



Debt Recovery in Firm Liquidations: Do Liquidation Trustees Matter?

Jaka Cepec
Peter Grajzl
Katarina Zajc

CESIFO WORKING PAPER NO. 6034
CATEGORY 11: INDUSTRIAL ORGANISATION
AUGUST 2016

An electronic version of the paper may be downloaded

- *from the SSRN website:* www.SSRN.com
- *from the RePEc website:* www.RePEc.org
- *from the CESifo website:* www.CESifo-group.org/wp

ISSN 2364-1428

Debt Recovery in Firm Liquidations: Do Liquidation Trustees Matter?

Abstract

Insolvency systems play a crucial role in protection of creditor rights, yet micro-level empirical evidence on the functioning of insolvency regimes worldwide is sparse. We investigate whether creditors' recovery of outstanding claims, a measure of ex-post efficiency of an insolvency regime, depends on the characteristics of the trustee delegated the administration of the liquidation proceedings. To this end, we draw on a novel dataset of firm liquidations from Slovenia and exploit courts' de facto random assignment of firm liquidation cases to licensed liquidation trustees. Using a wide range of specifications and controls, we find that a subset of trustee characteristics indeed matters for debt recovery. Thus, ex-post efficiency of an insolvency regime depends not only on its formal rules and procedures, but also on who implements them in practice.

JEL-Codes: G330, K220, P370.

Keywords: insolvency, firm liquidations, debt recovery, liquidation trustees, Slovenia.

Jaka Cepec
Faculty of Economics
University of Ljubljana
Slovenia – 1000 Ljubljana
jaka.cepec@ef.uni-lj.si

*Peter Grajzl**
Department of Economics
The Williams School of Commerce,
Economics, and Politics
Washington and Lee University
USA – Lexington, VA 24450
grajzlp@wlu.edu

Katarina Zajc
Faculty of Law
University of Ljubljana
Slovenia – 1000 Ljubljana
katarina.zajc@pf.uni-lj.si

*corresponding author

July 31, 2016

For helpful comments and suggestions we thank participants at the 3rd annual conference on the Economic Analysis of Litigation in Montpellier.

1. Introduction

Insolvency laws and procedures play a crucial role in supporting the functioning of markets. At the macro level, bankruptcy laws and their enforcement enable continuous reallocation of resources from less to more productive use (White 1989, Claessens and Klapper 2005). At the micro level, an effective insolvency regime ensures resolution of financial distress by encouraging the liquidation of unviable firms or the restructuring of firms that are viable in the long run but suffering from temporary distress (see, e.g., Bris et al. 2006, Wang 2012). Effective insolvency regimes thus guarantee protection of creditor rights (see, e.g., Djankov et al. 2008), which in turn facilitates private credit and investment (La Porta et al. 1997, 1998).

From the normative standpoint, the primary objective of bankruptcy proceedings is to attain an *ex-post* efficient outcome, that is, maximize the value of the financially distressed firm to be divided among the stakeholders (see, e.g., Hart 2006: 4, Blazy and Chopard 2004, Blazy et al. 2013, Cornelli and Felli 2012). Yet detailed micro-level empirical evidence on the factors influencing the *ex-post* efficiency of insolvency regimes, especially those outside of the United States, is scant (Hotchkiss et al. 2008: 38, Blazy et al. 2011, 2013: 1937; Sundgren 1998, Couwenberg and de Jong 2008, Dewaelheyns and Van Hulle 2009, Leyman et al. 2011).¹ Systematic empirical analyses of bankruptcy regimes are especially scarce in the context of post-socialist and emerging-market economies (e.g., Blazy and Stef 2015, Lambert-Mogiliansky et al. 2007, Vukelic et al. 2014, Knot and Vychodil 2006), even though the design of effective bankruptcy institutions and procedures was identified as a policy priority during transition (see, e.g., Aghion et al. 1994, Estrin 2000, Pistor 2000, Csaki 2002) and continues to be an important

¹ In contrast, the literature on the *ex-ante* incentive effects of bankruptcy has been comparatively voluminous (for references, see, e.g., Hotchkiss et al. 2008: fn. 1).

policy concern in current reform debates worldwide (see, e.g., Cirmizi et al. 2012, Claessens et al. 2001).

In this paper, we fill the abovementioned gap in the literature by studying the determinants of *debt recovery*, a common measure of ex-post efficiency of insolvency proceedings (see, e.g., Blazy and Stef 2015, Blazy et al. 2011, 2013; Thorburn 2000, Couwenberg and de Jong 2008, Armour et al. 2008), in firm liquidations in the post-socialist EU member state of Slovenia. Scarce previous micro-level studies on the predictors of debt recovery have examined the importance of bankruptcy laws (see, e.g., Armour et al. 2008, Davydenko and Franks 2008, Haselmann et al. 2010, Blazy et al. 2013; Blazy and Stef 2015) and utilized cross-country variation in the applicable codes and procedures (e.g., Davydenko and Franks 2008, Haselmann et al. 2010, Blazy et al. 2013, Blazy and Stef 2015). We, in contrast, much like Armour et al. (2008) or Blazy et al. (2011) rely on a within-country research design, but focus on the thus far empirically unexplored role of *liquidation trustees* as the agents delegated the execution of insolvency procedures in the resolution of firm liquidation cases.²

Liquidation trustees (also referred to as 'insolvency office holders' or 'insolvency administrators') have not been explicitly modeled in the analyses of firm bankruptcy (see, e.g., Hotchkiss et al. 2008). In theory, if bankruptcy codes were complete, insolvency outcomes would be independent of who exactly administers the insolvency proceedings. That law is inherently incomplete (Pistor and Xu 2003) and, hence, that liquidation trustees may play a vital role in debt recovery, however, has been well understood in insolvency practice (see, e.g., Bridge 2014). Accordingly, bankruptcy codes worldwide often include provisions governing the appointment of insolvency office holders with the aim of ensuring maximum recovery for the

² Blazy et al. (2011) examine whether insolvency outcomes in France are affected by the way the insolvency procedures are managed by the courts. The authors, however, do not explicitly investigate the role of the insolvency administrators and their impact vis-à-vis the judges.

creditors (see, e.g., Granfield et al. 2008). Indeed, in most jurisdictions (see, e.g., Bridge 2014, Granfield et al. 2008), the appointment of insolvency office holders typically involves a process in which the creditors, the court, and possibly other state bodies, directly participate in the nomination and approval of the candidates. This kind of deliberate matching of insolvency cases to insolvency trustees is intended to ensure favorable insolvency outcomes. From a researcher's standpoint, however, such endogenous selection of insolvency office holders represents an empirical challenge because it blurs the insolvency trustees' causal (*ceteris paribus*) impact on insolvency outcomes.

To examine the liquidation trustees' impact on creditors' recovery, we exploit a peculiar institutional setting in post-socialist Slovenia where concerns about cronyism and corruption in firm liquidations were prevalent throughout 1990s and early 2000s. In particular, under the old Slovenian insolvency legislation judges possessed full discretion in allocating firm liquidation cases among the liquidation trustees. In the transition environment, such unfettered judicial discretion created scope for illegal quid-pro-quo transactions between the judges and liquidation trustees eager to get a hold of the cases with the best prospects for private rent extraction.³ Consequently, in an effort to curb institutional subversion and promote efficiency, in 2008 the drafters of the reformed Slovenian insolvency code included a rare provision (see, e.g., Bridge 2014) which aims to ensure that firm liquidation cases petitioned in court are assigned to licensed liquidation trustees based on alphabetical order and, thus, independent of judge, firm, and trustee characteristics.

We make use of this *de facto* random allocation of firm liquidation cases among the liquidation trustees in post-2008 Slovenia as the source of exogenous variation in liquidation

³ A recent series of legal cases, covered extensively by the Slovenian press, revealed the nature of corrupt ties between judges and liquidation trustees and became known under the heading 'Friends in Firm Liquidations' (*Prijatelji v stečajih*).

trustees' characteristics. Upon combining a newly assembled dataset on the features of and outcomes in Slovenian firm liquidations with available data on liquidation trustee characteristics, we are therefore able to provide what is to our knowledge the first empirical analysis of whether, and if so in what way, liquidation trustee characteristics matter for ex-post efficiency of insolvency outcomes as measured by the prospects and the extent of creditors' recovery of outstanding claims.

