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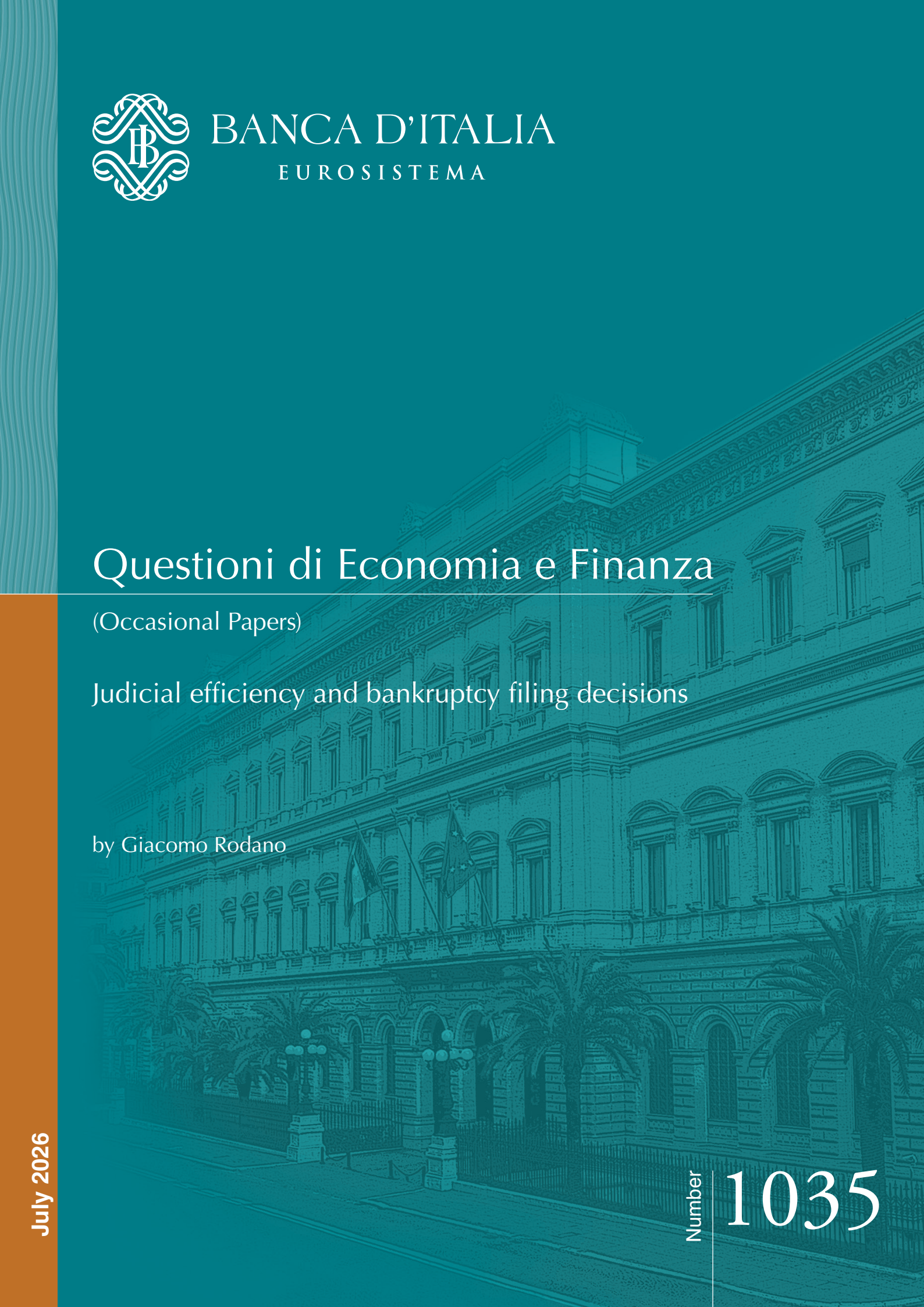
Questioni di Economia e Finanza

(Occasional Papers)

Judicial efficiency and bankruptcy filing decisions

by Giacomo Rodano



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JUDICIAL EFFICIENCY AND BANKRUPTCY FILING DECISIONS

by Giacomo Rodano*

Abstract

Using administrative data on Italian firms and courts, this paper studies whether judicial inefficiency influences the likelihood and timing of bankruptcy filings. To address endogeneity, we instrument court efficiency with judge turnover. We find that inefficient courts significantly reduce the likelihood that financially distressed firms file for bankruptcy.
Judicial inefficiency also substantially delays bankruptcy filing: firms remain insolvent longer and are more likely to enter bankruptcy after extended periods of economic distress, contributing to the persistence of insolvent and zombie firms, with adverse implications for resource reallocation.

JEL Classification: G33, K41, K22, D24.

Keywords: judicial efficiency, insolvency proceedings, financial distress, zombie firms.

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1. Introduction[1]

Bankruptcy institutions play a central role in market economies by governing the resolution of financial distress and shaping the reallocation of resources across firms. By coordinating creditors' claims and constraining managerial incentives, formal insolvency procedures can prevent inefficient liquidation and preserve going-concern value when restructuring is socially efficient (Aghion et al. 1992; Jackson 2001). When these mechanisms function poorly (Bris et al. 2006), financial distress may remain unresolved, tying up capital and labour in low-productivity firms and contributing to aggregate misallocation (Caballero et al. 2008; Adalet McGowan et al. 2018).

A critical determinant of how bankruptcy systems operate in practice is judicial efficiency. Lengthy and uncertain court proceedings raise the expected costs of formal insolvency, weaken creditor recovery prospects, and alter firms' incentives to access judicial procedures. In such environments, distressed firms may delay filing in order to preserve option value for equity holders or avoid costly court involvement altogether, even when bankruptcy would facilitate efficient resolution. Judicial inefficiency may therefore distort both whether firms enter bankruptcy and when they do so.

Despite the importance of these mechanisms, empirical evidence on how court efficiency affects bankruptcy choices remains limited, largely because of substantial data and identification challenges.[2] Studying bankruptcy decisions requires unusually rich and granular data, because one must observe when firms enter financial distress, whether and when they file for bankruptcy, and which procedure they choose, while controlling for a wide range of firm characteristics. Credible identification further requires variation in court efficiency that however might be endogenous: courts that face more bankruptcy filings may experience longer delays precisely because firms make greater use of formal procedures, generating reverse causality.

This paper addresses these challenges by combining granular administrative data on firms, bankruptcy proceedings, and courts with an instrumental-variable strategy that exploits judge turnover as a source of exogenous variation in court efficiency. Using data on the universe of Italian corporations between 2007 and 2021, we relate firm-level bankruptcy outcomes to court efficiency measured by the duration of judicial liquidation proceedings, instrumented with exogenous variation in judicial turnover, while controlling for a rich set of firm characteristics and fixed effects.

Our empirical analysis delivers two main findings. Regarding the use of bankruptcy

[1]Division of Economics and Law, DG for Economics, Statistics, and Research, Bank of Italy. I thank Antonio Accetturo, Federico Cingano, Federico Fornasari and Sauro Mocetti for valuable suggestions. All remaining errors are mine. The views expressed in this paper are those of the author and do not involve the responsibility of the Bank of Italy.

[2]A notable exception is Becker and Ivashina (2022), who document a positive correlation between court inefficiency and the prevalence of zombie firms in a cross-country setting.

procedures, court inefficiency substantially reduces the use of formal bankruptcy procedures. According on the instrumental-variable estimates, moving from a court at the 75th percentile of inefficiency (with a duration of bankruptcy procedures of about 15 years) to one at the 25th percentile (about 6 years) increases the probability that a financially distressed firm files for bankruptcy by about 8.7 percentage points—roughly 15% of the sample mean filing probability. Instrumental-variable estimates are significantly larger than OLS estimates, consistent with reverse causality attenuating naïve correlations.

These findings point to a distortion in the resolution of financial distress induced by judicial inefficiency. In an efficient insolvency system, firms with similar economic and financial conditions should make similar bankruptcy choices—such as whether to enter formal insolvency. Instead, otherwise comparable firms facing similar crises make systematically different decisions depending solely on the efficiency of the courts they face. Conditional on filing, however, court efficiency has no causal effect on the choice between reorganisation and liquidation.

Judicial inefficiency also significantly delays the initiation of bankruptcy procedures. Firms in slower courts remain insolvent for longer periods before filing and are more likely to enter bankruptcy after extended periods of economic distress. An interquantile-range reduction in court inefficiency shortens pre-filing insolvency by about 11 months, and reduces by more than 10 percentage points the probability that a firm is continuously classified as a zombie in all three years preceding filing. These delays increase the incidence of insolvent and zombie firms in the economy, with adverse implications for resource reallocation and aggregate productivity.

The paper contributes to three strands of literature. First, it relates to the literature on bankruptcy design and the functioning of insolvency procedures. A first strand of this literature documents the costs associated with formal bankruptcy and their implications for firm value and creditor recovery (e.g. Bris et al. 2006). A related body of work studies the efficiency of different bankruptcy procedures and of the insolvency system as a whole, showing that procedure choice matters for firm outcomes, recovery rates, and creditor coordination. [3]. More recent work adopts structural approaches to quantify bankruptcy frictions and to study whether firms are efficiently allocated to restructuring or liquidation procedures (Dou et al. 2021; Antill 2022). This literature typically treats judicial enforcement as an exogenous institutional feature. I complement it by showing that the effectiveness of a given bankruptcy design depends critically on court efficiency: even within a fixed legal framework, judicial inefficiency alters how insolvency procedures are used in practice and distorts firms' entry into formal bankruptcy.

Second, the paper relates to the literature on judicial enforcement and firm outcomes,

[3] For instance, reorganisation under Chapter 11 is associated with higher creditor recovery than alternative forms of exit (Acharya et al. 2007; Ivashina et al. 2016), while different procedures affect asset redeployment and generate spillovers in firms' employment (Bernstein et al. 2019a,b)

which documents that court efficiency affects credit markets and real economic outcomes. A large body of work shows that weak enforcement and slow courts distort financing decisions, limit firm growth, and reduce investment (e.g La Porta et al. 1997; Fabbri 2010; Giacomelli and Menon 2017; Rodano 2021; Pezone 2022). This literature primarily emphasises ex-ante effects, focusing on how judicial efficiency shapes firms' behaviour before financial distress arises. I complement this work by shifting the focus to firms that are already insolvent and by studying how court efficiency affects the resolution of distress itself.

Finally, the paper contributes to the literature on zombie firms and delayed restructuring. Existing explanations emphasise creditor incentives, bank balance-sheet constraints, and policy interventions as drivers of zombie firm survival (e.g. Caballero et al. 2008; Adalet McGowan et al. 2018). Similarly to Becker and Ivashina (2022), I identify judicial inefficiency as a distinct mechanism that prolongs insolvency and delays restructuring, allowing financially distressed firms to survive longer despite persistently weak performance. Differently from their cross-country analysis, I exploit variation in court efficiency within a single institutional framework, which helps isolate the effect of judicial enforcement while holding constant other dimensions of insolvency law.

