Strategic Bankruptcy and Corporate Negligence*

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January 15, 2026

Abstract

Firms facing serious litigation can use bankruptcy as a negotiating tactic. We develop a dynamic capital structure model in which firms choose negligence levels that boost short-run profits but create litigation risk. The model reveals substantial risk-shifting: highly leveraged firms engage in excessive negligence because limited liability allows them to shift expected litigation costs to creditors and tort victims through bankruptcy. After estimating the model, we evaluate four policy regimes corresponding to recent legal debates. Legalizing Texas Two-Step bankruptcies, which shield firms from litigation with minimal consequences, would produce catastrophic increases in negligence and harm victims despite eliminating bankruptcy costs. Protecting tort victims in bankruptcy with either superpriority or enhanced bargaining rights improves outcomes modestly. Comprehensive reform combining both of these protections dominates: negligence declines, victim recovery triples, and firm equity values increase, as both productive investment and improved deterrence benefit shareholders.

Keywords: corporate bankruptcy, litigation, third-party releases, corporate social responsibility, capital structure.

JEL Classification: G33, G30.

*We are grateful for helpful comments from seminar participants at MIT Sloan. Bingnan Jin provided excellent research assistance.

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1 Introduction

In June 2021, a court ruled that Johnson & Johnson (J&J) was liable for selling carcinogenic baby powder. J&J owed $2.2 billion to the 22 successful plaintiffs in that case, and it faced 38,000 similar ongoing lawsuits. J&J responded with a recent legal strategy called the "Texas two step." It utilized Texas state law to conduct a divisive merger, splitting into two companies. One of the new companies, called LTL Management, received all of the baby-powder liability and only $2 billion in assets. The other company, valued at $400 billion, received none of the baby-powder liability and all of J&J's other assets. LTL Management immediately filed for bankruptcy, which indefinitely halted all baby-powder litigation. The rest of J&J continued operating normally (Francus, 2022). J&J's strategy is part of a growing trend of aggressive corporate legal strategies to address litigation through bankruptcy. Since 2017, firms such as 3M, Georgia-Pacific, CertainTeed, and Trane Technologies have attempted Texas two step bankruptcies to halt litigation, bolstering their bargaining positions when negotiating settlements with plaintiffs. Purdue Pharma used a similar strategy: after aggressively marketing opioid drugs, earning $11 billion for its owners and contributing to 247,000 overdose deaths, Purdue filed for bankruptcy to halt litigation against the owners.

Courts and policy makers are currently debating the legality of these strategic bankruptcies. In particular, Purdue's bankruptcy led to a 2024 Supreme Court case and congressional bill proposals in 2021 and 2024. Legalizing these strategic bankruptcies would likely harm the firms' plaintiffs *ex post*: a bankruptcy dramatically limits a plaintiff's ability to seek compensation for injury.

However, it is less clear how legalizing these aggressive bankruptcy strategies would impact *ex ante* firm incentives. Would shielding J&J and Purdue encourage investment in other potentially beneficial products? Or, conversely, would shielding J&J and Purdue exacerbate existing incentives to produce harmful but profitable products? And, crucially, are the potential ex-ante incentive benefits of strategic bankruptcies sufficiently large to justify weighing them against the costs they impose on firms' victims?

We answer these quantitative questions by estimating a structural model, providing the first answers to these questions. We find that legalizing Texas two-step bankruptcies would increase harmful corporate negligence by 411%. Even more surprisingly, other potential reforms that protect firms' victims in bankruptcy can benefit both firms and consumers, increasing investment while reducing negligence.

To motivate our structural model, we begin by documenting three empirical facts about the interaction between bankruptcy and litigation. First, merging Compustat with a dataset covering major corporate lawsuits, we find that a firm is 10% more likely to be sued after a one-standard-deviation increase in its market leverage. Because this estimation controls for time-invariant firm characteristics, this finding suggests that litigation risk is a specific form of dynamic risk shifting, in which firms engage in "negligent" behavior, boosting profits and risking lawsuits, when an unusually high risk of default implies that creditors might bear the litigation costs in bankruptcy. Second, using additional data on corporate bankruptcies, we find that a firm is 28% more likely to file for bankruptcy after facing major litigation. This estimation controls for market leverage and firm fixed effects. This second fact suggests that even before the recent trend of Texas two steps, firms used bankruptcy to boost their negotiating position in litigation. Third, we find that bankruptcy was already devastating for plaintiffs, even before the J&J-style bankruptcy emerged. In a sample of bankrupt firms facing litigation, the average plaintiff receives only 19% of what they were owed, roughly half of the typical recovery on unsecured bonds.

Motivated by these facts, we model the corporate policies that lead to bankruptcy and litigation in a dynamic capital structure model. In each period, a firm sets its capital structure, issuing debt that is fairly priced given lenders' rational expectations. The firm endogenously chooses its dividend policy and the extent of its investment in two investment technologies. One technology represents traditional investment, growing the firm's assets and cash flows. The other technology represents a form of risk seeking that we call "negligence." Negligence increases the firm's short-run profits. However, negligence creates a risk of harming the firm's customers. If the firm's negligence harms consumers, then they sue the firm. We model litigation as a bargaining game under asymmetric information about the firm's trial outcome, which leads to either (i) the firm making an endogenous settlement payment to the consumer; (ii) the firm winning in trial and paying nothing; or (iii) the firm losing in trial, creating an exogenous litigation liability that the firm owes the consumer.

After litigation, the firm can choose to file for bankruptcy. Bankruptcy filings are motivated by either large trial losses or negative cash flow shocks, which arrive stochastically. Bankruptcy creates a deadweight loss for the firm, reducing ex-post lender recovery and increasing the firm's ex-ante cost of credit through rational debt pricing. However, as we explain in Section 2 and show empirically, bankruptcy has historically led to especially low recovery rates for litigation plaintiffs. Motivated by this institutional detail, we assume that bankruptcy allows a firm to disproportionately reduce its litigation obligations. Formally, a fraction of any litigation claims disappears and the remaining litigation claims share equal priority with financial lenders.

Our model solution features two important interactions among agents. First, negligence and investment choices introduce a value-destroying agency conflict between lenders and equity holders. When the firm issues debt, equity holders would like to commit to levels of negligence and investment that maximize firm value, thereby obtaining favorable debt pricing. However, equity holders cannot commit to future negligence and investment choices. In each period, they choose negligence given the existing debt level, and then choose new debt and investment simultaneously. Taking their debt level as given, equity holders choose higher negligence than would be ex-ante optimal because they do not fully internalize the potential litigation costs: if the firm faces litigation and files for bankruptcy, limited liability protects equity holders while the debt holders must share part of their recovery with litigants. Likewise, taking their debt level as given, equity holders choose a lower level of investment because they pay the upfront costs, while debt holders receive the resultant capital if the firm ends up in bankruptcy. Debt holders anticipate this behavior in their debt pricing. Thus, equity holders suffer ex-ante when they issue debt from their inability to commit to firm-value-maximizing levels of negligence and investment. These classic risk-shifting and debt-overhang problems worsen as the firm's leverage grows because bankruptcy becomes more likely. Thus, negligence rises with leverage and investment falls with leverage.

The second key interaction in our model arises between litigation plaintiffs and financial investors. When bankruptcy disproportionately reduces litigation plaintiff claims, equity holders engage in greater negligence. This result may seem counterintuitive because equity holders choose negligence levels and recover nothing in bankruptcy. However, two model mechanisms link negligence incentives to plaintiff recovery. First, because bankruptcy is an effective threat to harm plaintiffs, it reduces the plaintiffs' outside option in settlement negotiations, thereby reducing settlement payments for nonbankrupt firms and encouraging negligence. Second, because plaintiff haircuts (i.e., recovery reductions) improve lender recovery in bankruptcy, these haircuts reduce the cost of debt ex ante. As the cost of debt falls, equity holders choose higher leverage ratios, increasing the likelihood of high leverage states in which the excessive-negligence agency conflict worsens. Since these mechanisms link plaintiff recovery to negligence incentives, a policy reform that improves plaintiff recovery in bankruptcy incentivizes equity holders to be less negligent ex ante.

To quantify the importance of these model interactions, we estimate the model parameters. Our simulated method of moments (SMM) estimation uses comprehensive data on firm financing decisions from Compustat and litigation outcomes and bankruptcy filings from Audit Analytics. Our estimation jointly selects parameters to make model-implied moments match empirical counterparts, thus disciplining the model's key parameters. For example, the estimated parameters that match the first motivating fact imply a substantial risk-shifting incentive: negligence increases sharply with leverage, particularly for low-productivity firms approaching financial distress.

With the estimated model, we conduct counterfactual experiments to evaluate four policy regimes corresponding to recent legal debates and proposed reforms. Each counterfactual implements a different bankruptcy reform that modifies the treatment of litigation claims in bankruptcy. In each counterfactual, we re-solve the model using the estimated parameters to generate new equilibrium outcomes.

In our first counterfactual, we model a world in which the bankruptcy strategies used by J&J and Purdue are unambiguously legal. Formally, in this counterfactual exercise, we assume that firms can use a shell subsidiary's bankruptcy to reduce litigation claims without incurring the deadweight losses associated with bankruptcy. This assumption differs from our baseline model and the traditional bankruptcy process, in which a firm must file for bankruptcy and incur deadweight losses to reduce litigation claims. We show that legalizing these strategic bankruptcies would cause catastrophic moral hazard: average negligence increases 411 percent and lawsuit probability (i.e., the likelihood of consumer harm) rises from 17 to 71 percent. Leverage falls because firms no longer need high leverage to credibly threaten a bankruptcy and obtain favorable litigation settlements. Even low-leverage firms can use a shell-subsidiary bankruptcy to reduce litigation liability. As leverage falls, and the firm size distribution endogenously shifts toward high investment firms, investment rises modestly. However, the increase in investment is only two percentage points of capital, quite small relative to the massive increase in customer harm. Because investment rates rise two percentage points and the incidence of consumer harm rises 54 percentage points, these findings strongly support judicial skepticism toward the recent bankruptcy strategies of Purdue and J&J.