The majority of firm liquidations in our data result in no debt recovery. To assess the role of trustee characteristics, we thus estimate different corner solutions models, which allow us to differentiate between the outcome of whether firm liquidation resulted in any debt recovery at all and the outcome of how much creditors were paid in the aggregate, given that the total amount paid to creditors at the end of the liquidation proceeding was positive. Our findings indicate that liquidation trustees indeed shape debt recovery. After controlling for a wide range of firm and case level controls as well as fixed effects, we find, first, that the creditors' prospects of recovering at least some of their claims are lower when firm liquidation is administered by a liquidation trustee who does not hold a degree in law or economics/business. This effect is admittedly identified off a relatively small number of observations (see Sections 3.3 and 4.3). However, the effect is robust across specifications and consistent with the argument that, even though all licensed liquidation trustees have had to pass a proficiency exam, the liquidation trustee's lack of a comprehensive legal or economics/business background increases the costs of the liquidation procedure, which in turn decreases the prospects of creditors' recovery.

Second, we find evidence that, conditional on firm liquidation resulting in at least some debt recovery, the total amount paid to creditors is all else equal higher if the trustee has had longer on-the-job experience. Third, at least some debt recovery is *ceteris paribus* more likely

when the trustee is paired with a judge with whom the trustee has already cooperated on a previous liquidation case in our dataset. This effect, which appears to work primarily through shortening the duration of the liquidation proceedings or increasing the ex-post value of liquidated assets, is consistent with the hypothesis that repeated interaction between a judge and a liquidation trustee enables the judge to more effectively supervise the trustee in his or her administration of the liquidation proceedings. In contrast, neither the trustee's gender nor the attained level of education (post-graduate versus undergraduate) matter for whether firm liquidation results in any debt recovery and, if so, how much creditors are paid in the aggregate.

Previous empirical research has persuasively demonstrated that ex-post efficiency of an insolvency regime is inter alia contingent on the choice of laws and procedures governing the proceedings (see, e.g., Armour et al. 2008, Davydenko and Franks 2008, Haselmann et al. 2010, Blazy et al. 2013, Blazy and Stef 2015). Our analysis complements these findings by demonstrating that the ex-post efficiency of a given insolvency regime may also notably depend on who is entrusted with its administration. Our research therefore points to a further layer of considerations for policy-makers contemplating designing or reforming insolvency regimes.

The rest of the paper is organized as follows. Section 2 provides a brief overview of the institutional rules governing firm liquidations in Slovenia. Section 3 introduces the data and variables. Section 4 presents the empirical strategy and the results. Section 5 concludes.

2. Firm Liquidation Proceedings in Slovenia: A Brief Overview⁴

The Slovenian insolvency practice, as in many other countries, encompasses two broad groups of proceedings: financial reorganization (*prisilna poravnava*) and bankruptcy liquidation (*stečaj*).

⁴ This section draws on various sources, most notably the Act on Financial Operations, Insolvency Proceedings, and Involuntary Liquidation Proceedings (Insolvency Act, in short), published in the Official Gazette of the Republic of Slovenia, No. 126/7.

Bankruptcy liquidation is the ultima ratio, implying that a petition for financial reorganization has priority over liquidation.

The key formally stated goals of the Slovenian bankruptcy liquidation proceedings are the maximization of the value of liquidated assets to be distributed among creditors and timely resolution. If a firm is insolvent, the liquidation proceedings can be initiated at one of eleven district courts by either the debtor or by each of the creditors. Once filed at the court, the liquidation case is assigned to a judge who specializes either in insolvency or in commercial disputes. The assignment of liquidation cases to judges is based on alphabetical ordering. Upon the initiation of the liquidation proceedings the debtor's management is dismissed and the court appoints a liquidation trustee who becomes a legal representative of the debtor.

Prior to 2008, the decision of who among the licensed liquidation trustees should be appointed as the liquidation trustee in a particular case was the exclusive prerogative of the court. However, as noted in the Introduction, judicial discretion in the appointment of trustees raised concerns about cronyism and corruption and was abandoned with the 2008 reform of insolvency legislation. Since October 2008, the courts therefore appoint liquidation trustees based on alphabetical order using the list of all liquidation trustees registered at a particular district court. A 2010 amendment to the insolvency law further stipulates that, in the case of large companies (officially defined as companies with at least 250 employees), the so appointed liquidation trustee must have had at least two years of on-the-job experience.⁵ A further legal provision, included as an amendment to the insolvency law in 2010, eliminated a prior restriction on the maximum total number of liquidation cases that a trustee can administer at a given point in time.

⁵ If the candidate trustee, chosen based on the alphabetical ordering, does not satisfy this requirement, the case is assigned to the first next candidate trustee from the alphabetical list who does.

The new administrative procedure of assignment of firm liquidation cases to trustees is thus by purposeful design de facto independent of firm, judge, and trustee characteristics. (In Section 4.1 below, we note that we have verified this claim using a series of statistical tests.) The current Slovenian system of randomized appointment of bankruptcy trustees is rare in the context of international insolvency practice and has been utilized only by a handful of other post-socialist countries (Bridge 2014), presumably likewise for purposes of curtailing corruption.

All liquidation trustees in Slovenia must possess a valid license, issued by the Ministry of Justice. Only a natural person can serve as a liquidation trustee. To become a licensed trustee, a candidate must hold a university degree in any subject; have at least three years of professional experience; have passed a proficiency examination for performing the function of a bankruptcy trustee; have valid professional liability insurance; and must be deemed worthy of public trust. Liquidation trustees can choose to be listed at all eleven district courts.

Liquidation trustee performs an essential role in the liquidation proceedings since after the initiation of the bankruptcy proceeding all representative powers of the debtor are vested with the appointed liquidation trustee. The liquidation trustee's key tasks are to verify creditors' claims, sell the debtor's assets, and distribute the value of liquidated assets among the creditors in accordance with the statutory rules. After the initiation of bankruptcy proceedings, the trustee may carry out only those transactions and actions that are necessary for the administration and liquidation of the bankruptcy estate. The liquidation trustee's remuneration is regulated by the law and is part of the costs of the liquidation proceeding. The trustee is entitled for remuneration based on the submission of an opening report, proofing of claims, and sale and distribution of liquidated assets. The judge's role in the liquidation proceeding is to supervise the trustee.

Accordingly, the judge approves the trustee's decisions and reports, and issues resolutions of relevance to the case.

Creditors must file their claims within three months from the initiation of the proceeding. A claim is recognized if it is recognized by the liquidation trustee and if no other creditor raises an objection against the claim. The court decides which claims are recognized and which party has the burden of filing a legal action to establish or refute the validity of a disputed claim. A creditor whose claim is not recognized has to file a motion for recognition of their claim. If no motion is filed within one month, the court terminates the claim. Upon the creditors' request, the court is obliged to appoint a creditors' committee (*upniški odbor*). The creditors' committee issues opinions on the liquidation trustee's actions and reports to the creditors. The creditors committee may also request dismissal of the liquidation trustee and appointment of a new trustee.

The debtor's assets can be sold piecemeal or, if the value of the whole business estate exceeds the sum of individual assets, as a going concern. Assets are sold via a public auction or a (binding) call for tenders. If neither public auction nor tenders for sale result in a sale of assets, the sale of assets may proceed via direct negotiations with potential buyers following a non-binding call for tenders.

Whenever the value of the bankruptcy estate is insufficient to cover the total costs of the bankruptcy proceedings, the court, upon the liquidation trustee's petition and in agreement with the creditors' committee (if one exists), issues a decision that the liquidation proceeding is terminated without payment to the creditors. The ex-post value of sold assets is then used for covering the costs of the liquidation proceedings. These costs encompass a range of expenses,

including the costs incurred by the liquidation trustee, the cost of accounting, administrative and legal services, and litigation expenses.

