How Insider Incentives in Bankruptcy Design Shape Firm Dynamics

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Abstract

This paper examines how incumbent insider payoffs embedded in bankruptcy design shape ex-ante decisions and ex-post outcomes for financially distressed firms. I identify exogenous variation in incumbent payoffs by exploiting provisions in Indian bankruptcy law that barred incumbent managers and large shareholders from bidding to reacquire their own firm in bankruptcy auctions, together with a 2018 amendment that exempted SMEs from these restrictions. Using a triple-difference specification that compares SMEs to non-SMEs, distressed firms to healthy firms, and the pre- to post-amendment period, I document four main findings. First, permitting incumbent insiders to reacquire their firm in auction leads to higher investment ex-ante, consistent with an alleviation of debt overhang. Second, affected firms finance this investment with lower leverage, which raises profitability and revenue growth and increases the likelihood of recovering from financial distress. Third, permitting incumbent reacquisition improves ex-post firm survival rates but has no discernible effect on creditor recovery rates. Fourth, creditor recovery rates increase only in industries with lower information frictions, suggesting that insiders can extract rents from creditors in settings where outside bidders are less informed.

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1 Introduction

An optimal bankruptcy procedure strives at achieving several competing objectives. One such objective is to deliver an ex-post efficient outcome by allocating the distressed assets to their highest valued use (Hart, 1995) Achieving this objective requires that the bankruptcy regime permit the most efficient resolution mechanism, whether it be reorganization under existing management, sale of the firm as a going concern or piecemeal liquidations (Aghion, Hart, and Moore, 1992). Another objective concerns ex-ante incentives of the incumbent management or shareholders. A good bankruptcy law should preserve the disciplinary function of debt contract, which is to punish the shareholders in the event of default. However, excessive penalties could adversely affect the incentives of incumbent management to improve firm value in bad state of the world. To preserve some degree of "skin in the game", various bankruptcy regimes provide provisions for reorganization under existing management Gilson (1989) or allow incumbent managers reacquire the firm through an auction process (Strömberg, 2000).

The existing literature has examined the impact of bankruptcy procedures on ex-post outcomes by comparing liquidation, reorganization, and acquisition sales along dimensions such as firm survival, creditor recovery rates, and post-bankruptcy firm performance (Bris et al., 2006; Hotchkiss et al., 2008). Similarly, many studies have documented how creditor control rights and the allocation of control in bankruptcy affect the ex-ante incentives of managers in firm decision-making, including investment, employment, and capital structure choices (Vig, 2013; Visaria, 2009; Agrawal, González-Uribe, and Martínez-Correa, 2022). However, comparatively little empirical evidence exists on the role of payoffs to incumbent insiders (managers, large shareholders, directors) embedded in bankruptcy design and how these payoffs shape ex-ante firm performance and post-bankruptcy outcomes. In particular, the extent to which provisions preserving incumbent managers' or shareholders' stake in the reorganized firm influence pre-bankruptcy strategy, investment and capital structure

decisions remains largely unexplored. This paper seeks to fill that gap by examining how such payoff structures affect both the incentives of incumbent management prior to the bankruptcy and the resulting outcomes for the firm after bankruptcy.

My paper examines an amendment in India's bankruptcy law in 2018 that preserves incumbent insider's ability to reacquire their own firm through bankruptcy auction. Since Indian bankruptcy law provides only for going-concern auction sales and piecemeal liquidation, the ability to bid and reacquire their own firm was the sole avenue for incumbent insiders to preserve their stake in the firm and obtain some residual payoff (Ram Mohan and Raj, 2022). Consequently, this institutional feature offers a distinctive setting to isolate the effect of incumbent payoffs on ex-ante decisions and ex-post outcomes.

Exploiting this amendment in Indian bankruptcy law and using a novel case-level data on bankruptcy outcomes in India, I document four main facts. First, permitting incumbent insiders to reacquire their firm in bankruptcy auction improves the ex-ante incentives of financially distressed firms by increasing investment, reflecting an alleviation of the debt overhang channel. Second, the affected firms finance their investment with lower leverage and lower interest rate, thereby raising profitability and revenue growth and increasing their probability of recovering from financial distress. Third, permitting incumbent insiders to reacquire affects ex-post outcomes by improving firm survival rates, but has no discernible effect on creditor recovery rates. Fourth, creditor recovery rates reduce in industries characterized by higher information frictions when incumbent participation in auction is permitted.

India enacted a modern bankruptcy law in May 2016, titled Insolvency and Bankruptcy Code (IBC), establishing a modern, unified and time-bound process for insolvency resolution. IBC provided resolution either through auction sale of firm as going concern or liquidation of assets. Initially, there were no restrictions on resolution applicants, enabling incumbent promoters to repurchase their distressed firms in auction. However, an amendment was introduced in November 2017, which disqualified incumbent mangers, promoters, directors and large shareholders from

participating in the resolution process. Yet, in July 2018, a key amendment exempted Small and Medium Enterprises (SMEs) from the restriction on participating in resolution process. This amendment generated exogenous variation in incumbent's eligibility to participate in bankruptcy resolution, thereby facilitating comparison between SMEs and Non SMEs in the post-amendment period and forming the basis for this study's empirical identification strategy. Most small and medium size firms including some large firms in India are managed and owned by business families, thereby ensuring alignment between shareholders and managers.

India's setting is useful for three reasons. First, India's bankruptcy system is very similar to most Western countries in its emphasis on time-bound resolution, creditor participation and formal procedures for restructuring and liquidation under judicial oversight. Second, the amendment passed in 2018 offers an excellent opportunity to study plausible exogenous variation in incumbent insiders' payoffs in the bankruptcy process. Third, Indian insolvency regulator provides rich data at case level with detailed information on timelines, mode of bankruptcy, debt claims, creditor recovery, auction bids and auction participants.

I examine the impact of permitting incumbent reacquisition on ex-post outcomes using a theoretical framework. I model a common-value bankruptcy auction with three bidders: an informed owner-manager of the bankrupt firm and two less-informed outside bidders. In this setting, (Povel and Singh, 2007) and (Hausch, 1987) show that the expected rents earned by the owner-manager increase with the level of information asymmetry. I further show that information asymmetry between outside bidders and the insider must be sufficiently high for creditor recovery to be lower in an auction with insider participation than in an auction without it.

Extending this framework, I next examine the impact of permitting incumbent reacquisition on ex-ante firm decisions. Firms under financial distress underinvest due to debt overhang, since the benefits of new projects accrue primarily to debtholders rather than equity holders (Myers, 1977; Hennessy, 2004). However, permitting insider reacquisition generates a positive expected payoff for incumbent insiders in

the bankruptcy state, as they extract rents from creditors in the auction. The rents extracted by incumbents from the auction would increase if they invest in positive NPV projects. This raises investment when incumbents are allowed to reacquire the firm relative to when they are not. Moreover, for a given level of investment, permitting insiders to reacquire the firm makes it feasible to finance that investment with lower leverage than would otherwise be possible (Meckling and Jensen, 1976), since the positive expected payoff in the bankruptcy state raises the return on equity.

I exploit a 2018 amendment that granted Small and Medium Enterprises (SMEs) an exemption from the restriction on incumbent participation in bankruptcy auctions to construct my identification strategy. Since SMEs and large firms were subject to similar rules governing auction participation prior to the amendment, a difference-in-differences specification comparing SMEs and non-SMEs before and after the amendment captures the causal effect of permitting incumbent participation. Because ex-ante incentive effects should primarily manifest among financially distressed firms, I employ a triple-differences specification to isolate the ex-ante impact on distressed SMEs in the post-amendment period. Since SME status is determined by an investment threshold, I restrict the regression sample to firms with investment levels falling within a specific bandwidth around this threshold. These estimates are subjected to a battery of robustness tests to rule out size-related trends unrelated to treatment, including regressions using narrower bandwidths, placebo tests based on false thresholds, and specifications with time-varying firm-size controls.

I begin by documenting how permitting insider reacquisition shapes the ex-ante decisions of financially distressed firms. Since these incentives are most relevant to firms already in distress, I employ a difference-in-differences specification on the subsample of distressed firms, complemented by a triple-difference specification on the full sample that compares SMEs with non-SMEs, and distressed with healthy firms, across the pre- and post-amendment periods. The results show that permitting insider reacquisition raised investment among distressed SMEs by 19% following the amendment. Notably, this investment was financed with relatively little new debt,

with long-term additional borrowing among SMEs rising only by only 8% and leverage ratio, measured as long-term debt scaled by fixed assets actually declined after the reform. The findings are consistent with a relaxation of the debt overhang problem: once owner-managers can expect a positive payoff in bankruptcy rather than none, they have stronger incentives to invest.

Investment aimed at reviving a distressed business should, in turn have an impact on profitability and growth. Consistent with this, I find that the amendment raised revenue growth among SMEs by 5.8 percentage points and profit margins by 10.3 percentage points, both of which suggest towards a lower probability of default. I substantiate this decline in default risk further by estimating that interest coverage rises by 1.44, and the share of firms reporting negative EBIT falls by 3.7 percentage points. Together, these findings suggest that allowing incumbent insiders to bid in bankruptcy auctions reshapes their ex-ante incentives in ways that reduce both the probability of default and, ultimately, the likelihood of entering bankruptcy at all.

I then turn to the amendment's ex-post consequences, focusing on firm survival and creditor recovery. Here, I find that permitting insider reacquisition increased the share of firm reorganizations through auction sale by 9 percentage points. Since auction sale and piecemeal liquidation were the only two exit routes available, this rise necessarily came at the expense of liquidations, whose share fell correspondingly. By contrast, the increase in creditor recovery is small and statistically insignificant, suggesting that the amendment had little discernible effect on creditor recovery rate.

