

# Bankruptcy delay and firms' dynamics

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**Abstract** The present paper explores the link between bankruptcy law and firms' dynamics, focusing on Italy as a case study. Relying on a previous literature dealing with the concept of entrepreneurship "friendly" bankruptcy law, 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 a quicker reallocation of assets towards more efficient destinations. Such effect is related with firms' organizational structure and size.

**Keywords** Bankruptcy · Judicial delay · Entrepreneurship · Firms' dynamics

**JEL classification** D23 · K22 · K41 · L26

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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 done with respect to those institutions that regulate the final stage of a firm's lifecycle. Previous works have shown that bankruptcy law influences firms' financial structure in countries like the USA (Skeel 2001) or Germany (Eger 2001) and entrepreneurs' risk perceptions (Estrin et al. 2017). In the present work, we wish to stress that, although directly dealing with the exit of businesses

from markets, bankruptcy institutions have an impact on the entire life cycle of a firm and thus equally affect both the entry of perspective entrepreneurs and the exit of insolvent businesses.

This is particularly true for business-bankruptcy law, since it regulates a very crucial moment in firms' lives: the formalization of an entrepreneurial failure and the transfer of its assets to creditors. However, even from this painful event, these might still derive beneficial returns on the societal level. Previous works have theorized that an entrepreneurship "friendly" bankruptcy law has a positive impact on markets' dynamics by encouraging firms to engage risks and entry markets (Lee et al. 2007, 2011; Peng et al. 2010). 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 (Jensen 1993).

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: the very first form of insolvency regulation dates back to ancient roman law.<sup>1</sup> Unfortunately, nowadays, Italy has become relevant with respect to this issue for other (less remarkable) achievements. Several international organizations as the OECD, the World Bank and the European Council have acknowledged Italy as the worst ranked country (at least among European ones) when it comes to the performance of its judiciary.<sup>2</sup> In this framework, bankruptcy lawsuits are not exempt from lengthy procedures. 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 characterized by a strong prevalence of SMEs and low levels of dynamism on markets, with both entry and exit rates well below the EU average according to Eurostat.

The identification strategy adopted allows us to restrict to the judicial enforcement of bankruptcy law, the only dimension affecting the entrepreneurship

"friendliness" of Italian bankruptcy institutions. 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 bankruptcy regulation more "entrepreneurship-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.<sup>3</sup> 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 socioeconomic factors. From the empirical analysis conducted, we validate the insights proposed by the entrepreneurship "friendly" bankruptcy law theory (Lee et al. 2007, 2011; Peng et al. 2010). 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 has a different role in incentivizing risk between limited liability companies and personally liable entrepreneurs. More specifically, businesses that have not incorporated their activity are more likely to be affected by bankruptcy delays in their decisions to enter or exit markets, while limited liability companies seem exempt.

The remainder of the paper is organized as follows. Section 2 recalls the theoretical premises behind entrepreneurship "friendly" bankruptcy law. Section 3

<sup>1</sup>The *partes secanto* institution, disciplined by the XII Tables (around 450 BC).

<sup>2</sup>According to the 2015 *Doing Business* Report elaborated by the World Bank, Italy ranks 172<sup>th</sup> out of 189 countries with respect to judicial delay. A similar picture is given by the European Council's CEPEJ Reports and by the OECD (Palumbo et al. 2013).

<sup>3</sup>Alternative insolvency institutions are envisaged by the Italian legal system. However, similar solutions are either rarely used (*concordato preventivo*) or limited to rather narrow categories of firms (*amministrazione straordinaria* only for firms with over 200 employees or *liquidazione coatta amministrativa* that only concerns banks and financial firms).

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 discusses the consequent results. Conclusions are drawn in Section 5.

## 2 Theory: entrepreneurship “friendly” bankruptcy law

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 their money back as soon as possible, thus lowering the overall amount of transaction costs relating to a bankruptcy (Armour and Cumming 2008).

Although it sounds like an oxymoron, the recent scholarly debate has tried to isolate the beneficial consequences that bankruptcy institutions might determine for economic activities. As Frank Borman<sup>4</sup> elegantly emphasized: *capitalism without bankruptcy is like christianity without hell*, in this sense, several works have theorized that, under certain circumstances, bankruptcy law could perhaps be even entrepreneurship “friendly” (Lee et al. 2007, 2011; Peng et al. 2010). A well-designed bankruptcy system stimulates entrepreneurship by lowering not only exit barriers but also entry ones, thus making markets more dynamic.<sup>5</sup> Although one might imagine bankruptcy law as the set of rules that regulate the “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

<sup>4</sup>Retired NASA astronaut and former CEO of Eastern Air Lines, company that went bankrupt in 1989.