In a second counterfactual, we model a longstanding proposal from legal scholars (Painter, 1984) to grant litigation plaintiffs superpriority over financial creditors in bankruptcy. We still assume that bankruptcy can delay litigation and impose a haircut on plaintiffs' claims, but the post-haircut claim has first seniority in bankruptcy. In a third counterfactual, we model a proposal from Casey and Macey (2023) to ensure that litigants receive the same litigation outcome in bankruptcy that they would receive outside of bankruptcy. Formally, we set the litigation claim haircut to zero, while continuing to assume that litigants and lenders share equal recovery. Finally, in a fourth counterfactual that we call "comprehensive reform," we combine the second and third counterfactuals, granting litigation claims the highest priority in bankruptcy and eliminating the haircut.

Comprehensive reform dominates all alternatives. Negligence declines by 5.4 percent through the channels described above. In particular, lenders charge higher credit spreads because litigants take more value in bankruptcy, causing firms to choose lower leverage. The reduced leverage actually *increases* investment. Thus, improving the treatment of plaintiffs can simultaneously benefit consumers and improve firm investment. Victim recovery increases 221 percent, rising from 20 to 66 percent of claims. Remarkably, equity values increase 1.6 percent through a combination of (i) reduced agency conflicts with debt holders through higher investment and lower negligence and (ii) an endogenous shift in the firm distribution. Thus, comprehensive reform protecting plaintiffs in bankruptcy can benefit firms and victims.

Contribution to the literature. To our knowledge, we are the first to quantify how the treatment of corporate-negligence victims in bankruptcy impacts firm incentives. Our finding—that prioritizing victim recovery dramatically reduces negligence and potentially increases efficient investment—is a novel contribution to several literatures. First, we contribute to a law literature studying Texas two steps and other strategies used in bankruptcy to address litigation (Roe, 1984; Painter, 1984; Adler and Triantis, 2017; Francus, 2022, 2023; Foohey and Odinet, 2023; Casey and Macey, 2023). These papers are primarily descriptive based on notable cases. Differing from earlier work, we quantify how the availability of these bankruptcy strategies shapes incentives for nonbankrupt firms.

Second, we contribute to a literature studying how the design of the bankruptcy code shapes firms' incentives (François and Morellec, 2004; Vig, 2013; Rodano, Serrano-Velarde, and Tarantino, 2016; Ponticelli and Alencar, 2016; Bellon, 2021). Differing from this literature, we show how changing the treatment of litigation claims in bankruptcy impacts firm behavior.

Third, we extend the corporate finance literature on capital structure and risk-shifting by introducing endogenous operational decisions that create externalities on non-financial stakeholders. Classical theories emphasize asset substitution and underinvestment problems between equity and debt holders. We show that similar agency conflicts arise between inside claimants and outside claimants such as tort victims. Our paper builds on the corporate finance literature examining agency conflicts between equity holders and debt holders. Jensen and Meckling (1976) and Myers (1977) establish that leverage creates incentives for equity holders to shift risk to creditors through asset substitution and underinvestment. Leland (1998) extends this framework to dynamic settings, showing how agency costs affect optimal capital structure choices. Acharya and Viswanathan (2011) further explore how moral hazard incentives vary with leverage and liquidity. We contribute to this literature in three ways. First, empirically, we document novel facts linking leverage to litigation risk, litigation to bankruptcy filing, and show that tort plaintiffs recover substantially less than financial creditors in bankruptcy. Second, we build a dynamic structural model incorporating endogenous operational choices (negligence and investment), litigation as a bargaining game under asymmetric information, and differential treatment of legal versus financial claims in bankruptcy. Third, we estimate this model and conduct counterfactual policy experiments to quantify how bankruptcy law reforms affect ex-ante negligence incentives and ex-post victim compensation, providing the first structural evidence on policy debates surrounding strategic bankruptcies like the Texas two-step.

Methodologically, our paper belongs to the growing literature that employs structural model calibration or estimation to address corporate finance questions in capital investment, leverage, valuation, and bankruptcy (e.g., Hennessy and Whited (2005, 2007), Albuquerue and Wang (2008); Morellec, Nikolov, and Schurhoff, 2012; Gomes, Jermann, and Schmid (2016), Glover and Levine, 2017; Nikolov and Whited (2014), Dou et al. (2021), Nikolov, Schmid, and Steri (2021), Terry, 2023; Choi et al., 2025).[1] We contribute by providing the

[1]In particular, Liu (2022) estimates a model of bargaining between private equity owners and insurance companies over reimbursement rates that features a similar strategic bankruptcy threat. We differ by focusing on litigation claims, which have unique treatment in bankruptcy and arise from a different set of ex ante incentives.

first structural estimates linking bankruptcy law, capital structure decisions, and negligence incentives. Our approach allows us to quantify the magnitude of risk-shifting and debt-overhang mechanisms in the presence of tort liability, and to evaluate policy counterfactuals that vary the treatment of tort claims in bankruptcy, informing ongoing debates over strategic bankruptcies and proposed reforms to tort creditor protection.

The remainder of the paper proceeds as follows. Section 2 reviews the institutional background on tort claims in bankruptcy and recent legal developments. Section 3 describes our data sources and presents reduced-form evidence. Section 4 develops the structural model. Section 5 illustrates key properties of the model solution. Section 6 discusses estimation and identification. Section 7 analyzes counterfactual policies. Section 8 concludes.

2 Institutional Details

2.1 Litigation

Firms frequently face civil litigation. For example, when a firm produces a product that harms a customer, it can potentially face both: (i) criminal charges and (ii) civil "tort" litigation in which the harmed consumers seek monetary compensation for the damage caused by the firm. Since it is difficult to criminally prosecute firms, fewer than 100 firms face criminal charges in a typical year.[2] In contrast, a typical large firm faces over 60 civil lawsuits each year.[3] In our dataset covering major litigation against firms, 16% of firms face a major lawsuit in a typical year.

Civil lawsuits against firms are typically filed in federal district courts. A lawsuit begins when a plaintiff files a complaint. Some lawsuits are settled prior to trial: the plaintiff and defendant jointly agree on a monetary payment that the defendant firm gives to the plaintiff in exchange for the plaintiff agreeing to end the lawsuit. Other lawsuits end in a trial. In a trial, a jury is typically appointed, and the jury decides whether the evidence suggests that the plaintiff's complaint is valid. If a jury is appointed and the plaintiff wins, the jury also determines the trial award: the monetary amount that the defendant owes the plaintiff.

[2]See https://www.citizen.org/article/corporate-crime-prosecution-doldrums-low-2022/.

[3]See https://www.nortonrosefulbright.com/en/knowledge/publications/cc043475/2025-annual-litigation-trends-survey.

2.2 Chapter 11 Bankruptcy

Large firms use Chapter 11 bankruptcy for many purposes. In most instances, firms file for Chapter 11 when they cannot pay their debts but wish to continue operating. In a successful Chapter 11 reorganization, debt holders swap existing debt claims for new equity claims, allowing the firm to reduce leverage and continue operating. In other cases, Chapter 11 filings aim to facilitate an acquisition. Section 363 of the bankruptcy code allows a bankrupt firm to sell some or all of its assets without imposing successor liability on the acquiring firm: the acquirer is not liable for the bankrupt firm's earlier actions. Alternatively, some firms file for Chapter 11 to implement piecemeal liquidations in a more controlled process than Chapter 7 liquidation. Finally, some firms file for Chapter 11 to take actions that would be legally infeasible outside of bankruptcy. For example, Chapter 11 allows firms to break leases and other executory contracts on favorable terms and raise new secured financing that is senior to existing secured financing.

When a firm files for bankruptcy, the automatic stay halts all efforts by all creditors to seek repayment. Creditors must wait until the end of the bankruptcy to receive payments. Importantly, the automatic stay halts all litigation against the firm until the bankruptcy concludes. Likewise, plaintiffs who sued the firm prior to bankruptcy, and were owed money as a result of a settlement or trial award, must wait until the end of the bankruptcy to receive payment.

While firms continue to operate during bankruptcy, a bankruptcy substantially impacts the firm's operations. The CEO must ask the bankruptcy judge to approve any major decisions. Indirect bankruptcy costs, such as the costs of lost customers (Antill and Hunter, Forthcoming) and lost employees (Brown and Matsa, 2016; Graham et al., 2023), can be substantial.

For large firms with complicated corporate structures and many subsidiaries, it is common for some affiliates to file for bankruptcy while others avoid filing. The entities that remain outside of bankruptcy can continue their operations with minimal disruption. The automatic stay only applies to the entities that file for bankruptcy.

The bankruptcy concludes with a plan that specifies the payments and securities that each creditor receives. In a reorganization, these securities include the equity securities of the reorganized firm. The plan must be approved by at least one impaired class of creditors (i.e., a class receiving less than 100% recovery) and confirmed by a judge. The absolute priority rule requires that certain types of liabilities must be fully repaid before junior liabilities receive any compensation in a bankruptcy plan. For example, secured claims must be fully repaid before unsecured claims receive any value. General unsecured claims, such as litigation claims and unsecured trade credit claims, are typically the lowest priority claim to receive any compensation; the only lower priority claim is the equity holders' claim, which is typically wiped out.

2.3 The Traditional Treatment of Bankruptcy in Litigation

As we discuss in Section 2.4, firms have recently used aggressive strategies to stifle litigation through bankruptcy filings. While these aggressive strategies are new, firms have used other strategies to address litigation through bankruptcy filings for decades. We now describe the "status quo" of how firms facing litigation have traditionally benefited from bankruptcy.