I next examine how information asymmetry between insiders and outside bidders shapes ex-ante outcomes, given that insiders tend to possess superior information about the firm's true value. To proxy for these information frictions, I classify industrial sectors based on asset specificity (Kermani and Ma, 2023) and the dispersion of creditor recovery rate, on the premise that higher asset specificity and greater recovery dispersion signify more information frictions within a sector (Shleifer and Vishny, 1992). I find that both firm reorganization through sale auction and creditor recovery rise significantly for SMEs in the post-amendment period in sectors characterized

by low asset specificity and low recovery dispersion, while sectors with higher asset specificity and recovery dispersion show no such effect. This pattern aligns with the theoretical prediction that reducing information asymmetry between incumbent insiders and outside bidders curbs the incumbents' ability to extract rents from creditors (Povel and Singh, 2007).

I now explore competing theoretical frameworks of the ex-ante incentives created by permitting insider reacquisition. The original amendment banning insider reacquisition was motivated by a desire to prevent owner-managers from engaging in strategic default, and to push firms to exhaust all possible alternatives before entering bankruptcy. I find no evidence, however, that SMEs engage in strategic default (Bebchuk, 2002) through dividend expropriation or profit tunnelling, as the costs of bankruptcy remain higher than any gains from the relatively modest expected payoff available in the bankrupt state. Non-SMEs for whom insider reacquisition is banned, by contrast, do take active steps to avoid bankruptcy, chiefly by selling fixed assets to repay debt while it remains unclear whether this reflects distressed sales of efficient assets or the orderly disposal of inefficient ones. This is evidenced by a significant increase in divestitures among non-SMEs relative to SMEs in the post-amendment period. Therefore, one perverse incentive created by allowing incumbents to reacquire their firms is a potential disincentive to divest inefficient assets during financial distress.

I subject these findings to several tests to rule out alternative explanations. First, one might argue that the results are driven not by the amendment itself but by other MSME-specific policies in India such as taxation, government procurement preferences, priority-sector lending, and interventions like the RBI's restructuring guidelines that overlapped with the amendment's timeline. Using both qualitative documentary evidence and a series of robustness tests, I show that these policies had minimal bearing on my empirical findings, primarily because most of them target small and micro enterprises specifically, leaving medium enterprises largely unaffected. Restricting the treatment sample to medium firms alone, I confirm that

the main results are not driven by small and micro enterprises.

Second, the results could conceivably reflect a time-varying size effect rather than the amendment itself. Smaller firms, after all, tend to invest more and grow faster than larger, more mature firms, thereby implying that estimates might simply be capturing a firm life-cycle pattern rather than a treatment effect. I address this concern by showing the absence of pre-trends, and by running a series of additional robustness checks, including narrowing the sample around the size threshold and applying placebo thresholds, all of which confirm that the results are not an attributable to size-based trends. Third, because the ex-ante incentives reduce the probability of bankruptcy for SMEs, the treated firms observed in the bankruptcy sample used for ex-post analysis may be a selected, non-representative subset. I address this selection concern by verifying, through balance tests, that treated and control firms in the bankruptcy sample are comparable on observable characteristics, and by re-estimating the results on a sample that excludes debtor-filed bankruptcies, confirming that the findings are not driven by debtors' incentives to self-file.

My paper contributes to the literature on bankruptcy and financial distress along several dimensions. First, it offers a distinct contribution to the literature on how bankruptcy procedures shape economic outcomes. Existing studies have examined how different procedure such as pre-packaged bankruptcies (Betker, 1995; Tashjian, Lease, and McConnell, 1996), out-of-court restructurings (Gilson, 1997; Franks and Torous, 1994; Sautner and Vladimirov, 2018), auction sales (Strömberg, 2000; Thorburn, 2000; Hotchkiss and Mooradian, 2003), and Section 363 sales under Chapter 11 (Gilson, Hotchkiss, Osborn, and Waldock, 2021) affect post-bankruptcy outcomes such as firm survival, direct costs, and creditor recovery. A related set of studies compares reorganization with liquidation, estimating the impact on direct costs (Bris, Welch, and Zhu, 2006), local economic outcomes (Bernstein et al., 2019a), and asset utilization (Bernstein, Colonnelli, and Iverson, 2019b). My paper is, to my knowledge, the first to examine exclusively how incumbent managers' or equityholders' payoffs in the bankruptcy process affect economic outcomes. While traditional Chapter 11

reorganization does provide equityholder payoffs in some instances, there is substantial heterogeneity in this outcome, and absolute priority rule violations occur in only about 22% of cases (Bharath, Panchapagesan, and Werner, 2010), suggesting that traditional Chapter 11 reorganization does not, in practice, constitute a reliable bankruptcy process through which incumbent managers or equityholders can secure payoffs.

Second, the paper contributes to the literature on how bankruptcy reforms affect firm investment and financing. Existing work has primarily examined how strengthening or weakening creditor rights shapes firms' ex-ante decisions and control rights (Hackbarth et al., 2015; Vig, 2013; Rodano et al., 2016; Davydenko and Franks, 2008; Agrawal et al., 2022). These studies explore different mechanisms for strengthening creditor rights, including stricter enforcement (Vig, 2013), procedural reform (Rodano, Serrano-Velarde, and Tarantino, 2016), and enhanced creditor participation (Agrawal et al., 2022). While strengthening creditor rights is typically understood as weakening debtors' bargaining power, my paper shows that permitting insider reacquisition instead enhances creditor recovery. Its contribution, then, lies in demonstrating that improving debtor payoffs in bankruptcy need not come at the expense of creditor rights.

Finally, my paper supports and extends the literature on debt overhang and financial distress. Existing studies examine how financial distress affects firms' investment and financing choices (Kalemli-Özcan et al., 2022; Chu et al., 2025; Eisdorfer, 2008; Duval et al., 2020). My paper contributes by providing evidence that changes in bankruptcy design can alleviate debt overhang.

2 Institutional Details

2.1 Insolvency and Bankruptcy Code

India enacted the Insolvency and Bankruptcy Code (IBC) in May 2016 to establish a unified framework for insolvency and bankruptcy proceedings. Before IBC, liquidation

was the only option available for creditors, and they had to navigate through a slow and rigid judicial system in recovery of their assets. The Code incorporates several features of modern bankruptcy laws adopted in advanced economies, providing a mechanism for viable firms to continue operations under a resolution process monitored by courts. IBC strengthened creditor rights (Gai et al., 2026), adopted time limits for resolution and established an insolvency regulator to oversee the insolvency proceedings (Bose, Filomeni, and Mallick, 2021).

The Indian bankruptcy law outlines a systematic resolution process. The insolvency resolution process is initiated when an application is filed by either the corporate debtor or its creditors before the bankruptcy court (National Company Law Tribunal (NCLT)) and is subsequently admitted. Once insolvency proceedings commence, the tribunal declares a moratorium and appoints an Interim Resolution Professional (IRP), who assumes control of the company's management. During this period, the board of directors is suspended, and the managers and promoters are removed from managerial responsibilities. The insolvency process concludes when the court either approves a resolution plan or issues a liquidation order. Thus, there are two possible outcomes: resolution or liquidation. Resolution in the context of IBC is essentially a reorganization of the distressed under a new management. Reorganization allows the firm to continue as a going concern, while liquidation generally entails the piecemeal sale of assets. The primary objective of the IBC is to facilitate resolution in order to preserve the firm's surplus value, with liquidation treated strictly as a measure of last resort (Das et al., 2022).

Upon initiation of the insolvency process, the trustee (IRP) invites resolution plans from potential bidders who want to acquire the distressed firm. These plans are evaluated by the Committee of Creditors (CoC), which can approve a plan with a minimum voting share of 66 percent. In most instances, creditors will choose a credible plan that offers highest recovery. Once approved, the plan is submitted to the tribunal for final authorization. If no plan receives the requisite approval, the tribunal may order liquidation of the corporate debtor after the stipulated timeline.

Creditors typically prefer reorganization over liquidation, as it maximizes the recovery of their claims. Creditors proceed with liquidation after exhausting all options for reorganization.

2.2 Section 29A and the Ineligibility of Incumbent Insiders

At the time of its enactment in 2016, the IBC did not impose restrictions on who could submit resolution plans. However, concerns soon emerged after instances in which promoters were able to regain control of their distressed firms at significantly reduced valuations, while creditors were forced to accept substantial haircuts. These outcomes raised questions regarding the integrity of the process, as they appeared to allow promoters to retain control without bearing adequate financial responsibility. There was political pressure on the government to act, given the public perception that the new law favored incumbent promoters and managers at the expense of public sector banks

In response, the government introduced Section 29A through an amendment, specifying list of conditions that render certain applicants ineligible to participate in the resolution process. One key provision disqualifies any promoter, director, or key managerial personnel of a company with a non-performing asset (NPA)[1] for more than one year from submitting a resolution plan (Ram Mohan and Raj, 2022). This effectively barred the incumbent insiders of insolvent firms from bidding for their own companies. The amendment was intended to safeguard the credibility of the insolvency process and prevent what was perceived as the misuse of resolution mechanisms by defaulting promoters(Ram Mohan and Raj, 2022).

It is important to clarify the meaning of the term "insiders" in this context. Many Indian businesses, including several large corporations, are controlled by business families, meaning the firms are typically managed by their largest shareholders. Thus, most firms are run by owner-managers, referred to in India as "promoters" and they hold both substantial equity stakes and manage day-to-day operations. Section 29A

[1]A borrowers's loan becomes a NPA if it remains in default for more than 90 days from th due date

bars such promoters or what I call "insiders" from reacquiring their own firm through the bankruptcy resolution process.