<sup>5</sup>Previous 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). New studies have also tried to disentangle the interplay between unemployment and firms' dynamics (Acs and Mueller 2007; Fritsch and Schroeter 2011).

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 literature<sup>6</sup> has identified several possible 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 point (iii): the time needed to conclude a bankruptcy procedure. Accordingly, we define as “bankruptcy delay” (BD) the time needed by a court to conclude 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 entrepreneurship “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 (2005–2011) every tribunal has received on average only twelve such cases per year, with over 30% of all courts observed not dealing with any procedure in a given 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 Italy.<sup>7</sup>

Focusing on the notion of bankruptcy delay as defined *supra*, it is relatively straightforward to infer our

<sup>6</sup>Apart the already cited Lee et al. (2007, 2011), Peng et al. (2010), 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).

<sup>7</sup>It 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 as in the USA (Fan and White 2003).

hypothesis. *Ceteris paribus*, the longer a bankruptcy procedure will last, the more detrimental its effects will be for entrepreneurs.<sup>8</sup> 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 theoretical intuition behind this claim is that longer delays will raise barriers to entry and exit and thus make markets less dynamic (Lee et al. 2011). The rationale is that not only the “direct” (and monetized) costs related to a bankruptcy procedure must be contemplated; as, for example, legal expenses, court fees, and taxes. Such costs tend to be uniform across Italy and should be independent from the procedure’s temporal length.<sup>9</sup> For our purposes, what really matters are the “indirect” costs, that tend to raise as a bankruptcy case drags on Bebhuk (2000) and Bris et al. (2006). Several elements concur to determine such indirect costs. First of all, the legal consequences that bankrupt entrepreneurs have to bear on a personal level. Not only they are not entitled to start a new firm until the procedure ends, but they equally face many legal restrictions attached to their specific status,<sup>10</sup> that limit their possibility of engaging in economic transactions. A bankrupt entrepreneur loses the possession of all assets involved in the procedure and all concluded transactions that exceeds the strict personal necessities are to be considered void. At the same time, there is also a social stigma component attached to bankruptcy that will bind more as such procedures are extended in time (Simmons et al. 2014). Furthermore, it is very common that aside the civil law procedure dealing with the liquidation of the bankrupt assets, also criminal investigation are initiated in order to find out whether the premises of a bankruptcy fraud exists.<sup>11</sup> 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, thus discouraging the risk-taking associated to the start of a new business.

At the same time, we have equally seen above the importance for 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. It is important to stress that we are not willing to claim 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. One possible critique towards this last claim is that, in particular cases, insolvent entrepreneurs may be willing to strategically exploit this institutional flaw. Accordingly, the bankruptcy procedure would not be used by insolvent firms for solving coordination costs, but rather to “buy time.” Eidenmuller (2009) has shown that similar contingencies are usually linked to the possibility of “forum shopping”; however, this is not contemplated by the Italian law.

## 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

<sup>8</sup>Of course other aspects as firm size, equity structure and the fact of belonging to a larger business group might interact. However, the empirical strategy adopted proposes several ways to deal with these issues.

<sup>9</sup>The 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 and the supply of legal services, we should make this issue non-troublesome.

<sup>10</sup>For example, until the 2006 reform, bankrupt entrepreneurs were not allowed to vote in political elections.

<sup>11</sup>According to the Italian law, there are two distinct institutions that regulate respectively the civil consequences of bankruptcy (*fallimento*) and the potentially connected crime (*bancarotta*), which consist in the attempt to alter the bankrupt assets in order to avoid the bankruptcy consequences.

above-mentioned characteristics (judicial delay included) of a “friendly” bankruptcy law on entrepreneurship (either measured as levels of self-employment or firms’ entry rates). 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 (in our case, 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 states. However, to our very best knowledge, no previous work has attempted to focus specifically on the impact of bankruptcy delay on firms’ demography by concentrating on a single country.