Chapter 11 and pre-bankruptcy litigation. If a firm is facing a major lawsuit, several features of Chapter 11 give the firm a strong bargaining position. First, the automatic stay halts litigation during the bankruptcy. Thus, if the litigation is ongoing when the firm files for bankruptcy, the firm can make a stingy settlement offer and threaten to prolong the bankruptcy indefinitely unless the plaintiffs accept. Similarly, if the firm already owes money to the litigation plaintiffs because they won a trial award, the firm can postpone paying them indefinitely until the plaintiffs agree to a post-trial settlement as part of the bankruptcy. Moreover, litigation claims are general unsecured claims, which receive the lowest priority in bankruptcy. Jointly, these bankruptcy features dramatically reduce a plaintiff's likely recovery if they pursue litigation against a bankrupt firm. This weakens the plaintiff's outside option when deciding whether to settle with a bankrupt defendant. Moving backward in time, these bankruptcy features strengthen the bargaining position of a nonbankrupt firm facing litigation: it can threaten to file and extract a favorable settlement.

Importantly, while a bankruptcy filing benefits the defendant firm, the firm must file to realize the full benefits. Filing is costly, due to both direct legal fees and indirect costs. Thus, while firms can threaten to file for bankruptcy to extract a favorable settlement, the threat is weakened by the costs the firm would incur by filing.

Chapter 11 and future litigation for pre-bankruptcy actions. Mass tort lawsuits occur when a firm takes some action that harms many individuals, causing many simultaneous lawsuits. Such a firm often faces both current litigation and the threat of future litigation as more individuals discover that they were harmed by the firm. To see how bankruptcy benefits a firm in this situation, consider the impactful bankruptcy of Johns Manville in 1982. Johns Manville is a long-lived firm that manufactures insulation and roofing materials. In the years leading up to its bankruptcy, Johns Manville faced massive litigation related to its use of asbestos, a harmful chemical linked to cancer. In 1982, Johns Manville filed for bankruptcy. The filing was unusual in that Johns Manville was solvent at the time of filing; the value of its assets clearly exceeded its existing liabilities (Foohey and Odinet, 2023).[4] However, the manager of Johns Manville claimed that the firm was going to face substantial future litigation as more consumers were harmed by its products, and the firm would surely be insolvent once these lawsuits were filed and resolved.

The bankruptcy judge in Johns Manville's bankruptcy decided that the filing was valid and that the bankruptcy plan should compensate the future litigants. To achieve this goal, the judge created a new process for handling litigation in bankruptcy. He required the firm to appoint a "future claims representative," who would objectively estimate the expected value of the future litigation claims. The judge required the firm to fund a "trust" with cash and other assets, such that the trust's assets could be used to pay future litigants who discovered that they were harmed by the pre-bankruptcy asbestos use. And finally, the judge ruled that this trust was the *only* way that future litigants could receive compensation for their injuries. Specifically, he created a 'channeling injunction' such that any future lawsuits against Johns Manville or its affiliates would automatically be redirected to the trust. Further, he ordered a 'third-party release' that similarly protected any third parties whose actions were linked to the asbestos harm; lawsuits against them would be redirected to the trust (Foohey and Odinet, 2023). Johns Manville funded the trust, confirmed the plan, and emerged from bankruptcy; it is still operating today.

After the judge confirmed the Manville plan, many other firms facing similar situations filed for bankruptcy to implement the same solution. In 1994, Congress modified the bankruptcy code to formalize this bankruptcy procedure with a new Section 524(g) (Foohey

[4]While a firm may file for bankruptcy even if it is solvent, such filings are often deemed 'bad faith' filings and dismissed unless the firm can convince the judge that the bankruptcy is necessary (Foohey and Odinet, 2023).

and Odinet, 2023).[5] Section 524(g) allowed any company facing asbestos litigation to follow the structure of the Johns Manville plan.

While the Manville approach may seem fair at first glance, its outcome was not: the existing litigation claims were fully paid, but the trust was quickly depleted as further litigation ensued. Ultimately, the plaintiffs harmed by Manville only received 10% of what they were owed (Foohey and Odinet, 2023). Moreover, future bankruptcies filed by non-asbestos firms created a precedent that the Manville approach could be used for non-asbestos litigation.

In summary, bankruptcy provides strong protection for firms facing litigation, dramatically reducing the amount that plaintiffs suing the firm can recover. While this has been true for decades, the protection has come at a cost: the firm must file for bankruptcy, destroying value, in order to fully realize these benefits. While a nonbankrupt firm can threaten to file to improve its litigation bargaining position, the threat is less credible because of these costs that the firm would incur in bankruptcy.

2.4 Recent Developments in Bankruptcy and Litigation

Recently, firms have sought to use bankruptcy to reduce litigation obligations without fully realizing the costs of bankruptcy.

The Texas Two Step. Firms including J&J, Georgia-Pacific, 3M, CertainTeed, and Trane Technologies have attempted to reduce litigation liability with a "Texas Two Step." In the first step, a firm uses Texas state law to conduct a divisive merger. The firm splits into two firms: one holds the litigation liability and the other holds all of the valuable assets. In the second step, the "LiabilityCo" files for bankruptcy to halt the litigation, while the "AssetCo" continues operating as normal. While the two companies mutually indemnify one another, technically implying that AssetCo is responsible for the liabilities of LiabilityCo, this does little for the litigation plaintiffs: As LiabilityCo is the subject of the litigation, the plaintiffs must wait until the end of LiabilityCo's bankruptcy to seek any indemnification payment from AssetCo, and LiabilityCo has a strong incentive to stay in bankruptcy indefinitely (Francus, 2022).

As of now, most of these bankruptcies have been unsuccessful. J&J's LiabilityCo has filed

[5] See Taillard (2013) for a discussion of a related Supreme Court case.

for bankruptcy three times and each bankruptcy has been dismissed.[6] Notably, however, different appeals courts have ruled differently on this issue. Bestwall, the spinoff of Georgia-Pacific, has successfully remained in bankruptcy for seven years at the time of this writing.[7]

Purdue and other third-party releases. Purdue Pharma attempted a similar strategy. The Sackler family who owned Purdue received $11 billion in dividends by selling opioids for years. Thus, by the time that Purdue filed, Purdue was essentially a worthless "LiabilityCo" while the Sackler family were a human "AssetCo." In Purdue's bankruptcy plan, the Sackler family agreed to fund a trust to cover future opioid litigation in exchange for a third-party release: similar to the channeling injunction of Johns Manville, any future litigation against the Sackler family would be automatically redirected to the trust. While the Sacklers only injected $4.3 billion of their $11 billion profit, a majority of creditors approved the bankruptcy plan. However, the Supreme Court subsequently ruled that this particular form of third-party release was unconstitutional.[8] Notably, while the Supreme Court ended Purdue's particular strategy, there are still many other viable potential strategies to obtain third-party releases. Skadden Arps, one of the most prominent bankruptcy law firms, still views third-party releases as entirely viable after the Purdue decision.[9] Indeed, on November 14, 2025, a bankruptcy court approved a new Purdue bankrupty plan that allowed the owners to keep almost $4 billion of their profits.[10]

Asbestos prepackaged bankruptcies. Finally, Francus (2023) describes how firms have recently used 'asbestos prepackaged bankruptcies' to conduct an expedited bankruptcy that reduces litigants' ability to recover–as discussed above– without realizing the costs of a lengthy bankruptcy.

In summary, firms have recently tried to use bankruptcy to reduce litigation liabilities

[6]See https://www.baileyglasser.com/news-bg-wins-dismissal-of-Johnson-and-Johnson-third-bankruptcy.

[7]See https://www.reuters.com/legal/litigation/court-upholds-texas-two-step-bankruptcy-georgia-pacific-unit-mired-lawsuits-2025-08-01/.

[8]See https://www.reuters.com/legal/litigation/court-upholds-texas-two-step-bankruptcy-georgia-pacific-unit-mired-lawsuits-2025-08-01/

[9]See https://www.skadden.com/-/media/files/publications/2025/07/nonconsensual_thirdparty_releases_are_alive_and_well_in_chapter_15_despite_purdue.pdf?rev=31854a61fbef4000b41b9222dc81fdc2.

[10]See https://www.npr.org/2025/11/14/g-s1-97864/purdue-pharma-sackler-family-opioid-settlement.

without realizing the costs of bankruptcy. In our counterfactual exercises, we study the impact of moving from the current system–bankruptcy reduces litigation liabilities but creates indirect costs–to a counterfactual world in which these new legal strategies become common.

2.5 Related policy proposals

The recent developments summarized above have sparked outrage among policy makers. The Ending Corporate Bankruptcy Abuse Act of 2024 aims to end this practice of using bankruptcy to reduce litigation liabilities.[11] The SACKLER Act of 2021 had a similar goal.[12]

Even before these recent developments, legal scholars have argued that bankruptcy law should be reformed to protect litigation plaintiffs. For decades, some legal scholars have proposed that tort plaintiffs should be given the highest seniority in bankruptcy (Painter, 1984). Referring to this proposal, Adler and Triantis (2017) write "there is little academic opposition to this proposal and we have none here."

In (Casey and Macey, 2023), a prominent bankruptcy scholar argues that tort claimants should have the exclusive right to propose a reorganization plan. This is intended to realize a goal of ensuring that plaintiffs recover as much in bankruptcy as they would outside bankruptcy.

3 Motivating Empirical Facts

In this section, we describe our data and present three empirical facts that motivate our model.

3.1 Data

We conduct our analysis using two primary datasets. Our first dataset is the Compustat North America Fundamentals Annual database. We construct a firm-year panel of U.S. firms over the period 1970-2025. We exclude financial firms and regulated entities: SIC codes

[11]See `https://www.congress.gov/bill/118th-congress/senate-bill/4746`.
[12]See `https://www.congress.gov/bill/117th-congress/house-bill/2096`.

beginning in 6, 49, or 9. We follow standard practice to define common variables such as market leverage, Tobin's Q, and profitability. We provide details in Internet Appendix B.

Our second dataset is the Ideagen Audit Analytics (IAA) corporate and legal database. The IAA litigation database covers all material civil litigation filed against firms in federal courts. The IAA constructs this database using Securities and Exchange Commission (SEC) filings that firms must file whenever they face "material legal proceedings:" lawsuits that can have a significant impact on the company's financial health and stability.[13] IAA supplements these SEC filings using other sources, such as news articles. For each lawsuit, the dataset includes the filing date, a code describing the type of litigation, as well as information about the case outcome: whether it was settled or went to trial; the dollar amount requested by the plaintiff; and in some instances, the dollar amount of the settlement. Importantly, the dataset also includes identifiers such as SEC CIK codes, allowing us to merge lawsuits to defendant firms in Compustat.

