93	-351.11	-355.63
Period	1 Sep 2004 - 31 Dic 2011	1 Sep 2004 - 31 Dic 2011	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009

Estimator: Maximum Likelihood of a log-normal duration model. Dependent variable: log(DURATION)

Clustered standard errors in parentheses. Cluster level: province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix B: impact of the reforms on the duration of bankruptcy procedures

Table B2: impact of the 2012 reform on the duration of bankruptcy

DEP. VARIABLE	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM 2012	-0.185***	-0.181***	0.106	0.083
	(0.040)	(0.042)	(0.153)	(0.145)
LOG(AGE)	0.015	0.012	-0.106	-0.134*
	(0.026)	(0.027)	(0.078)	(0.077)
LOG(TOTAL ASSETS)	0.101***	0.104***	0.150***	0.156***
	(0.016)	(0.015)	(0.038)	(0.038)
ROA	0.001*	0.000	0.002	-0.001
	(0.001)	(0.000)	(0.002)	(0.002)
TANGIBILITY	0.000	0.000	0.002*	0.002**
	(0.000)	(0.000)	(0.001)	(0.001)
LEVERAGE	0.002***		0.004***	
	(0.000)		(0.001)	
NEGATIVE EQUITY		0.103***		0.108
		(0.036)		(0.119)
CURRENT RATIO	-0.001	-0.004	0.067	0.058
	(0.027)	(0.024)	(0.068)	(0.071)
INTEREST COVERAGE RATIO	0.000	0.001	0.003	0.005
	(0.002)	(0.002)	(0.005)	(0.005)
EXPRESS BANKRUPTCY	-7.225***	-7.216***	-6.430***	-6.453***
	(0.118)	(0.119)	(0.962)	(0.714)
UNEMPLOYMENT RATE	-0.014	-0.013	-0.148***	-0.153***
	(0.011)	(0.010)	(0.035)	(0.038)
BANKRUPTCY RATE	-0.006	-0.006	-0.123*	-0.113
	(0.005)	(0.006)	(0.074)	(0.070)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	7,480	7,613	828	845
Log pseudolikelihood	*-6896.81*	*-7039.50*	*-705.24*	*-724.86*
Period	1 Apr 2009 - 7 Mar 2014	1 Apr 2009 - 7 Mar 2014	1 Oct 2011- 1 Apr 2012	1 Oct 2011- 1 Apr 2012

Estimator: Maximum Likelihood of a log-normal duration model. Dependent variable: log(DURATION)

Clustered standard errors in parentheses. Cluster level: province. *** p<0.01, **

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p<0.05, * p<0.1

Appendix B: impact of the reforms on the duration of bankruptcy procedures

Table B4: impact of the September 2014 reform on the duration of bankruptcy

DEP. VARIABLE	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM SEPTEMBER 2014	0.001	0.002	0.013	-0.002
	(0.105)	(0.097)	(0.102)	(0.096)
LOG(AGE)	0.007	0.008	0.004	0.006
	(0.032)	(0.030)	(0.055)	(0.047)
LOG(TOTAL ASSETS)	0.094**	0.094**	0.057	0.067
	(0.045)	(0.045)	(0.044)	(0.042)
ROA	0.000	-0.001	-0.002	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
TANGIBILITY	0.001	0.002*	0.004***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
LEVERAGE	0.000		-0.000	
	(0.001)		(0.001)	
NEGATIVE EQUITY		-0.000		-0.016
		(0.044)		(0.067)
CURRENT RATIO	0.085*	0.088*	0.119**	0.109*
	(0.046)	(0.046)	(0.057)	(0.058)
INTEREST COVERAGE RATIO	-0.002	0.001	0.004	0.006**
	(0.002)	(0.002)	(0.003)	(0.003)
EXPRESS BANKRUPTCY	-6.923***	-6.912***	-6.935***	-6.929***
	(0.103)	(0.112)	(0.110)	(0.132)
UNEMPLOYMENT RATE	0.022	0.025	-0.021	-0.026
	(0.027)	(0.025)	(0.047)	(0.047)
BANKRUPTCY RATE	-0.020	-0.015	0.022	0.016
	(0.025)	(0.025)	(0.030)	(0.030)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observations	1,864	1,935	806	826
Log pseudolikelihood	-947.47	-996.99	-462.49	-485.56
Period	8 Mar 2014 - 13 June 2016	8 Mar 2014 - 13 June 2016	7 Jun 2014 - 7 Dec 2014	7 Jun 2014 - 7 Dec 2014