As mentioned above, we believe this 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 variance.<sup>12</sup> Accordingly, our unit of observation is the geographical area coinciding with the judicial district over which each bankruptcy tribunal holds jurisdiction.

As emerges from Fig. 1, average bankruptcy delay tends to vary substantially 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 on average more time to dispose the same type of bankruptcy procedure). In this sense, by comparing Figs. 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 socioeconomic 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 district dummies are introduced in our econometric models. The former are meant to capture shocks affecting the national economy. Since the considered time span 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 judicial districts 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-year period. Accordingly, our baseline model is the following:

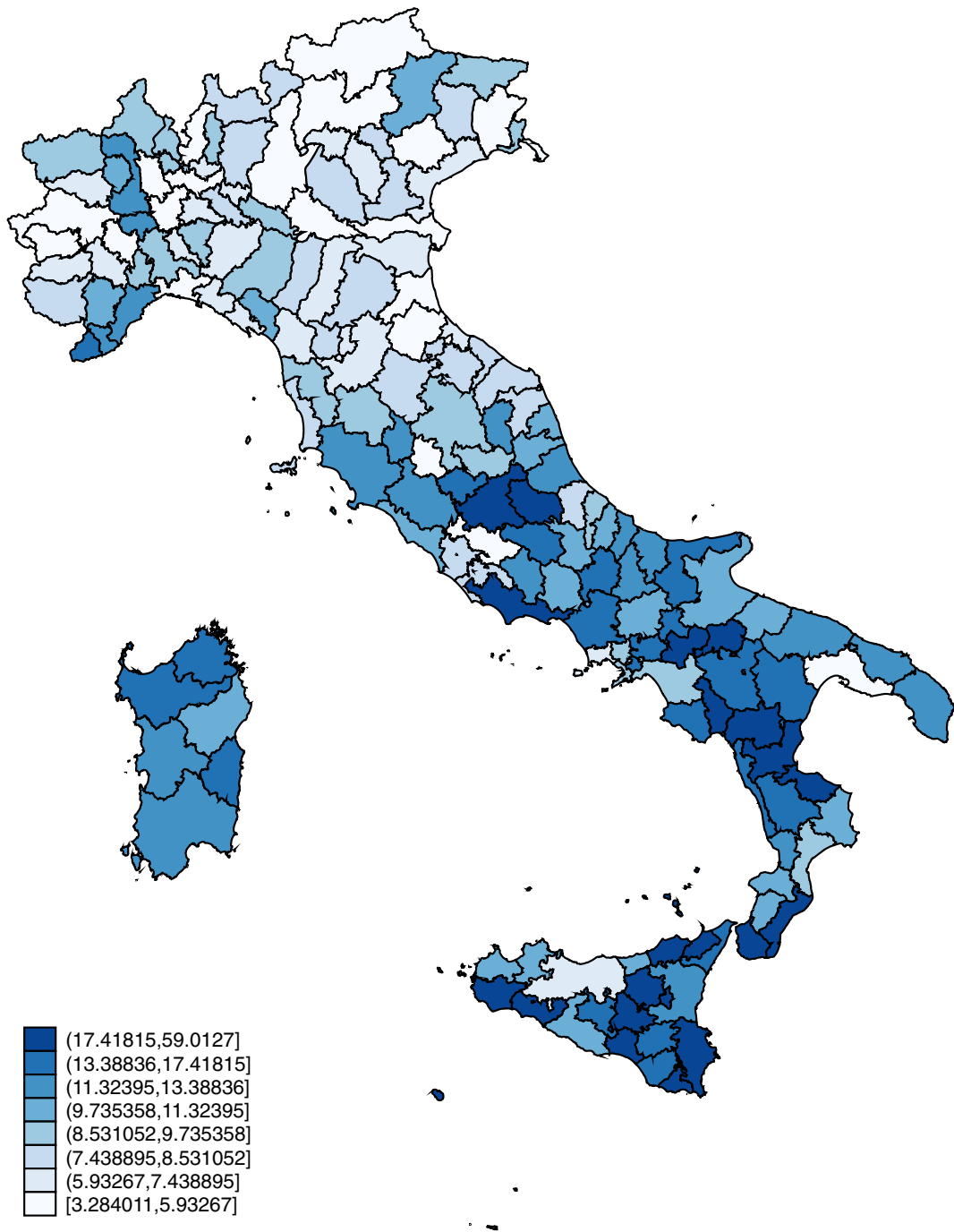
$$y_{i,t} = \beta BD_{i,t} + \mathbf{X}'_{i,t}\theta + \delta_i + \alpha_t + u_{i,t} \quad (1)$$

where  $y$  represents either the entry or exit rate for the geographical unit  $i$  in year  $t$ ,  $\delta_i$  are judicial districts fixed effects,  $\alpha_t$  year fixed effects and  $u_{i,t}$  the stochastic term.  $BD$  (Bankruptcy Delay) is our variable of interest and we expect negative values of  $\beta$ 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.