In addition to the IAA litigation database, the IAA corporate and legal database includes a database of corporate bankruptcies. Similar to the litigation data, the IAA constructs this dataset by combining SEC filings regarding bankruptcy with other sources (e.g., the Public Access to Electronic Court Records PACER system) to identify when SEC registered firms file for bankruptcy. We merge the bankruptcy database with Compustat to identify which Compustat firms file for Chapter 11 bankruptcy. We observe bankruptcy filing dates.

The IAA data begins in 2000 and has sparse coverage before 2002. Accordingly, for all analyses involving bankruptcies or litigation, our sample period is 2002-2025.

Finally, merging Compustat with the IAA datasets, we identify firms that faced litigation in the year before they filed for bankruptcy. We obtain bankruptcy plans from PACER for a subset of these firms and manually read the plans to identify plaintiff recovery rates: the fraction of the plaintiffs' claim that they recover in the final bankruptcy plan. For each bankruptcy, we first identify all classes of claims that mention plaintiffs, using general unsecured claims if no classes mention plaintiffs. We then take an average of recovery rates across all of these classes, weighting by the amount of claims in each class.

[13]See https://www.ideagen.com/solutions/compliance/audit-intelligence/database-modules/litigation.

3.2 Motivating Facts

Using these datasets, we document three facts that motivate our model.

Firms face more litigation when highly levered: To begin, we document that firms face more lawsuits when their market leverage is unusually high. Specifically, for firm i in year t, we define Litigation$_{i,t}$ as an indicator equal to one if the firm faces a major lawsuit in year t. We define Market Leverage$_{i,t}$ as the firm's market leverage in year t. We regress Litigation$_{i,t}$ on Market Leverage$_{i,t}$, controlling for firm and year fixed effects.[14] Our regression includes 73,573 firm-year observations between 2002 and 2025. We cluster standard errors at the firm level.

Column 1 of Table 1 presents the results. We find a strong positive and statistically significant relationship between market leverage and litigation. A one-standard-deviation increase in market leverage (0.287) increases the probability of a firm being sued by 0.017 ($0.287 \times 0.0581 = 0.017$), which is roughly 10% of the sample mean of Litigation$_{i,t}$. While this relationship is not necessarily causal, the inclusion of firm fixed effects *suggests* that this pattern is explained by variation across time in a given firm's leverage, not variation across firms in characteristics that determine capital structure. It is important to note that this first fact aligns with results shown previously in Arena (2018).

Firms file for bankruptcy after major litigation: Next, we document that firms are more likely to file for bankruptcy after facing major litigation, even after controlling for market leverage. To our knowledge, this is a novel fact. For firm i in year t, we define Litigation in Last 3 Years$_{i,t}$ as an indicator equal to one if the firm faces a major lawsuit in the three years leading up to t. We define Bankruptcy$_{i,t}$ as an indicator equal to one if the firm files for bankruptcy between year t and year $t+1$. We regress Bankruptcy$_{i,t}$ on Litigation in Last 3 Years$_{i,t}$, controlling for market leverage, firm fixed effects, and year fixed effects.[15] We cluster standard errors at the firm level.

Column 2 of Table 1 presents the results. Unsurprisingly, firms are more likely to file for bankruptcy in years in which their market leverage is unusually high. More interestingly, we see that litigation substantially increases a firm's likelihood of filing for bankruptcy. If a firm faces litigation, its probability of filing for bankruptcy increases by 24 basis points. The

[14] Other than these fixed effects, there are no other controls.

[15] Other than these fixed effects and market leverage, there are no other controls.

relationship is strongly statistically significant. While this absolute magnitude may seem small, the unconditional sample mean of $\text{Bankruptcy}_{i,t}$ is roughly 1%: approximately 1% of Compustat firms file for bankruptcy in a given year. Thus, litigation increases a firm's probability of filing for bankruptcy by roughly 24% of the sample mean.

Through the lens of our model, these findings suggest that firms engage in negligence–profitable behavior that risks harming consumers and causing lawsuits–when their leverage is high. This relationship is a form of risk shifting: firms do not fully internalize the costs of negligence when their leverage is high, because high-leverage firms file for bankruptcy after litigation, forcing creditors to bear the losses.

Plaintiff recovery in bankruptcy is extremely low: Finally, consistent with the discussion in Section 2, we find that average plaintiff recovery is extremely low in Chapter 11 bankruptcy. Again, to our knowledge, this is a novel fact. Measuring plaintiff recovery rates as described in Section 3.1 and averaging across bankruptcies, we find that the average plaintiff recovery rate is 19%: plaintiffs receive 19% of what they were owed at the time of filing. For comparison, according to Moody's, the average recovery for defaulted senior unsecured bonds over a similar time period is 36%, almost twice as high.[16] Thus, even before the recent aggressive strategies used by firms such as J&J, bankruptcy has been effective at reducing payments to plaintiffs.

4 Model

We develop a dynamic structural model where firms jointly optimize capital structure, investment, negligence, and bankruptcy timing. The model features three key interactions. First, firms choose negligence levels that increase profits but create litigation risk. Second, leverage choices affect the incentive to be negligent because limited liability allows firms to shift litigation costs to creditors through bankruptcy. Third, bankruptcy law parameters governing tort claim treatment directly affect both ex-ante negligence choices and ex-post victim compensation.

The model solution reveals three core mechanisms. Highly leveraged firms engage in excessive negligence because they can externalize litigation costs onto creditors and

[16] See https://www.moodys.com/sites/products/defaultresearch/2002300000424883.pdf.

tort victims through bankruptcy's reduced recovery. This risk-shifting intensifies for low-productivity firms with minimal continuation value. While creditors rationally price this behavior through higher yields, market discipline alone cannot eliminate the externality imposed on tort victims. These mechanisms form the foundation for our counterfactual policy analysis, where we evaluate how alternative bankruptcy rules affect firm incentives.

Agents. We estimate a dynamic model with three agents: an optimizing firm, its financial lenders, and a potential plaintiff (i.e., the firm's customers).

Timing. Time is discrete and indexed by $t = 0, 1, 2, 3....$ All agents share a common discount rate $\beta = (1+r)^{-1}$. Each period t, we assume the following timing for events:

1. The firm observes its productivity z_t, capital stock k_t, and debt value b_t. It chooses its level of *negligence* n_t, which creates a profit for the firm and a risk of harming the plaintiff.

2. Everyone observes whether the plaintiff is harmed. If the plaintiff is harmed, they have a claim worth L they can receive if they win in trial against the firm. The plaintiff makes a take-it-or-leave-it settlement offer S to the firm.

3. The firm privately observes its probability ω of winning in trial and decides whether to settle (pay S) or go to trial (pay L and incur a deadweight loss ζL with probability $1-\omega$, pay 0 otherwise).

4. Depending on the litigation outcome, the firm decides whether to file for bankruptcy.

5. If there is no bankruptcy, the firm picks its debt b_{t+1} and capital k_{t+1} for the next period and period t ends.

The detailed timeline of the model is illustrated in Figure 1.

Investment. At the end of each period t, the firm chooses its capital k_{t+1} for the following period. We assume that capital depreciates at an exogenous rate δ. Therefore, in the absence of any investment, the firm's capital is $k_{t+1} = (1-\delta)k_t$. The law of motion for k_t is given by:

$$k_{t+1} = (1-\delta)k_t + i_t, \tag{1}$$

where i_t is the capital investment at time t and δ is the capital depreciation rate.

A firm making investment i_t incurs a quadratic capital adjustment cost:

$$\Phi(i_t, k_t) \equiv \phi \frac{i_t^2}{k_t}, \tag{2}$$

where ϕ denotes the capital adjustment cost parameter.

Financing. We follow Gomes, Jermann, and Schmid (2016) to model long-term debt. The firm enters period t owing debt with face value b_t. The firm owes a coupon cb_t, where c is an exogenous parameter: debt always has a fixed coupon but new debt is issued at a discount to face value that reflects credit risk. Additionally, an exogenous fraction λ of the debt matures each period, costing the firm λb_t.

If the firm does not default, it picks new debt b_{t+1} for the following period. If the firm sets $b_{t+1} = (1-\lambda)b_t$, then it simply keeps its existing debt and receives nothing. If it issues additional debt $\Delta b \equiv b_{t+1} - (1-\lambda)b_t > 0$, it issues at a discount and receives $\Delta b \times q(z_t, k_{t+1}, b_{t+1})$ for an endogenous discount q that we describe below.

The firm can fund losses or repay debt by issuing equity. If $\Delta b < 0$, the firm buys back debt on the market by paying $\Delta b \times q(z_t, k_{t+1}, b_{t+1})$. Likewise, the firm can pay a dividend at any time, which is subject to a tax rate τ_d.

Negligence and Lawsuits. Negligence is profitable (i.e., the firm cuts corners, making a product unsafe). A negligence choice n_t leads to profit $\Pi(n_t) = \pi(1 - \exp(-n_t))$ for a parameter $\pi > 0$. $\Pi(n_t)$ is an increasing function of n_t with diminishing returns. Negligence creates a risk $P(n_t) = 1 - \exp(-\iota n_t)$ of harming the potential plaintiff (i.e., the customer is hurt by an unsafe product), where $\iota > 0$ is the harm risk sensitivity parameter controlling the slope of harm probability with respect to negligence. If there is harm, the size of the harm L_t is drawn from a log-normal distribution with parameters μ (location) and σ (scale).

The defendant's probability of winning in trial follows a uniform distribution $\omega \sim [\omega_L, \omega_H]$ for parameters ω_L, ω_H. To create gains from trade and the possibility of settlement, we assume the defendant incurs a reputation cost ζ for each dollar paid to the plaintiff in trial.

