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Anatomy of Out-of-court Debt Workouts for SMEs*

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Abstract

In this study, we use a detailed and comprehensive dataset on out-of-court debt workouts for distressed small and medium-sized enterprises in Japan to describe characteristics of these workouts. We then investigate their determinants and the subsequent effects on firm performance. We find that most cases of debt restructuring involve a rescheduling (deferral of debt repayment). In contrast, firms infrequently use more drastic measures, some of which could reduce their debt overhang. For the determinants, firms with operating surpluses and negative net worth are more likely to take drastic measures to restructure debt, which is consistent with the debt overhang theory. Firms with operating surpluses are more likely to adopt measures to hold management responsible and to use new outside executives. In terms of performance, firms that use drastic debt restructuring strategies have better gross sales and profits. Firms that use restructuring to hold management more responsible reduce employment and improve profits. These results indicate that firms that use measures to reduce their debt overhang and limit their moral hazard improved their performance.

Keywords: out-of-court debt workouts, debt overhang, moral hazard, zombie firms

JEL classification: G21, G33, G34

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1. Introduction

After the global financial crisis, corporate debt has increased substantially not only in emerging market economies but also in advanced economies that has led to a concern about the debtor firms' repayment ability (Kose et al, 2021; Jorda et al. 2022). The concern became more pronounced during the COVID-19 pandemic that brought a massive negative shock to entire economies that threatened many firms with insolvency. Contrary to our expectation, however, the number of corporate bankruptcies decreased rather than increased in many countries during the pandemic. There are two possible reasons.

First, the government's financial support to deal with the COVID-19 pandemic helped debt-laden firms weather the crisis, while the support also created a large number of zombie firms (Albuquerque and Iyer, 2023; Hoshi et al., 2023; Honda et al. 2023).[1] Second, changes in the bankruptcy laws provided firms with the breathing room to survive. According to Dun & Bradstreet (2021), these changes comprised an increase in the threshold amount above which a creditor could take action against a late-paying debtor and in the length of the period within which the debt could be repaid.[2] Further, capacity constraints for the courts to receive applications due to lockdowns in the early period of the pandemic discouraged distressed firms from filing for bankruptcies. A smaller number of bankruptcies does not mean that financially distressed firms which require debt restructuring were non-existent.

As the government unwound its support measures, borrower firms have begun to repay the debt accumulated during the COVID-19 pandemic. However, many of them may be unable to repay if their businesses do not sufficiently recover. All of these indicate the need for an efficient

[1] See also "What to do about zombie firms," The Economist, September 24, 2020. In contrast, Gourinchas et al. (2021) and Pelosi et al. (2021) suggest that governments' financial supports did not increase the number of zombie firms.

[2] Dun & Bradstreet (2021) states that countries that suspended the mandatory obligation to declare bankruptcy were India (until March 2021), Germany (until April 2021), and Spain (until June 2022).

framework for debt restructuring. The framework includes not only the bankruptcy procedures, which are often constrained by their capacity, but also some alternative measures, namely, out-of-court debt workouts.

We define out-of-court debt workouts as a privately negotiated debt restructuring between the debtor and all or some of its creditors. It is recognized as an important alternative to formal bankruptcy, as other studies have found that out-of-court debt workouts are less costly (Haugen and Senbet 1978, Gilson et al. 1990, Hotchkiss et al. 2008, Jostarndt and Sautner 2010, McConell and Servaes 2023). Recently, a number of countries have adopted policies to promote these debt workouts, and an international body of financial regulators has shown a great interest in their current status and future development (FSB, 2022). This study focuses on the out-of-court debt workouts of small and medium-sized enterprises (SMEs).

The reasons that we examine out-of-court debt workouts for SMEs are two-fold. First, the cost savings from these workouts is especially valuable for SMEs with limited capacity to bear bankruptcy costs. For example, the creditors and the distressed firm usually carry out these workouts confidentially that reduces the possible adverse feedback to the firm from their customers, suppliers, and employees (Titman 1984). In addition, out-of-court debt workouts are generally more efficient and flexible than formal bankruptcy procedures because there are fewer parties involved.

Second, despite the importance of these workouts for SMEs, there is a paucity of empirical research because of the lack of data.[3] Most studies have used a sample of out-of-court debt workouts identified by media reports (e.g., Gilson et al. 1990) or a sample constructed from banks'

[3] The lack of data on out-of-court debt workouts is pointed out in FSB (2022), which states "Data about the use of OCW (=out-of-court workouts) framework is scarce, and where it is available it is not in a format that is comparable across jurisdictions." It also states "This lack of information makes it difficult to assess the relative use or efficiency of OCW frameworks, both within and across jurisdictions."

internal data (e.g., Blazy et al. 2014). The sample in the former is generally limited to large listed firms, while the latter contains SMEs but may lack the representativeness of the population. An important exception is the recent study by Srhoj et al. (2023) that uses a large dataset on Croatia from which they identify firms that successfully settled out-of-court debt workouts and those that failed to do so.

Against this background, we identify the determinants and effects of out-of-court debt workouts on distressed SMEs by using the comprehensive and detailed data on those workouts in Japan. The unique feature of our dataset is that it contains detailed information on the content of the "revitalization plan" that the out-of-court debt workout is based on. The information in our dataset includes, for example, how existing debts are restructured (e.g., rescheduling, partial write-off, and debt-equity swap), how management is held responsible (e.g., turnover, provision of CEOs' personal assets for debt repayment, and reduction of management compensation), and how business is improved (e.g., appointment of a new outside manager(s) and asset sales).

Using this dataset, we examine which measures in the out-of-court workouts lead to the efficient restructuring of firms. Specifically, we focus on measures taken in out-of-court workouts to reduce debt overhang and moral hazard and examine their determinants and effects on firm performance. Borrowers with debt overhang have distorted incentives such as they may forego profitable investment opportunities and exert too little effort since the benefits of business restructuring mainly accrue to creditors (Myers 1977). Some debt restructuring measures, such as partial write-offs, reduce the incentive problems associated with debt overhang, and several empirical studies have found evidence that debt forgiveness indeed improves borrower performance (e.g., Giroud et al. 2011). However, there is a possible drawback associated with debt restructurings: they may generate moral hazard on the part of borrowers as they may abuse a culture of prudent borrowing and repayment (Kanz 2016) that may amplify the moral hazard of

lenders by allowing the "evergreening" of loans to persist (Inoue et al. 2010).

The major findings of this study are as follows: First, our dataset shows the unique features of out-of-court debt workouts for Japanese SMEs. More than 90% of debt restructurings involve rescheduling, which is a temporary deferment of debt repayment. More drastic measures can be classified into those that decrease the leverage of the distressed firms (e.g., partial write-offs and debt-equity-swaps), and those that change the seniority among creditors (e.g., debt-debt-swap and equity-like subordinated loans), which likely increases the provision of new loans by senior creditors. The shares of firms that used the former and the latter are 5.4% and 6.6%, respectively. Our findings that debt forgiveness is rarely used in out-of-court workouts are similar to the finding in Franks and Sussman (2005) for the UK but contrast with the result in Jostarndt and Sautner (2010) for Germany. Turning to management restructuring, we find that the share of firms that took severe measures (e.g., turnover and the provision of managers' private properties for debt repayment) is about 20%. Regarding asset restructuring, the share of firms that sold their assets or reorganized their affiliated firms is more than 20%.

Second, we use probit estimations with firms that adopt only rescheduling as the control group to examine the determinants of restructuring measures. The results are the following: Firms with operating surpluses and negative net worth are more likely to take drastic measures other than debt rescheduling in the restructuring of existing debts. This finding is consistent with the theory of debt overhang that predicts lenders should forgive a part of existing debts if borrowers whose net present values are positive have an incentive problem associated with negative net worth. We also find that these firms are more likely to adopt measures to hold management responsible and employ new outside executives. This result contrasts with some studies that find that CEO turnovers are more likely for firms with poor performance (Coughlan and Schmidt 1985, Kaplan 1994a, 1994b, Kang and Shivdasani 1995). An operating surplus is not associated with

the likelihood of asset restructuring.

Third, to examine the ex-post performance of firms that worked out their debts out of court, we match our anonymous dataset for out-of-court workouts with the Tokyo Shoko Research (hereafter TSR) database using the information on firms' region, year of establishment, and paid in capital. We then run difference-in-differences (DID) regressions that control for firm and year fixed effects. Our estimations show that compared to firms that adopted only rescheduling, firms that took more drastic measures in debt restructuring have better performance in gross sales and profits. Although the number of observations is small, the additional subsample analysis for firms that took drastic measures shows that the positive effect is more substantial for firms that reduced the leverage through methods such as partial write-offs than firms that changed the seniority among creditors, such as debt-debt-swaps. These findings indicate that resolving debt overhang through out-of-court debt workouts improves firm performance. Turning to management restructuring, we find that firms that adopt measures to hold management responsible reduce the number of employees and improve profits. We also find that they have a higher likelihood of bankruptcy. The additional subsample analysis shows that the improvements in profits are quantitatively more substantial for firms that employ new outside executives than for firms that do not. The increase in the likelihood of bankruptcy is observed only for the latter subsample. These findings indicate that the firms that take measures to limit the moral hazard of management improve their performance. We do not find evidence that asset restructuring contributed to improvements in firm performance. Instead, firms that used measures for asset restructuring have worse performance that means asset restructuring in our sample firms takes the form of asset fire sales rather than the strategic change in firms' asset portfolio.

This study is related to the following strands of the literature: First, it is related to those that examine determinants of out-of-court debt workouts and their effects on firm performance. Based

on the assumption that these workouts are less costly than formal bankruptcy for borrowers and lenders, many studies examine the determinants of out-of-court workouts that successfully settled and those that did not (i.e., those moved to bankruptcy), such as distressed firms' going concern value relative to their liquidation value, the likelihood of the coordination failure among lenders, and possible deviations from the rule of absolute priority in bankruptcy procedures (Gilson et al. 1990, Jostarndt and Sautner 2010, Goto and Uchida 2012, Blazy et al. 2014, Demiroglu and James 2015). In contrast, the number of studies that examine the ex-post performance of distressed debtors is limited. Srhoj et al. (2023) examine the impact of delay in debt workouts on firm performance using the formal out-of-court procedure in Croatia and find that the delayed debt workouts result in worse outcomes. Giroud et al. (2011), Kanz (2016), and Chu (2021) examine the effect of the resolution of debt overhang through out-of-court workouts. The results of these studies are mixed. On the one hand, Giroud et al. (2011) and Chu (2021) find that debt restructuring led to improvements in firms' performance and investment. On the other hand, Kanz (2016) find that the debt relief program for households in India led to a reduction in investments and lower productivity. Meanwhile, Inoue et al. (2010) examine the effect of CEO turnover in out-of-court debt workouts and find no significant effect on firm performance. Our study differs in that it focuses on measures taken in out-of-court workouts and therefore examines the differences within firms that settled out-of-court workouts. In contrast, other studies examine the difference between firms that have successful out-of-court workouts and firms that do not. Although there are a few studies that examine the determinants and effects of different measures in out-of-court debt workouts (Miyakawa et al. 2018, Bergant and Kockerols 2020), the measures we examine are more comprehensive in that we investigate those for not only debt restructuring but also business restructuring.