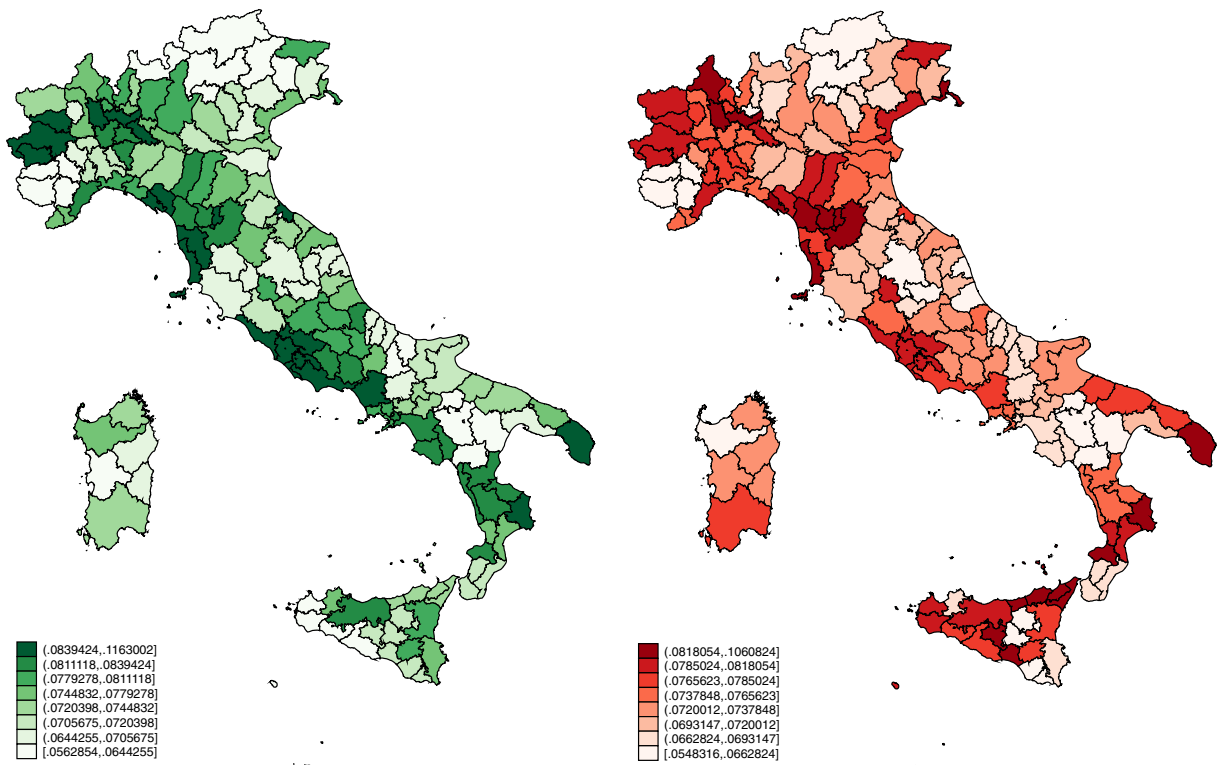
## 4.2 Data

As mentioned above, our empirical analysis covers the time span between 2005 and 2011. For each year,

<sup>12</sup>Of 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. At the same time, we are confident that adopting a fixed effects strategy, much of this unobserved variance ought to be accounted for.



