

Bankruptcy Delay and Firms' Dynamics*

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Abstract

In this paper we explore the impact of bankruptcy procedure's length on firms' dynamics, using Italy as a case study. Relying on a previous literature dealing with the concept of entrepreneur "friendly" bankruptcy, we stress the idea that bankruptcy institutions, although connected to a painful event for firms, might still yield beneficial consequences on a societal level. In particular we find evidence that quicker judicial resolutions of liquidation bankruptcies have an impact on firms' entry and exit rates in Italy, by reducing the indirect costs that a bankrupt firm must undergo and allowing assets to be allocated in a more efficient way. Such effect seems to be related with firms' organizational structure and size, suggesting that limited liability companies and sole-proprietorship enterprises are not affected by similar concerns as partnerships among entrepreneurs sharing personal liability.

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1 Introduction

Fail fast, fail cheap and move on! This Silicon Valley's motto condenses in a few words the emerging entrepreneurial spirit driving economic forces nowadays. The simple tenet that failure is no more to be considered uniquely as a painful event for entrepreneurs has gained momentum in the scholarly debate, suggesting that bankruptcy might still yield beneficial consequences for society and the economy as a whole. However, in order for these positive effects to emerge, bankruptcy institutions not only need to be well designed. Even the most efficient rule, will turn out to be ineffective if not properly enforced: something ultimately done by the judiciary.

A vast literature has explored the impact of institutions on economic activity (Baumol, 1990; North, 1990; Acs and Szerb, 2006; Chowdhury et al., 2015). Regulatory regimes shape the framework in which entrepreneurs conduct their transactions and thus might substantially affect their propensity to enter or exit markets. However, while most literature has focused its attention on entry regulation (Djankov et al., 2002), not as much has been with respect to those institutions that regulate the final stage of a firm's lifecycle. What we want to show is that although dealing with the exit of businesses from markets, such institutions might equally affect the entry of perspective entrepreneurs.

This is particularly true for corporate bankruptcy law, since it regulates a very crucial moment in firms' lives: the formalization of an entrepreneurial failure and the transfer of all assets to creditors. However, even from this painful event, might still derive beneficial returns on the societal level. Previous works have theorized that entrepreneur "friendly" bankruptcy regimes have a positive impact on markets' dynamics by encouraging firms to engage risks and entry markets (Lee et al., 2007; Peng et al., 2010; Lee et al., 2011). At the same time such regulation, by stimulating competition, helps pushing unproductive firms out of the markets more smoothly, thus allowing a more efficient allocation of their assets.

We focus on Italy as a case study in order to provide empirical evidence of these claims. From an historical perspective, Italy is a significant country for the purpose of studying bankruptcy institutions. Not only the very first form of insolvency

rule dates back to ancient roman law¹, but also the etymological origin of the word “bankruptcy” comes from the Italian *banca rotta*: the act of breaking the trading benches of insolvent merchants in medieval Italy. Unfortunately, nowadays Italy has become relevant with respect to this issue for other (and less positive) achievements. Both the OECD, the World Bank and the European Union have acknowledged Italy as the worst ranked country (at least among European ones) when it comes to the performance of its judiciary. In this framework, bankruptcy lawsuits are not exempt from delays. In 2005 it took on average 9.7 years to conclude a (liquidation) bankruptcy procedure, thus motivating a legislative intervention aiming to reform the law according to an efficiency-oriented criterion in 2006. At the same time Italy is equally not experience much dynamism on markets with both entry and exit rates well below the EU average according to Eurostat. Our identification strategy allows us to restrict to the judicial enforcement of bankruptcy law, its only dimension affecting the entrepreneur “friendliness” across Italy. Accordingly, by sharing from previous works dealing with judicial performance and entrepreneurship (Chemin, 2009; Ippoliti et al., 2015; García-Posada and Mora-Sanguinetti, 2015a), we focus on the issue of how judges enforce bankruptcy regulation. The idea to be tested is the following: a “faster” court-system will help make the bankruptcy regulation more “entrepreneur-friendly” and thus foster dynamism in firms’ entry and exit rates.

Although bankruptcy accounts only for 10% of all firms exiting markets (bankruptcy is only one of the possible “terminal” phases in a firm’s life cycle), we want to account for the impact of the judiciary on exit, which is ultimately caught only by firms that pass through legal procedures like bankruptcy. In other words, we wish to isolate how many perspective firms are prevented from entering the markets or insolvent businesses are prevented from exiting because of a too long bankruptcy procedure.

In order to disentangle this mechanism we employ a unique dataset accounting for bankruptcy delays in the 165 Italian first-instance tribunal districts between 2005 and 2011. This dataset has been merged with firms’ dynamics figures and other control variables accounting for markets’ characteristics. From the empirical analysis conducted, we validate the insights proposed by the entrepreneur “friendly”

¹The *partes secanto* institution, disciplined by the XII Tables (450 BC).

bankruptcy theory. We find evidence of the impact exerted by the bankruptcy system's enforcement on firms' entry and exit rates across Italy. Interesting results emerge from our empirical analysis, suggesting that such effect might have a different role in incentivizing risk between limited liability companies and personally liable entrepreneurs.

The remainder of the paper is organized as follows. Section 2 discusses the theoretical premises behind entrepreneurship "friendly" bankruptcy systems. Section 3 advances our specific research question, with respect to the impact of bankruptcy delay in the Italian judiciary on firms' entry and exit, proposing a quick picture of the national institutional framework. Section 4 describes the identification strategy and data used in the empirical analysis and its results. Conclusions are drawn in Section 5.