2.3 MSME Exemption through 2018 Amendment

The introduction of Section 29A, however, had some unintended consequences. The disqualification of incumbent insiders from participating in the insolvency process slowed down resolution efforts for many firms. The government addressed this issue by introducing an ordinance in June 2018 exempting (Micro, Small and Medium Enterprises) MSMEs from the application of Section 29A(c). This provision had originally barred promoters in control of companies who defaulted for more than a year from bidding. By carving out this exemption, the law restored the eligibility of MSME promoters or insiders to participate in resolution process and their ability to reacquire their firms. The amendment applied to all MSMEs that would initiate insolvency proceedings with court after the passage of amendment.

The amendment was unanticipated, and the fact that the exemption applied only to MSMEs acted as an exogenous shock to MSMEs. There may have been political considerations behind the government's decision to exempt only MSMEs, as it may have feared political backlash from instances of business families of large corporations retaining their firms at substantial discounts, at the expense of taxpayers. [2]

MSMEs were classified on the basis of investment in plant and machinery, with separate thresholds for manufacturing and services. Specifically, a medium enterprise was defined as one with investment below INR 100 million in manufacturing and INR 50 million in services. Thus, the insiders of all manufacturing firms with investment below INR 100 Million and service firms with investment below INR 50 Million were eligible to participate in insolvency resolution and reacquire their firm.

[2] 70% of the Indian banking sector consisted of public sector banks, and any creditor losses would be borne by the exchequer

3 Theoretical Framework

The design of bankruptcy policy is shaped by trade-offs between disciplining managers to ensure debt repayment and creating incentives for preventing costs associated with agency conflict during financial distress. The ability of incumbent insiders to reacquire their firm in bankruptcy auction has the potential to mitigate costs of distress such as underinvestment due to debt overhang and simultaneously weaken the discipline in paying off debt. The theoretical literature offers insights on both mechanisms. If owner-managers expect the possibility of retaining their firms at a discount through bankruptcy process, they may have weaker incentives to avoid default (Meckling and Jensen, 1976). This creates opportunities for diversion to shareholders or realization of private benefits. However, owner-manger can minimize the under-investment problem associated with distress if they are able to claim some of the benefits of that investment in bankruptcy state White (1989); Gertner and Scharfstein (1991). Reacquiring their firm at a discount allows owner-manager to enjoy the benefits of investment in the continuation of the firm under it.

From an ex-post perspective, corporate insolvency mechanisms are intended to preserve viable firm and liquidate inefficient firms (Hart, 1995). Reorganization generally allows creditors to recover more value than under piecemeal liquidation, where assets are sold separately and synergies are lost Hotchkiss et al. (2008). Incumbent management, particularly promoters in emerging markets, possess firm-specific knowledge and private information that can facilitate operational turnaround better than outsiders (Aghion et al., 1992). Therefore, in some cases, incumbents would increase firm value more than other potential applicants and thereby bid at higher price than everybody else. However, in instances of asymmetric information, allowing incumbents to participate would cause the information advantage of insiders to discourage outside bidders from participating and reducing recovery value.

3.1 Agents

The model has 4 agents, the firm's incumbent manager, firm's creditor and two bidders who would participate in the bankruptcy auction. The manager of the firm owns the entire equity of the firms and would now be referred as owner-manager. Manager is risk-nuetral with the objective to maximize expected payoffs. The bank has a debt claim of B on the firm's assets with objective to recover as much as possible from those claims. The two bidders participating in the bankruptcy auction would decide their bids to maximize their expected revenues.

3.2 Model Setup

Consider a firm at $t = 0$ with asset value V and outstanding debt D, where $V < D$, so the firm is in financial distress. Onwner-managers hold a residual claim that is currently out of the money. They can choose to invest $I \geq 0$ in a new project from their own funds . The project generates two possible realisations:

High realization with probability, p: the project succeeds, and equityholders receive

$$\Pi^H = R_h \cdot I + V - D > 0,$$

where $R_h > 1$ is the gross return multiplier on the high outcome.

Low realization with probability, $1 - p$: the project fails. The total realization is insufficient to cover the face value of debt, so equityholders receive

$$\Pi^L = 0.$$

We compare two institutional regimes: one in which incumbent owner-managers are banned from the bankruptcy auction, and one in which they are permitted to participate.

3.3 Incumbent Insiders Banned

When incumbents cannot participate, the low-state payoff to equity is zero. The expected payoff to owner-managers net of the investment cost is:

$$\mathbb{E}[\pi_B] = p\left(R_h \cdot I + V - D\right) + (1-p)\cdot 0 - I.$$

Expanding:

$$\mathbb{E}[\pi_B] = pR_hI + p(V-D) - I = I\left(pR_h - 1\right) - p(D-V).$$

Equityholders choose to invest whenever $\mathbb{E}[\pi_B] \geq 0$:

$$I\left(pR_h - 1\right) \geq p(D-V).$$

This requires $pR_h > 1$. The minimum expected return multiplier at high realization, $R_h^B = \dfrac{1}{p}$ for the owner-managers to invest. Solving for the minimum viable investment level:

$$I_A^* = \frac{p(D-V)}{pR_h - 1}. \tag{1}$$

Owner-managers will invest if and only if $I \geq I_A^*$. Note that $I_A^* > 0$ since $D > V$ and $pR_h > 1$.

3.4 Incumbent Insiders Allowed

When incumbents can participate in the bankruptcy auction, the low-state outcome is no longer a complete wipeout for owner-managers. The incumbent wins the auction with composite parameter $\phi \in (0,1)$, where ϕ embeds both the probability of the incumbent winning the auction and the ratio of owner-manager payoff conditional on winning. We will derive the expected value of ϕ in the section on bankruptcy. Specifically, in the low state, the owner-manager receives:

$$\Pi_A^L = \phi\left(R_l \cdot I + V\right),$$

where $R_l \in (0, R_h)$ is the gross return multiplier under the low realization, and V is the residual asset value.

The expected payoff to equityholders is:

$$\mathbb{E}[\pi_A] = p\left(R_h \cdot I + V - D\right) + (1-p)\,\phi\left(R_l \cdot I + V\right) - I.$$

Expanding:

$$\begin{aligned}\mathbb{E}[\pi_A] &= pR_hI + p(V-D) + (1-p)\phi R_lI + (1-p)\phi V - I \\ &= I[pR_h + (1-p)\phi R_l - 1] - p(D-V) + (1-p)\phi V.\end{aligned}$$

Setting $\mathbb{E}[\pi_A] \geq 0$ and solving:

$$I[pR_h + (1-p)\phi R_l - 1] \geq p(D-V) - (1-p)\phi V.$$

This requires $pR_h + (1-p)\phi R_l > 1$. The minimum expected return multiplier at high realization, $R_h^A = \dfrac{1-(1-p)\phi R_l}{p}$ for the owner-managers to invest. Solving for the minimum viable investment level:

$$I_A^* = \frac{p(D-V) - (1-p)\phi V}{pR_h + (1-p)\phi R_l - 1}. \tag{2}$$

Proposition 1 *$I_B^* > I_A^*$: the minimum investment threshold is strictly higher when incumbents are banned from the bankruptcy auction. $R_h^B > R_h^A$: the minimum return multiplier is strictly higher when incumbents are banned from the bankruptcy auction. When incumbent are banned, they can invest only in project with higher investment magnitude and higher return multipleir and thus less likely to invest relative incumbents who are allowed in bankruptcy auction*

When owner-managers are from participating in auction, they bear the full burden

of the debt overhang. The investment cost I must generate a high-state payoff large enough to overcome the shortfall $D - V$ before equity turns positive. This depresses investment incentives and raises the minimum viable scale. However, incumbent participation in the auction provides equityholders with a recovery of $\phi(R_l I + V)$ even when the project fails. It enhances investment incentives by converting a zero low-state payoff into a positive one.

Bankruptcy Auction

The creditor initiates bankruptcy proceedings against the firm whenever a default occurs. Upon initiation, the creditor can dispose of the firm's assets in one of two ways: (i) selling the firm as a going concern to a new owner through an auction, or (ii) dissolving the firm and liquidating its assets through a piecemeal sale. Since going-concern sales typically yield higher recoveries than liquidation, the creditor prefers to preserve the firm as a viable entity whenever possible. Consequently, the creditor's first step is to organize an auction for the firm's distressed assets. If, instead, the creditor chooses liquidation, the realized liquidation value is denoted by L. The creditor will pursue liquidation only if the revenue obtained from the auction is expected to fall below L. For simplicity, we assume that the liquidation value, L is zero and therefore selling the firm as going concern is the only option.

There are three potential bidders in the auction: the former manager-owner of the bankrupt firm and two outside bidders. All bidders are risk neutral. The true value of the firm in bankruptcy, denoted by $\widetilde{V}_l$, is unknown and lies in the interval $(0, \overline{V}_l)$. The firm has a common value to all bidders, meaning that whoever acquires the firm will operate it in the same manner and obtain the same payoff. This assumption reflects the idea that operating the firm does not require unique or firm-specific managerial skills.

Although bidders do not observe the true value directly, each receives a private signal t_i (for $i = 1, 2, 3$), drawn independently from a common distribution with

density f, cumulative distribution function F, and support $[0, \overline{V}_l]$. The true value of the firm depends on the information held collectively by the bidders and is given by a weighted average of their signals:

$$V(t_1, t_2, t_3) = \psi_1 t_1 + \psi_2 t_2 + \psi_3 t_3, \qquad \text{where } \psi_1 + \psi_2 + \psi_3 = 1.$$

This formulation can alternatively be interpreted as an exogenous true value for the firm, with bidders receiving noisy private information about it. The weights ψ_i capture how informative each signal is; higher ψ_i implies that bidder i's signal is more informative.