**Fig. 1** Bankruptcy delay (avg 2005–2011)



**Fig. 2** Entry and exit rates (avg 2005–2011)

**Table 1** Variables description

Variable	Description	Source	Unit
<b>Dependent variables</b>			
Entry rate	Firms entry rate	Firms' register office	Province
Exit rate	Firms exit rate	Firms' register office	Province
<b>Variable of interest</b>			
Bankruptcy delay (BD)	Avg. years to solve bankruptcy case	Ministry of justice	Judicial district
<b>Controls</b>			
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		Judicial district

**Table 2** Descriptive statics—dependent variables

Variable		Mean	Std. dev.	Min.	Max.	<i>N</i>
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

we concentrate our attention on the 165 judicial districts,<sup>13</sup> corresponding to the geographical area over which each bankruptcy court has territorial jurisdiction. When a business is declared bankrupt, the procedure is carried by the tribunal that has territorial jurisdiction in the geographical area where the firm has its main center of activity; no “forum shopping” is allowed. Such geographical level is slightly more disaggregated than the provincial one (NUTS 3 level): in most cases, the judicial district coincides with the administrative province, while various provinces include several judicial districts within their borders.<sup>14</sup> 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 socioeconomic 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 adopted. 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 two combined, thus making an aggregation of all firms not very relevant, also the legal differences among the tree types must be acknowledged (Table 2). 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,

$$BD_{i,t} = \frac{\text{pending cases}_{i,t-1} + \text{pending cases}_{i,t}}{\text{incoming cases}_{i,t} + \text{solved cases}_{i,t}} \quad (2)$$

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 Fig. 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 mean value is just above 10 years, some tribunals needed (on average) up

<sup>13</sup>According 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.

<sup>14</sup>The opposite does not hold: there is no single judicial districts with jurisdiction over multiple provinces.



**Table 3** Descriptive statics—dependent 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

to 24.6 years to conclude the very same type of procedure. For purposes of data homogeneity, we have dropped the observations ranging in the top 5 percentiles with respect to BD. 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 six judges, would dramatically reduce the number of solved cases and thus lead to unrealistic high delays. For this reason, such observation was excluded from our empirical analysis.

A number of controls are considered in order to account for other time-varying factors that we believe might be correlated with our variable of interest. With respect to the general economic situation within a judicial district, we control for the average income and unemployment rate. To control for the development of the local financial market, we account for the density of bank branches. We equally 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 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. While the former is intended to isolate the judicial delay of bankruptcy procedures from the overall courts' performance, the latter aims at accounting for local litigation levels (Buonanno and Galizzi 2014). Finally, we introduce a dummy trying to capture the effect of the efficiency-oriented legislative

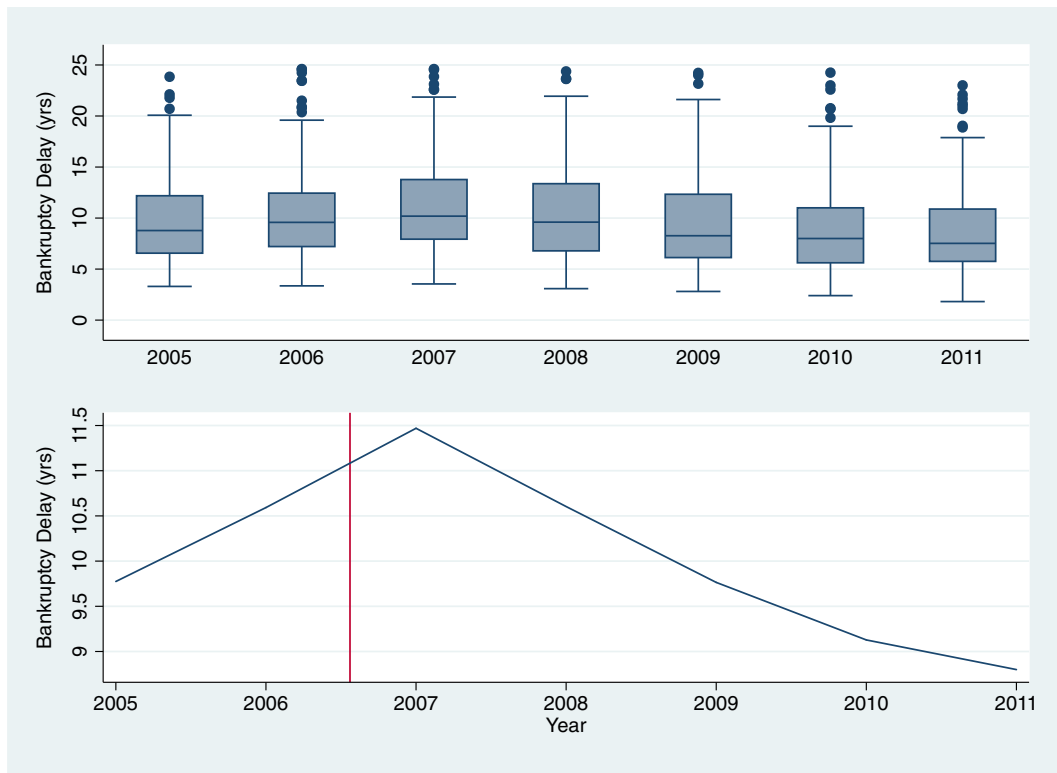
reform of bankruptcy law enacted in 2006. For the purposes of this work, we are not directly interested in the effect of the reform; moreover, the available data only goes back to 2005. However, as emerges from Fig. 3, a reduction of delay has occurred after the enactment of the reform. Accordingly, accounting for the changes in the bankruptcy law consequent to such reform 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  $\beta$  in Eq. 1).<sup>15</sup> Consistently with previous findings (Lee et al. 2011), empirical evidence seems to support the insight that BD has an impact on firms' dynamics in Italy. However, the significance of such effect is conditional on the organizational structure that entrepreneurs adopt. More specifically, bankruptcy delay has a negative (as expected) and significant impact on the entry and exit rates of partnerships of multiple entrepreneurs sharing together 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