3. Data, Variables, and Hypotheses

3.1. Dataset

The source of our data on firm liquidations are publicly available court records compiled and published by the Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES). The available records represent a subset of information drawn from the underlying court files and include information about the proceedings, including the identity of the judge and the liquidation trustee who administered the case. We investigated these records and hand-collected the relevant information to assemble a comprehensive dataset of firm liquidations. We further combined the firm liquidation data with information about the debtor's financial records in the year prior to the liquidation filing, available through a separate database maintained by AJPES.

Our starting sample consisted of about one thousand firm liquidation cases that were filed in the eleven Slovenian district courts after October 1, 2008 and were resolved by March 28, 2013 (the end of our observation window).⁶ Published court records on insolvency proceedings and firm financial data, however, often contain missing values for one or more variables of our interest. We thus dropped all cases with incomplete records. Given our focus on the role of liquidation trustee characteristics, we further dropped those liquidation cases that were over the course of resolution administered by more than one liquidation trustee. Our final dataset thus

⁶ The length of our observation window (4.5 years) implies that our sample might be excluding some of the most difficult firm liquidation cases which are often also the longest in duration. In Slovenia, the resolution of insolvency cases has taken the longest for large ex-socialist companies and their successor firms. Most of these businesses, however, have either been subject to financial reorganization (as opposed to liquidation) or had already been liquidated by year 2008.

includes 640 firm liquidation cases for which we have complete data for all of the variables used in the analysis.

Because court records on any given insolvency proceedings include identifying information (first and last name) for the liquidation trustee who administered the case, we were able to merge the available court data on firm liquidations with hand-collected data on liquidation trustees. There currently exists no publicly available database with information about liquidation trustees beyond their names. We thus set out to collect data on liquidation trustees from a variety of sources. We obtained information about the dates of issue of trustees' professional licenses through AJPES, which keeps a roster of liquidation trustees in Slovenia. We gathered information about trustees' education via the databases of the Virtual Library of Slovenia (COBISS), which maintains a record of bachelor, masters, and doctoral theses for all individuals who graduate from one of Slovenian universities. We verified and complemented thus-obtained data with the information available through business-related social networking websites such as LinkedIn, as well as trustees' personal web pages and other websites, located via a web search, which contain information about the liquidation trustees of interest.

Altogether, we possess data about gender, education level and subject, as well as the length of on-the-job experience for 97 different liquidation trustees who oversee the 640 firm liquidation cases in our sample. We were unfortunately unable to obtain comprehensive information on liquidation trustees' age. Since age is highly correlated with the length of on-the-job experience, however, we do not expect this lack of information to bias our empirical results. Given that we have information about the identity of the judge and the trustee for each of the firm liquidation cases in our data, we are further able to code whether a given case features a repeated judge-trustee match based on the full range of firm liquidation cases that we have

access to (i.e. including cases filed prior to October 2008). Table 1 defines and describes the variables. Table 2 presents the descriptive statistics.

3.2. Outcome Variable

The outcome variable of our interest is the total amount paid to creditors (i.e. the sum of payments to all creditors) after completion of the liquidation proceedings. After controlling for the total value of declared claims (see below), the total amount paid to creditors measures the ex-post efficiency of insolvency proceedings (see, e.g., Sundgren 1998, Thorburn 2000, Armour et al. 2008, Davydenko and Franks 2008, Blazy et al. 2013, Blazy and Stef 2015).

None of the creditors recovered any of their claims in the vast majority (79 percent) of firm liquidations in our dataset. That is, the sum of all payments to creditors is positive in only 21 percent of the cases (see Table 2). The mean total payment to creditors is EUR 21,354, which amounts to about 21 percent of the mean value of total declared claims. When the total amount paid to creditors is positive, the mean total payment to creditors is EUR 100,332 or 6.2 percent of the mean value of total declared claims for this subsample.

3.3. Focal Explanatory Variables and Hypotheses

Our focal explanatory variables are the characteristics of the liquidation trustees. The first is the subject of the trustee's university education. Most trustees hold a university degree either in economics/business (50 percent; see Table 2) or in law (48 percent). Two percent of trustees (altogether four trustees), who together administered 14 firm liquidations, have a university degree in subjects other than law or economics/business. All liquidation trustees have had to pass a proficiency exam to obtain professional license (see Section 3). However, we would expect that passing an exam is an imperfect substitute for the more encompassing financial and legal education obtained through completion of a concentrated field of study at a university.

Liquidation trustees with limited financial and legal knowledge are at a disadvantage in carrying out the liquidation proceedings and this may have repercussions for the outcome of insolvency proceedings. For example, because the inherent incompleteness of insolvency legislation grants liquidation trustees a noteworthy extent of discretion, trustees with a less comprehensive educational background in law and finance may resort to contracting out (by hiring external experts) legal and financial tasks that arise as part of the firm liquidation procedure, which in turn increases the costs of the liquidation proceedings (see, e.g., Branch 2002) and reduces the prospects for creditors' recovery.⁷ We thus hypothesize (Hypothesis 1) that cases managed by trustees without a formal degree in law or economics/business *ceteris paribus* result in lower debt recovery.

The second trustee characteristic of our interest is trustee's level of education. 26 percent of trustees have completed post-graduate education. The effect of a trustee's level of education on debt recovery is theoretically ambiguous. On the one hand, we would expect liquidation trustees with completed post-graduate education to possess better overall analytical skills than their peers without a post-graduate degree, which should *ceteris paribus* translate in greater debt recovery (Hypothesis 2a). Yet on the other hand, post-graduate programs in Slovenia do not offer specialization in insolvency law and practice. Moreover, trustees with a post-graduate degree may have a higher opportunity cost of devoting attention to the task of firm liquidation, which may all else equal result in less debt recovery for creditors (Hypothesis 2b).

The third trustee characteristic we examine is trustee's on-the-job experience. The average length of trustee's on-the-job experience, as measured by the length of time from the date the trustee obtained their license and the filing date for a particular firm liquidation case

⁷ Indeed, we have learned that courts are sometimes reluctant to approve liquidation trustees' planned expenses, to be paid for from the value of the bankruptcy estate, for hiring external experts for tasks and services that, in court's view, a trustee should be able to perform on his or her own based on his or her education.

administered by that trustee, is about seven years in our sample. Longer on-the-job experience may substitute for an inadequate educational background. We thus hypothesize (Hypothesis 3) that liquidation cases managed by trustees with longer on-the-job experience all else equal result in greater debt recovery.

The fourth trustee characteristic we have information on is the trustee's gender. The majority of the trustees (59 percent) in our sample are men. We do not have a well-grounded hypothesis on the effect of trustee's gender on debt recovery. We thus let the data speak for themselves.

Finally, we know whether the liquidation trustee and the judge assigned to a given liquidation case have already been matched on a previous liquidation case in our dataset. Indeed, about 23 percent of the cases in our sample feature a repeated match between a specific judge and a specific trustee. Under the current insolvency rules, which ensure that the assignment of cases to judges and to trustees is de facto random (see Sections 1 and 2), repeated interaction between a given judge and a specific trustee enables the judge to learn about the trustee's on-the-job practices and behavior. We would expect this, in turn, to allow the judge to better exercise his or her supervisory role over the trustee as well as possibly foster a culture of productive cooperation between the judge and the trustee. We therefore expect (Hypothesis 4) that cases featuring a repeated judge-trustee match all else equal result in greater debt recovery.

3.4. Controls

We employ a wide range of firm and case level controls. We, first, control for firm size and legal form. The vast majority (95 percent) of financially distressed firms in our sample are micro firms; that is, businesses with less than ten employees. Similarly, 98.5 percent of the firms are limited liability companies and the remaining 1.5 percent are joint-stock companies. Second, we

control for two basic firm-level financial indicators measured in the last year prior to the liquidation filing: the capital-to-assets ratio and the profit-to-assets ratio. Sample means for both of these indicators are negative, as we would expect.

Among case-level variables, we control, first, for whether the liquidation was petitioned by the debtor (88 percent of the cases) or by the creditors (12 percent of the cases). Second, we control for the number of registered creditors. The mean number of registered creditors in the full sample is 16. Because declaring a claim entails paying an advance, creditors may rationally choose not to register if they expect that they will not be able to recover any portion of their claims. Indeed, the number of registered creditors equals zero for 13 cases in our sample. Third, we control for the total value of declared claims.