We assume that the former manager (Bidder 1) is better informed than the two outside bidders, implying $\psi_1 > \psi_2, \psi_1 > \psi_3$ This assumption is natural, since the former owner-manager likely has more detailed knowledge of the firm's operations and prospects. The two outside bidders, by contrast, are assumed to be equally informed; hence, $\psi_2 = \psi_3$. Combining these restrictions with $\psi_1 + \psi_2 + \psi_3 = 1$ yields

$$\psi_2 = \psi_3 = \frac{1 - \psi_1}{2}.$$

Because the signals t_i are i.i.d. and the weights sum to one, these assumptions ensure that the unconditional expected value of the firm does not depend on the specific weights. The true value of the firm is

$$V = \psi_1 t_1 + \frac{1 - \psi_1}{2} (t_2 + t_3)$$

The auction format is assumed to be an open ascending (English) auction, which is strategically equivalent to a sealed-bid second-price auction in this setting. Most bankruptcy auctions employ some variation of the English format when disposing of distressed assets. I characterize the equilibrium of this auction under asymmetric information.

Consider first the case where the former owner-manager is restricted from participating in the auction. In this scenario, only the two outside bidders participate. The equilibrium bidding strategy for bidder j is given by

$$b(t_j) = (1 - \psi_1)t_j + \psi_1 \mathbb{E}[\widetilde{V}_l].$$

The bid $b(t_j)$ is optimal for bidder j because any bid above $b(t_j)$ may result in winning the auction while generating a negative expected payoff, whereas bidding below $b(t_j)$ reduces the likelihood of winning despite the possibility of a positive payoff. This becomes clear when we compare the expected firm value conditional on bidder signals to the bid level itself.

The expected value of the firm, given other bidders' signals t_j and t_k, is

$$V(t_1,\, t_2 = t_j,\, t_3 = t_k) = \int_0^{\bar{V}_l} \int_0^{\bar{V}_l} \left(\psi_1 \, \mathbb{E}[\widetilde{V}_\ell] + \frac{1 - \psi_1}{2}(t_j + t_k) \right) f(t_k)\, dt_k\, f(t_j)\, dt_j.$$

The expected payoff for bidder j under the equilibrium bidding strategy is

$$X_j = \int_0^{\bar{V}_l} \int_0^{t_j} \left[\psi_1 \, \mathbb{E}[\widetilde{V}_\ell] + \frac{1 - \psi_1}{2}(t_j + t_k) - b(t_k) \right] f(t_k)\, dt_k\, f(t_j)\, dt_j.$$

$$X_j = \int_0^{\bar{V}_l} \int_0^{t_j} \left(\frac{1 - \psi_1}{2}(t_j - t_k) \right) f(t_k)\, dt_k\, f(t_j)\, dt_j.$$

The expression above is always positive when bidder j wins the auction. To simplify the analysis, I illustrate using an example where signals are assumed to be uniformly distributed over interval $[0, \bar{V}_l]$. Under this assumption, the previous expression simplifies to

$$\frac{(1 - \psi_1)\, \bar{V}_l}{12}.$$

The creditor's expected revenue equals the expected value of the firm minus the

total expected payments made by all bidders. Thus,

$$ER = \mathbb{E}[V] - X_j - X_k = \frac{\bar{V}_l}{2} - \frac{(1-\psi_1)\,\bar{V}_l}{12} - \frac{(1-\psi_1)\,\bar{V}_l}{12} = \frac{4+2\psi_1}{12}\,\bar{V}_l.$$

Participation of Owner-Manager in Auction

Once we allow the owner-manager to participate in the bankruptcy auction, value of the firm is fully determined by the information contained in the signals of all bidders participating in the auction. Therefore, the expected value of the firm conditional on the bidders' signals is

$$V(t_1 = t_i,\, t_2 = t_j,\, t_3 = t_k) = \int_0^{\bar{V}_l}\int_0^{\bar{V}_l}\int_0^{\bar{V}_l}\left(\psi_1 t_i + \frac{1-\psi_1}{2}\,(t_j + t_k)\right) f(t_i)\,dt_i\, f(t_k)\,dt_k\, f(t_j)\,dt_j.$$

In a three-bidder ascending (open) auction, the withdrawal of the first bidder reveals information about that bidder's private signal, allowing the remaining bidders to update their beliefs and adjust their bidding strategies accordingly. When all three bidders remain active, each continues to bid sequentially until either their bid reaches the value implied by their private signal or one of the bidders exits the auction.

Once a bidder drops out, the equilibrium bidding strategy for each remaining bidder incorporates both their own signal and the inferred signal of the withdrawn bidder.

Specifically, when bidder i drops out, the bidding strategy of bidder j is

$$b(t_j) = (1-\psi_1)\,t_j + \psi_1\,t_i.$$

Similarly, when bidder k drops out, the bidding strategy of bidder j becomes

$$b(t_j) = \frac{1+\psi_1}{2}\,t_j + \frac{1-\psi_1}{2}\,t_k.$$

The expected payoff for bidder j under the equilibrium bidding strategy when

bidder i drops off is

$$X_j^a = \int_0^{\bar{V}_l} \int_0^{t_j} \int_0^{t_k} \left(\psi_1 \left(t_j - t_k \right) \right) f(t_i)\, dt_i \; f(t_k)\, dt_k \, f(t_j)\, dt_j.$$

The expected payoff for bidder j under the equilibrium bidding strategy when bidder k drops off is

$$X_j^b = \int_0^{\bar{V}_l} \int_0^{t_j} \int_0^{t_i} \left(\frac{1+\psi_1}{2} \left(t_j - t_i \right) \right) f(t_k)\, dt_k \; f(t_i)\, dt_i \, f(t_j)\, dt_j.$$

Under uniform distribution, the expected revenue for a creditor simplifies to

$$ER = \mathbb{E}[V] - X_i^a - X_i^b - X_j^a - X_j^b - X_k^a - X_k^b = \frac{5}{12}\, \bar{V}_l.$$

The expected revenue for owner-manager when they are allowed to participate in auction is

$$X_i = X_i^a + X_i^b = \frac{\psi_1}{12}\, \bar{V}_l.$$

The comparison between creditor's expected revenue in a two-bidder auction with less-informed participants and a three-bidder auction in which the owner–manager is better informed leads to the following prediction.

Proposition 2 *If ψ_1 is sufficiently high, creditors earn lower expected revenue in a three-bidder auction with a better-informed owner–manager than in a two-bidder auction without the owner–manager.*

Under a uniform distribution, the auction without the owner–manager yields a higher expected revenue whenever $\psi_1 > \frac{1}{2}$. This condition corresponds to the owner–manager being more than twice as informative as each of the other bidders.

4 Data

The case-level bankruptcy data are obtained from the Insolvency and Bankruptcy Board of India (IBBI). The IBBI publishes, on a quarterly basis, a cumulative list of firms

that have received final approval for resolution by the NCLT This dataset includes information on the claims filed by creditors, the realizable value, the liquidation value, as well as the dates of admission into insolvency and completion of the process.

In addition, the IBBI publishes a cumulative list of firms for which liquidation orders have been issued. This dataset contains details on creditor claims, along with the dates of insolvency admission and the issuance of the liquidation order. However, a key limitation of the liquidation data is that it does not immediately provide the liquidation value or the amount recovered. Although the insolvency process is formally completed with the issuance of a liquidation order, the liquidation itself often extends over a prolonged period, as the sale of assets and subsequent distribution to creditors may take considerable time. Consequently, recovery values from liquidation are reported with a lag. As of August 2025, liquidation orders have been issued for 2,891 firms. Of these, detailed information on sales proceeds and recovery outcomes is available for only 798 firms.

I obtain data relating to firm fundamentals from the Prowess database maintained by the Center for Monitoring Indian Economy (CMIE). The source for financial data in Prowess is company annual financial statements for publicly listed firms and of annual fillings made by unlisted firms at MCA (Ministry of Corporate Affairs). The database provides firm- level information on investment, interest expense, long-term debt, revenue, EBIT, net profit, and assets.

4.1 Sample Construction

The bankruptcy sample, comprising all reorganization and liquidation cases, initially consists of 3,700 cases. Since our period of interest extends only till June 2020 when the Central Government announced the revised MSME definition, we restrict the sample to this timeline, reducing it to 1,416 bankruptcy cases. Because the MSME classification requires measuring gross investment in plant and machinery, we further restrict the sample to cases with a firm match in the Prowess database for which this variable is available. This matching procedure yields a final bankruptcy sample of 512

cases.

For the ex-ante tests, we draw on a panel of firms with available financial data from Prowess. This sample comprises 26,918 unique firms and 183,851 firm-year observations. Restricting the sample to a narrow bandwidth around the MSME threshold reduces the final estimation sample to 62,341 observations.

4.2 Summary Statistics

Summary statistics are reported in Table 1. Only 21% of cases in the sample culminate in reorganization, with the remainder proceeding to liquidation. Mean and median creditor claims stand at INR 7.73 billion and INR 0.55 billion, respectively, reflecting a highly right-skewed distribution of case sizes. The average duration between the initiation of insolvency proceedings and the approval of a resolution plan is 352.84 days, modestly exceeding the statutory timeline of 330 days, while a median completion time of 315 days indicates that roughly half of all cases overrun this statutory limit. This is a consequential delay, as longer resolution periods are typically associated with lower value realization in the bidding process.

Creditor recovery is measured as the realizable amount under the winning resolution plan, expressed as a share of creditors' claims for reorganization cases, and as the amount distributed to stakeholders from asset sales, expressed as a share of claims for liquidation cases. On average, creditors recover 26.1% of their claims, with a median recovery of just 15.3%, underscoring the substantial haircuts creditors typically absorb. Creditor recovery data are available for only 576 observations, as the actual amount realized from liquidation is missing for most liquidation cases, largely due to delays in the liquidation process or gaps in reporting. Liquidation values, by contrast, are available for nearly all cases, drawn from valuation reports prepared by resolution professionals at the outset of proceedings; these offer an estimate of what piecemeal liquidation of assets would be expected to yield. Actual liquidation proceeds, however, are observed for only 263 cases. The median ratio of realized liquidation proceeds to the estimated liquidation value is 0.84, indicating that more than half of creditors

ultimately recover less than the initial estimate suggested. The high standard deviation around this ratio further indicates that outcomes vary considerably, and that liquidation value estimates made at the start of a case are often poor predictors of eventual recovery. To evaluate the relative benefit of reorganization over liquidation, I construct a surplus value measure, defined as the ratio of realized value under reorganization to the estimated liquidation value. The mean surplus value is 4.7, and the median is 1.34, suggesting that reorganization typically delivers meaningfully higher recoveries for creditors than liquidation would.