<sup>15</sup>Table 7 in Appendix A reports the estimated coefficients of all independent variables.



**Fig. 3** Average bankruptcy delay in Italy

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 lose 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<sup>16</sup> and even when reaching such limits, there might be an underestimation of the costs related to bankruptcy.

<sup>16</sup>According to the Italian Law, some economic activities are exempted from bankruptcy procedures in light of their business magnitude. In order to be exempted, entrepreneurs must satisfy two conditions at the same time: during the last three fiscal years (i) gross revenues must be globally below 200,000€ and (ii) total assets below 300,000€.

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 1-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 6 in Appendix A, our variable of bankruptcy delay is not severely correlated with any of the other covariates.<sup>17</sup>

<sup>17</sup>The estimated variance-inflation factor (VIF) is on average 2.58, well below the value of 5, the threshold usually adopted as a rule-of-thumb for detecting multicollinearity problems.

**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. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

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), 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 big 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 registries) and later be declared bankrupt within the same solar year. Although this is something formally possible according to the bankruptcy law,<sup>18</sup> these 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 increase 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). However, we also performed an additional check: we estimated Eq. 1 for collective firms lagging the BD regressor by 1 year lagged,  $BD_{t-1}$ . Results are shown in columns (6) and (7) of Table 5.

In order to further strengthen the robustness of our estimates, we considered another potential issue.

<sup>18</sup>A firm might be declared bankrupt until 1 year past the end of its economic activity.

**Table 5** Regression results: robustness checks

	(5) Entry rate	(6) Entry rate	(7) Exit rate
BD	-0.000289*** (0.000110)		
$BD_{t-1}$		-0.000179** (7.76e-05)	-0.000487* (0.000288)
R-squared	0.597	0.591	0.175
Controls	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Number of districts	158	158	158
Observations	880	879	879

OLS estimates. Robust standard errors in parentheses. All regression concern collective firms dynamics. Column (5) includes exit rate in  $t - 1$  as a control. Columns (6) and (7) use a 1-year lagged regressor. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

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 Eq. 1 for collective firms including as a control the exit rate in the previous year. As emerges from column (5) of Table 5, results are not affected.

## 5 Concluding remarks

Bankruptcy indeed represents a negative and painful 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 entrepreneurship. This is exactly what is meant by the term entrepreneurship “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 that longer judicial delays should determine an increase in the “indirect” costs connected 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 this conjecture, we have employed data on the enforcement of bankruptcy procedures from the 165 Italian judicial districts. 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 businesses’ entrepreneurial forms. 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 explain 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 generally greater than the one of self-employed entrepreneurs, 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 overall Italian 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 law 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 bankruptcy law reform, by simplifying 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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## Appendix A: Additional tables

**Table 6** 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

*p* values in parenthesis

**Table 7** 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	1025	1025	1025	1025	1025	1025

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

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