Second, the present study is also related to a growing literature on "zombie" firms that has

gathered renewed interest amid the COVID-19 pandemic. The studies on zombie firms examine the mechanism through which they are created (Peek and Rosengren 2005, Blattner et al. 2023), their adverse spillover effects on other healthy firms in the same industry and region (Caballero et al. 2008, Acharya et al. 2019), and whether they emerge from zombie status (Fukuda and Nakamura 2011, Goto and Wilbur 2019). A common concern inherent in these studies is that it is difficult to correctly identify zombie firms, which are defined as firms that are not viable without support from financial institutions or governments (Acharya et al. 2022). Although other studies have proposed several empirical strategies to identify zombie firms using firms' and their lender banks' financial information, they inevitably entail a measurement error. Because the sample firms in this study undergo out-of-court debt workouts, they are by definition zombie firms; therefore, our analysis does not suffer from problems associated with the measurement error and thus provides new insights on whether zombie firms revive after receiving supports from their financial institutions. In this respect, the closest study to ours is that by Inoue et al. (2010) who examine the performance of Japanese firms that experience out-of-court debt restructuring. The differences between our study and Inoue et al. (2010) are as follows: First, the sample period that we examine is from 2008 to 2018 during which the Japanese banks were financially healthy, while Inoue et al. (2010) use the period from 1990 to March 2005 in which Japanese banks held large amounts of nonperforming loans and had incentives to engage in "evergreening". Second, the sample firms we examine are SMEs, while those in Inoue et al. (2010) are listed firms. Because bankruptcy costs are higher for smaller firms and it is hard for them to revive through bankruptcy procedures (Brunnermeier and Krishnamurthy 2020), an investigation of the determinants of out-of-court debt workouts as well as their effects on firm performance is important to do, especially for SMEs.

The remainder of the study is organized as follows: In Section 2, we explain the institutional

background of out-of-court debt workouts in Japan. Section 3 has an outline of our dataset and sample selection and a description of our empirical framework to examine the determinants of the measures adopted in out-of-court debt workouts and their effects on firm performance. Section 4 provides the descriptive statistics for firms that undertake workouts, while we explain the empirical results in Section 5. Section 6 concludes the study.

2. Institutional background

Out-of-court debt workouts are defined as a privately negotiated debt restructuring between the debtor and all or some of its creditors. There is a wide range in the extent of formality and the degree of institutional involvement in the workouts. On the informal side of the spectrum there are purely informal debt workouts that basically do not follow formal requirements but may be based on (non-binding) common principles or practices. All the 25 participating jurisdictions in the peer review on the out-of-court debt workouts organized by the FSB report that that these informal workouts exist.[4] Next one on the spectrum is what the FSB (2022) labels as enhanced out-of-court workouts. A unique feature of this type of workout is that they do not involve courts but benefit from supporting measures, such as third party coordination or pecuniary incentives. Out of 22 jurisdictions in the FSB (2022), 17, including Japan, had a framework for such enhanced out-of-court workouts. It is this type of workout that we focus on in this study, and we call them formal out-of-court debt workouts.[5]

These formal workouts have emerged in Japan since the financial crisis in the mid-1990s

[4] Jurisdictions (=countries and economies) that participated in the review are Argentina, Australia, Brazil, Canada, China, EU, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Korea, Mexico, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Turkey, UK, and US.

[5] There are some other types of out-of-court workouts that the FSB (2022) dubs as hybrid. In some hybrids, negotiations take place out of court and then the restructuring agreement is confirmed by the court (hybrid I). In some other hybrids, court interventions into restructuring procedures go beyond the mere confirmation but are more limited than in legal insolvency procedures (hybrid II). In Japan, the special conciliation procedure (Tokutei choutei) is categorized as the hybrid II debt workouts.

and early 2000s. The financial crisis during that period pushed many SMEs into financial distress. In response, along with several reforms to bankruptcy procedures, the Japanese government introduced several formal out-of-court workouts and authorized third-party organizations to help distressed firms to restructure their debts and reorganize businesses (FSB 2022). These frameworks are, for example, the Guidelines for Multi-Creditor Private Workouts (*Shiteki-seiri gaidorain*) developed at the initiative of the Japanese Bankers Association in 2001, the out-of-court workouts supported by the SME Rehabilitation Support Councils (*Chusho-kigyo saisei-shien kyogikai* that is currently the SME Revitalization Councils: *Chusho-kigyo kasseika kyogikai*) established by local chambers of commerce in each prefectures and the Japanese government in 2003, and the Turnaround Alternative Dispute Resolution (*Jigyo-saisei ADR*) developed by the Japanese government in 2007. This study focuses on the formal out-of-court workouts by the SME Rehabilitation Support Council (SMERSC hereafter), which have been mostly widely used among distressed SMEs in Japan.

Compared to purely informal out-of-court workouts, formal ones have several features that facilitate the agreement of a negotiation (Table 1). First, a formal out-of-court workout consists of laws, regulations, or general agreements without judicial intervention. For example, favorable tax treatments for losses incurred by creditors and gains accrued to debtors in debt restructurings are secured by laws. Second, impartial third parties and professionals (e.g., SMERSCs) participate in formal workouts, which mitigates the conflicts of interest among the parties involved. Third, because the procedure of formal workouts is standardized to some extent, it reduces the time and resources to reach an agreement. Even if a debtor firm and financial creditors do not reach an agreement and move to a formal bankruptcy, the debt restructuring plan discussed under a formal out-of-court workout serves as a starting point in a formal bankruptcy, which may contribute to an efficient settlement.

The flow of the out-of-court workout by the SMERSC is as follows: First, a firm in financial distress visits a consultation desk at the SMERSC in its residing prefecture to receive a diagnosis about its management and pieces of advice for its improvement. Second, the SMERSC decides the type of assistance it provides to the firm. If the SMERSC considers that it is necessary for the firm to restructure its debt, the council explains the financial and business conditions of the firm to its main creditors and asks for their cooperation. The SMERSC also assists the firm in drafting the "revitalization plan (*Saisei Keikaku*)" that the out-of-court debt workout is based on. In drafting the plan, the SMERSC provides a range of support: such as, a coordination with financial institutions to obtain their consent for debt restructuring; the formation of a task force that includes consultant, accountants, and lawyers who implement due diligence of the firm's finance and management status; and the provision of subsidies for drafting the revitalization plan. The plan comprises the following items: the firm's current managerial and financial status, reasons for the current managerial difficulties, contents of the business restructuring plan (e.g., CEO turnover and asset sales), details of the financial assistance (e.g., restructuring of existing debts such as rescheduling and partial write-off and provision of new money), and a new debt repayment schedule. In general, the plan sets the goal of the firm becoming profitable in three years if it currently has a loss, or having positive net worth in five years if it has negative net worth (i.e., has debt overhang). After drafting the plan, the SMERSC submits the report which assesses the feasibility of the plan to financial creditors and holds a meeting with creditors. The plan is finalized by the consent of all financial creditors,[6] which we regard as the start of a out-of-court workout.

To understand the prevalence of out-of-court debt workouts in Japan, Figure 1 shows the

[6] If some creditors do not agree with the revitalization plan, the SMERSC asks them to explain the reasons for their disagreement. If the SMERSC judges that the revitalization plan is feasible without the consent of these hold-out creditors, then the SMERSC revises the plan in which only agreed creditors are involved.

numbers of consultations with SMERSC and the out-of-court workouts in which revitalization plans reached agreement.[7] For comparison, the figure also shows the number of bankruptcy procedures by the Civil Rehabilitation Act or Corporate Reorganization Act, which is similar to the procedures for Chapter 11 in the US. As of the end of fiscal year 2022, the act conducted 60,624 consultations and finalized 17,765 plans.[8] The figure shows that the number of the finalized plans increased substantially in 2013–2014 and remained at a level of about 1,000 per year afterward. Meanwhile, the number of the bankruptcy procedures has been declining since the early 2000s.

The likely reason for the spike in the number of the workouts in 2013–2014 is as follows: From December 2009 to March 2013, that is, shortly after the Global Financial Crisis, the Japanese government implemented the SME Financing Facilitation Act to lighten the debt burden of SMEs. The Act required financial institutions to put forth their best effort to respond positively to requests by their client SME borrowers to forebear existing debts, such as deferring loan repayments and reducing the principal of or the interest on loans. The Act also required firms and financial institutions to make a credible business restructuring plan. When the deadline of the Act approached, the Japanese government estimated that 300,000–400,000 SMEs used this debt forbearance, and 50,000–60,000 of them needed a fundamental business restructuring.[9] It is likely that the increase in the number of the out-of-court workouts in 2013–2014 was due to the

[7] Firms that made a consultation but did not make the revitalization plan fall into several cases. First, if the SMERSC considers that it is not necessary for the firm to restructure its debt (i.e., the firm is not in severe financial distress), they provide other supports such as providing pieces of advice to make the business plan for improving profitability. Second, if the SMERSC considers that it is hard for the firm to continue business even if debts are restructured, they provide supports to smoothly close the business. Third, among firms that the SMERSC considers a debt restructuring is necessary, some are not able to reach an agreement on the debt restructuring plan or the revitalization plan.

[8] The cumulative number of consultations include the Support for Special Reschedule Plan (Tokurei risuke keikaku sakutei shien), while that of finalized plans does not include it. The Support for Special Reschedule Plan is a special framework established in 2020 for SMEs that suffered from the COVID-19 pandemic. Unlike the usual SMERSC framework, the Special Reschedule Plan intends to temporarily defer the repayments of existing debts and does not require a revitalization plan.

[9] www.fsa.go.jp/policy/chusho/setsumeikai/b4.pdf (in Japanese)

increased demand for the out-of-court workouts using the SMERSC by distressed SMEs that needed a fundamental restructuring amid the expiration of the SME Financing Facilitation Act.

3. Empirical approach

3.1 Data

The dataset used in this study is constructed from several sources. The first and primary source is firm-level anonymous records of out-of-court workouts that are collected by the SMERSC and reported by the Small and Medium Enterprises Agency (SMEA) of the Ministry of Economy, Trade and Industry of the Japanese government on its website.[10] The SMERSC and SMEA have disclosed these data every quarter since the fiscal year 2008. The unique feature of the data is that they include details of each workout that the SMERSC coordinates. They contain detailed information on the measures to restructure existing debts, those to hold the management responsible, those for asset restructuring, and those taken to improve business profitability. The data also include information on the number of years within which a firm aims to achieve its financial goals. The data cover the period from 2008–2018, and the number of observations is slightly less than 10,000.

The second data source we use is information on additional characteristics of firms started out-of-court workouts. Unlike the first data source, these additional data are confidential and provided to us by the SMEA. Information contained in the second data source includes the prefecture where the firm is located, its financial status at the time of consultation, names of financial institutions that a firm transacts with, its rating from financial institutions, the date on which a firm starts consultation, the date on which a firm starts the workout, and the date on which the start of the workout is reported to the SMERSC. By combining the first and second data

[10] https://www.chusho.meti.go.jp/keiei/saisei/index.html (in Japanese)

sources, we construct a unique dataset for the analysis of the determinants of the types of out-of-court debt workouts; the sample comprises 9,861 firms.