2. Institutional setting

In this paper, we focus on the two most important in-court bankruptcy procedures (Calanca et al. 2023), namely judicial compositions with creditors (*concordati preventivi*) and judicial liquidations (*fallimenti* or *liquidazioni giudiziali*) [4]. Only relatively larger firms, with minimum thresholds in terms of total assets, revenues and debts, can file for in court bankruptcy procedures.

Judicial liquidation is similar to Chapter 7 in the United States bankruptcy code. The goal of the procedure is the liquidation of firm's assets, either piecewise or as a whole, and the distribution of proceedings among the creditors. Notwithstanding its liquidation function, the continuation of the business activity during the procedure may be authorized. At the time of the judicial liquidation declaration, which is primarily initiated by the creditors (but can also be started by the public prosecutor or the debtor), the management

[4]The Italian bankruptcy system consists of several instruments put in place by the legislator to deal with firms crisis. A first group of instruments (see e.g. Danovi et al. 2020), both in and out of court, aims at increasing the chances of successful corporate restructuring: the out of court instruments are the negotiated composition (*composizione negoziata dei crediti*, art. 12 of the Bankruptcy Code), moratoria agreements (*convenzione di moratoria*, art. 62), and certified recovery plans (*piani attestati di risanamento*, art. 56); the judicial procedures are debt restructuring agreements (*accordi di ristrutturazione dei debiti*, art. 57), confirmed debt restructuring plans (*piani di ristrutturazione soggetti a omologazione*, art. 64-bis), and joint composition with creditors (*concordati preventivi*, art. 84). A second group of in court procedures aims at liquidation (see e.g. Calanca et al. 2023): the judicial composition with creditors with winding up purposes (*concordato preventivo*) and the judicial liquidation (traditionally called *fallimento*, recently relabelled *liquidazione giudiziale*).

of the firm passes to a trustee under the supervision of the court.

On the other hand, the judicial composition with creditors, akin to Chapter 11 in the US code, can only be opened upon the debtor's request and may serve a liquidation purpose or ensure the continuation of the business, either by the same entrepreneur or a third party. The debtor prepares a plan and a proposal for the creditors, which must be reviewed by the court and approved by the creditors themselves. During the procedure and the plan implementation, the entrepreneur retains the management of the business, although under the supervision of a judicial commissioner.

These two procedures constitute the vast majority of in-court proceedings[5] (Calanca et al. 2023). Among all bankruptcy proceedings started in 2019, about 80% were judicial liquidations and 15% were judicial composition with creditors. The exposure to the banking sector of firms entering insolvency proceedings is considerable: three years prior to the procedure, firms entering insolvency in 2018 had approximately 11 billion euros in outstanding credit, compared to an average annual flow of new non-performing loans for firms between 2016 and 2019, which amounted to around 22 billion euros.

According to data from courts registers, about half of the judicial liquidations (44%) concludes without any distribution of proceedings, thus with no satisfaction for the creditors. The average length of proceedings is seven years and one month, with significant differences between proceedings with (eight years and nine months) and without any distribution (six years and five months). All proceedings take longer in the southern regions of the country (Calanca et al. 2023).

Finally, there is evidence that the companies that access the judicial composition with creditors and debt restructuring agreements are significantly larger than the average Italian company probably because of the complexity and cost of these procedures (Danovi et al. 2020).

3. Data and Empirical Framework

This section describes the data used in the paper and the construction of the different samples employed in the analysis, and presents stylized facts on in-court bankruptcy procedures in Italy. It then discusses the empirical challenges related to the potential endogeneity of our measure of court efficiency and the instrumental variable approach used to address them.

[5] Firm's creditors can tackle the crisis also by foreclosing firm's assets and real estate. However, the only source of data about these proceedings is from courts registers that do not provide information about the identity of the borrower (Giacomelli et al. 2019; Calanca et al. 2022).

3.1. Data Sources

This paper combines several data sources: bankruptcy records from the registers of the *Chambers of Commerce* (collected in the INFOCAMERE dataset), employment data from the *National Institute for Social Security* (INPS), credit data from the *Central Credit Register* (CR), balance sheet data from *Cerved Group* (CERVED), and information on court proceedings from the *Ministry of Justice*.

Infocamere. The Chambers of Commerce registers provide comprehensive firm-level information on all registered firms, including the location of headquarters, industry, legal form, and date of establishment, as well as ownership and management characteristics. Information on the type and timing of significant corporate events — such as judicial bankruptcy proceedings, voluntary liquidation or dissolution, and removal from the business register — is also available. INFOCAMERE is the only source that identifies firms filing for judicial bankruptcy procedures. The data are available from 2005 onward.

INPS. The National Institute for Social Security (INPS) provides administrative data for pension purposes at the firm level. For each firm and year from 1990 to 2021, the data report average annual employment, monthly employment counts, and basic firm characteristics (industry, year of establishment, and location of the administrative headquarters). The resulting unbalanced panel includes approximately 3 million distinct firms, averaging just under one million firms per year.

Central Credit Register. The Central Credit Register provides detailed information on bank–firm relationships for all firms with total exposure to the Italian banking system above €30,000.[6] For each month from 1998 onward, we observe firms' total exposure to the banking system, measures of debt concentration, and indicators for the presence of bad or nonperforming loans.[7]

Cerved. For all Italian corporations, Cerved Group collects and harmonizes data from firms' financial statements (balance sheets and income statements), which we use to measure firm size, performance, and financial health. The data are available at the firm

[6] A firm is recorded in the Credit Register if it has a significant exposure to the banking system, amounting to €75,000 prior to 2008 and €30,000 thereafter. This threshold is reduced to €250 for firms with bad loans (*sofferenze*).

[7] Italian banks classify problematic loans into four categories: *past due*, *substandard*, *restructured*, and *bad* loans. *Past due* loans (*scaduti*) are exposures for which payments have been overdue for more than 90 days; *substandard* loans (*incagli*) refer to borrowers experiencing temporary financial difficulties; *restructured* loans (*ristrutturati*) involve modifications to original contract terms due to deteriorating financial conditions; and *bad* loans (*sofferenze*) correspond to exposures to firms considered insolvent. A firm is classified as nonperforming (*default rettificato*) if a significant share of its total exposure falls into any of these categories.

level for all years from 2002 to 2021. Cerved also provides the SCORE, an indicator of a firm's probability of financial default over a one- to five-year horizon. This probability is mapped into ten ordered risk classes, ranging from low to high risk.[8]

Ministry of Justice. Data from the Civil Justice Data Warehouse of the *Ministry of Justice* provide information on the duration and outcomes of bankruptcy procedures (e.g. Giacomelli et al. 2018; Calanca et al. 2023). The data are available at the judicial district level and are linked to firms' legal headquarters using municipal identifiers from the *National Institute of Statistics* (ISTAT). Information on judge turnover is obtained from the *High Council of the Judiciary*. The *Ministry of Justice* also provides information on court size, a 5 classes ordinal variable (small, medium small, medium, big, very big).

3.2. Main variables

The unit of observation is the firm, identified by a unique tax code that allows us to track it across the different datasets. The focus of the paper is on firms that exit the market with financial distress and potentially file for judicial bankruptcy (see Figure 1).

According to the definition of the *National Institute of Statistics*, a firm is considered *active* in a given year if it produces revenues or employs at least one worker. A firm is defined as having *exited* the market in year t if it is active in year t but inactive in each of the following three years.[9] A firm exits with *financial distress* if any portion of its bank exposure is classified as *bad* either before or after exit.[10]

A firm is classified as filing for *judicial bankruptcy* if we observe a record of either a judicial composition with creditors or a judicial liquidation in the INFOCAMERE data. When both procedures are observed for the same firm, we assign to the firms the procedure initiated first, which in the vast majority of cases is a judicial composition with creditors.[11]

Following the literature, our measure of *court efficiency* is the duration of bankruptcy proceedings (e.g., Giacomelli and Menon 2017; Rodano 2021; Pezone 2022). Specifically, we use the court-level median duration of judicial liquidation proceedings that end with some distribution to creditors (Calanca et al. 2023).[12] *Judge turnover* at the court level is

[8]The ten classes are commonly grouped into three broad categories: *solvency* (SCORE 1–4), *vulnerability* (SCORE 5–6), and *risk* (SCORE above 6).

[9]This definition allows for temporary inactivity. Among firms active in 2010, the exit rate is 6.5% when exit is defined as one year of inactivity, 5.8% when defined as three consecutive years of inactivity, and 5.5% when defined as permanent inactivity through 2024.

[10]We focus on *bad* loans rather than the broader category of nonperforming loans because the reporting threshold for bad loans (€250) is substantially lower than that for nonperforming loans (€30,000 or €75,000 depending on the year), allowing us to capture financially distressed firms of all sizes, and therefore not selecting the sample for the analysis.

[11]Approximately 3.7% of bankrupt firms are observed in both procedures; in about 97% of these cases, the first procedure is a judicial composition with creditors.

[12]A reform in 2013 reduced the number of court jurisdictions from 165 to 140. For the pre-reform period,

measured as the number of judge departures over all the available years relative to the average number of judges during the same period.

In the regression analysis we include a rich set of firm-level controls. Firm size is measured using total assets and revenues from CERVED, as well as employment from INPS. Firm age is obtained from INFOCAMERE or CERVED. Leverage is defined as total debt divided by total assets. We also control for the geographic location of the headquarters (region fixed effects), industry (two-digit NACE codes), and corporate governance characteristics. These include legal form (approximately 90% of firms are limited liability companies, 3% are joint-stock companies, and the remainder have other legal forms), family firm status (defined as at least 50% ownership held by individuals sharing the same surname), and the presence of a supervisory body, such as a board of statutory auditors.

To identify different degrees of financial distress, we construct several indicators. Our broadest measure classifies a firm as *risky* if its SCORE is greater than or equal to six. An intermediate measure identifies *undercapitalized* firms, defined as firms with equity below the statutory minimum (e.g., Orlando and Rodano 2022). A firm is identified as *zombie* if its operating margin is lower than interest expenditures for three consecutive years. A further indicator identifies firms with *negative value added*. Finally, our strictest measure identifies *insolvent* firms as those with at least one bad loan.

The original sample included all firms that employed at least one worker according to INPS data and reported positive revenues in CERVED at least once between 2002 and 2021. The average firm holds approximately €2 million in assets and revenues, employs ten workers, and is about twenty years old (Table A1 in Appendix B). Approximately 11% of active firms do not employ any workers, while 15% report no revenues or do not file financial statements in a given year. Among firms with positive revenues, 24% are classified as risky, 10% as undercapitalized, and 7% as losing. Almost half of the firms are not recorded in the Central Credit Register, and approximately 2.7% of active firms have at least one bad loan.