2 Theory: entrepreneur "friendly" bankruptcy

Bankruptcy law is an institutional solution to the coordination problem that creditors of an insolvent debtor face. By organizing in a unique procedure that centralizes all claims towards the bankrupt's assets, the legal system avoids creditors' rush to get as soon as possible their money back, thus lowering the overall amount of transaction costs relating to a bankruptcy (Armour and Cumming, 2008). Accordingly, an efficient overall solution ought to be achieved.

Although it sounds like an oxymoron, the recent scholarly debate has tried to stress the beneficial role that bankruptcy institutions might determine for economic activity. As Frank Borman² elegantly emphasized: *capitalism without bankruptcy is like christianity without hell*. In this sense, several works have theorized how bankruptcy law could perhaps be even entrepreneur "friendly" (Lee et al., 2007; Peng et al., 2010; Lee et al., 2011). A well-designed bankruptcy system stimulates entrepreneurship by lowering not only exit barriers but also entry ones, thus mak-

²Retired NASA astronaut and former CEO of Eastern Air Lines, company that went bankrupt in 1989.

ing markets more dynamic³. Although one might imagine bankruptcy law as the set of rules of “end of the (business) game”, such institutions equally affect the entry of firms. Accordingly, not only a well-functioning bankruptcy regime makes the transition of insolvent firms out of markets smoother, but at the same time it incentivizes risk-taking of perspective entrepreneurs, thus stimulating their entry. Of course, what a more friendly bankruptcy law will not do is to eliminate the likelihood of failing: it will only decrease the side damages related to such event (Fossen, 2014).

This stream of literature⁴ has identified several determinants of the friendliness towards economic activity of a bankruptcy regime: i) availability of a reorganization option, ii) fresh start after liquidation, iii) temporal length of bankruptcy procedure, iv) direct costs, v) automatic stay of assets and vi) incumbent managers not forced to leave. All these elements have been proved to have an impact on entrepreneurship (Lee et al., 2011).

3 Bankruptcy Delay

For the purposes of this paper, we concentrate our attention uniquely on one aspect: the time needed to conclude a bankruptcy procedure. Accordingly, we define as “bankruptcy delay” (BD) the time needed by a court to solve a bankruptcy case from the moment a firm is declared formally bankrupt to the moment in which the fresh start is available. This approach rests on the fact that across Italy all the other aforementioned features that make bankruptcy law entrepreneur “friendly” are invariant with the only exception of time. A reorganization form of bankruptcy (alike the US Chapter 11) is formally contemplated by the law (*Concordato Preventivo*), but is very rarely used: in the considered timespan every tribunal has received on average only twelve such cases per year, with over 30% of all courts ob-

³Previous literature has emphasized the importance of dynamic markets for a vibrant economy. With respect to entry, it has been shown how the related risk-taking stimulates competition and, consequently, innovation (Feldman and Audretsch, 1999). At the same time, the exit of firms is equally necessary for economic growth, since expelling obsolete activities allows a more efficient allocation of assets (Audretsch, 1991).

⁴Apart the already cited Lee et al. (2007), Peng et al. (2010), Lee et al. (2011), also other papers have focused their attention on the impact of bankruptcy law on entrepreneurship (Armour and Cumming, 2008; Ayotte, 2007; Fossen, 2014; Rohlin and Ross, 2016; Jia, 2015).

served not receiving any cases in a year. Being this institutional option so seldom adopted, we will concentrate our attention only on liquidation bankruptcy. The other features are all disciplined by the national law, thus being uniform across Italy⁵.

Focusing on the notion of bankruptcy delay as defined *supra*, it is relatively straightforward to conclude that, the longer a procedure will last, the more detrimental its effect will be for all firms. This is true not only for the insolvent ones, but also for the other incumbent firms and for the perspective businesses that ought to enter markets. The intuition is that longer delay will raise barriers to entry and exit and thus make markets less dynamic (Lee et al., 2011). The rationale behind this insight is that not only the “direct” costs related to a bankruptcy procedure must be contemplated: legal expenses, court fees and taxes. Such costs tend to be uniform across Italy and should not be dependent on a procedure’s length⁶. For our purposes, what really matter are “indirect” costs, since they tend to raise as a bankruptcy case drags on (Bebchuk, 2000; Bris et al., 2006). Several elements concur to determine such indirect costs. First of all, the formal and legal consequences that bankrupt entrepreneurs have to bear on a personal level. Not only they are not able to start a new firm until the procedure does not end, but they equally face many legal restrictions attached to their specific status⁷, that limit their possibility of making economic transactions. A bankrupt entrepreneur loses the possession of all assets interested by the procedure and all transactions that exceeds the strict personal necessities are to be considered void. Also the social stigma component attached to bankruptcy will bind more as such procedures are extended in time (Simmons et al., 2014). It is very common that aside the civil case dealing with the liquidation of the bankrupt assets, also criminal investigation are automatically initiated in order to find out whether the premises

⁵It is worth saying for purposes of clarity, that the Italian law does only contemplates corporate bankruptcy and not also a form of personal bankruptcy procedure.

⁶The only possible exception might be related to lawyers’ fee. However, we expect higher fees in wealthier parts of Italy: accordingly, by controlling for income levels, we should make this issue non-troublesome.

⁷For example, until the 2006 reform, bankrupt entrepreneurs were not allowed to vote in political elections.

of a bankruptcy fraud exists⁸. Zooming out from individuals' costs to the societal level, lengthy procedures will determine the delay of a more efficient allocation of resources, thus keeping assets frozen and preventing them from being redirected to more appropriate uses.