For the purpose of examining the ex-post performance of firms, we use a third source. It is the firm-level database provided by the TSR, which is one of the largest credit information companies in Japan. The TSR database contains various information on firms such as credit scores (TSR score: ranging between 0 and 100 where a higher value indicates higher creditworthiness), number of employees, sales, profits, and bankruptcy status for years between 2003 and 2020. We match firms identified from this third data source with anonymous firms from the first two data sources using the amount of paid-in capital, prefecture of a firm's headquarters, and its establishment year and month as key variables. As a result, we successfully match 1,791 firms.[11]

3.2 Empirical framework

3.2.1 Determinants of out-of-court debt workouts

To examine the determinants of the types of out-of-court debt workouts, we estimate the following probit model:

$$\begin{aligned} Workout\_type_i &= \text{if } Workout\_type_i^* \geq 0 \\ &= 0 \text{ otherwise} \qquad (1) \\ Workout\_type_i^* &= \beta_1 Surplus_i + \beta_2 PosNetWorth_i + \gamma X_i + \theta_t + \mu_r + \delta_s + \varepsilon_i \end{aligned}$$

where subscript *i* denotes a firm which successfully settled an out-of-court debt workout, *t* denotes the year when the workout plan became effective, *r* denotes the region where the firm is located, and *s* denotes the industry the firm belongs to. We include θ_t, μ_r, and δ_s to respectively control

[11] The current matching rate is less than 20%. However, we plan to use additional key variables for matching in order to increase the matching rate.

for time, region, and industry fixed effects.

For the dependent variable, we classify various types of out-of-court workouts into several categories depending on the types of restructuring to construct different dummy variables. We set the value to zero for firms that only rescheduled their debt repayments for all the dependent variables in the baseline estimation, which is the most prevalent form of debt restructuring among our sample firms (see Section 4.1).[12]

The most important dependent variable for $Workout\_type_i$ is $Debt_i$ that equals one if a firm adopts at least one of the drastic debt restructurings other than debt rescheduling: partial debt write-offs, good firm/bad firm spin-off, debt-equity swap (DES), and debt-debt swap (DDS). The good firm/bad firm spin-off (*daini-kaisha-hoshiki*) is a method to restrict debt in which a firm is split into a new "good" firm that takes on the good businesses with a clean balance sheet and an old "bad" firm that is left with unprofitable businesses and most of the debts, which will be restructured through liquidation. There are four related dependent variables, $Debt\_forgive_i$, $Debt\_DDS_i$, $Debt\_sponsor_i$, and $Debt\_nonsponsor_i$, that each equal one for firms adopting a subset of measures for $Drastic_i$. Panel (a) of Table 2 gives a detailed explanation of the definitions for these variables.

In the estimates for drastic debt restructuring, $Surplus$ is a dummy variable that indicates a firm was in operating surplus before consulting with the SMERSC for debt restructuring, and $PosNetWorth$ is a dummy variable that indicates a firm has positive net worth. The coefficients for these variables shed light on who chooses restructuring to solve the incentive problem caused by debt overhang. Debt overhang is the most severe for firms that have business opportunities with a positive net present value but have negative equity. It is in the interest of lenders to resolve

[12] In another set of estimations, we set the value of zero for all the firms that did not undertake any type of drastic restructuring rather than for firms that only undertook debt rescheduling. We show the results of these estimations in Table 4.

the debt overhang for these firms. Such firms are expected to be more likely to adopt drastic measures for debt restructuring than others. Therefore, we expect β_1 to be positive and β_2 to be negative.

We are also interested management and asset restructurings as types of drastic restructuring. The variable $Management_i$ for management restructuring equals one if a firm adopts at least one of the following measures: managers being held responsible (e.g., CEO's resignation), shareholders' being held responsible (e.g., reduction of capital), and managers being held responsible by using their assets for debt repayment. Based on the literature that finds that managerial turnovers are more likely among firms with poor performance (e.g., Kang and Shivdasani 1995), we expect that unprofitable firms and firms with negative net worth opt for management restructuring, that is, we expect both β_1 and β_2 to be negative. To examine the role of a new management after the restructuring due to the CEO's resignation, we also construct related variables of $Management\_outside_i$ and $Management\_inside_i$ for a firm that invites outsiders to apply for top management positions after the management restructuring and for a firm that promotes insiders, respectively.

The variable $Asset_i$ for asset restructuring equals one if a firm adopts at least one of the following measures: asset sales and reorganization of group firms. We use this variable to represent a firm taking strategic reallocation of its business portfolio. We expect β_1 and β_2 to be negative as a firm with good performance is less likely to change its business strategy. On the other hand, the signs of β_1 and β_2 can be positive because a profitable and solvent firm may have the managerial capacity to rethink its business strategy. Finally, we construct the variable Any_i that equals one if a firm adopts any one of the drastic measures, management or asset restructuring, in addition to rescheduling.

The other explanatory variables that are represented by X_i in (1) are as follows: First, there

are five dummy variables for the rating categories for a firm's debt as given by financial institutions that range from normal to effectively bankrupt. The rating is based on financial institutions' self-assessment of their borrower firms' capacity to repay their debt such as their financial conditions, cash flows, and profitability. Since we expect that firms that are close to bankruptcy are likely to obtain consent for drastic restructuring from their creditors than to obtain rescheduling, the coefficients on the high rating categories (such as normal and cautionary) are expected to be smaller than those on low rating categories (such as effectively bankrupt and potentially bankrupt). Second, we use the variable Emp_i that represents firm size and is likely to be positively correlated with the firm's capacity to adopt drastic restructurings of any type. Therefore, we expect positive coefficients on the variable in the estimation. Third, there are several bank-type dummies ranging from sizeable mega banks to small credit cooperatives. The size of financial institutions is likely to be positively correlated with their ability to handle drastic restructurings. Hence, we expect larger coefficients on the mega bank dummies and smaller coefficients on the dummies for smaller financial institutions.

3.2.2 Ex-post performance of the out-of-court debt workouts

Next, by using the DID model, we investigate the effect of each type of out-of-court workout, drastic debt restructuring, management restructuring, and asset restructuring, on firms' ex-post performance relative to the effect on benchmark firms, that is, firms that only reschedule debt repayment. Specifically, we measure the effect by examining the difference in firm performance between one or more years after the start of the out-of-court workout and the years before its start, and compare the difference between firms that underwent drastic out-of-court workouts and firms that only adopted debt rescheduling. We estimate the following two-way fixed effects DID model:

$$Y_{it} = \alpha_i + \lambda_t + \beta_1 After_{t \geq k_i+1} + \beta_2 Workout\_type_i \times After_{t \geq k_i+1} + \varepsilon_{it}, \quad (2)$$

where Y_{it} is an ex-post measure of performance for firm i in year t. We use nine measures: (1) credit scores provided by the TSR, one of the major credit research firms; (2) number of employees; (3) log of number of employees; (4) amount of sales in million yen; (5) log of amount of sales; (6) amount of net profits in million yen; (7) ratio of net profits to sales; (8) dummy for positive net profits; and (9) a dummy for the case in which a firm files for formal bankruptcy proceedings such as those stipulated by the Bankruptcy Law, Civil Rehabilitation Law, Corporate Reorganization Law, and Corporate Law, or the case in which a firm successively fails to pay its bills and is suspended from its bank transactions. The α_i and λ_t control for firm and time fixed effects, $After_{t \geq k_i+1}$ is a dummy variable that equals one if it is after the year k_i when firm i started a workout and zero otherwise. Note that the year k_i in $After_{t \geq k_i+1}$ varies across firms and that the year of the completion of the plan is not included in the ex-post period. $Workout\_type_i$ is a dummy variable for the measures taken for the out-of-court workout of firm i. For example, when we have $Debt_i$ for the workout type, it equals one for firms that adopted drastic debt restructuring and zero for firms that adopted the rescheduling of debt repayment.

The coefficient on $After_{t \geq k_i+1}$, β_1 represents the difference in the performance of firms before and after they adopted out-of-court workouts. We focus on the coefficient of β_2 on the interaction term of $Workout\_type_i \times After_{t \geq k_i+1}$, which represents the treatment effects of the relevant out-of-court workouts. If the out-of-court workout improves the firm's performance relative to firms with debt rescheduling only, β_2 should be positive in the estimations that use credit scores, sales, and profit margin for the dependent variable and negative in the estimations that use the dummy for bankruptcies for the dependent variable.

The sample period is from 2003 to 2020. However, since information is limited to a few

dozen firms for the years 2003 to 2005, the data used primarily for the analysis are from 2006 onward.

4. Descriptive statistics

We present the descriptive statistics for nearly 10,000 formal out-of-court workouts that SMERSC facilitated. With these statistics we understand the distribution of the types of out-of-court workouts. We also observe the characteristics of firms that choose out-of-court workouts. Thus far, the summary statistics for the types of out-of-court workouts and the characteristics of firms have not been publicly available due to the secretive nature of the procedure not only in Japan but also in other countries, while the characteristics of firms that resort to formal bankruptcies have been frequently documented (e.g., Franks and Torous, 1989 for US; Franks and Sussman, 2005 for UK; Davydenko and Franks, 2008 for France, Germany, and UK; Fukuda et al. 2009 for Japan).

It is not possible to show the precise number of out-of-court workouts in the entire country, because there are presumably many purely informal out-of-court workouts between debtors and their creditors without being noticed by others. However, the number of formal out-of-court workouts facilitated by the SMERSC is far larger than that facilitated by other organizations.[13]

4.1 Types of out-of-court workouts

Panel (a) of Table 2 shows the statistics for the different types of formal out-of-court workouts. All the out-of-court workouts include some degree of debt restructuring. They also include management or asset restructurings. In addition, Appendix Table A1 provides detailed

[13] The Japanese Association of Turnaround Professionals and the Regional Economy Vitalization Corporation of Japan are the other organizations that facilitate formal out-of-court workouts. The former association has assisted 60 business revitalization plans that involve 219 firms since its start in 2008as of 2021. The latter has assisted to complete 119 cases since its inception in 2009 as of 2022. Even though they often deal with large listed firms or relatively sizable SMEs, the numbers of cases they have dealt with are far smaller than those by the SMERSC.

information on the use of measures included in each of these types of restructuring.

Debt restructuring

There are several types in the debt restructuring. First, rescheduling debt repayment is the easiest for creditors to jointly agree on. As Panel (a) of Table 2 shows that the mean of Debt_restructuring is 0.925, indicating that 92.5% of firms that went with a workout adopted the measure. The rescheduling of debt repayment is useful for firms to weather a temporary financial distress but has a limited benefit for debtors. The rescheduling does not reduce the amount of the total debt obligation nor does it involve a change in the priorities for debt repayment among lenders after which prioritized lenders are willing to extend new loans to the debtors.

The second type of debt restructuring is the debt-debt swap (DDS) and equity-like subordinated debt that both change the priority among creditors and give senior creditors incentives to provide new loans. As Panel (a) shows, 6.6% of firms that have a workout adopted these measures. The third type of measure is to reduce the amount of the outstanding debt for a firm. This type comprises (partial) write-offs of debt and debt-equity swaps. As a variant of the debt write-offs, there is a method that is labeled as the "second firm scheme (*daini-kaisha-hoshiki*)," in which a firm is split into a good and a bad one. Typically, the former firm is newly established to take over the old firm's profitable businesses and the debt that it is able to repay, while the latter has the unprofitable businesses and (most of) the debt that will be forgiven through liquidation. As Panel (a) shows, the share of firms that adopt at least one of these measures is 5.4%. We regard the second and the third types of debt restructuring as drastic and construct the variable "Debt" as the sum of the variables "Debt_DDS" and "Debt_forgive," of which 11.8% of firms adopted. The number of firms that choose these drastic debt restructurings is far lower than those that adopt rescheduling.

One important aspect regarding the drastic debt restructuring is that it is often accompanied by business restructuring. In this regard, a firm invites a new major shareholder manager as an external sponsor in order to restructure its business. As Panel (a) shows, 2.3% of firms adopted a drastic debt restructuring in which they invited an external sponsor to take over their businesses.