Estimator: Maximum Likelihood of a log-normal duration model. Dependent
variable: log(DURATION)

Clustered standard errors in parentheses. Cluster level: province. *** p<0.01, ** p<0.05, * p<0.1

**Appendix C: impact of the reforms on the duration
of bankruptcy procedures, by bankruptcy outcome**
  **Table C1: impact of the 2009
  reform on average duration, by
  bankruptcy outcome**
    Reforma 2009

Dependent variable	OUTCOME OF INTEREST: REORGANISATION			
	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM MARCH 2009	-0.216	-0.573	0.161	-0.220
	(0.618)	(0.664)	(0.658)	(0.656)
LOG(AGE)	-0.453	-0.435	-0.729**	-0.683**
	(0.330)	(0.331)	(0.303)	(0.302)
LOG(TOTAL ASSETS)	-0.221	-0.215		
	(0.157)	(0.188)		
LOG(EMPLOYMENT)			0.209	0.177
			(0.194)	(0.217)
ROA	-0.003	-0.000	-0.005	-0.003
	(0.010)	(0.007)	(0.008)	(0.006)
TANGIBILITY	-0.012*	-0.012*	-0.009	-0.009
	(0.007)	(0.007)	(0.007)	(0.007)
LEVERAGE	0.007		0.009**	
	(0.005)		(0.004)	
NEGATIVE EQUITY		1.009***		1.027***
		(0.242)		(0.219)
CURRENT RATIO	-0.908***	-0.833***	-0.720***	-0.681***
	(0.217)	(0.209)	(0.191)	(0.195)
INTEREST COVERAGE RATIO	0.028*	0.024	0.028**	0.023*
	(0.015)	(0.015)	(0.013)	(0.013)
UNEMPLOYMENT RATE	-0.366*	-0.291	-0.409*	-0.316
	(0.195)	(0.213)	(0.215)	(0.221)
BANKRUPCY RATE	1.475***	1.503***	1.262***	1.261***

PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs	388	395	388	395
Period	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009

OUTCOME OF INTEREST: LIQUIDATION

Dependent variable	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM MARCH 2009	**0.374****	**0.272**	**0.297***	**0.213**
	(0.153)	(0.169)	(0.164)	(0.170)
LOG(AGE)	**-0.004**	**-0.012**	**0.021**	**0.016**
	(0.049)	(0.055)	(0.050)	(0.055)
LOG(TOTAL ASSETS)	**0.208*****	**0.194*****		
	(0.036)	(0.039)		
LOG(EMPLOYMENT)			**0.107****	**0.109****
			(0.047)	(0.046)
ROA	**-0.000**	**0.001**	**0.001**	**0.003***
	(0.002)	(0.001)	(0.002)	(0.002)
TANGIBILITY	**-0.000**	**-0.001**	**0.000**	**-0.000**
	(0.002)	(0.002)	(0.003)	(0.002)
LEVERAGE	**-0.001**		**-0.003***	
	(0.001)		(0.002)	
NEGATIVE EQUITY		**-0.117**		**-0.192****
		(0.075)		(0.084)
CURRENT RATIO	**-0.066**	**-0.084**	**0.000**	**-0.017**
	(0.081)	(0.081)	(0.063)	(0.070)
INTEREST COVERAGE RATIO	**0.000**	**-0.001**	**-0.001**	**-0.002**
	(0.002)	(0.002)	(0.002)	(0.002)
UNEMPLOYMENT RATE	**-0.089***	**-0.060**	**-0.078**	**-0.046**
	(0.051)	(0.043)	(0.052)	(0.045)
BANKRUPCY RATE	**-0.055**	**-0.042**	**-0.051**	**-0.059**
	(0.061)	(0.065)	(0.072)	(0.068)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs	388	395	388	395
Period	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009	31 Dec 2008 - 30 Jun 2009

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Estimator: Maximum Likelihood log-normal
distribution. Dependent variable: log (duration).
Clustering robust standard errors in parenthesis. Clustered by province.
*** p<0.01, ** p<0.05, * p<0.1

Table C2: impact of the 2012 reform on average duration, by bankruptcy outcome
Reforma 2012