As a consequence, we hypothesize in line with Peng et al. (2010), the overall effect of bankruptcy delay on entry rate to be negative. As the temporal length of a bankruptcy procedure increases, the indirect costs that a perspective entrepreneur might anticipate as necessary to bear in case of insolvency equally raise.

At the same time, we have equally seen above the importance of insolvent firms to exit markets in order to allow more productive use of their assets. However, as the indirect costs related to bankruptcy raise (together with bankruptcy delay), insolvent (and potentially bankrupt) entrepreneurs become reluctant to bear such consequences and thus prefer to operate at a financial loss instead (Gimeno et al., 1997). It turns out that bankruptcy delay ought to have a negative effect also on exit rates (Lee et al., 2007), thus hindering dynamism on markets both in their entry as in their exit. We are not willing to claim here that a fast bankruptcy system is more favorable towards creditors or debtors (Claessens and Klapper, 2005). On the contrary we believe this as a sort of “win-win” situation: with short delays creditors get their money back before, while failed entrepreneurs might have their fresh start earlier.

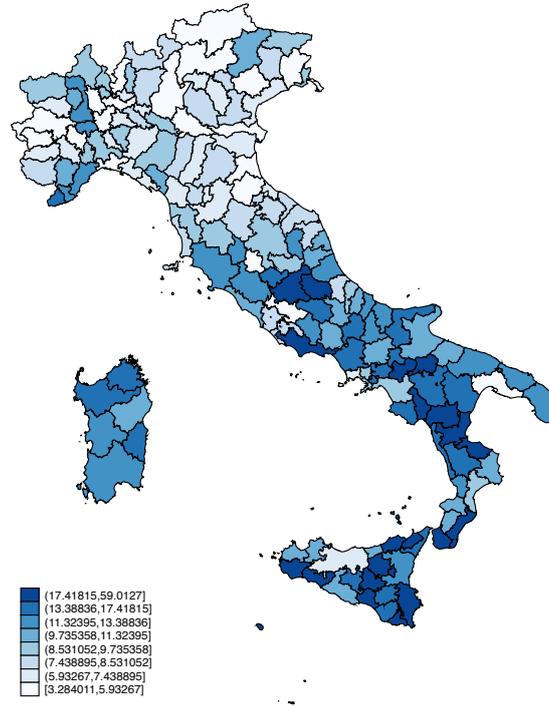
4 Empirical Analysis

4.1 Identification Strategy

Our empirical strategy to assess the impact of bankruptcy law on entrepreneurship, differs from that of previous works. Peng et al. (2010) and Lee et al. (2011), choose a cross-country approach, studying the impact of the aforementioned characteristics (judicial delay included) of a “friendly” bankruptcy law on entrepreneurship (either measured as levels of self-employment or more general firms' entry rates).

⁸According to the Italian law, there are two distinct institutions for disciplining the civil consequences of bankruptcy (*fallimento*) and the connected crime (*bancarotta*), which consist in the attempt to alter the bankrupt assets in order to avoid the bankruptcy consequences.

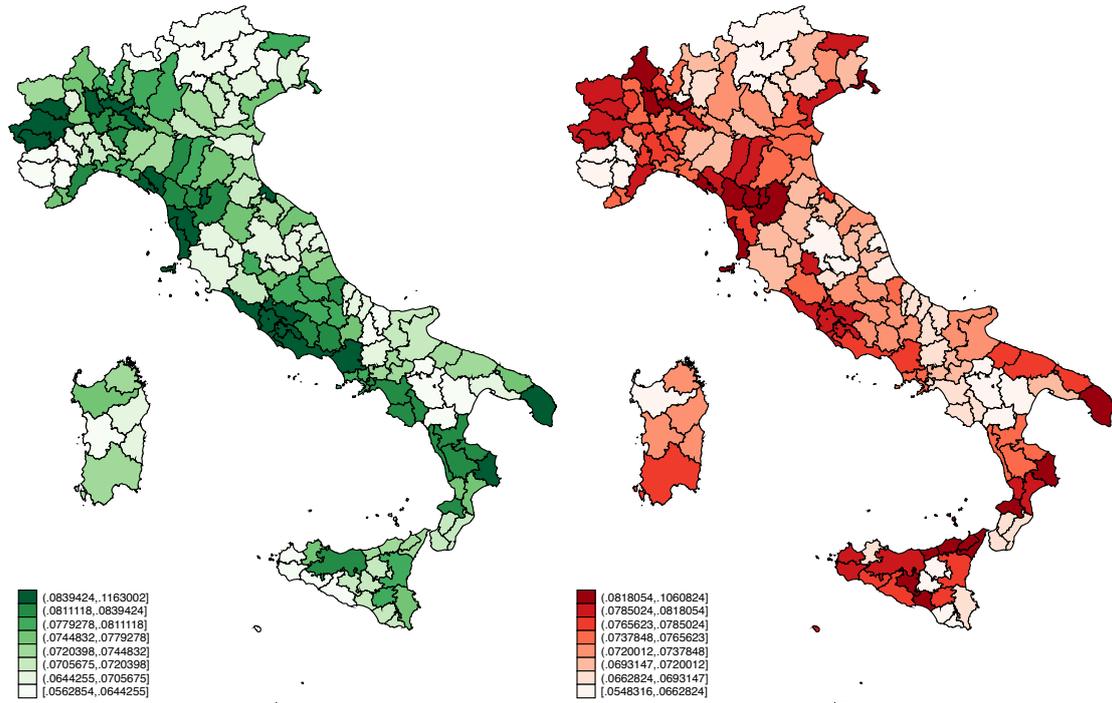
Figure 1: Bankruptcy Delay (avg 2005-2011)



While such empirical strategy allows to supply a global picture of this phenomenon, we believe it to be a “sub-optimal” one: without adequate controls (or country-level fixed effects) accounting for countries’ different legal systems’ characteristics, results might be biased. This is because judicial delay could be correlated with unaccounted factors such as the complexity of the legal system, the “industrial” organization of the judiciary or the litigation culture behind the national demand of justice.