Table 2 presents bankruptcy outcomes by industry. The hotels and restaurants sector records both the highest share of reorganization, at 42%, and the highest creditor recovery rate, at 57.3%. Wholesale and retail trade follows closely, with the second-highest recovery rate at 41.4%. This pattern suggests that sectors characterized by generic, easily valued assets such as inventory and real estate, which face fewer information frictions and consequently achieve higher recovery rates. By contrast, service-oriented sectors such as professional services and transportation exhibit the lowest reorganization shares, at 25% and 22%, respectively. Manufacturing, which accounts for 41% of all observations, undergoes reorganization in 303% of cases and yields a creditor recovery rate of 28.6%.

5 Results

I begin by documenting how permitting insider reacquisition shapes the ex-ante decisions of financially distressed firms. I exploit the 2018 amendment and perform an event study to measure its impact on firm investment, capital structure and performance.

5.1 Empirical Strategy

To estimate the causal effect of barring incumbent insiders in bankruptcy auction on firm decisions, I compare the outcome variables of SMEs with those of non-MSMEs us-

ing a difference-in-difference specification among financially distressed firms. MSMEs were exempted from the provisions of Section 29A that barred incumbent promoters from participating in the resolution process, thereby creating a natural source of variation. Since this amendment primarily affect financially distressed, I perform this test within a sample of financially distressed firm. I use the following specification for the regression

$$Y_{i,j,t} = \beta_0 + \beta_1(Post_t \times \mathbb{1}[SME_i]) + \alpha_i + \gamma_{j,t} + \varepsilon_{i,j,t} \tag{3}$$

$Y_{i,j,t}$ is the outcome variable for firm i in industry j at year t and $Post_t$ is the indicator variable equal to 1 for periods after the amendment and 0 otherwise. SME_i is an indicator variable equal to 1 if firm i satisfies the definition of MSME in pre-period and 0 otherwise. α_i is firm fixed effects, controlling for time-invariant firm-level heterogeneity and $\gamma_{j,t}$ is industry $\times$ year fixed effects, controlling for time-varying industry-level shocks. Our coefficient of interest is β_1, capturing the differential effect of the amendment on SMEs relative to non-SMEs. Standard errors are clustered at the industry level and adjusted for heteroscedasticity.

In addition to this specification, I also rely on triple difference-in-difference to control for any unobserved shocks that vary between SMEs and non-SMEs and remove any bias arising due to the difference in the nature of firms representing SMEs and non-SMEs. The triple difference specification would constitute the full sample and compare SMEs with non-SMEs, and distressed with healthy firms, across the pre- and post-amendment periods. I use the following specification for the regression

$$\begin{aligned} Y_{i,j,t} = \beta_0 + \beta_1(Post_t \times \mathbb{1}[SME_i]) + \beta_2(Post_t \times Distress_i) + \\ \beta_3(Post_t \times \mathbb{1}[SME_i] \times Distress_i) + \alpha_i + \gamma_{j,t} + \delta_t + \varepsilon_{i,j,t} \end{aligned} \tag{4}$$

Distress is an indicator variable equal to one for those firms with a pre-period three-year average interest coverage ratio below one. The firms that are defined as distressed would remain the same across time. These firms are those which do not have enough operating income to meet the interest expense. Similarly, SME is also a

time invariant variable, although firms would loose their SME status if they cross the investment threshold for 3 consecutive years. We address these issue by enusring that we only include those firms which consistently meet the SME or non-SME definition across all years in pre-period

5.2 Impact on Ex-ante Firm Dynamics

I begin by documenting how permitting insider reacquisition affects investment among financially distressed firms. The results are reported in Table 3. The estimate in Column (1) shows that investment rises by 27.2% for distressed SMEs, while Column (2), which restricts the sample to healthy firms, shows only a marginal and statistically insignificant impact. Column (3), which uses the full sample to estimate the triple-difference specification, indicates a differential effect of 19.1% for distressed SMEs relative to other firm categories. Figure 1 plots the difference-in-differences coefficients relative to the year preceding the amendment; the estimates show no evidence of pre-trends and turn positive and significant in each year of the post-amendment period. Figure 3 presents the corresponding estimates using the triple-difference specification.

These results are consistent with theoretical predictions that the possibility of a non-zero payoff for equityholders in the bankruptcy state alleviates the debt overhang problem and encourages investment. I next examine how this investment is financed, whether through debt or through equityholders' own funds. Table 4 reports the results for long-term debt. Long-term debt rises by 7.4% under the difference-in-differences specification in Column (1), and by 9% under the triple-difference specification in Column (3). This smaller magnitude relative to the increase in investment suggests that investment was financed through smaller levels of debt. Further support for this comes from the leverage ratio results reported in Table 3, which show that the leverage ratio declines for distressed SMEs (Column 4) in the post-amendment period, with negative and statistically significant estimates under the triple-difference specification. Figure 2 plots the difference-in-differences coefficients of leverage ratio relative to the year preceding the amendment; the estimates show no evidence of pre-trends and

turn negative and significant in each year of the post-amendment period. Figure 4 presents the corresponding estimates using the triple-difference specification.

I also examine how permitting insider reacquisition affects the cost of debt financing. Table 4 reports that interest rates decline by 80 basis points under the difference-in-differences specification and by 60 basis points under the triple-difference specification. This effect operates through two complementary mechanisms: lenders anticipate higher recovery conditional on bankruptcy, while the ex-ante incentives created by the amendment simultaneously reduce the probability of default itself.

Now, I consider how the ex-ante incentives created by insider reacquisition affect the financial performance of distressed firms. My theoretical prediction is that the resulting investment should be directed toward positive-NPV projects, and should therefore have a positive effect on revenue growth and profitability. The results in Table 5, Columns (1) and (4), for the sample of distressed firms, show that the coefficient estimates for revenue growth and profitability are both positive and significant. Under the triple-difference specification, revenue growth increases by 5.8 percentage points and profitability increases by 10.3 percentage points. Figures 5 and 6 plot the difference-in-differences coefficients for revenue growth and profitability, respectively, relative to the year preceding the amendment; the estimates show no evidence of pre-trends and turn positive and significant in each year of the post-amendment period.

Finally, I examine how the payoffs available to incumbent insiders under the revised bankruptcy design affect their probability of recovering from financial distress, and thereby of avoiding bankruptcy altogether. I use two measures to capture recovery from distress: interest coverage and the incidence of negative EBIT. Interest coverage indicates whether a firm generates sufficient operating income to meet its interest expense. The results, reported in Table 6, show that interest coverage rises among treated firms by 1.13 under the difference-in-differences specification and by 1.443 under the triple-difference specification. Column (6) further shows that the share of firms reporting negative EBIT falls by 3.7 percentage points among treated firms in the post-amendment period.

5.3 Impact on Ex-Post Bankruptcy Outcomes

In this section, I investigate how permitting incumbent insiders to participate in the bankruptcy auction affects ex-post outcomes such as firm survival and creditor recovery. I use the sample of bankruptcy cases for this analysis. As this sample constitutes cross-sectional data observed over time, I estimate the following difference-in-differences specification.

$$Y_{i,j,t} = \beta_0 + \beta_1(Post_t \times \mathbb{1}[SME_i]) + \alpha_j + \gamma_t + \varepsilon_{i,j,t} \tag{5}$$

The time reference used in the regression is based on the date on which insolvency proceedings were initiated. Here, Post refers to the quarter following the introduction of the amendment; accordingly, quarters from July 2018 onward are classified as part of the post-amendment period. I include sector fixed effects and closure-year fixed effects to account for sector-specific similarities and year-level shocks, respectively. Standard errors are clustered at the sector level and adjusted for heteroscedasticity. I use broad industrial sectors in this specification for fixed effects and clustering instead of 2-digit industry code due to smaller sample size.

Since incumbent insiders are now permitted to participate in bankruptcy auctions, we should expect an increase in reorganization rates: cases that would otherwise have proceeded to liquidation due to a lack of bidder participation may now attract bids from incumbent insiders, thereby improving the firm's chances of survival. The results reported in Table 7 confirm that the amendment improved firm survival rates, with the share of reorganizations rising by 9.8 percentage points. Creditor recovery also increases, but the effect is not statistically significant, and we conclude that the amendment had no discernible impact on creditor recovery. The figure 7 plots the difference-in-differences coefficient estimates by quarter-year relative to the quarter preceding the amendment; the estimates show no evidence of pre-trends and turn positive and significant in each quarter of the post-amendment period.

Finally, we test our theoretical prediction that information frictions shape the

amendment's effect on both the share of reorganizations and creditor recovery. The theory predicts that creditor recovery should rise with incumbent insider participation when information frictions are low. To examine this empirically, we require a proxy for information frictions that captures the difficulty of assessing firm value from an outsider's perspective. We construct an industry-level measure using asset specificity (Kermani and Ma, 2023) and the dispersion of creditor recovery. Asset specificity captures the extent to which a firm's assets are suited to specific uses, with higher specificity associated with greater information frictions; industries whose assets support multiple alternative uses such as retail and wholesale trade, real estate, and food and beverage are classified as low-asset-specificity industries. Similarly, industries exhibiting high standard deviation in creditor recovery are taken to indicate greater difficulty for outsiders in valuing firms within that sector.