Fourth, we control for the value of the soon-to-be-liquidated assets as evaluated by the liquidation trustee at the start of the liquidation proceeding. The mean value for this variable equals EUR 144,551. Fifth, we include an indicator variable for whether the liquidation process involved litigation. Litigation in firm liquidation proceedings typically involves the trustee filing a lawsuit against either the firm's own debtors or one of the firm's creditors in order to dispute a claim. Litigation accompanies firm liquidation in 9 percent of the cases in our sample. Finally, in some of our estimated models presented in Section 4, we also control for the ex-post value of liquidated assets and case duration as two possible endogenous outcomes that may affect creditors' debt recovery. The mean case duration in our sample equals 433 days and the mean ex-post value of liquidated assets equals EUR 35,165 or about 24 percent of the mean value of the assets as assessed by the liquidation trustee at the beginning of the proceeding.

4. Empirical Strategy and Results

4.1. Empirical Approach

The predominant outcome for our outcome variable, total amount paid to creditors, is equal to zero. To estimate the determinants of the total amount paid to creditors, we thus specify a lognormal hurdle model (see, e.g., Cragg 1971, Wooldridge 2002, Cameron and Trivedi 2005). In contrast to the Tobit model as one possible approach to the estimation of corner solution models (Wooldridge 2002: 518), hurdle models (also known as 'two-part models') are flexible in that different covariates are allowed to exert different effect on the binary outcome whether creditors recovered any debt versus the outcome measuring the total amount that creditors were paid if the total amount paid to creditors at the end of the liquidation proceedings is positive (Wooldridge 2002: 536, Cameron and Trivedi 2005: 544). In addition, hurdle models do not rely on the assumptions of normality and homoscedasticity for consistency (Wooldridge 2002: 533).

Let y be the total amount paid to creditors at the end of firm liquidation proceedings. We postulate that, first, $\text{Prob}(y=0|x)=1-\Phi(x'\gamma)$ and, second, $\log(y)|(x,y>0)\sim N(x\beta,\sigma^2)$, where Φ is the cumulative density function of a standard normal distribution, and x is the vector of covariates: liquidation trustee, firm and case characteristics as well as various fixed effects. For greatest generality, we let x be common to the two parts of the model. Conditional on the vector of covariates x , the outcome of $y>0$ versus $y=0$ is assumed to be independent from the outcome of how much y given that $y>0$. This assumption may be appropriate given the wide range of trustee, firm, and case level variables, as well as fixed effects, that we include in our vector of regressors x ; however, in Section 4.3 we also present the results when we relax this assumption. Figure 1 illustrates the appropriateness of the normality assumption for $\log(y)$ when $y>0$.

Because the log-likelihood function for the resulting model is additively separable (Wooldridge 2002: 537), the estimation proceeds in two steps. Step one is a probit for the binary outcome indicating whether creditors recovered any debt, $I[y>0]$, where $I[\cdot]$ is the indicator function. Step two is an ordinary-least-squares (OLS) regression for logged total amount paid to creditors ($\log(y)$) using the subsample of those observations for which the total amount paid to creditors exceeds zero ($y>0$).

In all of our regressions, we include the full set of judge, industry, and year fixed effects to respectively control for the effect of judge, industry, and year-specific factors which may influence whether and how much creditors were paid at the end of the liquidation process (see, e.g., Blazy et al. 2011).⁸ To allow for the possibility that error terms are correlated for cases managed by the same liquidation trustee (but not for cases managed by different trustees), we base statistical inference on heteroscedasticity-robust standard errors clustered at the trustee level. Most of our hypotheses (see Section 3.3) specify the expected sign of the coefficients of interest. We thus interpret the results concerning the effect of the corresponding variables as statistically significant whenever statistical significance can be established on the basis of at least a one-sided test of significance.

Finally, given our emphasis on the importance of exogenous variation in liquidation trustee characteristics for our empirical analysis, we subjected the legally mandated presumption of de facto random assignment of liquidation cases to liquidation trustees by Slovenian courts to statistical testing.⁹ Conditioning on the court, we indeed found no evidence of systematic, statistically significant association between the identity of the liquidation trustee and firm characteristics. We conclude that, consistent with the 2008 insolvency law, the allocation of firm

⁸ Judges do not change courts in our data and thus the inclusion of judge fixed effects fully absorbs court fixed effects.

⁹ Detailed results are available upon request.

liquidation cases among the licensed liquidation trustees within courts is indeed random in our sample.

4.2. Results

Table 3 presents the results based on three different model specifications. Model 1 includes only trustee characteristics. Model 2 additionally includes the full range of firm characteristics, those case-level characteristics that are plausibly exogenous, as well as year of filing, judge, and industry fixed effects. In Model 3 we further include two additional case-level covariates (case duration and value of liquidated assets) which may themselves be viewed as endogenous outcomes of the liquidation proceedings but which may also affect whether creditors are paid anything at all and, if so, how much creditors are paid in the aggregate. For step one (probit) of the model, Table 3 and subsequent tables report the average marginal effects.

The results show that debt recovery in firm liquidations indeed varies with liquidation trustee's characteristics. First, the liquidation trustee's educational background matters. Based on the estimates in Models 1-3, the prospects that the total amount paid to the creditors is positive are all else equal between 13.5 and 16.5 percentage points lower when the liquidation trustee holds a degree in subjects other than law or economics/business than when the trustee holds a degree in economics (the omitted category). Based on the estimates of Model 2, we further find that, conditional on firm liquidation resulting in at least some debt recovery, the total amount paid to creditors is *ceteris paribus* also lower when the trustee holds a degree in subjects other than law or economics/business. This effect, however, should be interpreted with caution since it is identified off a single firm liquidation case in which the trustee does not hold a law or economics/business degree and which resulted in positive debt recovery. In the discussion below, we thus do not explicitly highlight this effect even when it is statistically significant.

In contrast, we do not find differences in either the prospects for or the amount of debt recovery if there was at least some debt recovery between the cases administered by the trustees with a law degree and the trustees with an economics/business degree. Similarly, the level of trustee's education (post-graduate versus undergraduate) exhibits no statistically significant effect on either the outcome whether creditors were paid anything at all or the outcome how much creditors were paid in total if they were paid.

Second, we find evidence (in Models 1 and 3) that the length of trustee's on-the-job experience, as hypothesized, exhibits a positive effect on the total amount paid to the creditors if total amount paid to the creditors is positive. Trustee's experience, however, exhibits no statistically significant effect on whether creditors are paid anything at all.

Third, once we control for firm and case characteristics and fixed effects (Model 2), we find that liquidation cases featuring a repeated trustee-judge match *ceteris paribus* result in total payment to creditors that is on average about twice the size of the total payment to creditors in cases when the judge and the trustee have previously not been matched on a firm liquidation case, conditional on total amount paid to creditors being positive.¹⁰ The effect is statistically significant (for a one-sided test of significance) in Model 2 and marginally statistically insignificant in Model 1 (*p*-value for one-sided test of significance equals 0.135). The effect of the judge-trustee repeated match, however, becomes statistically insignificantly different from zero when we additionally control for case duration and the value of liquidated assets (Model 3), a result suggesting that the positive effect of judge-trustee repeated match on the prospects of debt recovery works through reduction in case duration and/or increase in the value at which liquidated assets are sold. Fourth, we find no trustee gender effect on debt recovery.

¹⁰ With the coefficient on the dummy variable for repeated judge-trustee dummy equal to b , the associated average percentage change in $y|y>0$ equals $(\exp(b)-1)\times 100$, *ceteris paribus*.

Among firm level covariates, based on Model 2 we find that the total amount paid to creditors is *ceteris paribus* more likely positive for firms that are joint-stock companies (as opposed to limited liability companies) and for firms with higher profitability (i.e. lower losses) in the year prior to the start of liquidation. In contrast, none of the firm-level covariates exhibit a statistically significant effect on the total amount paid to the creditors conditional on that amount being positive. Among case characteristics, the total amount paid to creditors is more likely positive when, all else equal, the number of registered creditors is large (a large number of registered creditors may, possibly via the creditors' committee, exert a beneficial influence on the trustee or, alternatively, reflect creditors' optimistic expectations concerning debt recovery); the value of assets as assessed by the trustee is high (and thus the *ex-post* value of liquidated assets, available for distribution among the creditors, is more likely high); the total value of declared claims is low (and hence, for a given value of assets as appraised by the trustee, the chances of debt recovery are lower); and when the case features no litigation (in which case the proceedings are likely shorter). Conditional on being positive, the total amount paid to creditors *ceteris paribus* statistically significantly increases with the value of the assets as assessed by the trustee and the total value of declared claims.