A better approach is to focus on differences within a single country, where the overall legal system is hopefully uniform and thus one might identify to a better extent the impact of bankruptcy law’s specific characteristics (as judicial delay) on entrepreneurship. Fossen (2014) and Rohlin and Ross (2016) have chosen this approach, respectively exploiting an exogenous shock in German national law (a legislative reform introducing “fresh start” policy) or differences in homestead exemptions across US state law. However, to our very best knowledge, no previous work has attempted to focus specifically on the impact of bankruptcy delay on

Figure 2: Entry and Exit Rates (avg 2005-2011)



firms' demography by concentrating on a single country.

As mentioned above, we believe the latter identification strategy to be more efficient. All the other features that characterize the degree of “friendliness” of the substantial bankruptcy law (reorganization option, direct costs, fresh start, exemptions and managers' fate) are fixed, since disciplined by the national law. Also the judicial procedure is equally uniform, thus leaving to the actual enforcement (expressed in terms of bankruptcy judicial delay) the only source of variance⁹. Accordingly, our unit of observation is the geographical area coinciding with the first-instance civil tribunal's district.

As emerges from Figure 1, bankruptcy delay tends to vary significantly across Italy according to the well-known North *vs.* South divide, with southern tribunals performing relatively worse with respect to the northern ones (*i.e.*, necessitate

⁹Of course, one might refer to other “qualitative” aspects, such as potential judicial biases in decision-making. However, as emphasized by previous works (Melcarne and Ramello, 2015), these aspects are not reported in official records and thus very hard, if not almost impossible, to quantify.

more time to dispose the same type of bankruptcy procedure). In this sense, by comparing Figures 1 and 2 some preliminary (though very rough) evidence of our predictions of a negative correlation between bankruptcy delay and firms' dynamics emerges. However, such broad picture does not allow to infer any causal relation, since it is well-known that the northern part of Italy is not only more dynamic in terms of firms' entry and exit, but also generally wealthier. This could imply that northern tribunals might be more effective in their task of disposing bankruptcy cases just because of their "geographical" advantage. In order to overcome this potential bias, we account in our empirical analysis for a number of controls that capture the differences in the socio-economic environment in which firms operate. Moreover, we exploit the panel structure of our data and adopt a fixed effect strategy. Accordingly, both year dummies and tribunal circuit dummies are introduced in our econometric models. The former are meant to capture shocks affecting the national economy. Since the considered timespan includes periods both preceding and following the burst of the 2008 financial crisis, this strategy might seem appropriate. At the same time we also introduce tribunal level fixed effects in order to account for all other "informal" determinants of firms' dynamics that it is reasonable to expect will not change in a seven years period. Accordingly our baseline model is the following:

$$y_{i,t} = \beta BD_{i,t} + \mathbf{X}'_{i,t} \theta + \delta_i + \alpha_t + u_{i,t} \quad (1)$$

where y represents either the entry or exit rate for the geographical unit i in year t , δ_i are tribunal fixed effects, α_t year fixed effects and $u_{i,t}$ the stochastic term. BD is our variable of interest and we expect negative values of β s. \mathbf{X} is a vector of controls accounting for factors that might change over time. A description of all variables can be found in Table 1.

4.2 Data

As mentioned above our empirical analysis covers the timespan between 2005 and 2011. The units of observation are the 165 first instance tribunals¹⁰ that have jurisdiction over liquidation bankruptcy of firms¹¹. Such geographical level is slightly more disaggregated than the provincial one (NUTS 3 level): in most cases the tribunal district coincides with the administrative province, while various provinces have several judicial districts within their borders¹². Accordingly, when data was not provided at the judicial district level, in most cases we were able to disaggregate it at the municipal level and further re-aggregate it at the district level. When this option was not available, we considered only variables that represented territorial rates. Although this is not a “first-best” option, we believe it should not bias the results dramatically for two reasons. First, this problem accounts only for 37 provinces out of 110. Second and most important, Italian provinces are relatively small (both in terms of population and territorial extension) and uniform so that it is reasonable to assume that socio-economic variables, do not vary significantly within a province border.

The dependent variables of our regression models are alternatively the entry/exit rates of firms calculated as the ratio between the number of firms entering/exiting the markets over the number of businesses active in a province. Thanks to data availability we were able to estimate different firm dynamics’ measures depending on the different entrepreneurial model that businesses might choose. Accordingly, we run separate models testing respectively the impact of bankruptcy delay on incorporated firms with limited liability (*società di capitali*), collective firms/partnerships of several personally liable entrepreneurs (*società di persone*) and individual firms/sole proprietorship (*ditte individuali*). Apart from the fact that in Italy, the latter category accounts for almost twice as much as the other

¹⁰According to a legislative reform passed in 2011, the number of courts has been reduced to 140 with the consequent merge of several districts together. However, the actual application of this reform only started in the last quarter 2013, thus leaving our considered time period unaffected.

¹¹When a business is declared bankrupt, the procedure is carried by the tribunal that has territorial jurisdiction in the geographical area where the firm had its main center of activity; no “forum shopping” is allowed.