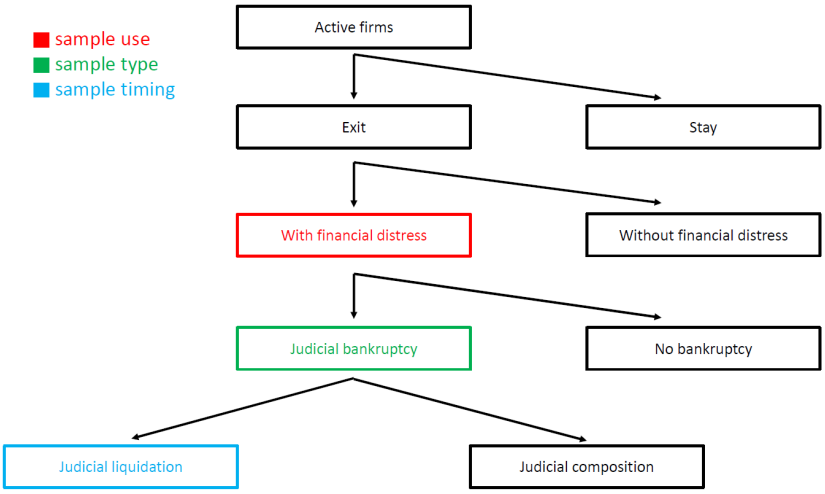
3.3. Descriptive Statistics and Stylized Facts

The paper addresses different sets of research questions. First, it examines whether court efficiency affects the likelihood that financially distressed firms exiting the market resort to in-court bankruptcy procedures and, conditional on doing so, the choice of procedure. Then, conditional on filing for judicial liquidation, it analyses whether court efficiency influences the timing of filing.

In the analysis of the use of bankruptcy procedures the sample consists of all firms exiting the market between 2007 and 2018 with financial distress (Figure 1). Between 2007

we use information on procedures closed between 2000 and 2007 from ISTAT. For later periods, we rely on data from the Ministry of Justice on procedures closed in 2018–2019.

Figure 1. Sample selection



The chart shows the sample selection. In the analysis of the use of bankruptcy procedures the sample consists of all firms that exit the market and experience financial distress. In the analysis about the type of bankruptcy procedure used, the sample consists of all firms that exit the market filing for bankruptcy. In the analysis of the timing of bankruptcy procedures, the sample consists of all firms that file for judicial liquidation.

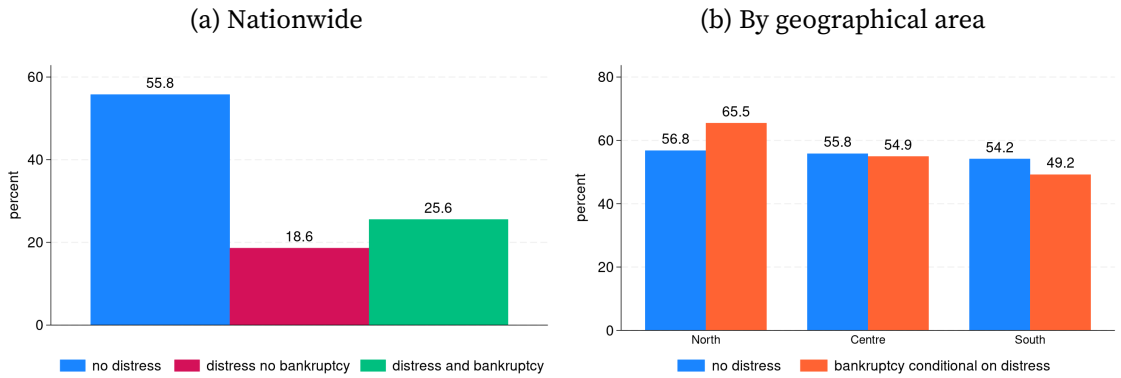
and 2018, the exit rate — defined as the ratio of exiting firms to active firms in a given year — averages around 6%, increasing to approximately 7% during the Great Recession. Exit rates are substantially higher among firms in economic distress. Firms with negative value added exhibit an average exit rate of 19.1%, compared with 2.2% among healthy firms.[13] The increase in exits during the recession is driven entirely by firms in distress, while exit rates among healthy firms remain roughly constant over time.

Exiting firms are, on average, younger and smaller than firms that remain active, even after accounting for the substantial reductions in employment, revenues, and assets observed in the five years preceding exit (Table A2 in Appendix B). They are also less likely to generate revenues and more likely to display indicators of economic or financial distress, including high risk scores, undercapitalization, negative value added, and the presence of bad loans.

More than half (55.8%) of firms exiting the market during this period do not experience financial distress, as measured by either the presence of bad loans or the initiation of a bankruptcy procedure (Figure 2). Among the remaining firms, approximately 42% (18.6% of all exiting firms) experience financial distress but do not file for bankruptcy, while the remaining 58% (25.6% of all exiting firms) do file for bankruptcy (Figure 2a). While the share of firms experiencing financial distress is broadly similar across Italian regions, the

[13]The same pattern holds under alternative definitions of distress. The exit rate is 8.7% for risky firms and 1.9% for safe firms; among undercapitalized firms it is 16.7%, compared with 2.3% for firms with sufficient equity.

Figure 2. The way firms exit the market



Source: CERVED, INPS and INFOCAMERE data. For all firm exiting the market between 2007 and 2018, the left panel of the figure shows the share of firms that exits without financial distress, identified with the presence of *bad* loans, the share that experience financial distress but do not file for bankruptcy procedure and the share with distress and bankruptcy. The right panel show the share of firms without financial distress and the share that file for bankruptcy conditional on having financial distress, across different geographic areas. In both panels only firms that are large enough to file for in court bankruptcy procedures are included.

share of firms filing for bankruptcy, over all firms that exit experiencing financial distress, is substantially lower in Central and Southern Italy (Figure 2b).

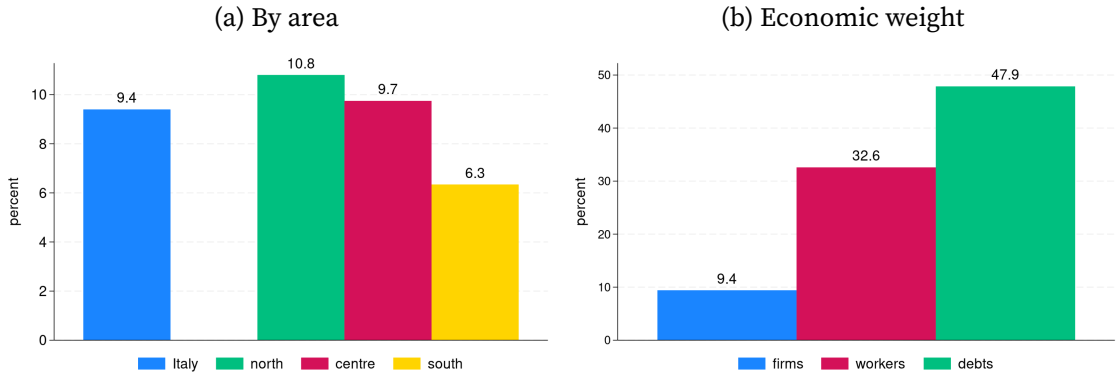
Firms that file for bankruptcy are larger, older, and more leveraged than firms that exit without financial distress and than distressed firms that do not file for bankruptcy. These differences are evident both at the time of exit and five years earlier (Table A3 in Appendix B). Among distressed exiters, bankrupt firms are also significantly more likely to be, at the time of filing, in a severe state of crisis, more likely to be insolvent (i.e., to have bad loans), less likely to be family firms, and more likely to have a supervisory body.

Conditional on filing, the paper focuses on firms that file for bankruptcy and examines how court efficiency relates to the allocation of firms across different procedures. In this case the sample consists of all firms that exit the market filing for bankruptcy between 2007 and 2021, and it includes approximately 113,500 firms that file for in-court bankruptcy procedures between 2007 and 2021. Among these firms, 9.4% initiate the process through a judicial composition with creditors, with this share being substantially lower in Southern Italy than in the Center and the North (Figure 3a).

Firms that enter bankruptcy through a composition with creditors differ markedly from those entering judicial liquidation (Table A4 in Appendix B). They are significantly more likely to be active — producing revenues and employing workers — in the year of filing. They are also larger, employing nearly three times as many workers and holding almost five times as many assets, older, less likely to be family firms, and more likely to have a supervisory body.

Although compositions with creditors account for a relatively small share of bankrupt

Figure 3. Composition with creditors as the first bankruptcy procedure



Source: CERVED, INPS and INFOCAMERE data. For all firm filing for bankruptcy between 2007 and 2021, the left panel of the figure shows the share of firms that starts bankruptcy with a judicial composition with creditors, both at the national level and in the different geographical areas. The right panel shows the share, in all workers employed and debts owed five years before bankruptcy filing, by firms that file for judicial composition with creditors first.

firms, they represent a disproportionately large share of economic activity. Five years prior to filing, firms that later enter composition with creditors account for 32.6% of total employment and 47.9% of total debt among bankrupt firms (Figure 3b).

The final part of the analysis is about the timing of bankruptcy filing. In this case the sample consists of all firms that file for judicial liquidation between 2007 and 2021 (Figure 1). Firms entering judicial liquidation typically display prolonged inactivity and insolvency prior to filing. Approximately 10% of firms in liquidation had ceased employing workers at least five years before filing, and 34.4% had done so at least two years before filing. Similarly, 9.8% of these firms had been continuously insolvent for at least five years, and about 30% for at least two years. In contrast, among firms entering a composition with creditors, fewer than 2% had been inactive or insolvent for five years prior to filing, and fewer than 10% for two years. Moreover, 54% of firms in composition with creditors were still employing workers at the start of the procedure, reflecting the dual restructuring–liquidation nature of this process.

A substantial share of firms entering judicial liquidation exhibit also persistent economic distress in the five years preceding filing. About 11% report no revenues throughout this period; 23.4% are either undercapitalized or report no revenues in all five years; and 15.3% report either negative value added or no revenues. These shares are considerably lower for firms entering a composition with creditors: only 1.5% report no revenues, and approximately 5% are undercapitalized or report negative value added. For comparison, among all active firms in a given year, 10% as undercapitalized, and 7.7% report negative value added (Table A1).