Management restructuring

Next, we focus on the management restructuring. Among various measures for this restructuring, the most frequently used is the reduction in executive compensation. While this measure is used by 65% of the firms as shown in Appendix Table A1, the measure may not be powerful enough to reduce moral hazard by the management. Therefore, we focus on the more drastic and effective measures to alleviate the problem of moral hazard, such as holding management responsible that usually includes CEO turnover, holding shareholders responsible that usually takes the form of a reduction in their equity shares, and using the CEOs' personal assets for debt repayment. As Panel (a) of Table 2 shows, 19.6% of firms adopted at least one of these measures.

In curbing the moral hazard, it is not only important to focus on the way the current management should be penalized but it is also important to identify who will take over the management. To examine this point, we distinguish among the firms with a united management whether they hire their executive officers from outside or not. Panel (a) shows, 3.1% of the firms plan to hire from outside the firm and 16.6% of the firms plan not to hire from outside the firm.

Asset restructuring

Then we focus on the asset restructuring whose aim is to increase a firm’s profitability through the reallocation of assets and business segments. The measures taken for this purpose include the firm’s sales of assets and the reorganization of affiliated firms. As Panel (a) of Table 2 shows,

22.4% of the firms adopted at least one of these measures.

Any type of drastic restructuring among firms that adopted rescheduling

Finally, we focus on the heterogeneity among the firms who adopted rescheduling of debt repayment. Among the more than 90% of firms which adopted rescheduling, some of them might have taken drastic measures for debt, management, and asset restructurings. But some others might have limited their commitment only to rescheduling. Therefore, it is important to know the extent to which the firms that rescheduled debt repayment chose additional drastic restructurings. Actually, 33.5% of rescheduled firms fall into that category as Panel (a) shows.

4.2 Characteristics of out-of-court workout firms

In the rest of Panels (a) and (b) of Table 2, we observe the characteristics of the firms that use out-of-court workouts. The average number of employees for these firms is about 40 with sales of about 700 million yen, while their median values are about 20 and 300 million yen (not shown in the table), respectively. It is larger than the average employment size of SMEs in the recent 2016 Economic Census for Business Activity (Ministry of Internal Affairs and Communications and METI), which is 9.0 (incorporations and proprietorships combined) and 16.6 (only incorporations). Regarding debtor ratings evaluated by banks, the firms that use out-of-court workouts are most likely to be in potential bankruptcies (47.0%) and second most likely to be in a cautionary status (33.5%) by the time they come to the desk of the SMERSC.

4.3 Distribution of out-of-court workouts by industry, region, year, and bank types

In Panel (b) we observe the distributions of out-of-court workouts and find several notable features. First, firms implemented the largest number of workouts in 2014, followed by 2013 and

2015; while the numbers around the Global Financial Crisis were much smaller. This is in contrast to the number of formal bankruptcies during those years, while the number of workouts that were filed under the Civil Rehabilitation Act or Corporate Reorganization Act peaked in 2008 (Figure 1). As explained in Section 2, the likely reason for the spike of the number of workouts in 2013–2015 is the expiration of the SME Financing Facilitation Act in March 2013.

When we focus on the number of workouts across industries, we find that the manufacturing industry has the largest share (37.6%) followed by the wholesale and retail industry (24.2%), while the services industry has a share of only 9.2%. In contrast, the shares of these industries in terms of the numbers of firms in the 2009 Economic Census for Business Frame (Ministry of Internal Affairs and Communications) are respectively 10.6%, 24.9%, and 18.9% that indicate the out-of-court workouts are most concentrated in the manufacturing and least concentrated in the services industry relative to the overall firm population. Firms that belong to the manufacturing sector, which often pledge their tangible fixed assets as collateral, face difficulties in coordinating creditors and as a result they need support from intermediary organizations such as SMERSC to proceed with out-of-court workouts.

When we focus on the distribution of workouts across regions, we find that the shares in the prefectures located in metropolitan areas such as Tokyo (5.7%), Osaka (4.0%), and Aichi (2.2%) are substantially lower than the shares according to the entire firm population in the 2009 Economic Census for Business Frame, which are respectively 11.6%, 7.8%, and 5.7%. This difference indicates that the out-of-court workouts are less concentrated in the metropolitan areas than in the other areas.

Finally, when we focus on the primary banks that these firms with out-of-court workouts used, they were more likely to use regional (40.6%) and Shinkin banks (28.4%) at the time they consulted with SMERSC. In contrast, 34.6% of the firms with out-of-court workouts to have

transacted with the government banks. Since the government banks work as a secondary bank and complement the banking services provided by the main bank, these banks might have facilitated the process of out-of-court workouts even when the primary banks were reluctant to do so.

5. Estimation results

In this section we explain the estimation results. We start by providing detailed accounts of the estimation on the determinants of various types of out-of-court workouts. Then we examine the effect of these workouts on firm performance.

5.1 Determinants of workouts

In this subsection, we use equation (1) to implement the probit model estimations. In the baseline, we use firms of each workout type for the treatment group, and firms that only underwent debt rescheduling for the control group. Since we define 11 types of formal out-of-court workouts in Panel (a) of Table 2, we report the results of 10 different estimations using rescheduling as the base. Table 3 presents the results. There are five notable findings.

First, regarding debt restructuring, the coefficients on the surplus and positive net worth are positive and negative, respectively, for the estimations of the drastic debt restructuring in columns (1) and (2). These coefficients indicate that firms with positive operating profits and negative net worth are more likely to take more drastic measures than debt rescheduling. This is consistent with the theory of debt overhang that predicts it is in the interest of lenders to forgive some of the existing debt of borrowers that are profitable but have an incentive problem associated with negative net worth. Notably, the signs of the coefficients on these variables are the same in column (3), even though the DDS merely changes the priority of lenders without alleviating borrowers' incentive problems. We interpret this result as some of the firms whose debt should be forgiven

ended up in receiving the DDS due to the financial institutions' reluctance to provide debt forgiveness. In contrast, the results are different in column (4) when we focus on the drastic debt restructuring accompanied by a sponsor. The coefficient on the positive net worth is still negative, but that on the surplus is insignificant. The result is consistent with what we expect from sponsors in the restructuring, that is, a turnaround of the firms' unprofitable businesses.

Second, regarding management restructuring, the coefficients on surplus are positive in columns (6) and (7), while the coefficient is insignificant in column (8). The result in column (6) indicates that firms with operating surpluses are more likely to hold management responsible through measures such as CEO turnover and capital reduction. This result contrasts with some studies that find that the likelihood of CEO turnover is higher for firms with poor performance (Coughlan and Schmidt 1985; Kaplan 1994a, 1994b; Kang and Shivdasani 1995). In addition, the results in columns (7) and (8) indicate that firms with surpluses are more likely not only to hold managers responsible but also to invite outside board members rather than promote insiders. Third, regarding asset restructuring, the coefficients on the surplus and positive net worth are statistically insignificant in column (9). These coefficients indicate that a firm's operating surplus and net worth are not associated with the likelihood of asset restructuring.

Fourth, the coefficients on the debtor status as assessed by banks are all negative and significant in all columns. Since we use the effective bankruptcy status as a baseline, we interpret the results to mean that firms with low creditworthiness are more likely to take more drastic measures for out-of-court workouts than their counterparts with high creditworthiness. However, there is heterogeneity in the magnitude of the coefficients across estimations. In terms of the absolute values of the coefficients, those on the variable for the cautionary status are larger for firms whose banks forgave debt than for firms whose banks provided the DDS. We interpret these values to mean that poorly performing firms are more likely to receive debt forgiveness than DDS.

Fifth, the coefficients on bank type, where we use city banks as the base, are negative in most cases. The extent to which these coefficients are negative is pronounced for financial institutions of smaller size, such as shinkin banks and credit cooperatives. We interpret this to mean that banks with limited capacity are less likely to take initiatives for drastic formal out-of-court workouts than large banks. However, there are some exceptions. In column (3), all statistically significant coefficients on the bank type are positive rather than negative that indicate regional banks and government banks are more likely to provide DDS or equity-like subordinated loans than large banks. Also, in column (5), the coefficient on government banks is positive that indicates these banks are more likely to support a firm's own restructuring efforts rather than securing an external executive to help the firm revive.

For robustness, we implement two additional sets of probit model estimations. First, we change the set of firms in the control group from the baseline estimations. Specifically, we add as controls all firms in the sample that are not in the treatment group. Table 4 shows the results. Admittedly, it is difficult to make a meaningful comparison between different estimations within the table, since the control groups are different in each estimation. However, the estimation results in each column are still meaningful as a comparison between firms that adopted a particular type of out-of-court workout and those that did not. The results in the table are qualitatively the same as in the baseline, except for the coefficient on the status of the debtor as rated by the banks in column (3), which changes to positive. The result in column (3) indicates that banks provide DDS and equity-like subordinated loans to firms with mediocre creditworthiness among the entire set of firms using out-of-court workouts.

Second, we restrict the sample to 2013 and 2014, when the largest number of formal out-of-court workouts were completed. We focus on this period to examine the presence of capacity constraints on the part of banks. If small banks, such as shinkin banks and credit cooperatives, are

limited in their capacity to handle drastic debt restructurings involving loan write-offs, the absolute size of the negative coefficients on these bank types should be larger during the period when the largest number of workouts were completed. Table 5 presents the results. The coefficients on the small bank type dummies in columns (1), (2), and (4), which focus on the use of drastic debt restructurings, become larger in absolute terms than those in the baseline estimates. The results indicate that the capacity constraint for handling complicated debt restructurings by small financial institutions becomes more binding during the period when many firms requested out-of-court workouts.

5.2 Ex-post performance of firms using workouts

In this subsection, we present the results of estimations on the effect of different types of formal out-of-court workouts on firm performance. We use equation (2) to implement the DID estimations. As noted, we use nine variables measuring firm performance as dependent variables such as credit scores, employment, sales, profit, and bankruptcy. Before explaining the results, there are a few remarks about the estimation procedure.

First, there is the problem with a limited number of observations matched to the firm-level TSR database. Due to the difficulty in matching the dataset of out-of-court workouts with the firm-level database, the number of firms used for the ex-post analysis of firm performance, which is about 1,700, is substantially smaller than the number of firms used for estimating the determinants of out-of-court workouts, which is slightly less than 10,000. As a result, for some types of workouts, only a very limited number of firms are identified as undertaking the workout and are used as treatment firms in the ex-post performance estimations. Such workout types comprise debt restructuring with forgiveness (Debt_forgive) and debt restructuring with sponsors (Debt_sponsor). Therefore, we need to be cautious when interpreting the results on the effects of

these types of workouts.

Second, there is another type of data-matching difficulty, that of identifying firms that adopted the "second-firm scheme" in the drastic debt restructuring. In order to correctly measure the treatment effect of the drastic debt restructuring, we need to identify the new second firms. However, our current matching results indicate that we are very likely to have identified old debt-laden firms but not new second firms from the observations, possibly leading to a negative bias in the estimates of ex-post performance. In order to avoid such a possible bias, we drop observations for workout firms that adopt the "second firm" scheme from the sample in the baseline estimations.[14]

5.2.1 Baseline results

Table 6 presents the baseline results of the estimations. There are 10 variables for 10 different types of workouts that are interacted with After. It is the coefficient on this interaction variable that we are most interested in. Therefore, we only show these coefficients along with the numbers of observations and firms and the R-squared in the table. The first five sets of rows present the results for the effects of the drastic debt restructurings. In the first row representing the result of Debt, we find a rather positive effect of drastic debt restructuring on firm performance, as we find an increase in sales and profits. The effect on the size of employment is negative, while it is positive on the size of employment in logarithms. The difference in the results indicates the presence of large (small) firms that report a large (small) decrease (increase) in the number of employees but end up in reporting a small (large) decrease (increase) in the growth rate in the employment. Comparing the effects of Debt_forgive and Debt_DDS in the second and third rows,

[14] For the reader's information, in Appendix Table A2 we present estimation results that include firms that adopt the scheme in the sample. Consistent with our expectation, the estimates for the variables related to the drastic debt restructuring are substantially different from those in Table 6, that is, the ex-post performance of the firms in Appendix Table A2 is significantly worse than that in Table 6.

respectively, we find that the positive effect of Debt_forgive is more pronounced than that of Debt_DDS for several outcome variables such as credit scores, log of employment, sales, and profits. The better ex-post performance of firms with Debt_forgive indicates that this performance is due to the resolution of the debt overhang, but we should note that the result may be due to the small number of treatment observations for Debt_forgive. In the fourth and fifth rows, we find that the result for Debt_nonsponsor is similar to that of Debt in the first row, while the positive result for Debt_sponsor is limited to the log of employment.