Results are reported in Tables 8 and 9. Using a difference-in-differences specification within the samples of high-asset-specificity firms and high-creditor-recovery-dispersion firms (Columns (1) and (4)), we find that the share of reorganization is either insignificant or negative. By contrast, among firms in industries with low asset specificity and low recovery dispersion (Columns (2) and (5)), both the share of reorganization and creditor recovery are positive and significant. The triple-difference specification confirms this pattern, showing that the share of reorganization and creditor recovery rise more when incumbent reacquisition is permitted in industries with low asset specificity and low recovery dispersion. These results reflect the fact that incumbents find it difficult to extract rents from the creditorx when information frictions are low.

6 Conclusion

This paper examines how granting incumbent insiders the opportunity to reacquire their firm in the bankruptcy auction reshapes both the ex-ante decisions of financially distressed firms and the ex-post outcomes of the bankruptcy process itself. Using the

2018 amendment permitting insider reacquisition for MSMEs in India as a setting, I find that the amendment generated economically meaningful effects on both margins.

On the ex-ante margin, permitting insider reacquisition increased investment among distressed SMEs substantially, financed largely through internal resources rather than new debt, consistent with a relaxation of the debt overhang problem: once owner-managers can expect a positive payoff even in the bankruptcy state, they are willing to commit resources to projects whose returns would otherwise have accrued primarily to creditors. This investment translated into higher revenue growth and profitability, a lower cost of debt, and improved measures of financial health based on higher interest coverage and a smaller share of firms reporting negative EBIT, indicating that the amendment reduced the probability of distressed firms defaulting and entering bankruptcy in the first place.

On the ex-post margin, the amendment increased the share of firms reorganized as going concerns rather than liquidated, improving firm survival, while leaving creditor recovery statistically unchanged. This pattern is consistent with a reduction in a key friction obstructing efficient auctions: insiders, who possess superior information about firm value, were previously barred from bidding, discouraging their participation in a way that reduced overall auction competitiveness. Once information frictions are more directly accounted for, the data bear this out, both the reorganization share and creditor recovery improve significantly only in sectors characterized by low asset specificity and low recovery dispersion, precisely where the incumbent's informational advantage over outside bidders is least severe.

Taken together, these findings speak to a central trade-off in bankruptcy design: between disciplining managers to ensure timely debt repayment and mitigating the real costs of financial distress. The results suggest that, at least in the presence of low information frictions, extending payoffs to incumbent insiders need not undermine creditor interests and can, in fact, improve both borrower and creditor outcomes simultaneously by expanding the pool of credible bidders in the bankruptcy auction. This nuances a body of prior work that treats stronger creditor rights and weaker

debtor protections as necessarily complementary, and suggests that policymakers designing insolvency frameworks, particularly for opaque, informationally frictional segments of the economy such as SMEs, may have more scope to improve ex-ante incentives without sacrificing ex-post creditor protection than commonly assumed. More broadly, the findings underscore that the design of bankruptcy procedure, and not merely its stringency, has first-order consequences for firm investment, survival, and the efficient reallocation of distressed assets.

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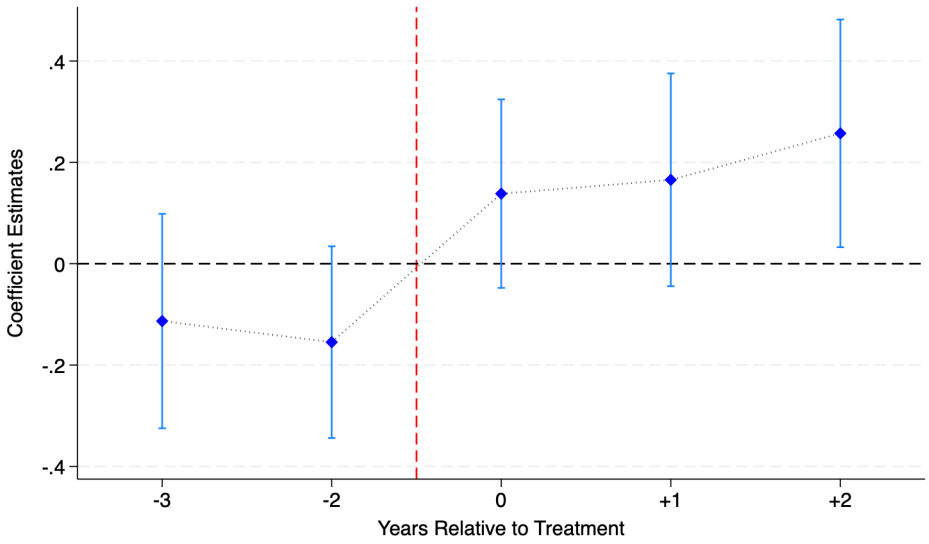


Figure 1: Impact of Amendment on Investment (Standard DID)

Notes: This figure plots the coefficient estimates from the DID specification in Equation 3, which estimates the effect of the 2018 amendment on investment for SMEs relative to non-SMEs among distressed firms. The dot represents point estimates, and the vertical line represent 95% confidence intervals, based on standard errors clustered at the industry level. The base year for the specification is FY2018, which is the fiscal year before the amendment

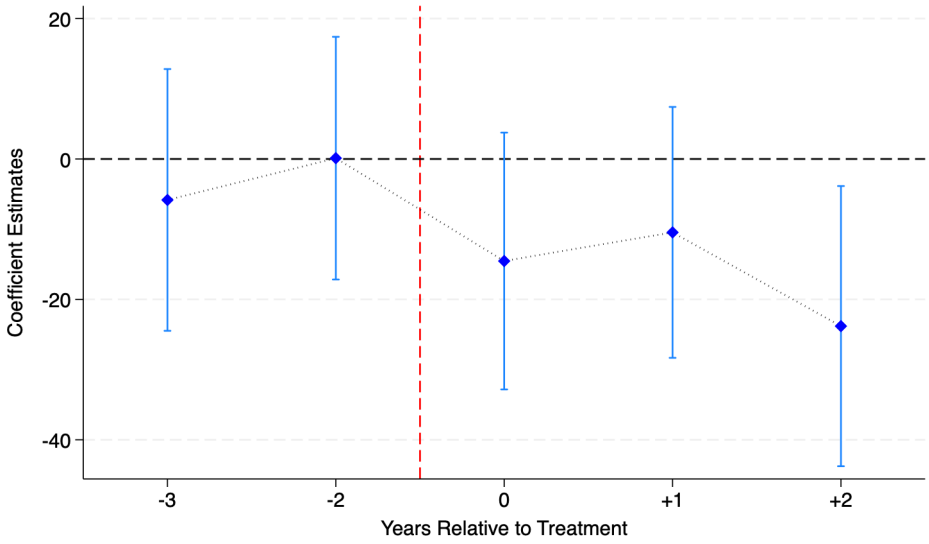


Figure 2: Impact of Amendment on Leverage (Standard DID)

Notes: This figure plots the coefficient estimates from the DID specification in Equation 3, which estimates the effect of the 2018 amendment on leverage ratio (ratio of long-term debt to gross fxied assets) for SMEs relative to non-SMEs among distressed firms. The base year for the specification is FY2018, which is the fiscal year before the amendment

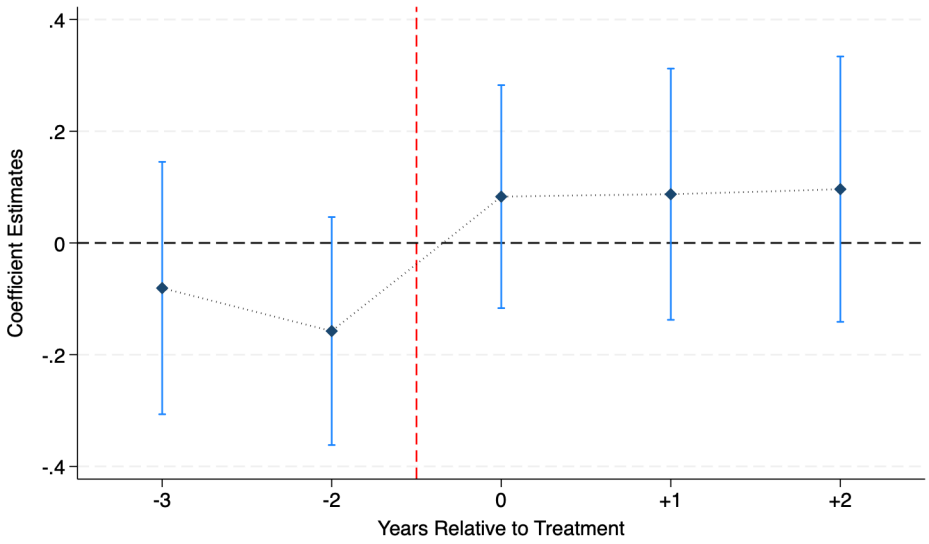


Figure 3: Impact of Amendment on Investment (Triple DID)

Notes: This figure plots the coefficient estimates from the triple difference specification in Equation 4, which estimates the effect of the 2018 amendment on investment for SMEs relative to non-SMEs and distressed firms relative to healthy firms. The dot represents point estimates, and the vertical line represent 95% confidence intervals, based on standard errors clustered at the industry level. The base year for the specification is FY2018, which is the fiscal year before the amendment