	OUTCOME OF INTEREST: REORGANISATION			
Dependent variable	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM MARCH 2012	**-0.421**	**-0.605**	**-0.537**	**-0.706***
	(0.440)	(0.380)	(0.437)	(0.376)
LOG(AGE)	**0.087**	**-0.003**	**0.012**	**-0.073**
	(0.228)	(0.215)	(0.232)	(0.211)
LOG(TOTAL ASSETS)	**-0.327***	**-0.310***		
	(0.097)	(0.105)		
LOG(EMPLOYMENT)			**-0.307****	**-0.288****
			(0.136)	(0.129)
ROA	**-0.010**	**-0.015****	**-0.013***	**-0.018*****
	(0.008)	(0.007)	(0.008)	(0.007)
TANGIBILITY	**0.005**	**0.002**	**0.003**	**-0.001**
	(0.005)	(0.005)	(0.005)	(0.005)
LEVERAGE	**0.019*****		**0.020*****	
	(0.006)		(0.006)	
NEGATIVE EQUITY		**0.876****		**0.891****
		(0.410)		(0.412)
CURRENT RATIO	**0.158**	**0.036**	**0.121**	**-0.023**
	(0.168)	(0.169)	(0.176)	(0.176)
INTEREST COVERAGE RATIO	**-0.013**	**-0.006**	**-0.015**	**-0.009**
	(0.021)	(0.019)	(0.021)	(0.019)
UNEMPLOYMENT RATE	**-0.209****	**-0.220****	**-0.239*****	**-0.249*****
	(0.087)	(0.087)	(0.088)	(0.086)
BANKRUPCY RATE	**-0.180**	**-0.157**	**-0.119**	**-0.099**
	(0.230)	(0.212)	(0.212)	(0.197)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs	828	845	828	845
Period	1 Oct 2011 - 1 Apr 2012	1 Oct 2011 - 1 Apr 2012	1 Oct 2011 - 1 Apr 2012	1 Oct 2011 - 1 Apr 2012
	OUTCOME OF INTEREST: LIQUIDATION			
Dependent variable	(1) LOG(DURATION	(2) LOG(DURATION	(3) LOG(DURATION	(4) LOG(DURATION

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	N)	N)	N)	N)
REFORM MARCH 2012	**0.054**	**0.074**	**0.040**	**0.041**
	(0.174)	(0.146)	(0.158)	(0.152)
LOG(AGE)	**-0.035**	**-0.072**	**-0.007**	**-0.021**
	(0.040)	(0.051)	(0.057)	(0.058)
LOG(TOTAL ASSETS)	**0.197*****	**0.175*****		
	(0.025)	(0.025)		
LOG(EMPLOYMENT)			**0.103*****	**0.095*****
			(0.026)	(0.024)
ROA	**0.002**	**0.001**	**0.004****	**0.003***
	(0.002)	(0.001)	(0.002)	(0.001)
TANGIBILITY	**0.000**	**0.001**	**0.002**	**0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
LEVERAGE	**0.001**		**0.001**	
	(0.001)		(0.001)	
NEGATIVE EQUITY		**0.020**		**0.018**
		(0.098)		(0.093)
CURRENT RATIO	**0.040**	**0.040**	**0.077**	**0.067**
	(0.067)	(0.065)	(0.063)	(0.065)
INTEREST COVERAGE RATIO	**0.002**	**0.003**	**0.004**	**0.004**
	(0.004)	(0.004)	(0.005)	(0.004)
UNEMPLOYMENT RATE	**-0.058****	**-0.072****	**-0.049**	**-0.054**
	(0.026)	(0.029)	(0.033)	(0.034)
BANKRUPCY RATE	**-0.064**	**-0.069**	**-0.054**	**-0.055**
	(0.069)	(0.056)	(0.067)	(0.060)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs	828	845	828	845
Period	1 Oct 2011 - 1 Apr 2012	1 Oct 2011 - 1 Apr 2012	1 Oct 2011 - 1 Apr 2012	1 Oct 2011 - 1 Apr 2012

Estimator: Maximum Likelihood log-normal distribution. Dependent variable: log (duration).
Clustering robust standard errors in parenthesis. Clustered by province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table C3: impact of the September 2014 reform on average duration, by bankruptcy outcome
Reforma 2014, septiembre