Cashflows and taxes. The firm's profitability z_t follows a log AR(1) process:

$$\ln(z_{t+1}) = \rho \ln(z_t) + \sigma_\epsilon \epsilon_{t+1}. \tag{3}$$

We estimate the parameters ρ, σ_ϵ and ϵ_{t+1} is an i.i.d standard normal random variable. The firm faces a constant corporate tax rate τ_c. It receives an interest tax shield $\tau_c c b_t$ on its debt coupon, deducts depreciation $\tau_c \delta k_t$, and pays taxes $\tau_c(z_t k_t^\theta + \Pi(n_t) - \tilde{O}^F)$ on its profits at the end of the period, where θ is a parameter that we estimate and $\tilde{O}^F$ is the firm's final litigation obligation.

Equity holders' problem. Let $J_1(z_{t+1}, k_{t+1}, b_{t+1})$ denote the continuation value for equity holders in part 1 of period $t+1$ (after observing z_{t+1}). Then $J_5(z_t, k_t, b_t, \tilde{O}^F, n_t)$, the equity continuation value in part 5 of period t given the firm has litigation obligation $\tilde{O}^F$, is determined by the following optimal debt and capital choice:

$$\begin{aligned} J_5(z_t, k_t, b_t, \tilde{O}^F, n_t) = \max_{k_{t+1}, b_{t+1}} & \left\{ (1 - \tau_d \mathbb{1}_{e_t \geq 0} + \gamma_e \mathbb{1}_{e_t < 0}) \cdot e_t - \gamma_{e0} k_t \mathbb{1}_{e_t<0} + \beta \mathbb{E}_{z_{t+1}|z_t} [J_1(z_{t+1}, k_{t+1}, b_{t+1})] \right\} \\ \text{s.t.} \quad e_t = {} & (1 - \tau_c) \left(z_t k_t^\theta + \Pi(n_t) - \tilde{O}^F \right) + (1 - \delta) k_t - k_{t+1} - \Phi(k_t, k_{t+1}) + \tau_c \delta k_t \\ & + q(z_t, k_{t+1}, b_{t+1})(b_{t+1} - (1 - \lambda) b_t) + \tau_c c b_t - (c + \lambda) b_t - f \end{aligned} \tag{4}$$

where e_t represents the dividend payout when $e_t > 0$, or equity issuance when $e_t < 0$; τ_c denotes the corporate income tax rate, τ_d denotes the dividend tax rate, and f is the fixed operating cost. The firm can issue equity at a linear cost γ_e and a fixed cost, $\gamma_{e0} k_t$, which is independent of the size of the issuance. The equity issuance costs reflect underwriting fees and adverse selection costs. To keep the model tractable, we do not model the costs of external equity as the outcome of an asymmetric information problem. Following Cooley and Quadrini (2001) and Gomes and Schmid (2021), we capture adverse selection costs and underwriting fees in a reduced form using a linear equity issuance cost, γ_e, multiplied by the dollar amount of equity issuance. The fixed equity issuance cost γ_{e0} is introduced to better capture additional characteristics of seasoned equity offerings (SEOs), such as their frequency and lumpiness.

In part 4 of period t, equity holders decide whether to file for bankruptcy, receiving a continuation value of zero, or move to part 5 of period t. This leads to the continuation value

$$J_4(z_t,k_t,b_t,\tilde{O}^F,n_t) = \max\Big(0\,,\; J_5(z_t,k_t,b_t,\tilde{O}^F,n_t)\Big)\,. \tag{5}$$

We define an indicator equal to one if the firm files for bankruptcy as follows:

$$d(z_t,k_t,b_t,\tilde{O}^F,n_t) = \mathbb{1}\left[J_4(z_t,k_t,b_t,\tilde{O}^F,n_t) = 0\right] \tag{6}$$

Here, $d(z_t,k_t,b_t,\tilde{O}^F,n_t) = 1$ indicates that equity holders choose to file for bankruptcy at period t; otherwise, $d(z_t,k_t,b_t,\tilde{O}^F,n_t) = 0$.

Given the realization of S, L, and ω, the firm's decision to settle or go to trial determines its value in part 3 of period t:

$$\begin{aligned} J_3(z_t,k_t,b_t,S,L,n_t,\omega) = \max\Big[& J_4(z_t,k_t,b_t,S,n_t)\,, \\ & \omega J_4(z_t,k_t,b_t,0,n_t) + (1-\omega) J_4(z_t,k_t,b_t,L(1+\zeta),n_t)\Big]. \end{aligned} \tag{7}$$

In other words, the firm's litigation obligation $\tilde{O}^F$ will either be equal to 0, S, or $L(1+\zeta)$, depending on the litigation outcome. Rearranging, the firm settles if and only if

$$\begin{aligned} \omega \le \omega_*(S) \equiv & \Big[J_4(z_t,k_t,b_t,S,n_t) - J_4(z_t,k_t,b_t,L(1+\zeta),n_t)\Big] \\ & \times \Big[J_4(z_t,k_t,b_t,0,n_t) - J_4(z_t,k_t,b_t,L(1+\zeta),n_t)\Big]^{-1}. \end{aligned} \tag{8}$$

In part 2 of period t, the plaintiff chooses a settlement offer S, which we describe below. In part 1 of period t, the firm chooses negligence n_t to optimize its future expected profit, taking an expectation over potential plaintiff harms:

$$\begin{aligned} J_1(z_t,k_t,b_t) = \max_{n_t}\Big[& (1-P(n_t)) J_4(z_t,k_t,b_t,0,n_t) \\ & + P(n_t)\mathbb{E}_{L,\omega}[J_3(z_t,k_t,b_t,S(z_t,k_t,b_t,L,n_t),L,n_t,\omega)]\Big], \end{aligned} \tag{9}$$

where $P(n_t)$ is the probability that the plaintiff is harmed, which is defined above, and $S(z_t,k_t,b_t,L,n_t)$ is the optimal plaintiff offer given a claim of size L, which we describe below.

Plaintiff's problem. The plaintiff observes L and chooses a settlement offer S to maximize

$$\begin{aligned}
&\max_S \frac{\omega_*(S)-\omega_L}{\omega_H-\omega_L}\times\Big[S\cdot\Big(1-d(z_t,k_t,b_t,S,n_t)\Big)\\
&+\mathscr{R}(z_t,k_t,b_t,S)\cdot d(z_t,k_t,b_t,S,n_t)\Big]\\
&+L\cdot\Big[1-d(z_t,k_t,b_t,L(1+\zeta),n_t)\Big]\cdot\mathbb{E}[(1-\omega)\mathbb{1}(\omega>\omega_*(S))]\\
&+\mathscr{R}(z_t,k_t,b_t,L)\cdot d(z_t,k_t,b_t,L(1+\zeta),n_t)\cdot\mathbb{E}[(1-\omega)\mathbb{1}(\omega>\omega_*(S))].
\end{aligned}\tag{10}$$

Recall $\omega_*(S)$ is the firm's cutoff probability for accepting a settlement offer S. Therefore, the plaintiff's offer is accepted with probability $\mathbb{P}(\omega\le\omega_*(S))$. The first line captures the plaintiff's payoff if the settlement offer is accepted and the firm does not file for bankruptcy. The second line captures the payoff if the settlement is accepted and the firm files for bankruptcy. The third line captures the payoff to the plaintiff if (i) the lawsuit goes to trial, (ii) the plaintiff wins, and (iii) the firm does not default. The fourth line captures the plaintiff's recovery $\mathscr{R}(z_t,k_t,b_t,L)$ if the plaintiff wins in trial and the firm files for bankruptcy, which we describe below.

Litigation and bankruptcy. As a benchmark, we can assume all debt is unsecured and there are no complex bankruptcy litigation strategies (i.e., the Purdue strategy or the Texas Two Step). In this case, litigation debt dilutes financial debt and vice versa. We assume that in bankruptcy, the firm's debt falls to zero, and a fraction ξ of assets are destroyed. Therefore, the total recovery is $J_1(z_t,(1-\xi)(1-\delta)k_t,0)$, which represents the going-concern value of the reorganized firm that emerges from bankruptcy. This is split equally between financial lenders and litigants. However, we also assume that bankruptcy enables the firm to erase a fraction κ of litigation obligations. This is a reduced form way of modeling the fact that bankruptcy can postpone litigation indefinitely, which incentivizes litigants to reach a new reduced settlement to receive payment faster (Section 2). Therefore, litigants recover

$$\mathscr{R}(z_t,k_t,b_t,\tilde{O}^P)=min\Big[\tilde{O}^P(1-\kappa),\frac{\tilde{O}^P(1-\kappa)}{\tilde{O}^P(1-\kappa)+(1-\lambda)b_t}J_1(z_t,(1-\xi)(1-\delta)k_t,0)\Big].\tag{11}$$

In this equation, $\tilde{O}^P$ is S if the firm accepted a settlement offer S or it is L if the firm lost a trial over a claim L. Financial lenders recover

$$\mathscr{D}(z_t,k_t,b_t,\tilde{O}^P) = min\Big[b_t, max\Big(0, J_1(z_t,(1-\xi)(1-\delta)k_t,0) - \mathscr{R}(z_t,k_t,b_t,\tilde{O}^P)\Big)\Big]. \quad (12)$$

Finally, if there is any value left over, then it goes to pay legal fees or other stakeholders. Equity holders recover nothing.

Debt pricing. In part 5 of period t, the firm issues debt. Lenders anticipate the firm's strategy next period. Let $\tilde{O}^F$ denote the realized litigation obligation of the firm and let $\tilde{O}^P$ denote the realized litigation claim for the plaintiff (which excludes the deadweight loss ζ). Then the debt pricing function q sets the lender's expected payoff in period $t+1$ equal to its payment in period t:

$$\begin{aligned} q(z_t,k_{t+1},b_{t+1})b_{t+1} = \frac{1}{1+r}\mathbb{E}_{z_{t+1},\omega,L}\Big[& d(z_{t+1},k_{t+1},b_{t+1},\tilde{O}^F,n_{t+1}) \times \mathscr{D}(z_{t+1},k_{t+1},b_{t+1},\tilde{O}^P) \\ +\Big[1-d(z_{t+1},k_{t+1},b_{t+1},\tilde{O}^F,n_{t+1})\Big] & \times \big(c+\lambda+(1-\lambda)q(z_{t+1},k_{t+2},b_{t+2})\big)\, b_{t+1}\Big]. \end{aligned} \quad (13)$$

where $\tilde{O}^F = S$ if the firm accepts the settlement offer, 0 if it declines the offer and wins at trial, and $(1+\zeta)L$ if it loses at trial. Similarly, $\tilde{O}^P = S$ if the firm accepts the settlement offer, 0 if it declines the offer and wins at trial, and L if it loses at trial.