3.4. Empirical strategy

Identifying the causal effect of judicial efficiency on firms' bankruptcy decisions is challenging due both to data requirements and to the potential endogeneity of court efficiency. Exploiting the richness of our data, we begin by estimating the following baseline specification:

$$y_i = \alpha + \beta C_i + \gamma' \mathbf{X}_i + \varepsilon_i, \tag{1}$$

where y_i denotes the outcome of interest for firm i — for example, an indicator for whether an exiting firm files for bankruptcy — and C_i is a measure of court efficiency relevant for firm i. The vector $\mathbf{X}_i$ includes a broad set of firm-level controls, such as size, leverage, age, industry, region, legal form, ownership structure, and year of exit from the market (or of the start of bankruptcy proceedings). In all specifications standard errors are clustered at the court by year (of exit or of bankruptcy) level.

Court Efficiency and Instrumental Variable. Following the empirical literature (Bianco et al. 2007; Fabbri 2010; Giacomelli and Menon 2017; Rodano 2021; Pezone 2022), we proxy court efficiency using the duration of judicial liquidation proceedings (*fallimento* or *liquidazione giudiziale*) in the judicial district where the firm's legal headquarters is located.[14] In particular we use the length of judicial liquidations concluded with some distribution to creditors (Calanca et al. 2023).

Court efficiency is likely to be endogenous. In particular, reverse causality may arise if courts facing a higher incidence of bankruptcies experience heavier workloads, thereby lengthening proceedings.[15] In this case, a positive correlation between the duration of proceedings and the likelihood that firms file for bankruptcy could emerge even in the absence of a causal effect of judicial inefficiency on firms' crisis management.

To address this concern, we adopt an instrumental variable strategy. Our instrument is judge *turnover* at the court level measured as the number of judges leaving a court in a given period relative to the average number of judges serving at that court over the same period.[16] Figure 4 shows that judge turnover is higher on average in Southern Italy, but also exhibits substantial variation within regions. In all regressions, we include region fixed effects, so identification exploits variation in court efficiency across courts within

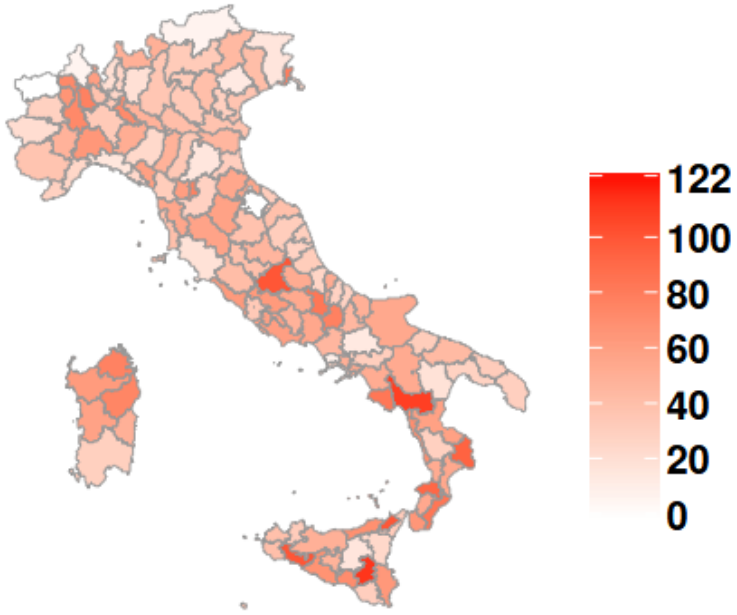
[14] In Italy, the court with jurisdiction over bankruptcy cases is determined by the location of the firm's legal headquarters, and there is limited evidence of forum shopping across courts (Rodano 2021).

[15] In *Ministry of Justice* data for several different type of proceedings (bankruptcy, foreclosures, labour, civil ordinary proceedings and matters of voluntary jurisdiction) at the court, year, type-of-proceedings level, the correlation between the total number of new cases filed in a court-year and trial length is positive and statistically significant controlling for year, type-of- proceedings and court-size fixed effects.

[16] The instrument is the average at the court level over all the available years. Descriptive statistics about the length of proceedings in 2019 and turnover are reported in Table A5 in Appendix B.

the same region.

Figure 4. Judges' turnover



Source: *High Council of the Judiciary* (Filomeno and Rocchetti 2019). The map shows judges' turnover at the jurisdiction level. Turnover is higher in darker jurisdictions.

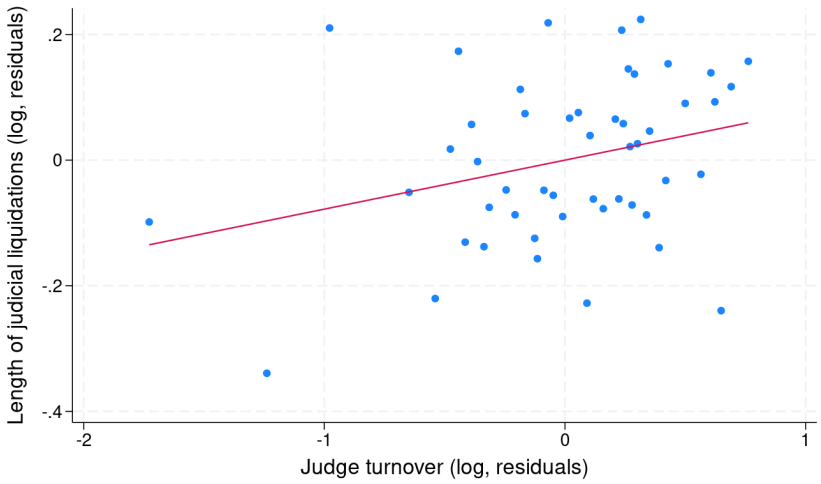
The logic for the instrumental variable approach is that higher turnover disrupts court activity and slows down proceedings, leading to longer trial durations. Figure 5 documents a positive and statistically significant relationship between judge turnover and the duration of judicial liquidation proceedings at the court level, even after controlling for geographic area and court size fixed effects.[17] More formally, the first stage regressions show a positive and statistically significant correlation between turnover and court inefficiency in the samples used for the analysis of the use (Table 1) and the timing (Table A13) of bankruptcy procedures; the clustered F-statistic is 21.8 and 31.1 respectively, well above conventional thresholds for weak instruments (Stock and Yogo 2005).

At the same time, judge turnover largely reflects idiosyncratic career dynamics such as changes in judicial functions or promotions. For example, turnover is positively associated with changes in judicial functions, including transfers between courts or appointments to semi-directive or directive positions (Filomeno and Rocchetti 2019). Moreover, bankruptcy cases represent a very small fraction of total court activity — less than 2% of new filings in 2019 were bankruptcy cases — making it unlikely that turnover is driven by bankruptcy volumes. Across courts, judge turnover is uncorrelated with the average number of incoming bankruptcies over the sample period, given area of the country and court's size.[18]

[17] As shown in column (1) Table A6 in Appendix B, the correlation is positive and statistically significant when geographic area and or region fixed effects are included.

[18] Column (2) of Table A6 in Appendix B, reports the estimates of a cross section OLS regression of judge

Figure 5. Court efficiency and judges' turnover



Calculations based on data from the *Ministry of Justice* and the *High Council of the Judiciary*. Each dot in the figure represents one of 50 bins in the court distribution of turnover. The red line is a linear fit. The variables are residualized: they are the residual of a regression of each variable on area and court dimension fixed effects. Turnover is winsorized at the 2.5 and 97.5 cut-offs.

Controls. All specifications include a rich set of firm-level controls. We control for firm's age and include fixed effects for industry (two-digit NACE), region of the firm's legal headquarters, legal form, family firm status, and the presence of a supervisory body. Time fixed effects are also included: year-of-exit fixed effects when analysing the use of bankruptcy procedures by exiting firms, and year-of-filing fixed effects when analysing outcomes conditional on filing.

Additional controls capture firm size (total assets, revenues, and employment), leverage, and bank debt characteristics (total bank exposure and debt concentration). Time varying variables from financial statements (CERVED) and social security records (INPS) — such as assets, employment, and leverage — are measured five years prior to exit or filing[19] when analysing the use and type of bankruptcy procedures and with the median over the whole life of the firm when analysing the timing. Credit variables from the *Central Credit Register* are measured either at the time of exit, when analysing the use or as averages over the available sample period when analysing the timing.

turnover over number of incoming bankruptcy cases at the jurisdiction level, that includes area of the country and court class size fixed effects.

[19] If the variable is not available five years prior to exit or filing, it is used the last non missing observation, before the five years. If the variable is still missing, because the firm has not any observation before five years prior to exit or filing, the last available observation available, even if it is more recent than five years prior to exit or filing.

4. Results

This section presents the main empirical results. We first examine the effect of court efficiency on the likelihood that firms exiting the market with financial distress file for bankruptcy. We then analyse how court efficiency affects the choice and timing of bankruptcy procedures among firms that file.

4.1. Court Efficiency and the Use of Bankruptcy Procedures

We begin by examining whether court efficiency affects the use of bankruptcy procedures by firms exiting the market with financial distress. Bankruptcy procedures provide an orderly mechanism to address financial distress by internalizing creditor coordination, but they entail non-trivial costs. Lengthy procedures increase these costs and may discourage firms from resorting to formal bankruptcy.

Table 1 reports estimates of equation (1), where the dependent variable is the probability that a firm exiting the market with financial distress files for bankruptcy. Column (1) presents OLS estimates, Column (2) the reduced form, Column (3) the instrumental-variable estimates, and Column (4) the first stage.

The analysis focuses on firms that exit the market with financial distress between 2007 and 2018. All specifications include fixed effects for region, two-digit industry, legal form, court size, and year of exit. Identification therefore exploits variation in court efficiency across courts within the same region. We also control for firm characteristics, including family ownership, the presence of a supervisory body or external auditors, firm size (assets and employment), age, revenues, leverage, and the size and concentration of bank debt. Time-varying controls are measured five years before exit.

Court inefficiency has a statistically and economically significant negative effect on the probability that a financially distressed firm files for bankruptcy. The first stage confirms that judge turnover is a relevant instrument for court efficiency, with a clustered F-statistic of 21.8, well above conventional thresholds for weak instruments (Stock and Yogo 2005). The difference between OLS and IV estimates is consistent with reverse causality: higher bankruptcy incidence increases court congestion and lengthens proceedings, biasing the OLS coefficient toward zero in absolute value. The IV estimates isolate the causal effect of court inefficiency and are therefore larger in magnitude.

Quantitatively, moving from a court at the 75^{th} percentile of inefficiency (approximately 15 years) to one at the 25^{th} percentile (almost 6 years) increases the probability of filing for bankruptcy by about 8.7 percentage points. This effect is economically large, corresponding to roughly 15% of the sample mean filing probability of 58.2%.