¹²The opposite does not hold: there is no single judicial districts with jurisdiction over multiple provinces.

two combined, thus making an aggregation of all firms not very relevant, also the legal differences among the tree types must be acknowledged. Although we do not express any *a priori* belief, we believe that differences in the liability rules and corporate structure might interact to a different extent with the aforementioned theoretical conjectures.

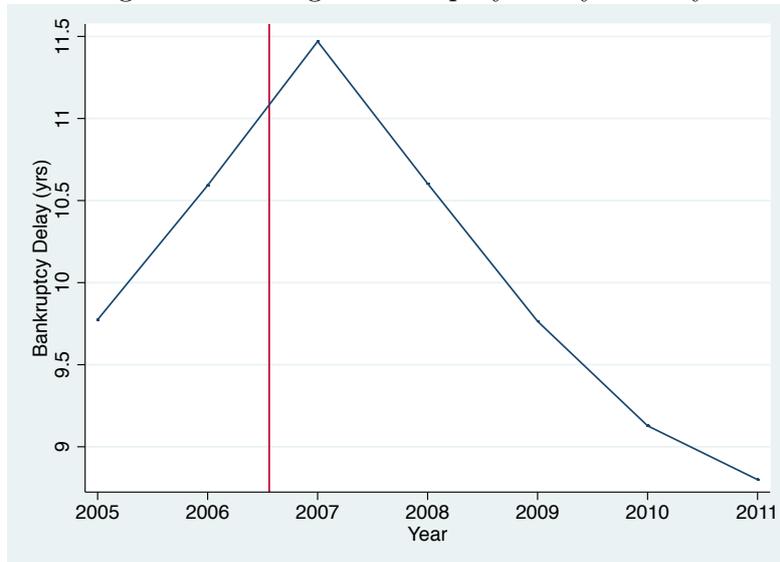
Our main variable of interest is bankruptcy delay (BD). It measures the average amount of time (expressed in years) that a bankruptcy procedure will necessitate to be concluded in a given tribunal/year. In order to compute this measure we employ data directly supplied by the Ministry of Justice, representing the actual workload carried on in courts: more precisely,

$$BD_{i,t} = \frac{pending_cases_{i,t-1} + pending_cases_{i,t}}{incoming_cases_{i,t} + solved_cases_{i,t}} \quad (2)$$

In this respect, we believe that our measure of BD is relatively more accurate than those based on survey data as the one supplied by the World Bank’s Doing Business project (Peng et al., 2010; Lee et al., 2011). As emerges from Figure 1 and Table 3, BD tends to vary across Italy. An unavoidable lower bound is due to the necessary time needed to accomplish all the procedure: thus no tribunal is able to conclude in less than 1.8 years. However, while the overall average is just above 10 years, some tribunals take up to 24.6 years to conclude the very same procedure. For purposes of data homogeneity we have dropped the top 5% of observations. Very high values in BD might have been due to the sensitivity of our measure. One exogenous shock as, for example, the promotion, maternity leave or transfer of a couple judges in a small tribunal composed of 6 judges, would dramatically reduce the number of solved cases and thus lead to unrealistic high delays. For this reason such observation were excluded from our empirical analysis.

A number of controls are considered in order to account for other socio-economic factors that we believe might vary over time within a single geographic unit. With respect to the general economic situation within a judicial district, we control for the average income and unemployment rate. To control for financial availability we account for the density of bank branches. We control for factors that might influence the industrial structure, such as the average indebtedness and production and added value of firms operating in a district and the relative weight that the

Figure 3: Average Bankruptcy Delay in Italy



construction and services sectors respectively represent in the considered territorial units. In order to account for other judiciary related factors, we control for the “general” judicial delay and the density of lawyers. Finally, we introduce a dummy trying to capture the effect of the efficiency-oriented legislative reform of bankruptcy law enacted in 2006. For the purposes of this work, we are not directly interested in the effect of the reform: moreover the available data only goes back to 2005. However, as emerges from Figure 3, a reduction of delay has occurred after the enactment of the reform. Accordingly, accounting for the changes in the bankruptcy law consequent to such legislative act seems appropriate.

4.3 Results and Discussion

Table 4 reports the results of our empirical analysis. For purposes of simplicity we only reports bankruptcy delay’s coefficients(the β s in Equation 1)¹³. Accordingly, empirical evidence seem to support the fact that BD has an impact of firms’ dynamics, depending on the organizational structure that businesses choose. More specifically, bankruptcy delay has a negative (as expected) and significant impact on the entry and exit rates of partnerships of multiple entrepreneurs sharing to-

¹³Table A.2 reports the estimated coefficients of all independent variables.

Table 1: Variables Description

| Variable | Description | Source | Unit |
|-----------------------|--|------------------------|-------------------|
| DEPENDENT VARIABLES | | | |
| Entry Rate | Firms entry rate | Firms' register office | Province |
| Exit Rate | Firms exit rate | Firms' register office | Province |
| VARIABLES OF INTEREST | | | |
| Bankruptcy Delay (BD) | Avg. years to solve bankruptcy case | Ministry of Justice | Judicial District |
| CONTROLS | | | |
| Judicial Delay | Avg. days to solve civil case | Ministry of Justice | Judicial District |
| Unemployment | Unemployment rate | ISTAT | Province |
| Income | Avg. Income per capita | ISTAT | Province |
| Bank Branches | # bank branches per capita | BankItalia | Province |
| Lawyers | # lawyers per 10000 people | Ministry of Justice | Judicial District |
| Added Value | Avg. added value of firms production | Aida | Judicial District |
| Production Value | Avg. value of firms production | Aida | Judicial District |
| Debts | Avg. vale of firms' indebtedness | Aida | Judicial District |
| Construction Sector | % of construction firms | Firms' register office | Province |
| Services Sector | % of services firms | Firms' register office | Province |
| Reform | Dummy = 1 if Bankruptcy reform already enacted | Firms' register office | Judicial District |