The direction and statistical significance of the effect of many firm and case level covariates, however, changes when we additionally control for case duration and the value of liquidated assets (Model 3). This implies that, for example, the effects of the number of registered creditors and litigation on the prospects that the total amount paid to the creditors is positive, as well as the effect of the value of the assets as assessed by the trustee on the total amount paid to creditors when firm liquidation results in at least some debt recovery, to a notable extent operate through case duration and the *ex-post* value of liquidated assets.

4.3. Robustness Checks and Alternative Model Specification

We subject our analysis to several robustness checks and alternative model specifications. Table 4 reports the results for specifications analogous to Models 2 and 3 reported in Table 3. In Models 4 and 7 we use the sample of micro firms only (95 percent of our full sample) for which the alphabetical appointment of liquidation trustees features no restrictions concerning the candidate trustee's length of on-the-job experience throughout the time period covered by our sample (see Section 2). In Models 5 and 8 we drop all cases for which the number of registered creditors equals zero and which are ex ante therefore least likely to result in any recovery for creditors. In Models 6 and 9 we use only cases filed from year 2010 onwards, where the year 2010 marks the removal of the restriction on the maximum total number of liquidation cases that a trustee can oversee at a given point in time (see Section 2).

We, first, continue to see a robust negative effect of trustee's university education in subjects other than law or economics/business on the prospects that creditors recover any of their claims. In Model 9, we further find evidence consistent with Hypothesis 2a (see Section 3.3); the (positive) effect of liquidation trustee's level of education, however, is not robust across specifications. Second, repeated trustee-judge match either increases the total amount paid to creditors when firm liquidation results in at least some debt recovery (Models 4 and 5), or in one specification (Model 6), when we do not control for case duration and the value of liquidated assets (as possible channels of influence), the prospects that the total amount paid to creditors is positive. Third, the effect of trustee's on-the-job experience on the total amount paid to creditors when liquidation results in at least some debt recovery is statistically significant in four out of eight specifications (Models 4, 6, 7, and 8).

The consistently negative effect of trustee's subject of university education on the prospects that the total amount paid to creditors is positive is identified off a small number of trustees. In our dataset there are altogether only four trustees whose subject of university education is in areas other than law or economics/business and who together administer 14 firm liquidations (see Section 3.3 and Table 2). One might therefore be concerned that the effect is driven by some unobservable trustee characteristic other than the subject of education that is common to a subset of these trustees. To this end, we re-estimated Model 3 after one by one excluding each of the four abovementioned trustees. The results (not reported) still featured a statistically significant negative effect of liquidation trustee's university education in subjects other than law or economics/business on the likelihood that creditors recover any of their claims. We conclude that the results reported in Section 4.2 are robust to using alternative estimating samples.

In Table 5 we report the results when we relax the assumption that, conditional on the vector of covariates x , the outcome of whether creditors are paid anything at all is independent from the outcome of how much creditors are paid in total when they are paid. To this end, we estimate Heckman's (1979) two-step sample selection model as an alternative empirical approach to corner solution responses (see, e.g., Cameron and Trivedi 2005: 546). In the first step, we obtain the probit estimate $\hat{\gamma}$ from the model $\text{Prob}(y=0|x)=1-\Phi(x'\gamma)$. For each observation, we then use $\hat{\gamma}$ to compute the estimated inverse Mills ratio $\lambda(x'\hat{\gamma})=\phi(x'\hat{\gamma})/\Phi(x'\hat{\gamma})$, where ϕ and Φ are respectively the probability density and cumulative density function of the standard normal distribution. In the second stage, we estimate the vector of parameters β (see Section 4.1) by running an OLS regression of $\log(y)$ on x and $\lambda(x'\hat{\gamma})$ for cases with $y>0$. We base statistical inference on the appropriately corrected standard errors (see Heckman 1979).

Due to the non-linearity stemming from the inclusion of the inverse Mills ratio among the regressors, the identification of β is formally possible even if the vector of covariates in the $\log(y)|y>0$ equation is identical to the vector of covariates in the equation for $I[y>0]$, as we had assumed in the estimation of the lognormal hurdle model above. Such functional form-based identification, however, can be plagued by severe multicollinearity (see, e.g., Wooldridge 2002: 564; Cameron and Trivedi 2005: 551). To obtain more precise second-stage parameter estimates, we, therefore, rely on an exclusion restriction. We propose the value of assets as appraised by the trustee at the beginning of the liquidation proceedings as the variable which, after conditioning on a wide range of covariates, plausibly affects the outcome whether $y>0$ or $y=0$ but not the outcome $\log(y)|y>0$ when $y>0$. Intuitively, we expect the liquidation trustee's ex-ante assessment of the value of assets-to-be-liquidated to predict whether the total amount paid to creditors is positive or equal to zero. However, once controlling for the full range of case and firm level covariates, and in particular the ex-post value of liquidated assets (as in Model 3 in Table 3), trustee's ex-ante assessment of the value of assets-to-be-liquidated should not predict the total amount paid to creditors when firm liquidation results in at least some debt recovery. This conjecture is consistent with the findings based on the estimates of the lognormal hurdle Model 3, reported in Table 3.

Table 5 reports the average marginal effects of covariates of interest on the left-truncated mean ($E[\log(y)|y>0]$) from step two of Heckman's procedure. (The average marginal effects based on the probit (step one) coincide with those obtained from step one of lognormal hurdle Model 3, reported in Table 3, and are hence omitted.) The coefficient on the inverse Mills ratio is statistically significant, a finding suggesting that the sample selection correction is warranted. As in the case of the estimates based on step two of the lognormal hurdle Model 3, we find that the

total amount paid to creditors, conditional on at least some debt recovery, increases with the liquidation trustee's on-the-job experience. The trustee's gender, level and subject of education, however, exhibit no statistically significant effect and neither does the presence of a repeated judge-trustee match given that we control for case duration and the ex-post value of liquidated assets; as we argue in Section 4.2, case duration and the ex-post value of liquidated assets provide plausible channels through which repeated trustee-judge match might influence creditors' recovery. Among the remaining firm and case level controls (not shown in Table 5) only the value of liquidated assets has a statistically significant (positive) effect on the total amount paid to creditors when firm liquidation results in at least some debt recovery. In sum, the results based on an alternative empirical approach are very similar to those reported in Section 4.2.

5. Conclusion

An effective insolvency regime is key to protection of creditor rights, yet micro-level evidence on ex-post efficiency of insolvency regimes worldwide is scant. We contribute to this literature by offering to our knowledge the first analysis of the role of liquidation trustees for creditors' recovery. To this end, we exploit a particular, and in the context of the international insolvency practice rare, feature of insolvency proceedings in Slovenia where the courts' administrative assignment of firm liquidation cases to bankruptcy trustees has been, by deliberate design, independent of judge, firm, and liquidation trustee characteristics.

We find evidence that a subset of liquidation trustee characteristics indeed matters for debt recovery. Thus, our findings show that ex-post efficiency of an insolvency regime is contingent not only on laws and procedures on the books, as demonstrated by previous contributions (e.g., Armour et al. 2008, Davydenko and Franks 2008, Haselmann et al. 2010,

Blazy et al. 2013; Blazy and Stef 2015), but, importantly, also on who exactly implements these laws and procedures in practice. This in turn suggests that the institutional rules governing both the licensing and the appointment of insolvency office holders (see, e.g., Bridge 2014) are likely to affect insolvency outcomes. Future research should explore to what extent our results about the impact of insolvency office holders on insolvency outcomes might extend to other insolvency systems in Europe and beyond.