These results are consistent with the theoretical literature on bankruptcy (e.g., Aghion et al. 1992). When firms face multiple creditors, uncoordinated enforcement can lead to in-

Table 1. Court efficiency and the use of bankruptcy procedures

	OLS	Reduced Form	IV	First Stage
Court Inefficiency	-1.995***		-9.005**	
	(0.615)		(4.263)	
Judges' turnover		-1.043**		0.116***
		(0.443)		(0.025)
Family firm	-0.270	-0.279	-0.227	0.006***
	(0.319)	(0.319)	(0.321)	(0.002)
Firm with supervisory body	1.008**	1.019**	1.015**	-0.000
	(0.499)	(0.500)	(0.499)	(0.003)
Total assets (log)	1.865***	1.866***	1.865***	-0.000
	(0.174)	(0.174)	(0.174)	(0.001)
Revenues (log)	4.603***	4.608***	4.588***	-0.002**
	(0.139)	(0.139)	(0.140)	(0.001)
Employees (log)	5.784***	5.780***	5.783***	0.000
	(0.181)	(0.181)	(0.181)	(0.001)
Debts/Total assets (t-5)	0.043	0.042	0.041	-0.000
	(0.144)	(0.143)	(0.143)	(0.000)
Age (log)	-2.345***	-2.340***	-2.367***	-0.003**
	(0.229)	(0.229)	(0.229)	(0.001)
Bank debt (log)	2.938***	2.938***	2.940***	0.000
	(0.113)	(0.113)	(0.113)	(0.001)
Bank debt concetration	-4.262***	-4.268***	-4.259***	0.001
	(0.272)	(0.272)	(0.272)	(0.002)
N	122430	122430	122430	122430
R^2	0.18	0.18	0.11	0.55
Mean of dependent variable	58.23	58.23	58.23	7.95
F-stat (weak IV)				21.84

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table presents the results of an instrumental variables regression where the dependent variable is equal to 100 if the company has opened a bankruptcy proceeding and the sample consists of all firms that exited the market between 2007 and 2018 with financial distress. Court efficiency is the (logarithm) of the median length, at the court level, of judicial liquidations concluded with some distribution for the creditors. The instrumental variable is the turnover of judges at the court level. All specifications include fixed effects for industry sector (2 digit NACE), year of market exit, legal form of the company, region of firms' headquarter and court dimension. The first column presents the OLS estimates, the second the reduced form, the third the IV results and the last column the first stage. Variables derived from financial statements or INPS data (total assets, revenues, employees, leverage) are calculated 5 years before the firm's exit: if these are missing 5 years prior, the previous years' values are used recursively and then the subsequent years. Variables from the credit register (bank debt and debt concentration) are calculated in the year of exit. Standard errors are clustered at the year (of exit) by court level.

efficient liquidation even when continuation value is high (e.g., Jackson 2001). Bankruptcy procedures centralize enforcement and internalize coordination, but at a cost (e.g., Bris et al. 2006). Therefore firm's crisis leads to bankruptcy when coordination and going-concern benefits outweigh procedural costs, a condition that is less likely to hold when courts are inefficient.

Court inefficiency therefore distorts the use of bankruptcy procedures. Otherwise similar firms facing comparable financial distress make systematically different bankruptcy choices depending solely on the efficiency of the court they face. Firms that would optimally use in-court procedures in more efficient jurisdictions are less likely to do so when courts are inefficient.

The estimated coefficients on control variables are also consistent with the theoretical predictions. Larger and more indebted firms, as well as more productive firms, are more likely to file for bankruptcy, reflecting higher coordination benefits, relative to fixed costs of the procedures, and higher going-concern value. Older and family-controlled firms — potentially facing higher stigma or reputation costs — are less likely to file. Firms with a supervisory body or external auditors, who may face liability for delayed crisis management, are more likely to enter bankruptcy.

Consistent with theories of creditor coordination, firms with more concentrated bank debt are less likely to file for bankruptcy. Lower creditor dispersion reduces coordination frictions and weakens the benefits of formal bankruptcy procedures relative to their costs.[20]

Following this logic, we estimate the main specification separately for sectors characterized by different degrees of creditor coordination problems, proxied by the average concentration of firms' bank debt at the industry level. In sectors where bank credit is structurally more concentrated at the firm level, coordination problems are less severe, reducing the importance of bankruptcy law — and thus of court efficiency — for firms' bankruptcy decisions. As a result, the magnitude of the effect of court inefficiency on the use of bankruptcy procedures should be smaller in sectors with higher bank debt concentration.[21]

Table 2 shows that the effect of court inefficiency on the use of bankruptcy procedures is substantially stronger in sectors where firms' bank debt is less concentrated and creditor coordination problems are more severe. The estimated coefficient is nearly twice as large

[20] In Table 1, creditor dispersion at the firm level is measured using the Herfindahl index of bank credit. This result is robust to alternative measures of coordination problems (see Table A7 in Appendix B): the use of bankruptcy procedures is negatively correlated with the share of lending by the main bank and positively correlated with the number of banks lending to the firm.

[21] Because bank debt concentration may itself depend on court efficiency, we focus on sector-level averages rather than firm-level measures. To further mitigate endogeneity concerns, industry-level debt concentration is computed using pre-sample data (prior to 2007). A sector is classified as having high concentration if its average firm-level bank debt concentration exceeds the median across sectors.

Table 2. Court efficiency and the use of bankruptcy, by the strength of creditor coordination problems

	High concentration	Low concentration
Court Inefficiency	-6.292	-11.312**
	(5.019)	(5.461)
N	52201	70229
R^2	0.10	0.11
Mean of dependent variable	52.04	62.82
F-stat (weak IV)	20.85	21.40
Credit concentration (in the industry)	0.84	0.72

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports IV estimates of the baseline specification in Table 1, estimated separately for industries with high and low concentration of firms' bank debt, used as a negative proxy for creditor coordination problems. Industry-level averages are computed using the Herfindahl index of firm bank debt based on pre-2007 data. A sector is classified as *high concentration* if its average firm-level bank debt concentration exceeds the median across sectors. All regressions include the full set of controls and fixed effects used in the baseline specification.

as in sectors characterized by higher bank debt concentration.[22]

Robustness. The results in Table 1 are robust to a wide range of alternative specifications and definitions.[23] First, the sign and magnitude of the effect of court inefficiency on the use of bankruptcy procedures do not depend on how creditor coordination problems are measured, nor on the set of controls included in the regression or on how these controls are constructed (Tables A7 and A9).[24]

Second, the results are qualitatively unchanged — although slightly smaller in magnitude — when restricting the sample to the period following the 2012 judicial geography reform, which reduced the number of courts from 165 to 140 (Table A10, Panel A), and when using the full sample but computing court inefficiency based solely on trials concluded after the reform (Table A10, Panel B).

Finally, the results are robust to the inclusion of local labour market fixed effects and restricting the sample to local labour markets spanning multiple court jurisdictions[25].

[22] Results are qualitatively similar when industry-level bank debt concentration is measured using the share of the main bank or the number of lending banks (see Table A8 in Appendix B).

[23] All additional results are reported in Appendix B.

[24] Results are nearly identical to the baseline specification when (i) including only a minimal set of controls — age, family firm status, and the presence of a supervisory body — in addition to fixed effects, to alleviate concerns about bad controls; (ii) excluding controls from the Central Credit Register, thereby substantially increasing the sample size; and (iii) measuring firm-level controls using median values over the entire sample period rather than values observed five years prior to exit.

[25] A local labour market (*sistema locale del lavoro*) is a self-contained local market identified by the Italian National Institute of Statistics (ISTAT), defined by commuting flows rather than administrative boundaries. The strategy can be interpreted as a spatial regression discontinuity design along jurisdictional borders (see Black 1999, Holmes 1998, and Giacomelli and Menon 2017), comparing firms on either side of the border

This exercise yields qualitatively similar results, albeit estimated with lower precision (Table A11).

The type of bankruptcy procedure. We next examine whether court efficiency affects the type of bankruptcy procedure chosen, conditional on filing. Table 3 reports estimates where the dependent variable is an indicator equal to 100 if a firm initiates a judicial composition with creditors and zero if it enters judicial liquidation.

Table 3. Court efficiency and the type of procedure

	OLS	IV
Court Inefficiency	3.163***	-1.628
	(0.534)	(3.606)
N	83119	83119
R^2	0.25	0.17
Mean of dependent variable	12.12	12.12
F-stat (weak IV)		37.58

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table presents the results of the instrumental variables regression. The sample consists of all firms that started a bankruptcy procedure between 2007 and 2021. In all specifications the dependent is equal to 100 the company has started a judicial composition with creditors and 0 if it started a judicial liquidation. The first column presents the OLS estimates and the second column the IV results. Court inefficiency is the (logarithm) of the median length, at the court level, of judicial liquidations concluded with some distribution for the creditors. The instrument used is the turnover of judges at the court level. All specifications include the same fixed effects for industry sector (2 digit NACE), year of bankruptcy filing, legal form of the company, region and court dimension, and the same controls as in the main specification. Variables derived from financial statements, CERVED, or social security, INPS, data (total assets, employees, leverage) are calculated 5 years before the start of bankruptcy procedure: if these are missing 5 years prior, the previous years' values are used recursively and then the subsequent years. Variables from the credit register (bank debt and debt concentration) are calculated in the year of bankruptcy. Standard errors are clustered at the year (of bankruptcy filing) by court level.

The OLS estimate in Column (1) indicates a positive and statistically significant association between court inefficiency and the likelihood of entering a composition with creditors. However, this correlation is not robust to the instrumental variable approach: the coefficient in Column (2) is negative and statistically insignificant.[26] Overall, the evidence reported in Table 3 suggests that court efficiency is not a significant determinant of the type of bankruptcy procedure selected.

This pattern suggests that judicial inefficiency primarily operates on the extensive and

within a narrow geographical bandwidth.

[26] Results are similar when including local labour market fixed effects and restricting the sample to local labour markets spanning multiple court jurisdictions (Table A12 in Appendix B). While this strategy addresses some endogeneity concerns, it does not rule out reverse causality — a potentially less severe issue when analysing the choice among procedures rather than the decision to file. Also in this case, the results are not robust to the IV approach: the coefficient of court efficiency, although positive as expected, is not statistically significant.

timing margins, rather than by reallocating firms across insolvency procedures once the decision to file has been taken.

4.2. Court Efficiency and the Timing of Bankruptcy Procedures

We next examine whether court efficiency affects the timing of bankruptcy filings. Table 4 reports estimates for two related outcomes capturing delays in crisis resolution. The first dependent variable measures the time (in months) a firm remains continuously insolvent before filing for bankruptcy, while the second captures prolonged economic distress prior to filing, defined as an indicator equal to 100 if the firm was classified as zombie (or it was inactive) in all three years preceding filing. The analysis focuses on firms that enter a judicial liquidation procedure between 2007 and 2021 and differs from the previous specifications in the set of controls employed.