In words, the lender observes the current state z_t and the firm's choices for next period k_{t+1}, b_{t+1}. The lender pays out the left side of the above equation. Next period, if the firm defaults, the lender gets their default recovery equation (12). If the firm does not default, the lender collects its coupon and maturing principal $(c+\lambda)b_{t+1}$. Additionally, the lender can sell the remaining fraction $(1-\lambda)$ of debt at the new market price.

5 Model Solution

We solve the model using value function iteration on discretized state spaces for capital k, debt b, and productivity z. The solution algorithm follows the computational approach detailed in the appendix, iterating between equity value functions J_1, J_4, J_5, plaintiff settlement offers S_*, firm negligence choices n_*, and debt pricing functions q until convergence. This section characterizes the key equilibrium policy functions and their economic implications. For simplicity, we demonstrate these model properties using the model parameters that we estimate in Section 6. However, these model properties are more general and hold for other parameters as well.

5.1 Capital and Debt Policies

We begin by examining the firm's standard financing and investment decisions before turning to the novel interaction between leverage and negligence.

Capital accumulation. Panel (a) of Figure 2 shows that next-period capital k_{t+1} is an increasing, concave function of current capital k_t for both low-productivity (solid line, z_{low}) and high-productivity (dotted line, z_{high}) firms. High-productivity firms invest substantially more than low-productivity firms at every capital level, as evidenced by the dotted line lying consistently well above the solid line. The concavity in both policy functions reflects the interaction of adjustment costs and financing constraints. The flattening at higher capital levels suggests diminishing returns to scale in capital accumulation, consistent with the quadratic adjustment cost specification and the decreasing marginal product of capital in production.

Debt issuance. Panel (b) of Figure 2 demonstrates that next-period debt b_{t+1} increases with both current capital k_t and productivity z_t. Larger and more productive firms can sustain higher debt levels for two reinforcing channels. First, higher productivity generates greater expected cash flows $(1-\tau_c)z_t k_t^{\theta}$ to service debt obligations, reducing default risk and allowing creditors to extend more credit. Second, larger capital stocks provide greater collateral value in bankruptcy through the liquidation value $(1-\xi)(1-\delta)k_t$, further enhancing debt capacity. The blue dotted line ($z = z_{high}$) lies consistently above the red solid line ($z = z_{low}$), confirming that more productive firms have higher debt capacity.

5.2 Negligence and Risk-Shifting

Having established the basic financing patterns, we now turn to the model's central feature: the strategic choice of negligence and its interaction with leverage. The negligence policy function reveals strong evidence of risk-shifting behavior consistent with the agency costs of debt.

The leverage-negligence relationship. Figure 3a reveals one of the model's central mechanisms: negligence n_t rises sharply with leverage b_t/k_t, with the relationship exhibiting stark heterogeneity across productivity levels. At low leverage ratios, firms across all productivity levels choose zero negligence, indicating that well-capitalized firms internalize litigation costs and avoid risky behavior.

However, as leverage increases beyond a critical threshold, the three productivity groups diverge dramatically. Low-productivity firms (solid line, z_{low}) exhibit the most extreme risk-shifting behavior, with negligence jumping sharply from zero at a moderate leverage ratio and then rising smoothly to high levels as leverage approaches unity. Medium-productivity firms (dashed line, z_{median}) display similar but delayed risk-shifting, with negligence remaining at zero until a higher leverage threshold before rising steeply. High-productivity firms (dotted line, z_{high}) show virtually no negligence throughout the entire leverage range, remaining at zero even at the highest leverage levels.

This risk-shifting behavior arises because highly leveraged firms effectively transfer litigation costs to creditors through bankruptcy. When equity holders choose negligence n_t, they capture the immediate profit $\Pi(n_t) = \pi(1-\exp(-n_t))$ but face only partial liability for resulting lawsuits. If a lawsuit occurs and pushes the firm into bankruptcy, the litigation claim is reduced by factor $(1-\kappa)$ through the bankruptcy haircut, and the remaining obligation is shared with creditors according to the pari passu rule in equation (11). This wedge between private benefits and social costs intensifies as leverage rises and equity value approaches zero. Once leverage crosses the threshold where expected default probability becomes sufficiently high, the value of risk-shifting jumps, leading to an substantial increase in negligence.

The productivity-negligence relationship. Figure 3b shows that negligence n_t is a sharply decreasing function of productivity z_t. At very low productivity levels, firms choose maximum negligence. As productivity increases, negligence declines rapidly and steeply, eventually approaching zero at moderate productivity levels. High-productivity firms effectively choose zero negligence regardless of leverage or debt levels.

This pattern emerges because productive firms internalize a larger share of litigation costs. While all firms earn the same profit from negligence $\Pi(n_t) = \pi(1-\exp(-n_t))$, high-productivity firms face higher expected litigation costs because their stronger cash flows make default less likely, forcing them to pay settlements or trial damages in full rather than shifting costs to creditors through bankruptcy. In contrast, firms with low productivity have minimal continuation value, making default highly likely. These distressed firms anticipate escaping much of their litigation liability through the bankruptcy haircut $(1-\kappa)$ and pari passu sharing with creditors, leading them to "gamble for resurrection" through excessive negligence.

The sharp, convex decline in negligence captures the nonlinear relationship between productivity and default probability. As productivity rises, the expected cost of litigation, even accounting for potential cost-shifting through bankruptcy, increases rapidly, eventually dominating the immediate profit from negligence and driving optimal negligence to zero.

5.3 Debt Pricing and Default

The firm's risk-shifting behavior does not go unnoticed by creditors. The equilibrium debt pricing function reflects lenders' rational expectations about both default risk and endogenous litigation exposure arising from the negligence choice.

Bond pricing and credit spreads. Figure 4 displays the endogenous bond pricing function $q(z_t, k_{t+1}, b_{t+1})$ which incorporates lenders' rational expectations about future default and litigation outcomes. Panel (a) shows that for a given level of productivity, larger firms (dotted line, k_{high}) enjoy substantially higher bond prices than smaller firms (solid line, k_{low}) across all debt levels. The bond price starts near the risk-free level $\beta = 1/(1+r) \approx 0.975$ at low debt levels and declines as b increases. This downward slope reflects rising credit spreads: the yield $1/q - 1$ increases with leverage as default probability rises.

Consistent with the debt capacity results, panel (a) of Figure 4 shows that firms with larger capital stocks (green dashed line, $k = k_{high}$) enjoy higher bond prices than smaller firms (blue solid line, $k = k_{low}$) at every debt level. Similarly, panel (b) confirms that high-productivity firms ($z = z_{high}$) face lower credit spreads than distressed firms ($z = z_{low}$). The kink in the red solid line in panel (b) indicates a sharp increase in default probability for low-productivity firms at moderate debt levels, consistent with the negligence spike documented above.

Notably, the bond pricing function accounts not only for direct default risk but also for endogenous litigation risk through the negligence choice $n_t(z, k, b)$. Lenders anticipate that highly leveraged borrowers will engage in excessive risk-shifting, increasing the probability of costly litigation that dilutes creditor claims.

Default region. Figure 5 maps the optimal default decision $d(z_t, k_t, b_t, \tilde{O}^F, n_t)$ across the state space of debt b_t and capital k_t for low-productivity firms facing high versus low legal liability $\tilde{O}^F$. The shaded regions indicate states where firms optimally choose bankruptcy.

The left panel shows the default region under high legal liability (large lawsuit realization). The shaded area covers a substantial portion of the state space, indicating widespread default when firms face large litigation obligations. The default region exhibits a characteristic pattern: at very low capital levels, firms default across almost all debt levels, while at higher capital levels, default occurs only at sufficiently high debt. The default boundary slopes upward, showing that larger firms can sustain higher absolute debt levels before defaulting, though the relationship is roughly proportional—suggesting that leverage (debt-to-capital ratio) rather than absolute debt determines default.

The stark contrast in the right panel—which shows a much smaller default region under low legal liability—illustrates the critical role of litigation shocks in triggering financial distress. When litigation obligations are minimal, the default region shrinks dramatically, concentrated primarily at very low capital levels across various debt levels, with few defaults for moderate and large firms regardless of their debt burden.

The comparison between the two panels reveals how lawsuit risk creates fragility even for seemingly stable firms. The expansion of the default region in the left panel shows that litigation exposure can push moderately capitalized firms with moderate debt into bankruptcy, even when these same firms would survive comfortably absent the lawsuit shock. The shaded region extends to much higher capital levels and lower debt levels in the high-liability case, indicating that litigation risk alters the solvency landscape.

This result aligns with the empirical patterns documented in Table 1 (column 2), where lawsuit incidence significantly predicts subsequent bankruptcy filings. The model generates this pattern endogenously: firms choose negligence anticipating potential lawsuits, and when large lawsuits materialize, they can trigger default even for firms that appeared financially stable ex ante.

5.4 Mechanisms and Externalities

The solution reveals three key mechanisms that drive our counterfactual policy analysis. First, highly leveraged firms engage in excessive negligence because limited liability allows them to shift litigation costs to creditors and tort victims through bankruptcy. When equity holders choose negligence n_t, they capture the immediate profit $\Pi(n_t)$ but face only partial liability for resulting lawsuits if default occurs. The bankruptcy haircut $(1-\kappa)$ reduces litigation claims, and the pari passu sharing rule further dilutes these obligations among multiple claimants. This wedge between private benefits and social costs grows larger as leverage increases and default probability rises, leading highly leveraged firms to engage in excessive risk-shifting.