Table 2: Descriptive Statics - Dependent Variables

| Variable | | Mean | Std. Dev. | Min. | Max. | N |
|------------|--------------------|-------|-----------|-------|-------|------|
| Entry Rate | Incorporated firms | 0.114 | 0.032 | 0.038 | 0.287 | 1155 |
| | Collective firms | 0.068 | 0.024 | 0.018 | 0.206 | 1155 |
| | Individual firms | 0.073 | 0.015 | 0.036 | 0.156 | 1155 |
| Exit Rate | Incorporated firms | 0.052 | 0.022 | 0.013 | 0.199 | 1155 |
| | Collective firms | 0.073 | 0.038 | 0.016 | 0.327 | 1155 |
| | Individual firms | 0.08 | 0.017 | 0.038 | 0.19 | 1155 |

Table 3: Descriptive Statics - Independent Variables

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|---------------------|-------------|-------------|------------|-----------|------|
| Bankruptcy Delay | 10.001 | 4.633 | 1.815 | 24.6 | 1037 |
| Judicial Delay | 6.83 | 0.327 | 5.485 | 7.724 | 1037 |
| Income | 11250.721 | 3166.563 | 4136.27 | 19813.832 | 1037 |
| Unemployment | 7.782 | 4.103 | 1.855 | 19.224 | 1027 |
| Lawyers | 26.746 | 13.895 | 6.969 | 76.943 | 1037 |
| Bank Branches | 0.002 | 0.002 | 0 | 0.026 | 1025 |
| Production Value | 5348228.176 | 4025146.162 | 473017.563 | 39678672 | 1037 |
| Added Value | 1146178.31 | 806607.88 | -5289269.5 | 5244168 | 1037 |
| Debts | 3535591 | 2615052 | 265084.2 | 2.92e+07 | 1037 |
| Construction Sector | 0.152 | 0.031 | 0.087 | 0.249 | 1037 |
| Services Sector | 0.525 | 0.082 | 0.351 | 0.734 | 1037 |
| Reform | 0.717 | 0.45 | 0 | 1 | 1037 |

Table 4: Regression results

| | Entry Rate | | Exit Rate | |
|---------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | (1) | (2) | (3) | (4) |
| Incorporated firms | | | | |
| BD | 1.57e-05 (0.000183) | 4.48e-05 (0.000164) | 3.34e-05 (0.000235) | 2.63e-05 (0.000232) |
| R-squared | 0.554 | 0.650 | 0.056 | 0.121 |
| Collective firms | | | | |
| BD | -0.000336*** (0.000121) | -0.000348** (0.000143) | -0.000966*** (0.000355) | -0.000934** (0.000431) |
| R-squared | 0.512 | 0.578 | 0.188 | 0.217 |
| Individual firms | | | | |
| BD | -9.40e-06 (6.70e-05) | 3.08e-06 (6.22e-05) | -0.000370** (0.000156) | -0.000363* (0.000191) |
| R-squared | 0.140 | 0.220 | 0.147 | 0.177 |
| Controls | NO | YES | NO | YES |
| District FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |
| Number of Districts | 158 | 158 | 158 | 158 |
| Observations | 1,037 | 1,025 | 1,037 | 1,025 |

OLS estimates. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

gether their personal liability. The same is not true for limited liability companies, whose entry and exit rates are not significantly influenced by BD, while for the case of sole-proprietorship only exits seem to be affected.

Our interpretation is that such differences might be ascribed to the different liability rules and business magnitude. In the case of incorporated businesses, limited liability prevents entrepreneurs that choose this form of economic activity to be involved with their personal assets in the case of bankruptcy. They simply loose the invested “sunk” capital, and might be thus less subject to the “indirect” costs of bankruptcy as described above. The same is not true for the entry of individual entrepreneurs that do not choose to incorporate their business, thus remaining personally liable in the case of bankruptcy. In this case we believe that a different motivation might hold: such individual firms are often very small in terms of activity and investments. Our guess is that such business sizes might often not meet the bankruptcy law’s minimum requirements for a firm to go bankrupt; and even when reaching such limits, there might be an underestimation of the costs related to bankruptcy.

While the coefficients seem vary small and rather incomprehensible, we wish to quantify the estimated effect with more understandable figures. In the case of collective firms, we estimate that every additional day of bankruptcy delay prevents on average the entry of 5 firms and the exit of 13 firms in Italy every year. In the case of sole-proprietorships, every additional day is associated with a reduction of 4.6 firms from exiting the markets. While these numbers might seem small it is worth to remember that bankruptcy delay varies to a great extent across Italy (from 1.8 to 24 years), thus even a one-year reduction could determine a change in thousands of firms entering or exiting markets.

A few words deserve to be spent in order to discuss the robustness of our results. First of all, multicollinearity should not be an issue. As emerges from Table A.1, our variable of bankruptcy delay is not severely correlated with any of the other covariates. Moreover, even accounting for the possible correlation of BD with the dummies capturing year and districts’ fixed effect, the estimated Variance-Inflation Factor (VIF) is equal to 3.21, well below the value of 10, the threshold usually adopted as a rule-of-thumb for detecting multicollinearity problems.