Firm-level controls are measured using median values over the available sample period rather than values observed five years prior to filing. This choice allows us to retain also firms with incomplete balance-sheet information in the years immediately preceding bankruptcy, avoiding selection bias if incomplete financial statements are correlated with firms' distress. For each dependent variable, Table 4 reports OLS and instrumental-variable estimates[27].

The results indicate a strong positive relationship between court inefficiency and delays in bankruptcy filings. Firms operating in jurisdictions with longer judicial proceedings remain insolvent for longer periods before entering bankruptcy and are more likely to be classified as zombies in the three years preceding filing.

As the analysis conditions on firms that have already entered a bankruptcy procedure, reverse causality concerns are likely to be less pronounced than in the filing decision. We nonetheless rely on the instrumental-variable approach to address residual endogeneity.[28]. The comparison between OLS and IV estimates suggests that OLS coefficients are biased toward zero.

Quantitatively, moving from a court at the 75th percentile of the inefficiency distribution to one at the 25th percentile reduces the time spent in insolvency prior to filing by about 46.9%; given an average of the dependent variable of 24 months, this corresponds to a reduction of about 11.2 months. A comparable reduction in court inefficiency decreases the probability that a firm is already in severe economic distress three years before filing by about 10.4 percentage points, relative to a sample mean of 60.1%.

[27]The full IV exercises, including the first stage and reduced form, are reported in Table A13 in Appendix B.

[28]The direction of the potential bias in OLS estimates is not a priori clear. Delays in filing may worsen firms' financial conditions at the time of entry into bankruptcy, potentially increasing procedural complexity and length. At the same time, more severe distress may reduce the likelihood that the proceedings yield any recovery for creditors, potentially lowering judges' effective workload and our measure of court efficiency, which is constructed on the procedures that yield a positive return for creditors.

Table 4. Court efficiency and the timing of bankruptcy

	Time in insolvency		Already zombie	
	OLS	IV	OLS	IV
Court Inefficiency	0.035*	0.658***	2.054***	10.799***
	(0.019)	(0.168)	(0.630)	(3.944)
N	90536	90536	90536	90536
R^2	0.10	0.03	0.10	0.04
Dependent variable (mean)	2.41	2.41	60.19	60.19
F-stat (weak IV)		31.13		31.13

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table presents the results of several instrumental variables regressions. The sample consists of all firms that started a judicial liquidation procedure between 2007 and 2021. Odd columns present the estimates obtained using OLS, even columns show the IV estimates. In columns 1 and 2 the dependent variable is the logarithm of the time (in months) the firm was continuously insolvent before bankruptcy. In columns 3 and 4 the dependent variable is equal to 100 the company was continuously classified as zombie — EBITDA lower than interest expenditures — or inactive in the three years before bankruptcy. Court inefficiency is the (logarithm) of the median length, at the court level, of judicial liquidations concluded with some distribution for the creditors. The instrument used is the turnover of judges at the court level. All specifications include fixed effects for industry sector (2 digit NACE), year of bankruptcy filing, legal form of the company, region and court dimension. Variables derived from financial statements, CERVED, or social security, INPS, data (total assets, employees, leverage) are calculated using the firm's median value for all observations available in CERVED and INPS datasets. The variables from the credit register (bank debt and debt concentration) are calculated as the mean for all observations available in the CR data. Standard errors are clustered at the year (of bankruptcy filing) by court level.

These findings indicate that high costs associated with inefficient bankruptcy procedures not only discourage the use of formal insolvency procedures but also substantially delay their initiation. The timing margin is particularly sensitive to court efficiency because delaying filing preserves an option value for equity holders and controlling parties. In this context, insolvent firms may engage in risk-shifting or "gambling for resurrection", as downside losses are largely borne by creditors while potential upside accrues to equity holders, an incentive that is especially strong when expected resolution times are long and the present value of creditor recovery is low (Jensen and Meckling 1976).

By postponing formal crisis resolution, judicial inefficiency contributes to the persistence of insolvent and zombie firms, with important implications for resource reallocation and aggregate productivity (e.g., Caballero et al. 2008 and Adalet McGowan et al. 2018). Delays in bankruptcy filing have been identified as a key weakness of insolvency frameworks (e.g., Dou et al. 2021) and were explicitly targeted by recent bankruptcy reforms (e.g. Banca d'Italia 2021, Ch. 12) and proposals (e.g. Becker and Oehmke 2025). Moreover, empirical evidence shows that shorter delays are associated with higher recovery rates in judicial compositions with creditors (Danovi et al. 2018) and with better performance of restructuring plans (Fornasari and Rodano 2025).

Robustness. The results on the timing of bankruptcy filings are also robust to a wide range of alternative specifications and definitions.[29] First, the sign and magnitude of the effect of court inefficiency on time spent in insolvency and on the probability of being a zombie firm three years prior to filing do not depend on the set of controls included in the regression or on how these controls are constructed (Table A14), nor on the specific definition of economic distress prior to filing (Tables A15 and A16). Using indicators for insolvency at different horizons before filing (Table A17), we show that the effect on time spent in insolvency is stronger over shorter horizons (two years) than longer ones (five years).

Second, the results essentially unchanged — both qualitatively and quantitatively — when restricting the sample to the period following the 2012 judicial geography reform (Table A18, Panel A) or when computing court inefficiency based solely on trials concluded after the reform using the full sample period (Table A14, Panel B). When adopting the demanding setup of the spatial discontinuity design to control for unobserved geographic characteristics at a very fine level, the results remain qualitatively unchanged, although quantitatively smaller and estimated with lower precision (Table A19).

Finally, the results are qualitatively unchanged and quantitatively slightly stronger, when the sample is expanded to include all firms that initiated any bankruptcy procedure, including judicial compositions with creditors (Table A20).

5. Conclusions

This paper studies how court efficiency shapes firms' use of bankruptcy procedures, focusing on both the extensive margin—whether financially distressed firms file for bankruptcy—and the intensive margins—how and when they do so. Exploiting rich administrative data and an instrumental-variable strategy based on judge turnover, we document two main findings.

First, court inefficiency significantly reduces the likelihood that firms exiting the market with financial distress resort to formal bankruptcy procedures. Firms facing longer judicial proceedings are less likely to file for bankruptcy, even when formal procedures would otherwise provide coordination benefits and preserve going-concern value. Second, court inefficiency strongly affects the timing of bankruptcy filings: firms operating in jurisdictions with slower courts delay entry into bankruptcy, remaining insolvent and in economic distress for longer periods.

Taken together, these results highlight a central mechanism through which judicial inefficiency distorts the functioning of insolvency frameworks. Lengthy and uncertain procedures increase the expected costs of filing, discouraging early entry into bankruptcy

[29] All additional results are reported in Appendix B.

and inducing firms to postpone formal crisis resolution. As a result, firms enter bankruptcy later, in worse conditions, and with reduced scope for efficient restructuring.

These findings have important policy implications. Reforms aimed at improving insolvency outcomes should not focus exclusively on the design of bankruptcy procedures, but also — and perhaps primarily — on the capacity and efficiency of courts. Even well-designed legal frameworks may fail to deliver timely and effective crisis resolution if judicial proceedings are excessively slow. Policies that reduce court congestion, increase judicial capacity, or improve case management can lower the expected costs of bankruptcy and encourage earlier filing, when firms are still viable and restructuring is more likely to succeed.

The results also speak to recent reforms that emphasize early detection and timely management of corporate distress. Our evidence suggests that such reforms are likely to be most effective when complemented by improvements in judicial efficiency. Without credible expectations of timely resolution, firms may continue to delay filing despite the availability of early-intervention tools, undermining the objectives of the reforms.

More broadly, delayed bankruptcy has implications that extend beyond individual firms. By allowing insolvent and inactive firms to persist, judicial inefficiency can slow down resource reallocation and weigh on aggregate productivity. Improving court efficiency may therefore yield benefits not only in terms of creditor recovery and firm-level outcomes, but also for the dynamism and efficiency of the broader economy.

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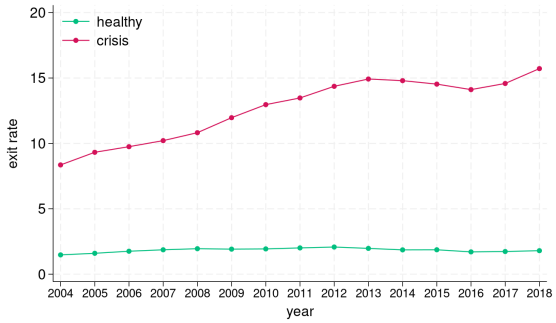
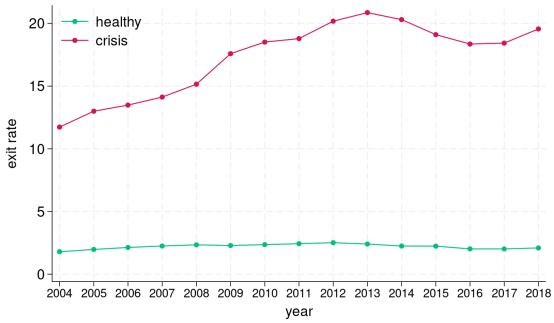
Appendix A. Additional Figures

Figure A1. Exit rate healthy and crisis (alternative definitions)

(a) Risky



(b) Undercapitalized



Source: CERVED and INPS data. For each year between 2004 and 2018, the figure shows the exit rate from the market, defined as the number of firms exiting in a given year relative to the number of firms active in the same year, separately for firms in crisis and for healthy firms. In the left panel, a firm is in crisis if it is risky (with SCORE greater or equal to 6) and healthy otherwise. In the right panel, the crisis is associated with the firm being undercapitalized.

Appendix B. Additional Tables

B.1. Tables

Table A1. Summary statistics (full sample)

	Mean	SD	Min	Max	N
Exit	6.14	24.00	0	100	7890313
Positive Revenues	84.39	36.29	0	100	7890313
At least one Employee	88.57	31.81	0	100	7890313
Not recorded in CR	44.70	49.72	0	100	7890313
Total Assets	2042.11	6062.26	0	50796	7890313
Revenues	1985.31	5984.35	0	52574	7890313
Employees	9.93	22.32	0	179	7890313
Age	19.76	12.97	1	1008	7890313
Risky	24.95	43.27	0	100	6658907
Undercapitalized	10.08	30.10	0	100	6709171
Negative Value Added	7.66	26.59	0	100	6658918
Bad Loans	2.69	16.17	0	100	7890313
Family Firm	68.70	46.37	0	100	7890313
Supervisory Body	18.03	38.44	0	100	7890313
Debts/Total Assets	0.73	0.38	0	3	6657760
South	27.92	44.86	0	100	7890313
Center	24.33	42.91	0	100	7890313

Source: INFOCAMERE, CERVED, INPS, CR. The sample consists of all firms that have employed at least one employee according to INPS data and have produced revenues according to CERVED data, at least once between 2002 and 2021. The table reports sample averages, at the firm-year level, for all active firms in the years between 2007 and 2018. All variables are in percentage terms, but employees (units), assets and revenues (thousands of euros), age (years) and leverage. If a firm does not report revenues or assets, these are assumed to be zero. Assets, revenues and employees are winsorized at the top 1%.