Second, this risk-shifting behavior is most pronounced for low-productivity firms with little continuation value. As Figure 3b demonstrates, firms below a critical productivity threshold choose substantial negligence, while high-productivity firms choose essentially zero negligence regardless of leverage. This sorting pattern arises because productive firms internalize a larger share of litigation costs—their strong cash flows make default unlikely, forcing them to pay settlements in full. In contrast, distressed firms with low productivity anticipate default with high probability and therefore "gamble for resurrection" through negligent behavior, knowing they will escape much of the liability through bankruptcy.

Third, creditors rationally price this moral hazard by charging higher spreads to risky borrowers, but market discipline alone cannot eliminate the externality imposed on tort victims. Creditors internalize only the dilution of their own recovery through pari passu sharing, not the full social cost borne by victims who receive reduced compensation due to the bankruptcy haircut $(1-\kappa)$. Limited liability creates an irreducible wedge: equity holders capture the profit $\Pi(n_t)$ while shifting litigation costs to others in default states. The fact that distressed firms choose excessive negligence in equilibrium demonstrates that market pricing alone cannot deter risk-shifting.

Unlike creditors who charge risk-adjusted spreads, potential tort victims cannot demand ex ante compensation for bearing litigation risk. Victims do not know they will be harmed when they interact with the firm and cannot negotiate the exact protective terms at that stage. By the time claims arise, the firm may lack sufficient assets to compensate them. This combination of limited liability and victims' inability to contract for risk compensation creates an externality that persists even under perfect credit market discipline.

These mechanisms—leverage-induced risk-shifting, heterogeneous negligence across firm types, and the limits of market discipline in protecting victims—motivate our counterfactual analysis of bankruptcy reform. In the next section, we use the estimated model to evaluate how alternative bankruptcy rules would affect firms' negligence incentives, credit market outcomes, and different stakeholders.

6 Estimation and Identification

Our estimation strategy combines a calibration of standard parameters with a simulated method of moments (SMM) estimation to identify the key structural parameters governing firm behavior, litigation dynamics, and bankruptcy outcomes. We jointly estimate these parameters by minimizing the distance between model-implied moments and their empirical counterparts from Compustat and Ideagen Audit Analytics (IAA).

6.1 Data

As discussed in Section 3.1, we merge Compustat and IAA to construct a firm-year panel covering firm balance sheets and income statements, litigation events, and Chapter 11 bankruptcy filings. Using this dataset, we calculate moments to inform our model parameters. Our first set of moments relate to standard Compustat variables. We average across all firms and years to calculate sample means of the following variables: (i) market leverage; (ii) investment as a fraction of capital; (iii) common equity issuance as a fraction of assets; (iv) an indicator for any common equity issuance; (v) profitability; (vi) Tobin's Q; and (vii) income growth. Following the literature (Hennessy and Whited, 2007), we estimate the serial correlation of profitability within a given firm and the within-firm variance of profitability. We also estimate the variance of investment.

Our second set of moments relates to the facts documented in Section 3. As discussed in that section, we calculate the sample mean of $\text{Bankruptcy}_{i,t}$ and $\text{Litigation}_{i,t}$, along with the regression coefficients from Table 1. Additionally, we calculate the average plaintiff recovery rate in bankruptcy, using bankruptcy plans from PACER.

Our third set of moments relates to litigation outcomes. We construct a lawsuit-level dataset using the lawsuits in IAA that target a Compustat firm. We calculate the fraction of these lawsuits that are settled. We also calculate the fraction of lawsuits in which the defendant wins, conditional on the lawsuit ending in trial. Finally, we use monetary settlement and requested claim amounts to calculate: (i) the average settlement amount, normalized by the defendants' assets; (ii) the standard deviation of the settlement amount, normalized by the defendants' assets; (iii) the average requested claim amount, normalized by the defendants' assets; (iv) the standard deviation of the requested claim amount, normalized by the defendants' assets.

We present the estimated values of these moments in Table 3. We provide details on the calculation of these moments in Appendix B.

6.2 Calibrated Parameters

We start with parameters that are standard in the literature. The discount factor β is set to match an annual risk-free rate of 3%. The maturity rate λ is set to match the average maturity of bonds in the Fixed Income Securities Database (FISD) issued by firms in our Compustat sample over the period 1970-2025. The coupon rate c is set to $(r+\lambda)/(1+r)-\lambda$, so that the price of default-risk-free debt is equal to $1/(1+r)$. The corporate tax rate, τ_c, is set to 35%; the dividend tax rate, τ_d, is set to 15%.

6.3 Estimated Parameters

Using SMM, we estimate the remaining 17 structural parameters: the production technology parameters (θ, ρ, σ_ϵ, δ), financing friction parameters (ϕ, γ_{e0}, γ_e, f), litigation parameters (μ, σ, ω_L, ω_H, ζ, ι, π), and bankruptcy parameters (κ, ξ). To identify these parameters, we match 21 empirical moments, which we described in Section 6.1 and list in Table 3. Our identification strategy aims to make the model fit the data as closely as possible. Since we estimate these parameters in one joint SMM system, the model-implied value of each moment depends jointly on all parameters in the estimation. Nonetheless, as we explain below, some moments are particularly sensitive to certain parameters. This sensitivity implies that certain moments are particularly informative in identifying certain parameters. In the following discussion, for each parameter, we explain which moments are particularly informative in identifying the parameter.

6.3.1 Production and Capital Structure Parameters

We identify the production technology and financing frictions using standard moments from Compustat. While each moment technically depends on all parameters through the model solution, certain moments are particularly sensitive to specific parameters.

Returns to scale, θ, and fixed operating cost, f: The curvature of the production function θ and the fixed operating cost are identified jointly by average profitability (measured as income over assets), firm valuation (Tobin's Q), and the bankruptcy filing rate. The returns to scale parameter θ determines the productivity of capital, affecting both current profits through the production function and the present value of future cash flows. Lower θ implies stronger diminishing returns to capital, reducing both current profitability and firm Tobin's Q. The fixed operating cost f represents resources consumed in each period that reduce net profitability and firm valuation. Higher f directly lowers average profitability and Tobin's Q. Additionally, f affects the bankruptcy filing rate: firms with higher fixed costs are more likely to experience negative cash flows during adverse shocks, making default more likely. The bankruptcy filing rate thus directly disciplines f. Higher fixed costs lead to more frequent bankruptcies as firms find it harder to cover their operating expenses during downturns. The combination of these three moments allows us to separately identify the production technology parameter θ from the fixed operating cost f.

Productivity process, ρ and σ_ϵ: The persistence parameter ρ governs the serial correlation of productivity shocks and is identified by two moments: the serial correlation of profitability over time and average income growth rates. Higher ρ implies productivity shocks are more persistent, increasing both the correlation of profits across periods and the predictability of future income. The volatility parameter σ_ϵ governs the magnitude of productivity innovations and is identified by the within-firm variance of profitability. Larger σ_ϵ generates greater dispersion in a firm's profitability over time as it experiences larger positive and negative shocks.

Depreciation rate, δ: The capital depreciation rate is identified by average investment rates. Higher depreciation requires firms to invest more simply to maintain their capital stock, creating a direct positive relationship between δ and observed investment rates. The level of average investment thus reveals how quickly capital depreciates.

Adjustment cost, ϕ: The quadratic adjustment cost parameter is identified by the variance of investment rates across firms and time. When adjustment costs are high, firms smooth their investment, responding less to transitory shocks and more to persistent changes in fundamentals. This smoothing reduces investment volatility. Conversely, low adjustment costs allow firms to adjust capital more freely in response to shocks, generating higher investment variance. This inverse relationship between ϕ and investment variance provides identification.

Equity issuance costs, γ_{e0} and γ_e: The fixed cost of equity issuance, γ_{e0}, is identified by the frequency of equity issuance events. A higher fixed cost makes firms reluctant to issue equity, reducing issuance frequency. Conditional on paying this fixed cost, the proportional cost γ_e determines the size of equity issuances. Higher proportional costs discourage large issuances, as firms face increasing costs per dollar raised. The average equity issuance size (conditional on issuance) thus identifies γ_e, while the frequency identifies γ_{e0}.

6.3.2 Litigation Parameters

To identify the litigation technology parameters, we exploit rich variation in lawsuit outcomes from Audit Analytics. These moments are particularly powerful for identification because they capture the strategic interaction between firms and plaintiffs.

Claim size distribution, μ and σ: We model claim sizes using a log-normal distribution with location parameter μ and scale parameter σ. The location parameter μ is identified by the average ratio of claims to assets, which pins down the central tendency of the claim size distribution. The scale parameter σ governs the dispersion of claims and is identified by the standard deviation of claim sizes relative to assets. Higher σ implies greater heterogeneity in claim sizes, generating more variation in the observed distribution of claims. The combination of mean and standard deviation allows us to separately identify both parameters of the log-normal distribution.

Defendant win probability bounds, ω_L and ω_H: These parameters govern the distribution of defendant trial victory probabilities ω, where $\omega \sim \text{Uniform}[\omega_L, \omega_H]$. The lower bound ω_L is identified by the overall rate of defendant victories in trials. A higher ω_L means defendant win rates are high even when plaintiffs have strong cases. The observed fraction of defendant wins thus reveals ω_L.

The spread $(\omega_H - \omega_L)$ affects settlement behavior and is identified by settlement rates. When this spread is small, plaintiffs are confident in the size of the surplus from avoiding trial, which depends on ω and ζ. In this situation, plaintiffs can easily choose a settlement offer that extracts most of the surplus and defendants accept. However, as $(\omega_H - \omega_L)$ widens, plaintiffs are less sure of the size of the surplus. They face a tradeoff between making an aggressive offer, which allocates more surplus to the plaintiff but is likely to be rejected, versus a generous offer, which is likely to be accepted but leaves less surplus for the plaintiff. Facing this tradeoff, as the spread widens, plaintiffs must accept a higher risk of settlement failure to receive more surplus in settlement. Thus, the rate of settlements falls as $(\omega_H - \omega_L)$ increases, allowing us to identify ω_H with the observed settlement rate.