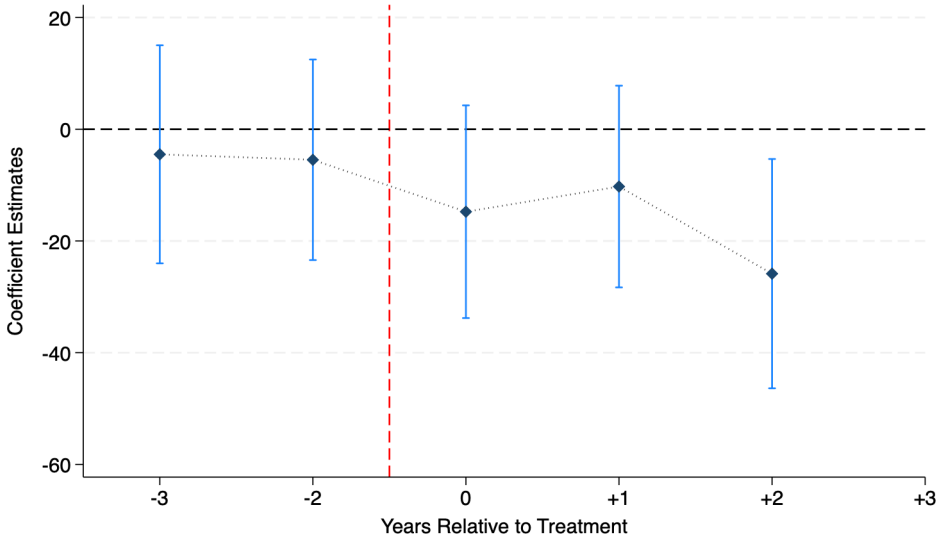


Figure 4: Impact of Amendment on Leverage (Triple DID)

Notes: This figure plots the coefficient estimates from the triple difference specification in Equation 4, which estimates the effect of the 2018 amendment on leverage ratio (ratio of long-term debt to gross fxied assets) for SMEs relative to non-SMEs and distressed firms relative to healthy firms. The base year for the specification is FY2018.

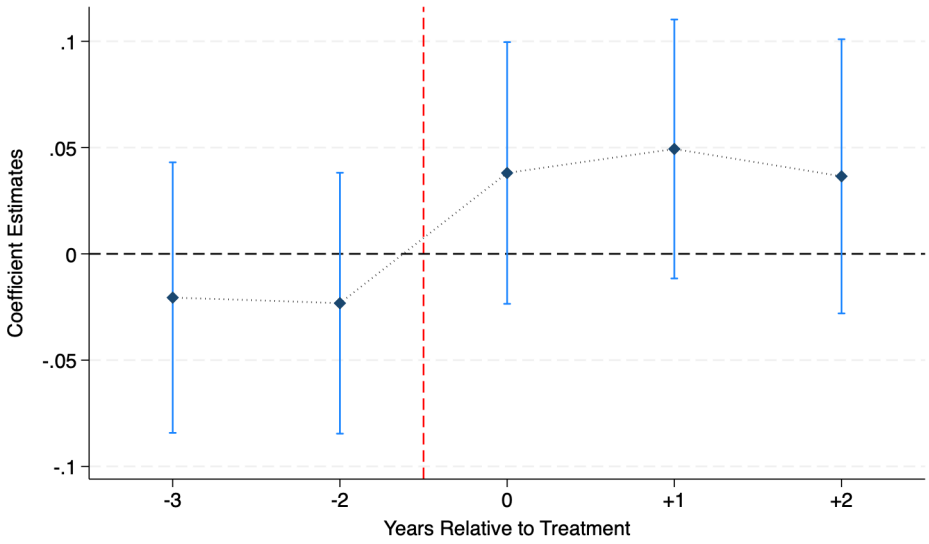


Figure 5: Impact of Amendment on Revenue Growth (Triple DID)

Notes: This figure plots the coefficient estimates from the triple difference specification in Equation 4, which estimates the effect of the 2018 amendment on revenue growth for SMEs relative to non-SMEs and distressed firms relative to healthy firms. The base year for the specification is FY2018.

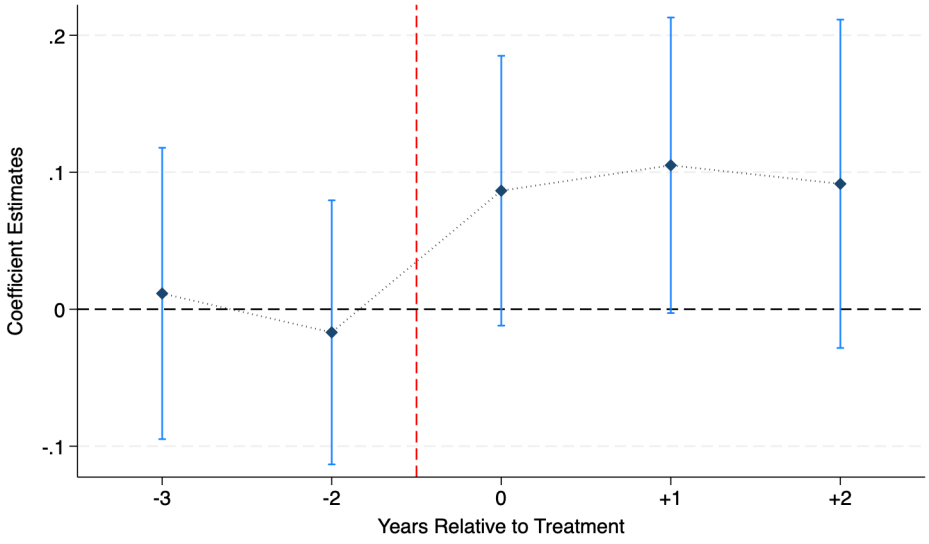


Figure 6: Impact of Amendment on Profitability (Triple DID)

Notes: This figure plots the coefficient estimates from the triple difference specification in Equation 4, which estimates the effect of the 2018 amendment on profit margin for SMEs relative to non-SMEs and distressed firms relative to healthy firms. The base year for the specification is FY2018.

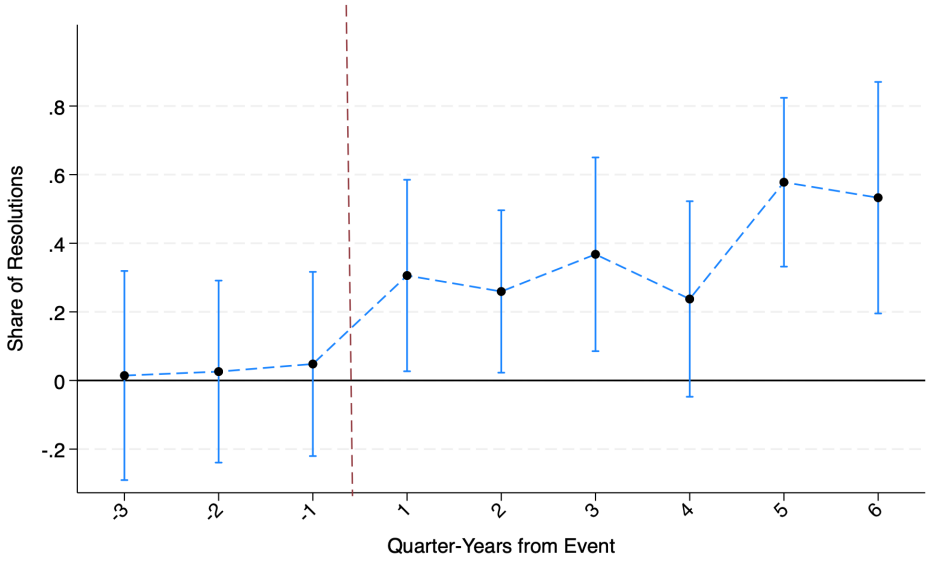


Figure 7: Impact of Amendment on Firm Suvival Rate

Notes: This figure plots the coefficient estimates from the difference-in-difference specification in Equation 5, which estimates the effect of the 2018 amendment on share of reorganizations for SMEs relative to non-SMEs and distressed firms relative to healthy firms. The base quarter-year for the specification is 2018Q2.

Table 1: Summary Statistics

	N	Mean	p25	Median	p75	SD
Debt Claims	1412	7737.8	112.8	558.3	2476.1	35300.3
Liquidation Value	1155	1129.3	12.0	90.1	360.0	7470.2
Reorganization	1416	0.21	0.00	0.00	0.00	0.41
Creditor recovery	576	26.14	4.95	15.34	36.47	29.29
Surplus Value	287	4.70	1.03	1.34	2.08	33.81
Liquidation recovery	263	2.1	0.54	0.84	1.07	14.02
Completion time (Days)	1416	352.84	236.50	315.00	430.00	166.33

Notes: All the figures are in INR Millions. Creditor recovery is the percentage of the realisable amount as a share of debt claims of creditors in reorganization cases and the percentage of amount distributed to stakeholders from asset sales as a share of debt claims of creditors in liquidation cases. Surplus value is the ratio of realisable amount to liquidation value estimate for reorganization cases. Reorganization is a dummy variable that carries a value of one for reorganization and zero for liquidation. Liquidation recovery is ratio of realized liquidation proceeds to the estimated liquidation value

Table 2: Bankruptcy Outcomes by Industrial Sectors

	Reorganization	Creditor Recovery	Surplus Value	Completion Time
Agriculture	0.31	31.29	2.33	556.95
Construction	0.37	39.95	3.28	613.75
Hotel and Restaurants	0.42	57.32	19.69	600.84
Information	0.18	35.74	21.38	438.64
Manufacturing	0.33	28.62	2.00	561.55
Mining	0.26	22.55	1.47	545.00
Professional Services	0.25	37.35	3.48	557.34
Transportation	0.22	30.64	9.13	546.87
Utilities	0.32	23.15	17.28	648.02
Wholesale & Retail trade	0.31	41.46	14.13	591.45
Total	0.30	33.02	5.18	568.16
Total	0.30	32.91	5.08	569.43

Notes: Creditor recovery is the percentage of realisable amount as a share of debt claims of creditors in reorganization cases and percentage of amount distributed to stakeholders from asset sales as a share of debt claims of creditors in liquidation cases. Surplus value is the ratio of realisable amount to liquidation value estimate for reorganization cases. Reorganization is a dummy variable that carries a value of one for reorganization and zero for liquidation. Completion time is the number days from the initiation of insolvency till the final approval order from the court for reorganization or liquidation. The data is based on the overall bankruptcy sample of 3700 firms