References

- Aghion, Philippe, Oliver D. Hart, and John Moore. 1994. "The Economics of Bankruptcy Reform." In: Blanchard, Olivier, Kenneth Froot, and Jeffrey Sachs (Eds.), *Transition in Eastern Europe, Volume 2*. Chicago, IL: The University of Chicago Press, pp. 215-244.
- Armour, John, Audrey Hsu, and Adrian Walters. 2008. "Corporate insolvency in the United Kingdom: The Impact of the Enterprise Act 2002." *European Company and Financial Law Review*, 5:2, 135-158.
- Blazy, Régis and Nicolae Stef. 2015. "How Do Bankruptcy Systems Perform in Eastern Europe?" University of Strasbourg Working Paper No. 2015-07.
- Blazy, Régis, Bertrand Chopard, Agnès Fimayer, and Jean-Daniel Guigou. 2011. "Employment Preservation vs. Creditors' Repayment under Bankruptcy Law: The French Dilemma?" *International Review of Law and Economics*, 31:2, 126-141.
- Blazy, Régis and Bertrand Chopard. 2011. "Ex Post Efficiency of Bankruptcy Procedures: A General Normative Framework." *International Review of Law and Economics*, 24:4, 447-471.
- Blazy, Régis, Bertrand Chopard, and Nirjhar Nigam. 2013. "Building Legal Indexes to Explain Recovery Rates: An Analysis of the French and English Bankruptcy Codes." *Journal of Banking and Finance*, 37:6, 1936-1959.
- Branch, Ben. 2002. "The Costs of Bankruptcy: A Review." *International Review of Financial Analysis*, 11:1, 39-57.
- Bridge, Catherine. 2014. "Insolvency Office Holders: A New Study by the EBRD Provides Insight into Creditors' Rights in Insolvency." *Law in Transition Online*. Available at: <http://www.ebrd.com/news/publications/newsletters/law-in-transition-online-2014.html>.
- Bris, Arturo, Ivo Welch, and Ning Zhu. 2006. "The Costs of Bankruptcy: Chapter 7 Liquidation versus Chapter 11 Reorganization." *Journal of Finance*, 61:3, 1253-1303.
- Cameron, A. Colin and Pravin K. Trivedi. 2005. *Microeconometrics, Methods and Applications*. Cambridge, UK: Cambridge University Press.
- Cirmizi, Elena, Leora Klapper, and Mahesh Uttamchandani. 2012. "The Challenges of Bankruptcy Reform." *The World Bank Research Observer*, 27:2, 185-203.
- Claessens, Stijn, Simeon Djankov, and Ashoka Mody (Eds.). 2001. *Resolution of Financial Distress, An International Perspective on the Design of Bankruptcy Laws*. Washington, DC: The World Bank Institute.
- Claessens, Stijn and Leora F. Klapper. 2005. "Bankruptcy around the World: Explanations of Its Relative Use." *American Law and Economics Review*, 7:1, 253-283.
- Cornelli, Francesca and Leonardo Felli. 2012. "How to Sell a (Bankrupt) Company." *International Review of Finance*, 12:2, 197-226.
- Couwenberg, Oscar and Abe de Jong. 2008. "Costs and Recovery Rates in the Dutch Liquidation-Based Bankruptcy System." *European Journal of Law and Economics*, 26:2, 105-127.
- Cragg, John G. 1971. "Some Statistical Models for Limited Dependent Variables with Application to the Demand for Durable Goods." *Econometrica*, 39:5, 829-844.

- Csaki, Csaba. 2002. "The Changing Farming Structure in Russia: Status and Potential Solutions." *Economic Systems*, 26: 2, 153-157.
- Davydenko, Sergei A. and Julian R. Franks. 2008. "Do Bankruptcy Codes Matter? A Study of Defaults in France, Germany and the UK." *Journal of Finance*, 63:2, 565-608.
- Djankov, Simeon, Oliver Hart, Caralee McLiesh, and Andrei Shleifer. 2008. "Debt Enforcement around the World." *Journal of Political Economy*, 116:6, 1105-1149.
- Dewaelheyns, Nico and Cynthia Van Hulle. 2009. "Filtering Speed in a Continental European Reorganization Procedure." *International Review of Law and Economics*, 29:4, 375-387.
- Estrin, Saul. 2000. "Competition and Corporate Governance in Transition." *Journal of Economic Perspectives*, 16:1, 101-124.
- Granfield, Lindsee P., Sean A. O'Neal, and Timothy S. Mehok. 2008. "International Insolvency and Bankruptcy." In: Basri, Carole (Ed.), *International Corporate Practice*, Chapter 29. New York, NY: Practising Law Institute.
- Hart, Oliver. 2006. "Different Approaches to Bankruptcy." *CESifo DICE Report, Journal for Institutional Comparisons*, 4:1, 3-8.
- Haselmann, Rainer, Katharina Pistor, and Vikrant Vig. 2010. "How Law Affects Lending." *Review of Financial Studies*, 23:2, 549-580.
- Heckman, James J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica*, 47:1, 153-161.
- Hotchkiss, Edith S., Kose John, Robert M. Mooradian, and Karin S. Thorburn. 2008. "Bankruptcy and the Resolution of Financial Distress." In: Eckbo, B. Espen (Ed.), *Handbook of Empirical Corporate Finance, Volume 2*. Amsterdam: Elsevier B.V., Chapter 14.
- Knot, Ondrej and Ondrej Vychodil. 2006. "Czech Bankruptcy Procedures: Ex-post Efficiency View." IES Working Paper 3/2006.
- Lambert-Mogiliansky, Ariane, Konstantin Sonin, and Ekaterina Zhuravskaya. 2007. "Are Russian Commercial Courts Biased? Evidence from a Bankruptcy Law Transplant." *Journal of Comparative Economics*, 35:2, 254-277.
- La Porta, Rafael, Florencio Lopez-De-Silanes, Andrei Shleifer, and Robert W. Vishny. 1997. "Legal Determinants of External Finance." *Journal of Finance*, 52:3, 1131-1150.
- La Porta, Rafael, Florencio Lopez-De-Silanes, Andrei Shleifer, and Robert W. Vishny. 1998. "Law and Finance." *Journal of Political Economy*, 106:6, 1113-1155.
- Leyman, Bart, Koen J.L. Schoors, and Peter Coussement. 2011. "Does Court-Supervised Reorganization Work? Evidence from Post-Confirmation Firm Failure." *International Review of Law and Economics*, 31:3, 149-168.
- Pistor, Katharina. 2000. "Patterns of Legal Change: Shareholder and Creditor Rights in Transition Economies." *European Business Organization Law Review*, 1:1, 59-107.
- Pistor, Katharina and Chenggang Xu. 2003. "Incomplete Law." *NYU Journal of International Law and Politics*, 35, 931-1014.
- Sundgren, Stefan. 1998. "Does a Reorganization Law Improve the Efficiency of the Insolvency Law? The Finnish Experience." *European Journal of Law and Economics*, 6:2, 177-198.
- Thorburn, Karin S. 2000. "Bankruptcy Auctions: Costs, Debt Recovery, and Firm Survival." *Journal of Financial Economics*, 58:3, 337-368.

- Vukelic, Luka, Martina Prpic, Blazo Nedic, Branko Radulovic, and Luka Andric. 2014. "Trends in Corporate Restructuring – Croatia and Serbia Examined and Contrasted." *Law in Transition Online*. Available at: <http://www.bradulovic.com/wp-content/uploads/2014/12/EBRD-Law-in-Transition-Online.pdf>.
- Wang, Chien-An. 2012. "Determinants of the Choice of Formal Bankruptcy Procedure: An International Comparison of Reorganization and Liquidation." *Emerging Markets Finance and Trade*, 48:2, 4-28.
- White, Michelle J. 1989. "The Corporate Bankruptcy Decision." *Journal of Economic Perspectives*, 3:2, 129-151.
- Wooldridge, Jeffrey M. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: The MIT Press.