The next three series present results for the effect of management restructuring. Overall, the effect is weaker than the effect of debt restructuring. In the sixth set of rows, we find that management restructuring increases the amount of profits, but has a negative effect on employment and increases the likelihood of bankruptcy. For a subset of firms that undergo management restructuring and promotion of outside personnel, the effect turns slightly in a more positive direction in two ways as shown in the seventh set of rows. First, these firms that invite outside executives do not observe a significant increase in the likelihood of bankruptcies. Second, these firms experience a larger increase in profits than firms that do not promote outsiders, although it comes at the cost of a larger decline in employment.

The ninth set of rows presents the results for the effects of asset restructuring. For the majority of the outcome variables, we find a negative effect on firms' ex-post performance. Firms that undergo asset restructuring tend to have lower credit scores, lower employment, lower sales, and higher likelihoods of bankruptcy. The only positive effect is on the level of profits. The results show that the asset restructuring we examine here is less a measure to increase the return on assets and more a measure for fire sales. Finally, the tenth set of rows presents results for the various drastic restructurings of debt, management, and assets. Similar to the results for asset restructuring, there is a negative effect on ex-post firm performance for the majority of the outcome variables.

5.2.2 Results of the subsample estimations

Next, we implement DID estimations for two different subsamples. First, we focus on firms that are most likely to have faced the problem of a debt overhang, that is, firms that are profitable but have negative net worth. We expect that out-of-court workouts with debt restructuring such as loan write-offs and DES should alleviate that debt overhang and that firms with positive surpluses but negative net worth should benefit most from these measures. Second, we focus on firms that initiated workouts in 2013 and 2014, when the number of out-of-court workouts was the largest in the sample period. Due to the large number of workouts, banks and other stakeholders are likely to be constrained in their ability to properly monitor the firms in workouts. As a result, there may be a limited amount of improvement in the firms' ex-post performance.

Table 7 shows the results for the subsample of firms with surpluses but negative net worth. Consistent with our expectation, we find that the magnitude of the positive effects of drastic debt restructuring is more pronounced in the first two sets of rows than in the baseline estimations.[15] For example, the coefficient on credit scores turns positive in the After*Debt estimation and becomes larger in the After*Debt_forgive estimation, while only the coefficient on After*Debt_forgive is positive and significant in the baseline.

Table 8 shows the results for the subsample of firms that began their out-of-court workouts in 2013 and 2014. We examine if there is a limited extent of improvement in the firms' ex-post performance possibly due to congestion. The results show that a limited number of restructurings implemented in these years turned out less effective than in the baseline estimation. For the drastic debt restructuring, the improvement in ex-post firm performance is smaller for credit scores, employment, and bankruptcies than in the baseline estimation. In contrast, the other results do not

[15] Due to the lack of observations in the subsamples for the Debt_sponsor treatment, we do not report the results for After*Debt_sponsor and After*Debt_nonsponsor in Tables 7 and 8.

show that ex-post performance deteriorates for firms that experience out-of-court workouts. For example, the ex-post performance of firms that adopted managerial restructuring and invite external board members improves in several aspects, such as sales and profits. In sum, the results are mixed regarding the effect of the capacity constraint on the ex-post performance of firms that adopted out-of-court debt workouts.

To summarize this section, the results of the baseline DID estimations indicate that out-of-court workouts that include drastic debt restructuring tend to improve firms' ex-post performance more than workouts that only use debt rescheduling. However, workouts that use the other types of restructuring do not necessarily lead to better firm performance. Management restructuring improves firms' profitability at the cost of reducing employment, and asset restructuring leads to worse, but not better, ex-post performance. Subsample analyses indicate that the magnitude of the improvement in firm performance due to drastic debt restructuring is more pronounced for profitable but negative net worth firms, which is consistent with the expectation that the debt overhang is alleviated to the greatest extent for these firms. On the other hand, the results of the subsample analysis examining firm performance of firms that started restructuring in 2013 and 2014 is mixed. On the one hand, the improvement in ex-post performance of firms that took the drastic debt restructuring was smaller than that in the baseline estimation. On the other hand, the ex-post performance of firms that adopted managerial restructuring improved somewhat. We cannot say that the extent of improvement is smaller than in the baseline or that firms' ex-post performance was exacerbated by the lack of monitoring caused by the start of a large number of out-of-court workouts.

6. Conclusion

In this study, we use a detailed and comprehensive dataset on out-of-court debt workouts for

distressed SMEs in Japan to examine the determinants and effects of formal out-of-court debt workouts for distressed SMEs. The uniqueness of this study lies in the availability of information that allows us to identify measures to reduce the debt overhang and moral hazard. Our results show that firms with operating surpluses and negative net worths are more likely to take more drastic measures than debt rescheduling in their debt workouts, which is consistent with the debt overhang theory. We also find that firms with operating surpluses are more likely to take measures to hold managers responsible and to hire new external managers, which is expected to reduce the problem of managerial moral hazard. We also examine the ex-post performance of the firms in workouts and find that those that took measures to mitigate a debt overhang and limit managerial moral hazard improve their performance.

There are several tasks that need to be implemented. First, it is necessary to increase the number of matched observations used for examining the ex-post performance of firms that experienced out-of-court workouts. This is particularly important if we are to examine in detail the effects of drastic debt restructurings, such as those involving debt forgiveness and successor managers. Second, it is important to examine the causal effect of out-of-court workouts on firm performance. The current analytical framework allows firms and banks to endogenously choose between alternative workout types that makes it difficult to draw proper causal inferences from the type of workouts to firm performance. Therefore, it is necessary to adopt appropriate instrumental variables for estimation.

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Table 1 Comparisons of formal bankruptcies and out-of-court debt workouts in Japan

	Bankruptcy	Out-of-court debt workout	
			Formal out-of-court debt workout
Governing laws, guidelines	Corporate Reorganization Act (for reorganization) Civil Rehabilitation Law (for reorganization) Bankruptcy Act (for liquidation)	None	Act on Strengthening Industrial Competitiveness (SMERSC) Act on Promotion of Use of Alternative Dispute Resolution (Turnaround ADR) Guidelines for Multi-Creditor Private Workouts
Procedural / intermediary organization	Court	None	SME Rehabilitation Support Councils (now SME Revitalization Council) Dispute Resolution Provider (Turnaround ADR) None (Guidelines for Multi-Creditor Private Workouts)
Confidentiality	Public	Private	Private
Targeted creditors	All property claims prior to the commencement of bankruptcy proceedings	Only financial creditors in principle	Only financial creditors in principle
Automatic stay	Yes	No, but the notice of temporary stay exists	No, but the notice of temporary stay exists
Procedure for the approval of a workout	Consent of the majority	Consent of all financial creditors (in principle)	Consent of all financial creditors (in principle)

Table 2 Panel (a) Types of formal out-of-court workouts and firm characteristics

Variable names	Definitions	Obs	Mean	Std. Dev.	Min	Max
Debt restructuring						
Debt	1 if a firm adopts at least one of the measures: partial debt writeoffs, establishment of second firm & liquidation of debt-laden firm, and debt equity swap (DES), and debt debt swap (DDS), and 0 otherwise	9,861	0.118	0.322	0.000	1.000
Debt_forgive	1 if a firm adopts at least one of the measures: partial debt writeoffs, establishment of second firm & liquidation of debt-laden firm and debt equity swap (DES), and 0 otherwise	9,861	0.054	0.226	0.000	1.000
Debt_DDS	1 if a firm adopts at least one of the measures: debt debt swap (DDS) and equity-like subordinated loans, and 0 otherwise	9,861	0.066	0.249	0.000	1.000
Debt_sponsor	1 if Drastic=1 & a firm invites sponsors for restructuring, and 0 otherwise	9,861	0.023	0.149	0.000	1.000
Debt_nonsponsor	1 if Drastic=1 & a firm does not invite sponsors for restructuring, and 0 otherwise	9,861	0.095	0.293	0.000	1.000
Debt_rescheduling	1 if a firm adopts rescheduling of debt repayment	9,861	0.925	0.263	0.000	1.000
Management restructuring						
Management	1 if a firm adopts at least one of the measures: CEO's taking responsibility for restructuring, share owners' taking responsibility, provision of CEOs' assets for debt repayment, and 0 otherwise.	9,861	0.196	0.397	0.000	1.000
Management_outside	1 if Manage_restructuring=1 & board members are from outside of the firm, and 0 otherwise	9,861	0.031	0.173	0.000	1.000
Management_inside	1 if Manage_restructuring=1 & board members are not from outside of the firm, and 0 otherwise	9,861	0.166	0.372	0.000	1.000
Asset restructuring						
Asset	1 if a firm adopts at least one of the measures: asset sales and reorganization of group firms, and 0 otherwise.	9,861	0.224	0.417	0.000	1.000
Any drastic restructuring in addition to rescheduling						
Any	1 if a firm adopts any one of the drastic debt, management, or asset restructuring in addition to rescheduling and 0 if a firm adopts only rescheduling	9,126	0.335	0.472	0.000	1.000
Firm characteristics at time of consultation						
Emp	Number of employees of a firm	9,861	41.244	74.765	0	2436
Sales	Sales amount (in million yen)	9,861	703.137	1355.080	0	38187
Capital	Paid-in capital amount (in million yen)	9,710	26.131	40.422	0	1150
Surplus	1 if a firm records positive business profit, and 0 otherwise	9,861	0.496	0.500	0.000	1.000
Positive networth	1 if a firm is in positive networth, and 0 otherwise	9,861	0.210	0.408	0.000	1.000