Table A2. Staying and exiting firms

	Stay	Exit	Diff	N
Positive Revenues	86.7	49.6	37.1***	7890313
At least one Employee	89.4	76.6	12.7***	7890313
Not recorded in CR	43.6	60.9	-17.3***	7890313
Total Assets	2153.7	335.5	1818.2***	7890313
Total assets (t-5)	1992.8	1356.3	636.5***	7257461
Revenues	2102.9	186.6	1916.4***	7890313
Revenues (t-5)	2064.1	1361.7	702.4***	7241781
Employees	10.4	3.2	7.1***	7890313
Employees (t-5)	9.1	7.4	1.7***	7433673
Age	20.2	12.2	8.0***	7890313
Risky	23.6	60.8	-37.2***	6658907
Undercapitalized	8.7	44.3	-35.6***	6709171
Losing (negative Value Added)	6.4	40.6	-34.2***	6658918
Bad Loans	1.8	16.7	-14.9***	7890313
Family Firm	69.0	63.5	5.6***	7890313
Supervisory Body	18.7	7.9	10.8***	7890313
Debts/Total Assets	0.7	1.2	-0.5***	6657760
South	27.7	31.0	-3.3***	7890313
Center	24.1	27.1	-3.0***	7890313

Source: INFOCAMERE, CERVED, INPS, CR, and *Ministry of Justice*. The original sample consists of all firms that have employed at least one employee according to INPS data and have produced revenues according to *cerved* data, at least once between 2002 and 2021. The table reports, for all active firms in the years between 2007 and 2018, separately for firms that stay in the market and those who exit in a given year, the averages of different firms characteristics. All variables are in percentage terms, but employees (units), assets and revenues (thousands of euros) leverage and age (years). If a firm does not report revenues or assets, these are assumed to be zero. Assets, revenues and employees are winsorized at the top 1% The third column report the differences between staying and exiting firms (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Table A3. Firms characteristics by type of exit

	No distress	Distress no Bankruptcy	Distress and Bankruptcy
Total Assets	238.0	300.1	400.6
Total assets (t-5)	944.7	875.0	2419.4
Revenues	146.0	108.6	142.4
Revenues (t-5)	1017.3	762.9	2312.3
Employees	2.8	1.6	4.1
Employees (t-5)	5.9	4.7	12.4
Age	11.7	11.9	14.2
Debts/Total Assets	1.0	1.3	1.6
Risky	53.2	75.3	85.4
Undercapitalized	37.9	52.2	70.7
Losing (negative Value Added)	37.4	44.4	54.1
Bad Loans	0.0	35.6	50.2
Family Firm	58.6	74.0	69.0
Supervisory Body	6.9	4.3	14.2

Source: INFOCAMERE, CERVED, INPS. The sample consists of all firms exiting the market between 2007 and 2018. The table reports sample averages for all these firms separately for firms that exit without financial distress, those that exit with financial distress but do not file for bankruptcy and those that file for bankruptcy. All variables are in percentage terms, but employees (units), assets and revenues (thousands of euros) leverage and age (years). Assets, revenues employees and leverage are winsorized at the top 1%.

Table A4. Bankrupt firms characteristics by first procedure

	Liquidation	Composition with Creditors
Positive Revenues	0.4	53.0
At least one Employee	26.7	69.6
Total assets (t-5)	2385.7	11807.9
Revenues (t-5)	2294.3	10011.4
Employees	1.8	20.0
Employees (t-5)	13.3	38.8
Age	15.1	23.4
Family Firm	69.4	60.6
Supervisory Body	10.8	53.9
Debts/Total assets (t-5)	0.9	0.9
South	26.3	17.2
Centre	25.4	26.4
Time in insolvency before procedure	24.2	8.7
Already zombie 3 years before procedure	61.4	40.6

Source: INFOCAMERE, CERVED, INPS. The sample consists of all firms filing for in court bankruptcy procedures between 2007 and 2021. The table reports sample averages for all these firms separately for firms that file for judicial liquidation and composition with creditors. All variables are in percentage terms, but employees (units), assets and revenues (thousands of euros) leverage, age (years) and time in insolvency before the procedure (months). Time in insolvency before the procedure is set to 0 if the firm had no bad loans at the start of the procedure. Assets, revenues employees and leverage are winsorized at the top 1%.

Table A5. Summary statistics — courts

	Mean	Median	25^{th} perc.	75^{th} perc	N
Length of judicial liquidations (years)	10.5	7.8	5.7	14.85	139
Judges' turnover	46.0	41.8	30.2	59.10	140

Source: *Ministry of Justice* and *High Council of the Judiciary*. The data report averages at the court level. The length of judicial liquidations is calculated as the average for all proceedings concluded in 2019, with some distribution to creditors (Calanca et al. 2023). Judge turnover at the court level is measured as the number of judge departures over all the available years relative to the average number of judges during the same period.

Table A6. IV relevance

	Dependent variable Court Inefficiency	Dependent variable Turnover
Judges' turnover	0.080*	
	(0.041)	
Incoming bankruptcies		0.002
		(0.124)
N	140	140
R^2	0.56	0.18

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table presents the results of OLS criss section regressions where the unit of observation is the jurisdiction. In the first column the measure of court (in)efficiency (the log of the median length of judicial liquidations closed with some distributions) is regressed on judges' turnover at the jurisdiction level (in log). In the second column the turnover (in log) is regressed on the average number of incoming bankruptcies over the sample period. All specifications include fixed effects for the area of the country and the size of courts (5 categories). Turnover is winsorized at the 2.5 and 97.5 cut-off.

Table A7. The use of bankruptcy procedures and firm's debt concentration

	Debt concentration		Share of main bank		Number of banks	
	OLS	IV	OLS	IV	OLS	IV
Court Inefficiency	-1.995***	-9.005**	-2.006***	-9.494**	-2.117***	-8.594**
	(0.615)	(4.263)	(0.615)	(4.296)	(0.614)	(4.188)
Herfindahl index	-4.262***	-4.259***				
	(0.272)	(0.272)				
Share of biggest bank			-20.265***	-20.268***		
			(0.659)	(0.660)		
Number of banks (log)					12.064***	12.081***
					(0.265)	(0.266)
N	122430	122430	122430	122430	122430	122430
R^2	0.18	0.11	0.18	0.11	0.19	0.12
Mean of dep. variable	58.23	58.23	58.23	58.23	58.23	58.23
F-stat (weak IV)		21.84		21.84		21.84

Source INFOCAMERE, CERVED, INPS, CR and *Ministry of Justice*. Standard errors in parentheses: * p < 0.10, ** p < 0.05, *** p < 0.01. The table presents the results of an instrumental variables regression where the dependent variable is equal to 100 if the company has opened a bankruptcy proceeding and the sample consists of all firms that exited the market between 2007 and 2018 with financial distress. Court efficiency is the (logarithm) of the median length, at the court level, of judicial liquidations concluded with some distribution for the creditors. The instrumental variable is the turnover of judges at the court level. All specifications include fixed effects for industry sector (2 digit NACE), year of market exit, legal form of the company, region of firms' headquarter and court dimension. Standard errors are clustered at the jurisdiction by year of exit level. The odd columns presents the OLS estimates, the even ones the IV results. The concentration of firm's debts is measured by the Herfindahl index of bank debt at the firm level in columns (1) and (2), by the share of the most exposed bank in columns (3) and (4), and by the number of banks in columns (5) and (6). Variables derived from financial statements or INPS data (total assets, revenues, employees, leverage) are calculated 5 years before the firm's exit: if these are missing 5 years prior, the previous years' values are used recursively and then the subsequent years. Variables from the credit register (bank debt and debt concentration) are calculated in the year of exit.

Table A8. Court efficiency and the use of bankruptcy, by the strength of creditor coordination problems (different measures of concentration)

	Share of main bank		Number of banks	
	High concentration	Low concentration	High concentration	Low concentration
Court Inefficiency	-6.292	-11.312**	-8.255	-9.544*
	(5.019)	(5.461)	(5.279)	(5.235)
N	52201	70229	61044	61386
R^2	0.10	0.11	0.10	0.11
Mean of dependent variable	52.04	62.82	53.07	63.35
Share of main bank (in the industry)	0.87	0.78		
Number of banks (in the industry)			1.85	2.72

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports IV estimates of the baseline specification in Table 1, estimated separately for industries with high and low concentration of firms' bank debt, used as a negative proxy for creditor coordination problems. Industry-level averages of concentration are computed using the share of the main bank (columns 1 and 2) and the number of banks the firm is indebted with (columns 3 and 4, where more banks imply less concentration), based on pre-2007 data. A sector is classified as *high concentration* if its average firm-level bank debt concentration exceeds the median across sectors. All regressions include the full set of controls and fixed effects used in the baseline specification.

Table A9. Court efficiency and the use of bankruptcy procedures - robustness with respect to controls included

	FEW	NO CR	BASE	MEDIANS
Court Inefficiency	-8.30**	-7.28*	-9.00**	-7.07*
	(3.92)	(3.84)	(4.26)	(3.88)
N	160985	160970	122430	152365
R^2	0.01	0.08	0.11	0.14
Mean of dependent variable	58.44	58.45	58.23	56.09
F-stat (weak IV)	23.16	23.17	21.84	22.90

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports IV estimates of the baseline specification in column (3) of Table 1, reported here in column (3), estimated with different set of controls. All specifications include the full set of fixed effects used in column (3). In column (1) we include only a minimal set of controls: age, family firms, statutory board. In column (2) we exclude controls from the *Central Credit Register*, increasing significantly the sample size with respect to the baseline. In column (4) we measure the controls using medians values over the whole sample for each firm rather than the values five years before the firm exit from the market.

Table A10. Court efficiency and the use of bankruptcy procedures - robustness to the geography reform

(a) Panel A: post-2012 reform sample

	OLS	Reduced Form	IV	First Stage
Court Inefficiency	-1.728**		-6.799*	
	(0.719)		(4.019)	
Judges' turnover		-1.006*		0.148***
		(0.541)		(0.039)
N	75301	75323	75301	75301
R^2	0.19	0.19	0.12	0.60
Mean of dependent variable	57.26	57.25	57.26	57.26
F-stat (weak IV)				14.38

(b) Panel B: post-2012 inefficiency measure

	OLS	Reduced Form	IV	First Stage
Court Inefficiency (post)	-0.874		-6.069**	
	(0.602)		(2.923)	
Judges' turnover		-1.041**		0.171***
		(0.443)		(0.033)
N	122398	122452	122398	122398
R^2	0.18	0.18	0.11	0.63
Mean of dependent variable	58.23	58.22	58.23	58.23
F-stat (weak IV)				27.07

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicate the baseline empirical analysis of Table 1: in Panel A the sample is restricted to the post-2012 period; in Panel B the full sample is used but the court inefficiency measure is calculated only with the length of trials post 2012. In both cases the set of controls and fixed effects is the same the baseline analysis.