	OUTCOME OF INTEREST: REORGANISATION			
Dependent variable	(1) LOG(DURATION)	(2) LOG(DURATION)	(3) LOG(DURATION)	(4) LOG(DURATION)
REFORM SEPTEMBER 2014	**0.121**	**0.114**	**0.114**	**0.110**
	(0.356)	(0.371)	(0.345)	(0.350)
LOG(AGE)	**0.027**	**0.032**	**0.000**	**0.002**
	(0.182)	(0.179)	(0.156)	(0.153)
LOG(TOTAL ASSETS)	**-0.391*****	**-0.367*****		
	(0.090)	(0.088)		
LOG(EMPLOYMENT)			**-0.411*****	**-0.397****
			(0.148)	(0.159)
ROA	**-0.014****	**-0.010***	**-0.015****	**-0.013***
	(0.007)	(0.006)	(0.007)	(0.007)
TANGIBILITY	**-0.005**	**-0.003**	**-0.007**	**-0.006**
	(0.005)	(0.004)	(0.004)	(0.004)
LEVERAGE	**-0.004**		**-0.002**	
	(0.003)		(0.003)	
NEGATIVE EQUITY		**0.092**		**0.064**
		(0.233)		(0.243)
CURRENT RATIO	**-0.045**	**0.036**	**-0.037**	**0.012**
	(0.234)	(0.233)	(0.216)	(0.204)
INTEREST COVERAGE RATIO	**0.023**	**0.023**	**0.014**	**0.015**
	(0.019)	(0.017)	(0.018)	(0.017)
UNEMPLOYMENT RATE	**0.006**	**-0.003**	**0.035**	**0.028**
	(0.140)	(0.146)	(0.137)	(0.143)
BANKRUPCY RATE	**0.053**	**0.046**	**-0.031**	**-0.030**
	(0.101)	(0.105)	(0.126)	(0.129)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Observaciones	806	826	806	826
Periodo	7 Dec 2014-7 Jun	8 Dec 2014-7 Jun	9 Dec 2014-7 Jun	10 Dec 2014-7 Jun

Dependent variable	2014 (1) LOG(DURATION)	2014 (2) LOG(DURATION)	2014 (3) LOG(DURATION)	2014 (4) LOG(DURATION)
	OUTCOME OF INTEREST: LIQUIDATION			
REFORM SEPTEMBER 2014	**-0.076**	**-0.077**	**-0.044**	**-0.060**
	(0.093)	(0.106)	(0.097)	(0.098)
LOG(AGE)	**-0.061**	**-0.076**	**-0.016**	**-0.009**
	(0.066)	(0.070)	(0.064)	(0.066)
LOG(TOTAL ASSETS)	**0.250*** **	**0.255*** **		
	(0.046)	(0.035)		
LOG(EMPLOYMENT)			**0.189*** **	**0.208*** **
			(0.061)	(0.066)
ROA	**-0.000**	**-0.001**	**0.001**	**0.000**
	(0.001)	(0.002)	(0.002)	(0.002)
TANGIBILITY	**0.005** **	**0.003**	**0.004***	**0.005** **
	(0.002)	(0.002)	(0.002)	(0.002)
LEVERAGE	**0.001**		**0.000**	
	(0.001)		(0.001)	
NEGATIVE EQUITY		**-0.031**		**-0.042**
		(0.094)		(0.088)
CURRENT RATIO	**0.134***	**0.213*** **	**0.278*** **	**0.289*** **
	(0.073)	(0.071)	(0.058)	(0.060)
INTEREST COVERAGE RATIO	**0.006***	**0.010** **	**0.012** **	**0.014*** **
	(0.004)	(0.005)	(0.005)	(0.005)
UNEMPLOYMENT RATE	**0.024**	**0.031**	**0.028**	**0.030**
	(0.042)	(0.043)	(0.041)	(0.043)
BANKRUPCY RATE	**-0.031**	**-0.028**	**-0.020**	**-0.012**
	(0.044)	(0.038)	(0.038)	(0.030)
PROVINCE DUMMIES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES
Obs	806	826	806	826
Period	7 Dec 2014-7 Jun 2014	8 Dec 2014-7 Jun 2014	9 Dec 2014-7 Jun 2014	10 Dec 2014-7 Jun 2014

Estimator: Maximum Likelihood log-normal distribution. Dependent variable: log (duration).
Clustering robust standard errors in parenthesis. Clustered by province. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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