Table 2 Panel (b) Other firm characteristics

Variable names	mean	Variable names	mean
Debtor ratings evaluated by lender bank		Region dummies	
Effectively bankrupt	0.028	Hokkaido	0.013
Potentially bankrupt	0.470	Aomori	0.018
Substandard	0.165	Iwate	0.017
Cautionary	0.335	Miyagi	0.021
Normal	0.002	Akita	0.017
Year at the start of a revitalization plan		Yamagata	0.017
Y2008	0.015	Fukushima	0.014
Y2009	0.036	Ibaraki	0.019
Y2010	0.035	Tochigi	0.045
Y2011	0.022	Gunma	0.024
Y2012	0.036	Saitama	0.031
Y2013	0.205	Chiba	0.035
Y2014	0.234	Tokyo	0.057
Y2015	0.177	Kanagawa	0.038
Y2016	0.102	Niigata	0.028
Y2017	0.099	Toyama	0.015
Y2018	0.039	Ishikawa	0.030
Industry dummies		Fukui	0.013
Mining	0.001	Yamanashi	0.014
Construction	0.115	Nagano	0.037
Manufacturing	0.376	Gifu	0.019
Electricity, Gas and Water	0.001	Shizuoka	0.032
Information and Communication	0.008	Aichi	0.021
Transportation	0.054	Mie	0.017
Wholesale and Retail	0.242	Shiga	0.019
Real estate	0.010	Kyoto	0.042
Accommodation and Eating	0.093	Osaka	0.040
Service	0.092	Hyogo	0.032
Education	0.002	Nara	0.011
Medical	0.008	Wakayama	0.009
Industry dummies used for estimation		Tottori	0.009
Manufacturing	0.376	Shimane	0.007
Wholesale and Retail	0.242	Okayama	0.016
Other industries	0.383	Hiroshima	0.022
Dummies for primary bank a firm transacts with		Yamaguchi	0.015
City bank	0.052	Tokushima	0.015
Regional bank I	0.406	Kagawa	0.021
Regional bank II	0.127	Ehime	0.017
Shinkin bank	0.284	Kochi	0.015
Credit cooperative	0.044	Fukuoka	0.019
Government bank	0.070	Saga	0.018
Other bank	0.017	Nagasaki	0.012
Dummies for secondary bank a firm transacts with		Kumamoto	0.013
City bank	0.078	Oita	0.013
Regional bank I	0.215	Miyazaki	0.009
Regional bank II	0.080	Kagoshima	0.020
Shinkin bank	0.131	Okinawa	0.012
Credit cooperative	0.023	Region dummies used for estimation	
Government bank	0.346	Hokkaido/Tohoku	0.118
Other bank	0.127	Kanto	0.249
		Chubu	0.227
		Kinki	0.153
		Chugoku/Shikoku	0.138
		Kyushu/Okinawa	0.116

Table 3: Estimation results of the probit model (sample of treatment and rescheduling only)

VARIABLES	(1) Debt	(2) Debt_forgive	(3) Debt_DDS	(4) Debt_sponsor	(5) Debt_nonsponsor	(6) Management	(7) Management_outside	(8) Manage_board inside	(9) Asset	(10) Any
Potentially bankrupt	-1.322***	-1.724***	-0.297*	-1.857***	-1.055***	-1.030***	-1.139***	-0.965***	-0.884***	-0.355***
	(0.101)	(0.108)	(0.174)	(0.136)	(0.115)	(0.102)	(0.148)	(0.109)	(0.107)	(0.118)
Substandard	-1.947***	-2.732***	-0.716***	-2.753***	-1.621***	-1.319***	-1.653***	-1.205***	-1.082***	-0.517***
	(0.114)	(0.148)	(0.182)	(0.196)	(0.127)	(0.108)	(0.167)	(0.114)	(0.112)	(0.122)
Cautionary	-2.110***	-2.880***	-0.907***	-2.886***	-1.785***	-1.445***	-1.839***	-1.318***	-1.194***	-0.645***
	(0.108)	(0.139)	(0.178)	(0.188)	(0.121)	(0.104)	(0.161)	(0.111)	(0.109)	(0.119)
Normal						-2.028***	-1.227**		-1.445***	-1.126***
						(0.549)	(0.564)		(0.389)	(0.395)
Emp	0.00309***	0.00251***	0.00309***	0.00271***	0.00298***	0.00199***	0.00283***	0.00155***	0.00270***	0.00232***
	(0.000275)	(0.000348)	(0.000294)	(0.000422)	(0.000285)	(0.000245)	(0.000337)	(0.000257)	(0.000224)	(0.000217)
Surplus	0.366***	0.185***	0.463***	-0.124	0.453***	0.0818**	0.185***	0.0546	0.0407	0.0873***
	(0.0415)	(0.0587)	(0.0478)	(0.0811)	(0.0440)	(0.0336)	(0.0633)	(0.0350)	(0.0316)	(0.0285)
Positive net worth	-0.450***	-0.354***	-0.448***	-0.514***	-0.420***	-0.0290	-0.150*	-0.00797	0.0135	-0.0164
	(0.0643)	(0.0967)	(0.0726)	(0.150)	(0.0666)	(0.0425)	(0.0883)	(0.0439)	(0.0393)	(0.0354)
Regional bank I	-0.0432	-0.332***	0.300**	-0.476***	0.121	-0.246***	-0.260*	-0.232***	-0.274***	-0.230***
	(0.0989)	(0.121)	(0.134)	(0.149)	(0.113)	(0.0780)	(0.137)	(0.0816)	(0.0706)	(0.0669)
Regional bank II	-0.123	-0.482***	0.248*	-0.438**	0.0291	-0.355***	-0.322**	-0.342***	-0.377***	-0.342***
	(0.111)	(0.142)	(0.146)	(0.175)	(0.125)	(0.0876)	(0.156)	(0.0916)	(0.0800)	(0.0751)
Shinkin bank	-0.255**	-0.689***	0.150	-0.980***	-0.0344	-0.454***	-0.497***	-0.426***	-0.536***	-0.433***
	(0.102)	(0.129)	(0.137)	(0.170)	(0.115)	(0.0799)	(0.144)	(0.0836)	(0.0726)	(0.0683)
Credit cooperative	-0.183	-0.483***	0.144	-1.472***	0.0820	-0.539***	-0.663***	-0.481***	-0.692***	-0.585***
	(0.134)	(0.174)	(0.172)	(0.381)	(0.144)	(0.111)	(0.223)	(0.116)	(0.109)	(0.0976)
Government bank	0.304***	-0.212	0.689***	-0.365*	0.499***	-0.225**	-0.326*	-0.198**	-0.116	-0.123
	(0.114)	(0.149)	(0.147)	(0.188)	(0.127)	(0.0965)	(0.179)	(0.100)	(0.0865)	(0.0817)
Other bank	0.144	-0.00338	0.296	-0.406	0.303*	-0.211	-0.236	-0.189	-0.311**	-0.230*
	(0.164)	(0.195)	(0.220)	(0.271)	(0.178)	(0.149)	(0.251)	(0.157)	(0.143)	(0.133)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo R2	0.247	0.393	0.155	0.393	0.218	0.171	0.234	0.156	0.127	0.0922
Log likelihood	-2396	-1126	-1813	-587	-2152	-3674	-938.5	-3355	-4198	-5281
Observations	7,216	6,591	6,711	6,281	6,992	8,009	6,377	7,689	8,284	9,126

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Estimation results of the probit model (sample of all observations)

VARIABLES	(1) Debt	(2) Debt_forgive	(3) Debt_DDS	(4) Debt_sponsor	(5) Debt_nonsponsor	(6) Management	(7) Management_outside	(8) Manage_board inside	(9) Asset	(10) Any
Potentially bankrupt	-1.166***	-1.503***	0.324**	-1.243***	-0.601***	-0.765***	-0.574***	-0.541***	-0.440***	-0.355***
	(0.0847)	(0.0871)	(0.128)	(0.0995)	(0.0864)	(0.0834)	(0.107)	(0.0838)	(0.0828)	(0.118)
Substandard	-1.756***	-2.398***	0.00562	-1.979***	-1.101***	-1.015***	-0.941***	-0.712***	-0.555***	-0.517***
	(0.0967)	(0.124)	(0.137)	(0.159)	(0.0985)	(0.0896)	(0.125)	(0.0899)	(0.0881)	(0.122)
Cautionary	-1.889***	-2.507***	-0.161	-2.100***	-1.238***	-1.139***	-1.132***	-0.812***	-0.667***	-0.645***
	(0.0918)	(0.116)	(0.133)	(0.152)	(0.0935)	(0.0863)	(0.122)	(0.0866)	(0.0850)	(0.119)
Normal						-1.695***	-0.435		-0.863**	-1.126***
						(0.520)	(0.518)		(0.367)	(0.395)
Emp	0.00171***	0.00118***	0.00150***	0.00127***	0.00140***	0.00118***	0.00149***	0.000555***	0.00245***	0.00232***
	(0.000194)	(0.000234)	(0.000204)	(0.000271)	(0.000199)	(0.000199)	(0.000228)	(0.000195)	(0.000201)	(0.000217)
Surplus	0.352***	0.116**	0.428***	-0.204***	0.443***	0.0364	0.0775	0.0174	-0.00319	0.0873***
	(0.0374)	(0.0510)	(0.0430)	(0.0693)	(0.0393)	(0.0310)	(0.0546)	(0.0319)	(0.0294)	(0.0285)
Positive net worth	-0.441***	-0.322***	-0.408***	-0.437***	-0.393***	-0.0203	-0.157**	0.0128	0.0274	-0.0164
	(0.0581)	(0.0849)	(0.0657)	(0.130)	(0.0598)	(0.0398)	(0.0786)	(0.0406)	(0.0371)	(0.0354)
Regional bank I	0.0391	-0.278***	0.364***	-0.425***	0.227**	-0.184***	-0.189*	-0.164**	-0.219***	-0.230***
	(0.0853)	(0.101)	(0.114)	(0.123)	(0.0957)	(0.0695)	(0.115)	(0.0715)	(0.0650)	(0.0669)
Regional bank II	-0.0198	-0.389***	0.324***	-0.364**	0.149	-0.257***	-0.235*	-0.227***	-0.306***	-0.342***
	(0.0971)	(0.121)	(0.125)	(0.145)	(0.107)	(0.0790)	(0.132)	(0.0812)	(0.0741)	(0.0751)
Shinkin bank	-0.147*	-0.579***	0.255**	-0.808***	0.109	-0.339***	-0.368***	-0.288***	-0.452***	-0.433***
	(0.0883)	(0.110)	(0.117)	(0.142)	(0.0982)	(0.0716)	(0.122)	(0.0736)	(0.0670)	(0.0683)
Credit cooperative	0.00698	-0.230	0.218	-1.301***	0.324***	-0.375***	-0.476**	-0.305***	-0.594***	-0.585***
	(0.119)	(0.147)	(0.152)	(0.324)	(0.125)	(0.102)	(0.189)	(0.104)	(0.101)	(0.0976)
Government bank	0.350***	-0.211*	0.689***	-0.380**	0.552***	-0.205**	-0.346**	-0.137	-0.0905	-0.123
	(0.0990)	(0.125)	(0.126)	(0.154)	(0.108)	(0.0859)	(0.150)	(0.0879)	(0.0793)	(0.0817)
Other bank	0.158	-0.0136	0.327*	-0.551**	0.430***	-0.157	-0.148	-0.173	-0.303**	-0.230*
	(0.144)	(0.165)	(0.190)	(0.225)	(0.152)	(0.134)	(0.205)	(0.137)	(0.128)	(0.133)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo R2	0.193	0.303	0.102	0.277	0.149	0.131	0.125	0.101	0.0857	0.0922
Log likelihood	-2878	-1447	-2159	-772.7	-2628	-4245	-1190	-3972	-4800	-5281
Observations	9,841	9,841	9,841	9,841	9,841	9,861	9,861	9,841	9,861	9,126

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Estimation results of the probit model (for years 2013 and 2104, sample of treatment and rescheduling only)