A second concern might deal with potential issues of reverse causality, *i.e.*, entry

and exit rates having an impact on bankruptcy delay. In the case of entry, this would hold only if firms undergo a bankruptcy procedure in their first year of activity. According to the Italian national bureau of statistics (ISTAT), in the considered time period, the survival rate of firms in their first year of life has been around 90%. Moreover, in order to be declared bankrupt, a preliminary procedure must ascertain firms' insolvency: this phase lasts on average 4 months. As a consequence, only firms failing in their first 8 months of activity ought to be a problem, thus making the issue not a relevant concern. With respect to exit, the possibility of reverse causality is equally unlikely. In this case, in order to be a cause of concern, firms should exit markets (go out of business and sign out of the public firms' registry) and later be declared bankrupt within the same solar year. Although this is something formally possible according to the bankruptcy law¹⁴, it is equally unlikely since the two moments are usually simultaneous: it is most likely that exit is a consequence of bankruptcy and not vice versa. However, it is worth mentioning that, even to the extent that causality could run backwards, we know its sign: we expect a positive impact of both entry and exit rates on BD. If the entry rate raises, the total amount of active firms increases. If one assumes that in this bigger cohort of firms the bankruptcy rate does not decrease, this would determine an increment in the absolute number of bankruptcies. Since one can expect that the judiciary's productivity cannot adjust instantly to similar shocks, it is reasonable to conclude that higher entry would lead to higher workload for judges and, ultimately, to longer delays. The same rationale can be applied to an increase in exit rates. Accordingly, since our estimates show a negative coefficient, we can conclude that either the bias is not existing or, even if there, it is not too large to offset the theorized causal effect of bankruptcy delay on firms' dynamics (García-Posada and Mora-Sanguinetti, 2015b).

In order to further strengthen the robustness of our estimates we considered another potential issue. Since the rate of entry in year t is positively correlated with the exit rate in year $t - 1$ (Lee et al., 2011), we estimated models (1) and (2) including as a control the exit rate in the previous year: results are not affected.

¹⁴A firm might be declared bankrupt until one year past the end of its economic activity.

5 Concluding Remarks

Failure indeed represents a painful and dramatic event in the life cycle of a firm. However, if the institutional setting in which these events occur is well-designed and properly enforced, also bankruptcies can yield beneficial consequences for societies. This is exactly what is meant by the term entrepreneur “friendly” bankruptcy law. Previous works have highlighted how differences in risk-taking and entrepreneurship levels might be explained by various characteristics of bankruptcy law. The main findings of this stream of literature is that, although bankruptcy is commonly considered as an institution regarding the “exit” of firms from markets, it is also relevant for their “entry”.

Among the various elements that define the friendliness towards entrepreneurship of a bankruptcy system, we were able to identify the temporal length of its judicial enforcement as the only component varying within Italy. We have stressed how longer judicial delays should determine an increase in the “indirect” costs attached to bankruptcy and a relatively less efficient allocation of resources. Accordingly we have hypothesized a negative effect of bankruptcy delay on firms’ entry and exit. In order to test such conjecture we have employed data on judicial enforcement of bankruptcy procedures from the 165 first-instance civil tribunals in Italy. Our results suggest that bankruptcy delay prevents both perspective firms to enter markets and insolvent business to exit. However, the significance of this effect depends on the entrepreneurial form of business. Either mixed or insignificant results are found for incorporated limited liability companies or sole-proprietorships. On the contrary, partnerships of multiple entrepreneurs sharing personal liability seem to be the economic activities mostly influenced by differences in the friendliness of bankruptcy law. This can be explained by the fact that collective firms are the ones more likely to be affected by the consequences of a bankruptcy procedure. Their business magnitude is greater than the one of self-employed, thus more is at stake. However, the fact that such entrepreneurs share their personal liability makes their activity more risky and thus more likely to be influenced by the harsh consequences of a bankruptcy.

Our results do not allow us to infer that bankruptcy delay discourages one form of entrepreneurship in favor of another. However, we might claim that it has an

impact on the industrial structure and, in particular, on an intermediate form of economic activities such as partnerships. If this is so, our results would concur to explain the peculiarities of the Italian national industrial structure, overwhelmingly characterized by small enterprises usually taking the form of self-employment. In this sense, one potential speculation is that the unfriendliness of bankruptcy towards partnerships might act as a sort of barrier for individual entrepreneurs to merge their activities and reach bigger scales, eventually incorporating their businesses. Accordingly, one might interpret the choice of sole-proprietorship also as a “defensive” reaction of perspective entrepreneurs to the imperfections of the institutional system.

From a policy-oriented perspective, our results suggest that further reductions of the judicial delay of bankruptcy procedures ought to be a goal to achieve in public sectors’ reforms. In this sense, the previous attempts go in the right direction. As mentioned earlier the 2006 reform of the bankruptcy law, that has simplified the procedure, has made small (but consistent) improvements over time. However, the gap that divides Italy from other developed countries when it comes to judicial performance is still far too wide and thus, more needs to be done. It is still too early to assess the impact of the 2011 reform of the judiciary’s organization that, according to the intention of the legislator, was meant to boost judges productivity, since the actual enactment only took place in the end of 2013 and data is not yet available. But this leaves space for further research to assess whether this reform has actually mitigated bankruptcy costs for entrepreneurs.