Table 1: Variable Definitions and Description

Variable Name	Description
<i>Case and firm characteristics</i>	
Amount Creditors Paid, y	Total amount paid to creditors (i.e. sum of payments to all creditors), in EUR.
Any Creditors Paid, $I[y>0]$	Dummy equal to 1 if total amount paid to creditors exceeds zero; and 0 otherwise.
Non-Micro Firm	Dummy equal to 1 if the liquidated firm is not a micro firm (firm with less than 10 employees); and 0 otherwise.
Joint-Stock Company	Dummy equal to 1 if the liquidated firm is a joint-stock company; and 0 otherwise.
Limited Liability Company	Dummy equal to 1 if the liquidated firm is a limited liability company; and 0 otherwise.
Prior Capital to Assets Ratio	Ratio of capital to assets at the end of the last year prior to start of the liquidation proceedings.
Prior Profit to Assets Ratio	Ratio of profit to assets at the end of the last year prior to start of the liquidation proceedings.
Liquidation Petitioned by Creditors	Dummy equal to 1 if firm liquidation was initiated by creditors; and 0 otherwise.
Number of Registered Creditors	Total number of registered creditors.
Value of Assets as Evaluated by Trustee	Value of assets as evaluated by the trustee at the beginning of the liquidation proceedings, in EUR.
Value of Declared Claims	Total value of all claims declared by the creditors at the beginning of the liquidation proceedings, in EUR.
Value of Liquidated Assets	Total value of liquidated assets, in EUR.
Litigation	Dummy equal to 1 if liquidation proceedings involved litigation; and 0 otherwise.
Duration	Duration of liquidation proceedings, in years.
<i>Trustee characteristics</i>	
Female	Dummy equal to 1 if liquidation trustee administering the case is female; and 0 if male.
Post-Graduate Education	Dummy equal to 1 if liquidation trustee administering the case has a post-graduate (masters or doctoral) degree; and 0 otherwise.
Econ/Business Degree	Dummy equal to 1 if liquidation trustee administering the case has an economics/business degree; and 0 otherwise.
Law Degree	Dummy equal to 1 if liquidation trustee administering the case has a law degree; and 0 otherwise.
Non-Law/Econ/Bus Degree	Dummy equal to 1 if liquidation trustee administering the case has neither an economics/business nor a law degree; and 0 otherwise.
Experience	Length of on-the-job experience of liquidation trustee administering the case, measured in years since obtaining the license.
Trustee-Judge Repeated Match	Dummy equal to 1 if the same trustee-judge pair was matched on a previous liquidation case in our dataset; and 0 otherwise.

Notes: The table presents variable names and definitions. All variables were hand-collected as described in Section 3.1.

Table 2: Descriptive Statistics

<i>Panel A: Full Sample</i>					
Variable Name	No. Obs.	Mean	Std. Dev.	Min.	Max.
<i>Case and firm characteristics</i>					
Amount Creditors Paid (in EUR), y	640	21,353.8	147,586.1	0	2,683,880
Any Creditors Paid, $I[y>0]$	640	0.2141	0.4105	0	1
Liquidation Petitioned by Creditors	640	0.1203	0.3256	0	1
Number of Registered Creditors	640	16.37	38.21	0	764
Trustee Evaluated Assets Value (in EUR)	640	144,550.7	869,319.5	0	13,100,000
Declared Claims Value (in EUR)	640	998,723.2	4,924,223.0	0	75,300,000
Liquidated Assets Value (in EUR)	640	35,164.83	180,822.6	0	3,302,721
Litigation	640	0.0984	0.2981	0	1
Duration	640	432.6	264.3	29	1,478
Non-Micro Firm	640	0.0453	0.2082	0	1
Joint-Stock Company	640	0.0141	0.1178	0	1
Limited Liability Company	640	0.9859	0.1178	0	1
Prior Capital to Assets Ratio	640	-281.03	3,475.95	-73,684.21	1
Prior Profit to Assets Ratio	640	-43.54	521.00	-11,389.52	0
<i>Trustee characteristics</i>					
Female	640 [97]	0.3547 [0.3196]	0.4788 [0.4687]	0	1
Post-Graduate Education	640 [97]	0.2625 [0.2371]	0.4403 [0.4275]	0	1
Econ/Business Degree	640 [97]	0.5000 [0.4845]	0.5004 [0.5024]	0	1
Law Degree	640 [97]	0.4781 [0.4742]	0.4999 [0.5019]	0	1
Non-Law/Econ/Bus Degree	640 [97]	0.0219 [0.0412]	0.1464 [0.1999]	0	1
Experience (in Years)	640 [97]	7.31 [6.69]	3.55 [3.73]	0.04	12.54
Trustee-Judge Repeated Match	640	0.2281	0.4200	0	1
<i>Panel B: Sample when Any Creditors Paid=1</i>					
Variable Name	No. Obs.	Mean	Std. Dev.	Min.	Max.
<i>Case and firm characteristics</i>					
Amount Creditors Paid (in EUR), $y y>0$	136	100,331.6	308,149.0	25	2,683,880
Liquidation Petitioned by Creditors	136	0.1250	0.3319	0	1
Number of Registered Creditors	136	37.13	76.79	1	764
Trustee Evaluated Assets Value (in EUR)	136	416,133.4	1,415,692.0	0	13,100,000
Declared Claims Value (in EUR)	136	1,620,935.0	4,023,595.0	39.2	36,700,000
Liquidated Assets Value (in EUR)	136	146,582.1	372,435.3	3,314.5	3,302,721
Litigation	136	0.1324	0.3401	0	1
Duration	136	628.8	258.0	69	1,437
Non-Micro Firm	136	0.1471	0.3555	0	1
Joint-Stock Company	136	0.0441	0.2061	0	1
Limited Liability Company	136	0.9559	0.2061	0	1
Prior Capital to Assets Ratio	136	-7.25	49.78	-517.16	0.95
Prior Profit to Assets Ratio	136	-1.22	4.13	-31.95	0
<i>Trustee characteristics</i>					
Female	136 [65]	0.4118 [0.3385]	0.4940 [0.4769]	0	1
Post-Graduate Education	136 [65]	0.2868 [0.2769]	0.4539 [0.4510]	0	1
Econ/Business Degree	136 [65]	0.4779 [0.5077]	0.5014 [0.5038]	0	1
Law Degree	136 [65]	0.5147 [0.4769]	0.5016 [0.5034]	0	1
Non-Law/Econ/Bus Degree	136 [65]	0.0074 [0.0154]	0.0857 [0.1240]	0	1
Experience (in Years)	136 [65]	7.49 [6.77]	3.32 [3.56]	0.04	12.24
Trustee-Judge Repeated Match	136	0.2500	0.4346	0	1

Notes: The table presents descriptive statistics for the estimating samples used to generate results reported in Table 3. The numbers in square brackets refer to descriptive statistics reported at the trustee level as opposed case level.