Table A11. Court efficiency and the use of bankruptcy procedures - geography at a very fine level

	OLS	Reduced Form	IV	First Stage
Court Inefficiency	-2.06**		-6.75	
	(0.89)		(4.20)	
Judges' turnover		-1.52*		0.23***
		(0.89)		(0.05)
N	72093	72094	72093	72093
R^2	0.18	0.18	0.11	0.68
Mean of dependent variable	59.03	59.03	59.03	59.03
F-stat (weak IV)				23.46

Source Infocamere, Cerved, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicate the baseline empirical analysis of Table 1 where the sample is restricted to those local labour markets whose municipalities pertain to different jurisdictions and the analysis include local labour market fixed effects. The set of controls and the other fixed effects are the same of the baseline analysis.

Table A12. Court efficiency and the type of procedure — geography at a very fine level

	OLS	IV
Court Inefficiency	3.355***	2.085
	(0.781)	(2.959)
N	49478	49478
R^2	0.27	0.17
Mean of dependent variable	11.57	11.57
F-stat (weak IV)		34.64

Source Infocamere, Cerved, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicate the baseline empirical analysis of Table 3 where the sample is restricted to those local labour markets whose municipalities pertain to different jurisdictions and the analysis include local labour market fixed effects. The set of controls and the other fixed effects are the same of the baseline analysis.

Table A13. Court efficiency and the timing of bankruptcy procedures - full IV

(a) Panel A: time in insolvency

	OLS	Reduced Form	IV	First Stage
Court Inefficiency	0.035*		0.658***	
	(0.019)		(0.168)	
Judges' turnover		0.089***		0.135***
		(0.015)		(0.024)
N	90536	90567	90536	90536
R^2	0.10	0.10	0.03	0.58
Mean of dependent variable	2.41	2.41	2.41	2.41
F-stat (weak IV)				31.13

(b) Panel B: already zombie 3 years before

	OLS	Reduced Form	IV	First Stage
Court Inefficiency	2.054***		10.799***	
	(0.630)		(3.944)	
Judges' turnover		1.472***		0.135***
		(0.470)		(0.024)
N	90536	90567	90536	90536
R^2	0.10	0.10	0.04	0.58
Mean of dependent variable	60.19	60.19	60.19	60.19
F-stat (weak IV)				31.13

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table presents the results of two instrumental variables regressions. The sample consists of all firms that started a judicial liquidation procedure between 2007 and 2021. The first column presents the OLS estimates, the second the reduced form, the third the IV results and the last column the first stage. In Panel A the dependent variable is the logarithm of the time (in months) the firm was continuously insolvent before bankruptcy. In Panel B the dependent variable is equal to 100 the company was continuously classified as zombie — EBITDA lower than interest expenditures — or inactive in the three years before bankruptcy. Court inefficiency is the (logarithm) of the median length, at the court level, of judicial liquidations concluded with some distribution for the creditors. The instrument used is the turnover of judges at the court level. All specifications include fixed effects for industry sector (2 digit NACE), year of bankruptcy filing, legal form of the company, region and court dimension. Variables derived from financial statements, CERVED, or social security, INPS, data (total assets, employees, leverage) are calculated using the firm's median value for all observations available in CERVED and INPS datasets. The variables from the credit register (bank debt and debt concentration) are calculated as the mean for all observations available in the CR data. Standard errors are clustered at the year (of bankruptcy filing) by court level.

Table A14. Court efficiency and the timing of bankruptcy procedures - robustness with respect to controls included

(a) Panel A: time in insolvency

	FEW	NO CR	BASE	MINUS 5
Court Inefficiency	0.64***	0.65***	0.63***	0.80***
	(0.17)	(0.17)	(0.17)	(0.20)
N	92564	92563	92574	73046
R^2	0.00	0.02	-0.01	0.04
Mean of dependent variable	2.42	2.42	2.42	2.26
F-stat (weak IV)	30.76	30.85	30.75	28.77

(b) Panel B: already zombie 3 years before

	FEW	NO CR	BASE	MINUS 5
Court Inefficiency	7.53**	9.35***	7.36**	12.33***
	(3.39)	(3.47)	(3.40)	(4.53)
N	102749	102746	102762	73046
R^2	0.01	0.04	-0.00	0.05
Mean of dependent variable	61.41	61.40	61.41	57.52
F-stat (weak IV)	31.73	31.83	31.71	28.77

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports IV estimates of the baseline specification in column (3) of Table 4, reported here in column (3), estimated with different set of controls. In Panel A the dependent variable is the logarithm of the time (in months) the firm was continuously insolvent before bankruptcy. In Panel B the dependent variable is equal to 100 the company was continuously classified as zombie — EBITDA lower than interest expenditures — or inactive in the three years before bankruptcy. All specifications include the full set of fixed effects used in column (3). In column (1) we include only a minimal set of controls: age, family firms, statutory board. In column (2) we exclude controls from the *Central Credit Register*. In column (4) we use controls calculated 5 years before the firm's exit rather than using medians values over the whole sample.

Table A15. Court efficiency and the timing of bankruptcy procedures - different measures of crisis

	Negative VA	Risky	Undercapitalized	Zombie
Court Inefficiency	14.439***	6.332*	11.627**	10.799***
	(4.675)	(3.745)	(4.524)	(3.944)
N	90536	90536	90536	90536
R^2	0.04	0.03	0.05	0.04
Dep. variable (mean)	37.97	74.64	47.03	60.19
F-stat (weak IV)	31.13	31.13	31.13	31.13

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports IV estimates of the baseline specification in column (4) of Table 4, reported here in column (4), estimated with different measures of firm's crisis. In column (1) the dependent variable is equal to 100 if the firm had negative value added in all three years before filing; in column (2) if it was classified as risky in all five years; in (3) if it had equity below the statutory minimum in all five years. All specifications include the full set of controls and fixed effects used in baseline analysis.

Table A16. Court efficiency and the timing of bankruptcy procedures - "dead" for five years before filing

	No revenues		No workers	
	OLS	IV	OLS	IV
Court Inefficiency	2.257***	4.287*	1.513***	4.795**
	(0.507)	(2.543)	(0.397)	(2.191)
N	90536	90536	90536	90536
R^2	0.12	0.04	0.10	0.04
Dep. variable (mean)	12.13	12.13	8.27	8.27
F-stat (weak IV)		31.13		31.13

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports OLS and IV estimates of the baseline specification of Table 4, estimated with two different measures of firm's difficulties. In columns (1) and (2) the dependent variable is equal to 100 if the firm had never produced positive revenues in all five years before filing; in columns (3) and (4) if it had never employed any worker in all five years. All specifications include the full set of controls and fixed effects used in baseline analysis.

Table A17. Court efficiency and the timing of bankruptcy procedures - different horizons of insolvency

	2 years before		5 years before	
	OLS	IV	OLS	IV
Court Inefficiency	0.571	10.659***	1.127***	1.723
	(0.620)	(4.066)	(0.437)	(2.365)
N	90536	90536	90536	90536
R^2	0.13	0.05	0.12	0.05
Dep. variable (mean)	33.73	33.73	10.47	10.47
F-stat (weak IV)		31.13		31.13

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicate the baseline empirical analysis of Table 4 on the time in insolvency, using as dependent variables an indicator variable equal to 100 if the firm had been continuously insolvent for 2 years (columns 1 and 2) or 5 years (columns 3 and 4) before filing. In all specifications the set of controls and fixed effects is the same the baseline analysis.

Table A18. Court efficiency and the timing of bankruptcy procedures - robustness to the geography reform

(a) Panel A: post-2012 reform sample

	Time in insolvency		Already zombie	
	OLS	IV	OLS	IV
Court Inefficiency	0.014	0.607***	1.996***	10.248**
	(0.022)	(0.187)	(0.707)	(4.198)
N	66478	66478	66478	66478
R^2	0.10	0.03	0.08	0.04
Dependent variable (mean)	2.48	2.48	63.53	63.53
F-stat (weak IV)		22.55		22.55

(b) Panel B: post-2012 inefficiency measure

	Time in insolvency		Already zombie	
	OLS	IV	OLS	IV
Court Inefficiency (post)	0.003	0.564***	1.315**	9.262***
	(0.019)	(0.147)	(0.611)	(3.445)
N	90524	90524	90524	90524
R^2	0.10	0.03	0.10	0.04
Dependent variable (mean)	2.41	2.41	60.19	60.19
F-stat (weak IV)		32.99		32.99

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicate the baseline empirical analysis of Table 4: in Panel A the sample is restricted to the post-2012 period; in Panel B the full sample is used but the court inefficiency measure is calculated only with the length of trials post 2012. Odd columns report OLS estimates and even columns report IV estimates. In both cases the set of controls and fixed effects is the same the baseline analysis.

Table A19. Court efficiency and the use of bankruptcy — geography at a very fine level

	Time in insolvency		Already zombie	
	OLS	IV	OLS	IV
Court Inefficiency	-0.009	0.223*	0.147	6.825
	(0.026)	(0.130)	(0.863)	(4.448)
N	54518	54518	54518	54518
R^2	0.09	0.04	0.10	0.05
Mean of dependent variable	2.40	2.40	59.36	59.36
F-stat (weak IV)		30.53		30.53

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicate the baseline empirical analysis of Table 4 where the sample is restricted to those local labour markets whose municipalities pertain to different jurisdictions and the analysis include a local labour market fixed effects. The set of controls and the other fixed effects are the same of the baseline analysis.

Table A20. Court efficiency and the timing of bankruptcy — also composition with creditors

	Time in insolvency		Already zombie	
	OLS	IV	OLS	IV
Court Inefficiency	0.015	0.741***	1.339**	12.302***
	(0.019)	(0.185)	(0.599)	(4.219)
N	101032	101032	101032	101032
R^2	0.10	0.02	0.09	0.04
Dep. variable (mean)	2.32	2.32	58.14	58.14
F.stat (weak IV)		29.11		29.11

Source INFOCAMERE, CERVED, INPS, CR, and the *Ministry of Justice*. Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table replicates the baseline specification of Table 4, estimated on the sample of all firms that started any bankruptcy procedure, including those that started a judicial composition with creditors. All specifications include the full set of controls and fixed effects used in baseline analysis.