Table 3: Effect on Investment and leverage

	Property, Plant and Equipment			Leverage Ratio		
	Distressed (1)	Healthy (2)	Full Sample (3)	Distressed (4)	Healthy (5)	Full Sample (6)
Post × SME	0.272***	0.059	0.060*	-5.628***	-0.983***	-1.089***
	(0.085)	(0.036)	(0.036)	(1.919)	(0.366)	(0.383)
Post × Distress			-0.317***			3.694**
			(0.062)			(1.513)
Post × SME × Distress			0.191**			-3.950**
			(0.090)			(1.720)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,820	28,840	36,717	8,593	29,506	38,151
R-squared	0.635	0.657	0.653	0.824	0.795	0.808

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on investment and leverage among financially distressed firms, based on Equations 3 and 4. The dependent variable is the logarithm of additions to property, plant, and equipment (PPE) in Columns (1)–(3), and the ratio of long-term debt to gross fixed assets in Columns (4)–(6). Post is a dummy variable equal to one for all fiscal years following the amendment, beginning with FY 2019. Distressed firms are defined as those with a pre-period three-year average interest coverage ratio below one. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition in the pre-period. Columns (1) and (4) restrict the sample to distressed firms, while Columns (2) and (5) restrict it to healthy (non-distressed) firms; Columns (3) and (6) use the full sample to estimate the triple-difference specification. All specifications include firm fixed effects and industry-year fixed effects, with industry defined at the 2-digit code level. Standard errors are clustered at the industry level and adjusted for heteroscedasticity. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4: Effect on Additional Borrowing and interest rate

	Additional Debt			Interest Rate		
	Distressed (1)	Healthy (2)	Full Sample (3)	Distressed (4)	Healthy (5)	Full Sample (6)
Post × SME	0.074***	-0.013	-0.011	-0.008***	-0.001	-0.001
	(0.028)	(0.015)	(0.015)	(0.002)	(0.001)	(0.001)
Post × Distress			-0.048**			0.000
			(0.021)			(0.002)
Post × SME × Distress			0.090***			-0.006**
			(0.031)			(0.003)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,833	28,083	35,963	8,705	29,869	38,623
R-squared	0.267	0.194	0.201	0.580	0.514	0.526

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on debt and interest rate among financially distressed firms, based on Equations 3 and 4. The dependent variable is YoY difference between logaritham of long-term debt Columns (1)–(3), and the ratio of interest expense to long-term debt in Columns (4)–(6). Post is a dummy variable equal to one for all fiscal years following the amendment, beginning with FY 2019. Distressed firms are defined as those with a pre-period three-year average interest coverage ratio below one. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition in the pre-period. Columns (1) and (4) restrict the sample to distressed firms, while Columns (2) and (5) restrict it to healthy (non-distressed) firms; Columns (3) and (6) use the full sample to estimate the triple-difference specification. All specifications include firm fixed effects and industry-year fixed effects, with industry defined at the 2-digit code level. Standard errors are clustered at the industry level and adjusted for heteroscedasticity. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5: Effect on Revenue growth and profitability

	Revenue Growth			Profitability		
	Distressed (1)	Healthy (2)	Full Sample (3)	Distressed (4)	Healthy (5)	Full Sample (6)
Post × SME	0.038*	-0.011	-0.013*	0.083*	-0.014*	-0.014*
	(0.021)	(0.008)	(0.008)	(0.044)	(0.008)	(0.008)
Post × Distress			-0.008			-0.030
			(0.015)			(0.030)
Post × SME × Distress			0.058***			0.103**
			(0.022)			(0.043)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,255	32,670	42,973	10,682	33,266	43,994
R-squared	0.280	0.249	0.253	0.476	0.325	0.477

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on revenue growth and profitability among financially distressed firms, based on Equations 3 and 4. The dependent variable is YoY growth of firm revenue in Columns (1)–(3), and ratio of net profit to total income in Columns (4)–(6). Post is a dummy variable equal to one for all fiscal years following the amendment, beginning with FY 2019. Distressed firms are defined as those with a pre-period three-year average interest coverage ratio below one. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition in the pre-period. Columns (1) and (4) restrict the sample to distressed firms, while Columns (2) and (5) restrict it to healthy (non-distressed) firms; Columns (3) and (6) use the full sample to estimate the triple-difference specification. All specifications include firm fixed effects and industry-year fixed effects, with industry defined at the 2-digit code level. Standard errors are clustered at the industry level and adjusted for heteroscedasticity. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Effect on Financial Recovery

	Interest Coverage			Negative EBIT		
	Distressed (1)	Healthy (2)	Full Sample (3)	Distressed (4)	Healthy (5)	Full Sample (6)
Post × SME	1.120**	-0.500	-0.512	-0.030	0.012**	0.011*
	(0.514)	(0.346)	(0.343)	(0.020)	(0.006)	(0.006)
Post × Distress			0.516			-0.160***
			(0.399)			(0.015)
Post × SME × Distress			1.443**			-0.037*
			(0.610)			(0.020)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,225	28,288	32,568	10,721	33,281	44,048
R-squared	0.638	0.741	0.741	0.425	0.355	0.544

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on recovery among financially distressed firms, based on Equations 3 and 4. The dependent variable is ratio of EBIT to interest expense in Columns (1)–(3), and is a dummy variable that carries a value of one if EBIT is below zero, in Columns (4)–(6). Post is a dummy variable equal to one for all fiscal years following the amendment, beginning with FY 2019. Distressed firms are defined as those with a pre-period three-year average interest coverage ratio below one. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition in the pre-period. Columns (1) and (4) restrict the sample to distressed firms, while Columns (2) and (5) restrict it to healthy (non-distressed) firms; Columns (3) and (6) use the full sample to estimate the triple-difference specification. All specifications include firm fixed effects and industry-year fixed effects, with industry defined at the 2-digit code level. Standard errors are clustered at the industry level and adjusted for heteroscedasticity. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7: Impact on Post-Bankruptcy Outcomes

	Reorganization		Creditor Recovery	
	(1)	(2)	(3)	(4)
Post × SME	0.098**	0.101**	0.236	0.198
	(0.035)	(0.033)	(0.239)	(0.293)
Controls	No	Yes	No	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes
Observations	338	337	336	335
R-squared	0.131	0.131	0.095	0.105

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on firm survival and creditor recovery among a sample of bankruptcy cases, based on Equations 5. The dependent variable is the share of reorganizations in Columns (1) and (2), and the ratio of amount realized by creditor to debt claims of creditors in Columns (3) and (4). Post is a dummy variable equal to one for all quarter-years following the amendment, beginning with July 2018. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition. All specifications include sector fixed effects and End-year fixed effects. Standard errors are clustered at the industry level and adjusted for heteroscedasticity.

Table 8: Impact on Post-bankruptcy Outcome: Hereterogeneity by Asset Specificity

	Reorganization			Creditor Recovery		
	High Asset-Spec	Low Asset-Spec	Full Sample	High Asset-Spec	Low Asset-Spec	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)
Post × SME	0.016	0.430***	0.300***	-0.202	1.625**	1.617**
	(0.062)	(0.115)	(0.083)	(0.306)	(0.467)	(0.644)
Post × High AS			-0.118			-0.027
			(0.094)			(0.559)
Post × SME × High AS			-0.267*			-1.749*
			(0.123)			(0.861)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	273	65	338	271	65	336
R-squared	0.135	0.307	0.150	0.131	0.146	0.115

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on firm survival and creditor recovery among a sample of bankruptcy cases, based on Equations 5. The dependent variable is the share of reorganizations in Columns (1)–(3), and the ratio of amount realized by creditor to debt claims of creditors in Columns (4)–(6). Post is a dummy variable equal to one for all quarter-years following the amendment, beginning with July 2018. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition. Columns (1) and (4) restrict the sample to firms in high asset-specificity industries, while Columns (2) and (5) restrict the sample to firms in low asset-specificity industries; Columns (3) and (6) use the full sample to estimate the triple-difference specification. All specifications include sector fixed effects and End-year fixed effects. Standard errors are clustered at the industry level and adjusted for heteroscedasticity.

Table 9: Impact on Post-bankruptcy Outcome: Hereterogeneity by Recovery Dispersion

	Reorganization			Creditor Recovery		
	High Disp (1)	Low Disp (2)	Full Sample (3)	High Disp (4)	Low Disp (5)	Full Sample (6)
Post × SME	-0.243**	0.266***	0.263***	-0.756	0.661**	0.693**
	(0.094)	(0.055)	(0.063)	(0.593)	(0.270)	(0.297)
Post × High Disp			0.150			0.453
			(0.104)			(0.456)
Post × SME × High Disp			-0.469***			-1.323*
			(0.122)			(0.713)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	129	206	338	128	205	336
R-squared	0.142	0.190	0.146	0.137	0.139	0.109

Notes: This table presents difference-in-differences estimates of the effect of permitting insider reacquisition on firm survival and creditor recovery among a sample of bankruptcy cases, based on Equations 5. The dependent variable is the share of reorganizations in Columns (1)–(3), and the ratio of amount realized by creditor to debt claims of creditors in Columns (4)–(6). Post is a dummy variable equal to one for all quarter-years following the amendment, beginning with July 2018. SME is a dummy variable equal to one for firms satisfying the Small and Medium Enterprise definition. Columns (1) and (4) restrict the sample to firms in high recovery dispersion industries, while Columns (2) and (5) restrict the sample to firms in low recovery dispersion industries; Columns (3) and (6) use the full sample to estimate the triple-difference specification. All specifications include sector fixed effects and End-year fixed effects. Standard errors are clustered at the industry level and adjusted for heteroscedasticity.