Table 3: Results, Lognormal Hurdle Model

Explanatory Variables	Model 1		Model 2		Model 3	
	I[y>0]	log(y) y>0	I[y>0]	log(y) y>0	I[y>0]	log(y) y>0
<i>Trustee characteristics</i>						
Female	0.0467 (0.0427)	-0.2000 (0.3541)	0.0180 (0.0294)	-0.3835 (0.4031)	0.0004 (0.0198)	-0.0640 (0.1864)
Post-Graduate Education	0.0391 (0.0403)	0.2315 (0.4233)	0.0290 (0.0355)	-0.2552 (0.5165)	0.0172 (0.0233)	0.1606 (0.2003)
Law Degree	0.0417 (0.0407)	0.1685 (0.4043)	-0.0021 (0.0321)	-0.2358 (0.5066)	-0.0031 (0.0189)	-0.0548 (0.2740)
Non-Law/Econ/Bus Degree ^a	-0.1620** (0.0738)	-0.4330 (0.6436)	-0.1350** (0.0538)	-3.2059** (1.3221)	-0.1651*** (0.0291)	-0.3475 (0.4610)
Experience (in Years)	0.0043 (0.0051)	0.0819+ (0.0553)	0.0023 (0.0042)	0.0578 (0.0716)	0.0011 (0.0025)	0.0486* (0.0272)
Trustee-Judge Repeated Match	0.0304 (0.0373)	0.6430 (0.5796)	0.0386 (0.0305)	0.7944+ (0.4904)	0.0112 (0.0181)	-0.2548 (0.2383)
<i>Firm characteristics</i>						
Non-Micro Firm			0.0968 (0.0723)	0.7706 (0.8351)	0.0586 (0.0753)	-0.5766** (0.2857)
Joint-Stock Company			0.3045** (0.1343)	-0.7544 (1.8586)	-0.0845* (0.0460)	-1.1206** (0.5175)
Prior Capital to Assets Ratio			-0.0000 (0.0000)	0.0038 (0.0102)	-0.0000 (0.0000)	0.0021 (0.0073)
Prior Profit to Assets Ratio			0.0011* (0.0006)	-0.0258 (0.1384)	0.0001 (0.0001)	-0.0079 (0.1142)
<i>Case characteristics</i>						
Liquidation Petitioned by Creditors			-0.0453 (0.0436)	0.5717 (0.5091)	-0.1123*** (0.0333)	0.1656 (0.2302)
Number of Registered Creditors			0.0036*** (0.0009)	-0.0021 (0.0025)	-0.0008*** (0.0002)	-0.0013* (0.0007)
Log (Trustee-Evaluated Assets Value +1)			0.0382*** (0.0048)	0.4071** (0.1728)	0.0032+ (0.0021)	-0.1218 (0.0733)
Log (Declared Claims Value +1)			-0.0011*** (0.0054)	0.2815* (0.1429)	-0.0103*** (0.0029)	0.0133 (0.1030)
Litigation			-0.0850* (0.0501)	-0.0128 (0.5843)	-0.0380 (0.0405)	-0.0811 (0.2533)
Duration (in Years)					-0.0203+ (0.0155)	0.0985 (0.2370)
Log (Liquidated Assets Value +1)					0.2091*** (0.0130)	1.5760*** (0.1352)
<i>Fixed effects</i>						
Judge FE	No	No	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes
Year of Filing FE	No	No	Yes	Yes	Yes	Yes
No. Obs.	640	136	640	136	640	136
Log likelihood	-625.73		-527.77		-207.57	

Notes: The table reports results based on estimation of a lognormal hurdle model, where step one (if any creditors were paid, I[y>0]) is estimated as probit and step two (how much creditors were paid in total when there was at least some debt recovery, log(y)|y>0) with OLS. For step one (probit) of each model, the table reports average marginal effects. Reported standard errors are heteroscedasticity-robust and clustered at the trustee level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively, for two-sided test of significance. + indicates significance at the 10% level for one-sided test of significance. ^a Effect on log(y)|y>0 is identified off of a single case.

Table 4: Results, Robustness Checks

Explanatory Variables	Model 4 (Micro Firms Only)		Model 5 (No. Registered Creditors>0)		Model 6 (Year of Filing>2009)	
	I[y>0]	log(y) y>0	I[y>0]	log(y) y>0	I[y>0]	log(y) y>0
<i>Trustee characteristics</i>						
Female	0.0197 (0.0337)	-0.2475 (0.4909)	0.0166 (0.0299)	-0.3835 (0.4031)	-0.0114 (0.0315)	-0.2552 (0.5448)
Post-Graduate Education	0.0261 (0.0376)	-0.0232 (0.5029)	0.0294 (0.0359)	-0.2551 (0.5165)	0.0236 (0.0404)	0.8293 (0.7576)
Law Degree	-0.0014 (0.0349)	-0.3017 (0.5789)	-0.0006 (0.0327)	-0.2358 (0.5066)	0.0130 (0.0348)	0.7137 (0.7580)
Non-Law/Econ/Bus Degree ^a	-0.1098* (0.0642)	-4.0810*** (1.4365)	-0.1237** (0.0580)	-3.2059** (1.3221)	-0.0751+ (0.0571)	-1.4281 (1.5422)
Experience (in Years)	0.0018 (0.0046)	0.0837+ (0.0585)	0.0022 (0.0044)	0.0578 (0.0716)	0.0004 (0.0039)	0.0971+ (0.0590)
Trustee-Judge Repeated Match	0.0327 (0.0315)	0.9783* (0.4987)	0.0397 (0.0313)	0.7944+ (0.4904)	0.0523+ (0.0325)	0.5640 (0.6605)
Firm characteristics as in...	Models 2 and 3	Models 2 and 3	Models 2 and 3	Models 2 and 3	Models 2 and 3	Models 2 and 3
Case characteristics as in...	Model 2	Model 2	Model 2	Model 2	Model 2	Model 2
Judge, Industry, Year of Filing FE	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	604	116	627	136	455	88
Log likelihood	-373.99		-423.82		-258.22	
Explanatory Variables	Model 7 (Micro Firms Only)		Model 8 (No. Registered Creditors>0)		Model 9 (Year of Filing>2009)	
	I[y>0]	log(y) y>0	I[y>0]	log(y) y>0	I[y>0]	log(y) y>0
<i>Trustee characteristics</i>						
Female	0.0023 (0.0217)	-0.1618 (0.2359)	-0.0012 (0.0197)	-0.0640 (0.1864)	-0.0508** (0.0254)	-0.2433 (0.2534)
Post-Graduate Education	0.0111 (0.0245)	0.2539 (0.2766)	0.0177 (0.0234)	0.1606 (0.2003)	0.0537** (0.0245)	0.3788 (0.3598)
Law Degree	0.0042 (0.0214)	-0.0152 (0.2750)	0.0016 (0.0194)	-0.0548 (0.2740)	0.0154 (0.0187)	-0.0332 (0.2771)
Non-Law/Econ/Bus Degree ^a	-0.1799*** (0.0337)	-0.1758 (0.8200)	-0.1582*** (0.0324)	-0.3475 (0.4610)	-0.1161*** (0.0358)	-0.2849 (0.6798)
Experience (in Years)	0.0020 (0.0028)	0.0398+ (0.0291)	0.0009 (0.0026)	0.0486* (0.0272)	-0.0008 (0.0024)	0.0321 (0.0302)
Trustee-Judge Repeated Match	0.0052 (0.0193)	-0.3621 (0.3418)	0.0073 (0.0182)	-0.2548 (0.2383)	0.0227 (0.0200)	0.2122 (0.3215)
Firm characteristics as in...	Models 2 and 3	Models 2 and 3	Models 2 and 3	Models 2 and 3	Models 2 and 3	Models 2 and 3
Case characteristics as in...	Model 3	Model 3	Model 3	Model 3	Model 3	Model 3
Judge, Industry, Year of Filing FE	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	604	116	627	136	455	88
Log likelihood	-185.49		-204.92		-97.58	

Notes: The table reports result based on estimation of a lognormal hurdle model, where step one (if any creditors were paid, I[y>0]) is estimated as probit and step two (how much creditors were paid in total when there was at least some debt recovery, log(y)|y>0) with OLS. For step one (probit) of each model, the table reports average marginal effects. Reported standard errors are heteroscedasticity-robust and clustered at the trustee level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively, for two-sided test of significance. + indicates significance at the 10% level for one-sided test of significance. ^a Effect on log(y)|y>0 is identified off of a single case.

Table 5: Results, Sample-Selection Model

Explanatory Variables	
<i>Trustee characteristics</i>	
Female	-0.3581 (0.2247)
Post-Graduate Education	0.0683 (0.2642)
Law Degree	-0.0911 (0.2554)
Non-Law/Econ/Bus Degree	-0.6548 (1.2502)
Experience (in Years)	0.0409 ⁺ (0.0310)
Trustee-Judge Repeated Match	-0.1247 (0.2372)
Firm characteristics	Yes
Case characteristics	Yes
Judge, Industry, Year of Filing FE	Yes
Lambda (inverse Mills ratio)	-0.9476*** (0.2475)

Notes: The table reports average marginal effects for $E[\log(y)|y>0,x]$ based on sample-selection model estimated using Heckman's (1979) two-step method. For Lambda (the inverse Mills ratio) the table reports the coefficient (rather than the average marginal effect). Firm characteristics coincide with those in Models 2 and 3. Case characteristics coincide with those in Model 3, but without the exclusion restriction $\log(\text{Trustee-Evaluated Assets Value} + 1)$; see the discussion in text. Total number of observations equals 640 of which 136 are uncensored. Reported standard errors are heteroscedasticity-robust. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively, for two-sided test of significance. ⁺ indicates significance at the 10% level for one-sided test of significance.

Figure 1: Distribution of cases based on the total amount paid to creditors when the total amount paid to creditors is positive