VARIABLES	(1) Debt	(2) Debt_forgive	(3) Debt_DDS	(4) Debt_sponsor	(5) Debt_nonsponsor	(6) Management	(7) Management_outside	(8) Manage_board inside	(9) Asset	(10) Any
Potentially bankrupt	-1.157***	-1.754***	0.0622	-2.116***	-0.787***	-0.616***	-0.945***	-0.454**	-0.727***	-0.168
	(0.172)	(0.191)	(0.324)	(0.272)	(0.202)	(0.166)	(0.239)	(0.183)	(0.164)	(0.177)
Substandard	-1.740***	-2.471***	-0.453	-2.591***	-1.367***	-0.802***	-1.526***	-0.573***	-0.936***	-0.331*
	(0.194)	(0.266)	(0.336)	(0.370)	(0.222)	(0.174)	(0.280)	(0.190)	(0.172)	(0.182)
Cautionary	-1.939***	-3.022***	-0.610*	-3.383***	-1.528***	-0.963***	-1.497***	-0.746***	-1.033***	-0.468***
	(0.184)	(0.297)	(0.330)	(0.513)	(0.212)	(0.169)	(0.254)	(0.185)	(0.167)	(0.178)
Normal						-1.104*	-0.358		-1.232**	-0.975
						(0.641)	(0.638)		(0.607)	(0.630)
Emp	0.00381***	0.00341***	0.00343***	0.00341***	0.00369***	0.00193***	0.00308***	0.00131***	0.00308***	0.00262***
	(0.000481)	(0.000675)	(0.000505)	(0.000936)	(0.000489)	(0.000411)	(0.000543)	(0.000451)	(0.000381)	(0.000361)
Surplus	0.339***	0.285**	0.353***	-0.0683	0.371***	0.105**	0.178*	0.0840	0.0557	0.0913**
	(0.0702)	(0.117)	(0.0764)	(0.182)	(0.0726)	(0.0498)	(0.0988)	(0.0518)	(0.0481)	(0.0422)
Positive net worth	-0.315***	-0.224	-0.312***	-0.188	-0.318***	-0.0219	-0.0609	-0.0140	0.0639	-0.00554
	(0.0989)	(0.172)	(0.107)	(0.254)	(0.102)	(0.0606)	(0.124)	(0.0629)	(0.0573)	(0.0509)
Regional bank I	-0.221	-0.582***	0.0420	-1.096***	0.00971	-0.320**	-0.588***	-0.245*	-0.281**	-0.231**
	(0.169)	(0.225)	(0.209)	(0.304)	(0.194)	(0.125)	(0.210)	(0.133)	(0.117)	(0.108)
Regional bank II	-0.0861	-0.512**	0.164	-0.690**	0.111	-0.359***	-0.595**	-0.283*	-0.345***	-0.270**
	(0.185)	(0.258)	(0.223)	(0.330)	(0.209)	(0.136)	(0.238)	(0.145)	(0.130)	(0.118)
Shinkin bank	-0.469***	-1.032***	-0.176	-1.903***	-0.207	-0.517***	-0.765***	-0.434***	-0.532***	-0.436***
	(0.174)	(0.247)	(0.213)	(0.450)	(0.198)	(0.126)	(0.217)	(0.135)	(0.120)	(0.110)
Credit cooperative	-0.774***	-1.236***	-0.479		-0.486*	-0.609***	-1.236***	-0.474***	-0.920***	-0.635***
	(0.255)	(0.406)	(0.296)		(0.270)	(0.167)	(0.408)	(0.174)	(0.180)	(0.148)
Government bank	0.189	-0.601*	0.527**	-0.810**	0.422*	-0.241	-0.639**	-0.131	-0.0405	-0.0141
	(0.199)	(0.317)	(0.234)	(0.398)	(0.222)	(0.156)	(0.294)	(0.163)	(0.142)	(0.131)
Other bank	0.137	0.359	-0.167	-0.145	0.252	-0.174	-0.295	-0.101	-0.354	-0.251
	(0.300)	(0.364)	(0.428)	(0.549)	(0.330)	(0.246)	(0.400)	(0.262)	(0.248)	(0.223)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo R2	0.173	0.311	0.133	0.399	0.151	0.0629	0.151	0.0541	0.0689	0.0507
Log likelihood	-809.5	-275.8	-673.4	-115.5	-755.7	-1666	-372.5	-1519	-1801	-2402
Observations	3,189	2,985	3,109	2,768	3,153	3,606	3,004	3,498	3,705	4,145

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: DID estimation results for ex-post performance of workout firms (excluding firms that adopted the second-firm scheme)

VARIABLES	(1) Credit score	(2) Emp	(3) Log(Emp)	(4) Sales	(5) Log(Sales)	(6) Profit	(7) Profit ratio	(8) Surplus	(9) Bankruptcy
After*Debt	0.184	-1.717***	0.0363**	113,264***	0.0687***	36,801***	0.0185**	0.00657	0.00235
	(0.167)	(0.574)	(0.0157)	(22,448)	(0.0171)	(5,473)	(0.00799)	(0.0296)	(0.00190)
Observations	11,842	11,833	11,831	11,802	11,800	9,376	9,359	9,376	11,856
R-squared	0.218	0.048	0.079	0.049	0.134	0.021	0.018	0.036	0.003
Number of firms	1,119	1,118	1,118	1,118	1,118	1,083	1,082	1,083	1,119
After*Debt_forgive	2.220***	-0.851	0.105**	211,608***	-0.00172	51,547***	0.0452*	-0.0640	-0.00127
	(0.554)	(1.665)	(0.0522)	(52,055)	(0.0565)	(11,722)	(0.0260)	(0.0974)	(0.00630)
Observations	10,137	10,132	10,130	10,102	10,101	7,938	7,925	7,938	10,151
R-squared	0.225	0.057	0.087	0.089	0.148	0.026	0.017	0.037	0.004
Number of firms	960	959	959	959	959	930	929	930	960
After*Debt_DDS	-0.0292	-1.765***	0.0307*	97,373***	0.0646***	34,929***	0.0160**	0.00823	0.00255
	(0.168)	(0.585)	(0.0161)	(22,832)	(0.0175)	(5,534)	(0.00777)	(0.0302)	(0.00196)
Observations	11,720	11,711	11,709	11,680	11,678	9,271	9,254	9,271	11,734
R-squared	0.223	0.048	0.079	0.049	0.134	0.020	0.019	0.036	0.003
Number of firms	1,106	1,105	1,105	1,105	1,105	1,070	1,069	1,070	1,106
After*Debt_sponsor	-0.149	7.834	0.391**	106,679	0.272				-0.00134
	(1.962)	(5.937)	(0.188)	(183,291)	(0.203)				(0.0229)
Observations	9,997	9,992	9,990	9,962	9,961	7,806	7,793	7,806	10,011
R-squared	0.230	0.056	0.088	0.091	0.147	0.023	0.017	0.037	0.004
Number of firms	946	945	945	945	945	916	915	916	946
After*Debt_nonsponsor	0.186	-1.772***	0.0343**	113,346***	0.0675***	36,800***	0.0185**	0.00654	0.00238
	(0.167)	(0.576)	(0.0157)	(22,520)	(0.0171)	(5,475)	(0.00799)	(0.0296)	(0.00191)
Observations	11,824	11,815	11,813	11,784	11,782	9,368	9,351	9,368	11,838
R-squared	0.218	0.048	0.079	0.049	0.134	0.021	0.018	0.036	0.003
Number of firms	1,117	1,116	1,116	1,116	1,116	1,081	1,080	1,081	1,117

Table 6: DID estimation results for ex-post performance of workout firms (continued)

VARIABLES	(1) Credit score	(2) Emp	(3) Log(Emp)	(4) Sales	(5) Log(Sales)	(6) Profit	(7) Profit ratio	(8) Surplus	(9) Bankruptcy
After*Management	0.0781	-2.356***	-0.0192	-290,748	-0.00655	25,283***	0.0106*	0.0473*	0.00767***
	(0.137)	(0.719)	(0.0129)	(324,878)	(0.0138)	(3,862)	(0.00638)	(0.0246)	(0.00175)
Observations	12,856	12,847	12,845	12,806	12,804	10,097	10,082	10,097	12,872
R-squared	0.217	0.108	0.087	0.002	0.143	0.028	0.019	0.039	0.006
Number of firms	1,226	1,225	1,225	1,225	1,225	1,183	1,182	1,183	1,226
After*Management_outside	0.444	-4.039***	-0.0143	-58,722*	0.0400	102,708***	0.0262	0.122*	-0.00132
	(0.354)	(1.089)	(0.0341)	(34,049)	(0.0367)	(9,564)	(0.0160)	(0.0637)	(0.00406)
Observations	10,271	10,265	10,263	10,233	10,231	8,059	8,045	8,059	10,285
R-squared	0.228	0.058	0.086	0.092	0.146	0.036	0.019	0.037	0.004
Number of firms	974	973	973	973	973	942	941	942	974
After*Management_inside	0.0202	-2.166***	-0.0202	-313,895	-0.0125	15,284***	0.00841	0.0374	0.00876***
	(0.143)	(0.754)	(0.0135)	(343,191)	(0.0145)	(3,380)	(0.00672)	(0.0258)	(0.00185)
Observations	12,564	12,556	12,554	12,517	12,516	9,836	9,822	9,836	12,580
R-squared	0.217	0.109	0.088	0.002	0.143	0.027	0.018	0.039	0.006
Number of firms	1,196	1,195	1,195	1,195	1,195	1,155	1,154	1,155	1,196
After*Asset	-0.639***	-4.803***	-0.0624***	-257,097***	-0.0592***	14,660***	-0.0124	-0.00659	0.00830***
	(0.120)	(0.791)	(0.0118)	(41,811)	(0.0127)	(4,280)	(0.00865)	(0.0213)	(0.00161)
Observations	14,223	14,217	14,215	14,169	14,168	11,439	11,420	11,439	14,239
R-squared	0.246	0.070	0.101	0.028	0.146	0.015	0.009	0.039	0.007
Number of firms	1,351	1,350	1,350	1,350	1,350	1,313	1,312	1,313	1,351
After*Any	-0.212**	-2.819***	-0.0164	-214,407	-0.0158	15,566***	-0.00100	0.0107	0.00746***
	(0.105)	(0.665)	(0.0102)	(225,855)	(0.0111)	(3,686)	(0.00732)	(0.0189)	(0.00143)
Observations	16,237	16,227	16,225	16,173	16,171	12,992	12,972	12,992	16,253
R-squared	0.232	0.061	0.085	0.002	0.133	0.017	0.010	0.037	0.007
Number of firms	1,542	1,541	1,541	1,541	1,541	1,492	1,491	1,492	1,542

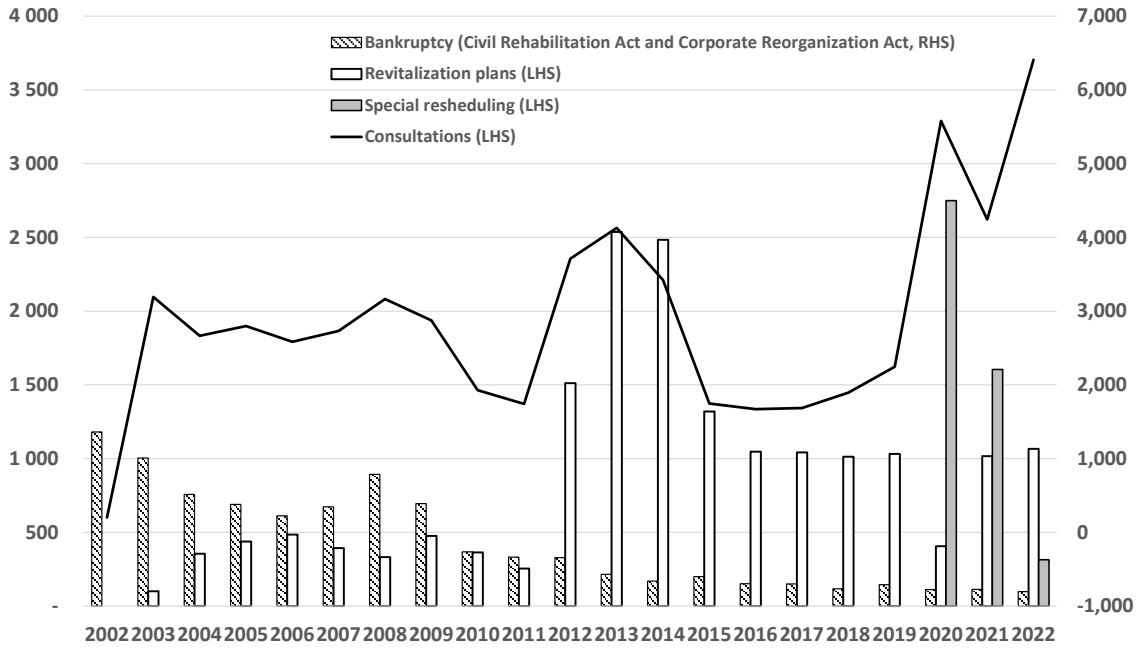
Table 7: DID estimation results for ex-post performance of workout firms (excluding firms that adopted the second-firm scheme and limited to firms with surpluses and negative net worth)