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A Appendix: additional tables

Table A.1: Cross-correlation Matrix

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|-------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|
| (1) Bankruptcy Delay | 1.00 | | | | | | | | | | |
| (2) Judicial Delay | 0.33 (0.00) | 1.00 | | | | | | | | | |
| (3) Income | -0.44 (0.00) | -0.52 (0.00) | 1.00 | | | | | | | | |
| (4) Unemployment | 0.40 (0.00) | 0.51 (0.00) | -0.74 (0.00) | 1.00 | | | | | | | |
| (5) Lawyers | 0.21 (0.00) | 0.48 (0.00) | -0.43 (0.00) | 0.55 (0.00) | 1.00 | | | | | | |
| (6) Bank Branches | -0.05 (0.07) | -0.06 (0.04) | 0.03 (0.33) | -0.07 (0.02) | -0.24 (0.00) | 1.00 | | | | | |
| (7) Production Value | -0.19 (0.00) | -0.35 (0.00) | 0.45 (0.00) | -0.45 (0.00) | -0.26 (0.00) | -0.03 (0.28) | 1.00 | | | | |
| (8) Added Value | -0.17 (0.00) | -0.39 (0.00) | 0.51 (0.00) | -0.51 (0.00) | -0.32 (0.00) | -0.06 (0.04) | 0.87 (0.00) | 1.00 | | | |
| (9) Construction Sector | -0.31 (0.00) | -0.38 (0.00) | 0.66 (0.00) | -0.61 (0.00) | -0.44 (0.00) | 0.02 (0.55) | 0.25 (0.00) | 0.30 (0.00) | 1.00 | | |
| (10) Service Sector | -0.16 (0.00) | 0.00 (0.93) | 0.23 (0.00) | 0.04 (0.18) | 0.15 (0.00) | 0.20 (0.00) | 0.03 (0.35) | 0.03 (0.26) | 0.25 (0.00) | 1.00 | |
| (11) Reform | -0.03 (0.29) | 0.08 (0.00) | 0.12 (0.00) | 0.02 (0.51) | 0.06 (0.03) | 0.01 (0.62) | -0.06 (0.05) | -0.08 (0.01) | 0.17 (0.00) | 0.10 (0.00) | 1.00 (0.00) |

p-values in parenthesis.

Table A.2: Regression results: all variables

| VARIABLES | Corporations | | Partnerships | | Sole-Proprietorship | |
|---------------------|-------------------------|----------------------------|---------------------------|----------------------------|---------------------------|---------------------------|
| | entry | exit | entry | exit | entry | exit |
| Bankruptcy Delay | 4.84e-05 (0.000175) | 5.43e-06 (0.000284) | -0.000348** (0.000143) | -0.000934** (0.000431) | 6.63e-06 (7.03e-05) | -0.000363* (0.000191) |
| Judicial Delay | -0.0123*** (0.00470) | -0.00744* (0.00402) | -0.00189 (0.00346) | -0.0142 (0.0125) | -0.00360*** (0.00120) | -0.00214 (0.00340) |
| Income | 2.02e-06 (4.41e-06) | -2.38e-06 (6.02e-06) | 6.41e-06** (2.97e-06) | -1.83e-05*** (6.53e-06) | 2.77e-06** (1.35e-06) | 2.72e-06 (4.21e-06) |
| Unemployment | -0.000188 (0.000445) | -0.000464 (0.000602) | 0.00105** (0.000413) | -0.00155 (0.00110) | -0.000414** (0.000207) | -0.000842** (0.000399) |
| Lawyers | -0.000122 (0.000475) | 0.000760 (0.000716) | -0.00133*** (0.000366) | -0.00305** (0.00119) | 0.000364*** (0.000138) | 0.000323 (0.000593) |
| Bank Branches | -48.59*** (4.774) | -30.82*** (5.147) | -13.71*** (2.283) | -19.61*** (6.487) | -1.978*** (0.589) | -4.456 (3.246) |
| Construction Sector | -0.393* (0.205) | -0.319 (0.202) | -0.249 (0.174) | 0.243 (0.246) | 0.272*** (0.0614) | 0.219** (0.103) |
| Service Sector | -0.495* (0.252) | -0.348** (0.152) | -0.375*** (0.142) | 0.00670 (0.186) | 0.0932*** (0.0335) | 0.232*** (0.0742) |
| Production Value | -4.91e-10 (6.16e-10) | 9.24e-10 (1.03e-09) | 0 (4.99e-10) | -7.56e-10 (1.65e-09) | -4.20e-10** (1.82e-10) | -9.58e-10 (8.90e-10) |
| Added Value | 7.11e-11 (1.46e-09) | -3.55e-10 (4.84e-09) | -8.97e-10 (7.10e-10) | 5.14e-09 (3.62e-09) | -2.61e-10 (4.33e-10) | 2.62e-09 (2.32e-09) |
| Debts | 3.60e-10 (5.36e-10) | -2.12e-09*** (5.32e-10) | -2.12e-10 (3.06e-10) | -5.99e-10 (6.96e-10) | 3.61e-10*** (1.04e-10) | -3.92e-10 (3.11e-10) |
| Reform | -0.00417 (0.00937) | 0.0222*** (0.00713) | -0.00468 (0.00599) | 0.0284*** (0.00923) | -0.00675*** (0.00191) | -0.00236 (0.00490) |
| R-squared | 0.650 | 0.121 | 0.578 | 0.217 | 0.220 | 0.177 |
| Number of Districts | 158 | 158 | 158 | 158 | 158 | 158 |
| Observations | 1,025 | 1,025 | 1,025 | 1,025 | 1,025 | 1,025 |

All regressions include year fixed effects and district fixed effects. Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1