VARIABLES	(1) Credit score	(2) Emp	(3) Log(Emp)	(4) Sales	(5) Log(Sales)	(6) Profit	(7) Profit ratio	(8) Surplus	(9) Bankruptcy
After*Debt	0.444**	-1.649**	0.0480**	205,261***	0.0803***	30,407***	0.0247**	0.0284	0.000553
	(0.212)	(0.838)	(0.0200)	(37,067)	(0.0232)	(6,342)	(0.0120)	(0.0383)	(0.00283)
After*Debt_forgive	4.424***	-2.810	0.107	497,577***	0.156*	67,319***	0.0630	0.148	-0.00154
	(0.738)	(2.249)	(0.0691)	(71,062)	(0.0833)	(14,976)	(0.0421)	(0.132)	(0.0103)
After*Debt_DDS	0.161	-1.459*	0.0465**	182,622***	0.0718***	27,511***	0.0214*	0.0239	0.000682
	(0.210)	(0.847)	(0.0205)	(37,586)	(0.0237)	(6,358)	(0.0114)	(0.0393)	(0.00291)
After*Management	0.733***	-2.767*	0.00366	-74,211***	0.0305	23,312***	0.0183	0.0643*	0.00365
	(0.209)	(1.464)	(0.0187)	(27,061)	(0.0219)	(5,303)	(0.0115)	(0.0371)	(0.00292)
After*Management_outside	1.434***	2.131	0.116**	144,936***	0.0739	30,297***	0.0392	0.0741	-0.00209
	(0.513)	(1.568)	(0.0497)	(48,798)	(0.0599)	(10,526)	(0.0269)	(0.0923)	(0.00745)
After*Management_inside	0.643***	-3.316**	-0.00999	-102,925***	0.0250	22,595***	0.0155	0.0633	0.00439
	(0.219)	(1.551)	(0.0196)	(28,463)	(0.0230)	(5,428)	(0.0122)	(0.0392)	(0.00310)
After*Asset	-0.525***	-5.919***	-0.0624***	-135,801***	-0.0319	19,814***	0.0129	-0.0190	0.00870***
	(0.180)	(1.329)	(0.0166)	(24,793)	(0.0195)	(5,700)	(0.00975)	(0.0318)	(0.00287)
After*Any	0.00352	-3.675***	-0.0161	-5,408	0.00781	22,178***	0.0163**	0.0268	0.00465**
	(0.154)	(1.116)	(0.0140)	(27,707)	(0.0164)	(4,917)	(0.00792)	(0.0279)	(0.00227)

Table 8: DID estimation results for ex-post performance of workout firms (excluding firms that adopted the second-firm scheme and limited to firms whose workout started in years 2013 or 2014)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Credit score	Emp	Log(Emp)	Sales	Log(Sales)	Profit	Profit ratio	Surplus	Bankruptcy
After*Debt	-0.959***	-4.824***	-0.0388	42,873	0.00941	36,825***	0.0185	-0.0308	0.0146***
	(0.298)	(0.899)	(0.0288)	(36,540)	(0.0303)	(9,537)	(0.0126)	(0.0523)	(0.00367)
After*Debt_forgive	0.258	0.828	0.0922	-180,574*	-0.274**	65,240***	0.108**	-0.287	0.000191
	(1.143)	(3.266)	(0.110)	(99,036)	(0.109)	(17,065)	(0.0438)	(0.191)	(0.0118)
After*Debt_DDS	-1.099***	-5.096***	-0.0495*	41,987	0.00715	32,712***	0.00992	-0.0272	0.0149***
	(0.301)	(0.909)	(0.0291)	(36,982)	(0.0306)	(9,604)	(0.0127)	(0.0529)	(0.00371)
After*Management	-0.194	-0.145	0.0347*	-120,479***	0.0472**	14,855***	0.00375	-0.0307	0.00339
	(0.212)	(0.612)	(0.0197)	(25,687)	(0.0199)	(4,178)	(0.00843)	(0.0377)	(0.00223)
After*Management_outside	-1.081*	-1.402	0.109*	207,825***	0.132**	33,252***	-0.00976	-0.0394	-0.000533
	(0.599)	(1.749)	(0.0577)	(52,605)	(0.0571)	(9,539)	(0.0226)	(0.101)	(0.00617)
After*Management_inside	-0.0946	-0.0107	0.0262	-157,516***	0.0377*	12,339***	0.00549	-0.0298	0.00383
	(0.222)	(0.631)	(0.0206)	(26,795)	(0.0209)	(4,181)	(0.00894)	(0.0397)	(0.00235)
After*Asset	-1.288***	-4.848***	-0.0501***	-146,882***	-0.0259	-2,188	-0.0436**	-0.0246	0.0141***
	(0.181)	(1.195)	(0.0183)	(26,980)	(0.0188)	(6,705)	(0.0174)	(0.0324)	(0.00264)
After*Any	-0.604***	-2.857***	-0.00501	-56,110**	0.0110	6,074	-0.0229	-0.0134	0.00951***
	(0.159)	(0.995)	(0.0156)	(24,589)	(0.0160)	(5,845)	(0.0147)	(0.0283)	(0.00218)

Figure 1. The number of formal bankruptcies and out-of-court workouts



Note: This figure shows the number of formal bankruptcies and the number of out-of-court workouts mediated by the SMERSCs. The shaded bar (right axis) represents the number of bankruptcies using the Civil Rehabilitation Act or Corporate Reorganization Act. The white bar (left axis) represents the number of revitalization plans that were finalized, while the gray bar (left axis) represents the number of the Special Reschedule Plan during the COVID-19 pandemic, which do not require the formulation of a revitalization plan. The solid blackline (left axis) represents the number of initial consultations made at the SMERSCs, which includes the number of the Special Reschedule Plan.

Appendix Table A1: Items included in formal out-of-court workouts coordinated by SMERSC

Variable names	mean
Measures implemented at the initiative of a firm	
Introduction of managerial accounting scheme	0.592
Promotion of personnel from outside of firm	0.080
Reorganization of group firms	0.066
Asset sales	0.186
Increase in capital	0.009
Others	0.162
Measures implemented at the initiative of CEOs and shareholders	
Asset sales	0.113
Increase in capital	0.014
Provision of new loans	0.032
Debt writeoff	0.064
Reduction in executive compensation	0.651
Taking responsibility of management	0.128
Taking responsibility of shareholders	0.051
Provision of personal assets	0.104
Others	0.162
Financial measures	
Rescheduling	0.925
Debt debt swap (DDS)	0.024
Equity-like subordinated loans	0.042
Debt equity swap (DES)	0.002
Establishment of second firm & liquidation of debt-laden firm	0.045
Partial debt writeoff	0.008
Other measures	
Inviting a sponsor that takes charge of restructuring	0.023
Use of tax program that defers taxes on gains on debt forgiveness	0.001
Sales of debt claims (to funds or servicers)	0.009
Repurchase of debt claims from RCC or servicers	0.003
Measures taken by SMEs' revitalization funds	
Purchase of debt claims	0.014
Purchase of equity	0.005
Increase in capital	0.003
Provision of loans	0.006
Measures related to provision of new funds	
Credit guaranteed loans by the credit guarantee corporation	0.067
Credit guarantees for rollover loans	0.002
Credit guaranteed loans subsidized by local government	0.025
Loans for restructuring provided by the government banks	0.006
Pre Debtor-in-possesion financing	0.004

Appendix Table A2: DID estimation results for ex-post performance of workout firms (including firms that adopted the second-firm scheme)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Credit score	Emp	Log(Emp)	Sales	Log(Sales)	Profit	Profit ratio	Surplus	Bankruptcy
After*Drastic	0.0919	-2.170***	0.00970	121,813***	0.0585***	21,945***	0.0132*	-0.00372	0.00481**
	(0.168)	(0.576)	(0.0165)	(22,724)	(0.0168)	(5,838)	(0.00795)	(0.0291)	(0.00189)
After*Drastic_forgive	0.705	-4.775***	-0.140***	254,587***	-0.0610	-76,811***	-0.0109	-0.123	0.0212***
	(0.452)	(1.376)	(0.0448)	(45,967)	(0.0455)	(11,644)	(0.0212)	(0.0775)	(0.00507)
After*Drastic_DDS	-0.0292	-1.767***	0.0308*	97,371***	0.0646***	34,929***	0.0160**	0.00822	0.00255
	(0.168)	(0.585)	(0.0161)	(22,831)	(0.0175)	(5,533)	(0.00777)	(0.0302)	(0.00196)
After*Drastic_sponsor	-5.493***	-6.203*	-0.303***	-78,578	-0.767***	-355,392***	-0.558***	-0.727**	0.139***
	(1.093)	(3.326)	(0.107)	(102,265)	(0.113)	(40,896)	(0.0821)	(0.326)	(0.0127)
After*Drastic_nonsponsor	0.203	-2.068***	0.0164	126,426***	0.0744***	24,379***	0.0169**	0.00116	0.00224
	(0.166)	(0.571)	(0.0161)	(22,866)	(0.0170)	(5,745)	(0.00797)	(0.0291)	(0.00186)
After*Manage_restructuring	0.0371	-2.264***	-0.0307**	-278,513	-0.0117	22,683***	0.00847	0.0442*	0.00906***
	(0.138)	(0.709)	(0.0133)	(316,317)	(0.0137)	(3,905)	(0.00642)	(0.0244)	(0.00175)
After*Manage_board outside	0.445	-4.094***	-0.0132	-62,123*	0.0394	100,567***	0.0258	0.123*	-0.00135
	(0.355)	(1.082)	(0.0345)	(35,010)	(0.0365)	(9,488)	(0.0161)	(0.0632)	(0.00400)
After*Manage_board inside	-0.0199	-2.056***	-0.0328**	-300,341	-0.0179	12,576***	0.00586	0.0336	0.0103***
	(0.143)	(0.746)	(0.0137)	(335,758)	(0.0144)	(3,465)	(0.00667)	(0.0255)	(0.00186)
After*Asset_restructuring	-0.673***	-4.802***	-0.0647***	-246,604***	-0.0624***	9,152**	-0.0143*	-0.0105	0.00932***
	(0.121)	(0.783)	(0.0121)	(41,337)	(0.0127)	(4,519)	(0.00859)	(0.0212)	(0.00162)
After*Restructuring & rescheduling	-0.215**	-2.920***	-0.0182*	-211,426	-0.0147	12,631***	-0.00124	0.0104	0.00743***
	(0.105)	(0.664)	(0.0102)	(225,209)	(0.0111)	(3,845)	(0.00731)	(0.0189)	(0.00143)