Litigation probability sensitivity, ι: This parameter governs how negligence translates into lawsuit probability through $P(n) = 1 - \exp(-\iota n)$. Higher ι means negligence more strongly increases litigation risk. This parameter is identified by the overall frequency of lawsuits in the data. Given the equilibrium level of negligence (itself determined by other parameters), the observed lawsuit rate reveals how sensitive litigation probability is to negligence choices.

Trial cost multiplier, ζ: This parameter captures how costly trials are for firms relative to how profitable they are for plaintiffs: plaintiffs receive L but firms lose $L(1+\zeta)$. The multiplier ζ is identified by comparing settlement amounts to claim sizes. Since settlements occur when both parties prefer to avoid the trial cost ζL, the gap between observed settlements and underlying claims reveals how expensive trials are. Larger gaps indicate higher trial costs (higher ζ), making parties more willing to settle for amounts significantly different from expected trial outcomes. We also target the dispersion of both settlement amounts and claim sizes. The standard deviation of claim sizes directly identifies the scale parameter σ of the log-normal distribution, as higher σ generates greater heterogeneity in claims. The standard deviation of settlement amounts serves as an overidentifying moment that validates the settlement bargaining process: since settlements are negotiated based on underlying claims, the dispersion of settlements should largely reflect the dispersion of claims, adjusted for the strategic bargaining captured by the ω bounds and trial cost ζ.

Negligence profitability, π: This parameter determines the profits firms earn from negligence via $\Pi(n) = \pi(1 - \exp(-n))$. Higher π makes cutting corners more profitable, encouraging firms to choose higher negligence despite litigation risks. This parameter is crucially identified by: (i) the regression coefficient of lawsuit probability on leverage and (ii) the regression coefficient of bankruptcy on a litigation indicator. As we explain below, both moments capture the strategic risk-shifting incentive.

The identification logic works as follows. In the model, firms with high leverage optimally choose high negligence because bankruptcy allows them to escape some tort liability through the κ haircut and dilution of tort claims when sharing the bankruptcy estate with creditors. This creates a positive correlation between leverage and lawsuit probability. The strength of this correlation reveals how profitable negligence is relative to litigation costs. If negligence is very profitable (high π), even low-leverage firms find negligence attractive, so negligence becomes widespread across all leverage levels. While high-leverage firms are still more negligent due to cost-shifting, the relationship is weakened by the fact that low-leverage firms are also substantially negligent. Conversely, if negligence offers little profit (low π), only high-leverage firms find negligence worthwhile due to their ability to shift costs through bankruptcy. This creates a sharp distinction between high- and low-leverage firms, producing a strong leverage-lawsuit correlation.

Relatedly, if negligence is highly profitable, then even high productivity firms engage in negligence. These firms can withstand litigation without filing for bankruptcy. However, if negligence is only mildly profitable (low π), then only low productivity firms near bankruptcy choose high levels of negligence: these are the firms that only partially internalize the cost of litigation due to a high default probability. These firms file for bankruptcy when sued. Thus, when π is high, many types of firms are negligent and litigation only leads to bankruptcy for a subset of them, generating a weak litigation-bankruptcy correlation. When π is low, only near-bankrupt firms are negligent and litigation frequently leads to bankruptcy for these firms, generating a strong litigation-bankruptcy correlation. Therefore, the correlation between litigation and bankruptcy decreases with π, further identifying π.

Without these moments, negligence profitability π would be unidentified. We would observe only the overall lawsuit frequency, which could be generated by many combinations of negligence profitability and litigation costs. The leverage-lawsuit correlation and the lawsuit-bankruptcy correlation provide the key exclusion restriction: these moments reveal how firms strategically adjust negligence in response to their ability to shift costs through leverage, thereby separately identifying the profitability of negligence from the cost of litigation.

6.3.3 Bankruptcy Parameters

Bankruptcy-related parameters exploit variation in bankruptcy outcomes and their interaction with litigation.

Litigation haircut, κ: This parameter governs how much tort victims lose in bankruptcy, receiving only $(1-\kappa)$ of their claim before the pari passu sharing of the bankruptcy estate. The parameter is identified by the observed recovery rate of tort victims in bankruptcy. In our data, tort claimants recover approximately 19% of their claims in bankruptcy on average. This low recovery rate reflects both the haircut κ that reduces the claim from L to $(1-\kappa)L$, and the dilution that occurs when this reduced claim must share the bankruptcy estate with creditors. Higher values of κ lead to lower recovery rates, as victims' claims are reduced more severely before entering the bankruptcy distribution. The model's prediction of tort victim recovery in bankruptcy directly disciplines the value of κ.

Fire-sale cost, ξ: This parameter is identified by average market leverage. Higher asset fire-sale costs increase the expected costs of financial distress, making debt financing more expensive and reducing firms' optimal leverage ratios. The observed leverage distribution reveals the trade-off between the tax benefits of debt and the costs of associated with potential bankruptcy. Since leverage in the model is determined by the interaction of debt costs, tax benefits, and default risk, the average leverage level primarily reflects ξ once other parameters are identified.

6.4 Parameter Estimates and Model Fit

Table 2 reports the estimated structural parameters with their standard errors, while Table 3 compares model-generated moments with their empirical counterparts. We estimate 17 structural parameters using simulated method of moments, targeting 21 moments from Compustat, Audit Analytics, and recovery rates from bankruptcy documents.

Parameter Estimates. The estimated parameters reveal economically meaningful magnitudes that align with prior empirical evidence and provide the foundation for our counterfactual analysis.

These estimates governing firm operation are largely consistent with those documented in the literature. For instance, the returns to scale parameter ($\theta = 0.546$) suggests substantial diminishing returns in production, consistent with limited managerial span of control and typical estimates in the corporate finance literature. Financing frictions are economically significant. The asset fire-sale cost ($\xi = 0.191$) suggests nearly 19% of asset value is lost in bankruptcy, making default costly and creating an incentive to avoid financial distress. Equity issuance costs include both a proportional component ($\gamma_e = 0.023$, or approximately 2.3% of issuance proceeds) and a fixed cost ($\gamma_{e0} = 0.008$, representing 0.8% of assets), with the fixed cost creating lumpiness in equity issuance decisions and discouraging small issuances.

The litigation parameters reveal substantial costs and strategic considerations that drive the risk-shifting behavior central to our analysis. The negligence profitability scale ($\pi = 1.272$) indicates that cutting corners can generate sizable profits. This high profitability creates strong incentives for risk-shifting when firms can externalize litigation costs through bankruptcy. The litigation probability sensitivity ($\iota = 0.606$) shows that negligence meaningfully increases lawsuit risk: doubling negligence increases the lawsuit probability by approximately 45%.

Defendant win probabilities range widely from $\omega_L = 0.101$ to $\omega_H = 0.828$, indicating substantial heterogeneity in case strength. Even the strongest plaintiff cases have about a 10% chance of the defendant winning, while the weakest plaintiff cases have defendant win rates exceeding 80%. This wide dispersion creates significant uncertainty about trial outcomes, encouraging settlement in many cases. Trial costs are substantial ($\zeta = 0.661$), meaning that going to trial imposes deadweight costs equal to 66% of the claim amount beyond the settlement value, providing strong incentives for both parties to settle rather than litigate.

The claim size distribution exhibits high dispersion ($\sigma = 2.275$) around a low mean (implied by the log-normal location parameter $\mu = -4.291$). This combination generates a fat-tailed distribution where most claims are relatively small but occasional large claims can exceed firm assets, capturing the realistic feature that tort liability creates tail risk for firms. The high standard deviation means claim sizes vary substantially across cases, creating significant uncertainty about litigation exposure.

Most critically for our counterfactual analysis, the bankruptcy haircut on litigation claims ($\kappa = 0.467$) indicates that tort victims lose nearly half (46.7%) of their claim value in bankruptcy before any pari passu sharing with creditors occurs. This substantial haircut creates the risk-shifting incentive central to our model: highly leveraged firms can externalize nearly half of their litigation costs through bankruptcy, particularly when combined with the additional dilution from sharing the bankruptcy estate with financial creditors. This large estimated haircut validates concerns about inadequate tort victim protection in bankruptcy and motivates our policy counterfactuals examining alternative bankruptcy rules.

Model Fit. Table 3 presents the targeted moments, comparing empirical values from the data with model-generated values. The table also reports standard errors for the empirical moments and indicates which parameters are primarily identified by each moment. The moment conditions span three panels: Panel A contains 14 firm-year panel moments from Compustat capturing financing, investment, profitability, and valuation; Panel B contains 6 litigation outcome moments from Audit Analytics on trial results, settlements, and claim distributions; Panel C reports tort claimant recovery rates in bankruptcy from PACER.

The model achieves a reasonable fit across most targeted moments, successfully capturing the key economic mechanisms while exhibiting some predictable tensions between fitting different aspects of firm behavior. Panel A shows that the model closely matches several critical financial moments. The bankruptcy filing rate is matched almost exactly (0.009 in data vs. 0.007 in model), indicating that the model correctly captures bankruptcy frequency. The probability of lawsuits is also matched well (0.166 vs. 0.173), confirming that the model generates realistic litigation incidence. The model successfully captures the strategic risk-shifting mechanism that is central to our analysis: the regression coefficient of lawsuit probability on leverage is positive in both data and model (0.058 vs. 0.131), though the model somewhat overstates the strength of this relationship. This positive correlation confirms that highly leveraged firms engage in more negligent behavior, validating the risk-shifting channel. The model also generates a positive relationship between lagged lawsuits and bankruptcy, indicating that litigation contributes to financial distress as expected.

In terms of litigation outcomes, the model captures the average settlement amount relative to assets almost exactly (0.033 in both data and model), demonstrating that the bargaining framework generates realistic settlement magnitudes. The model also matches both the mean and dispersion of claim sizes reasonably well (0.152 vs. 0.192 for average claims; 0.665 vs. 0.653 for standard deviation), validating the log-normal specification of the claim distribution. The standard deviation of settlements is also matched closely (0.065 in data vs. 0.062 in model), confirming that the model captures the heterogeneity in settlement outcomes.

Panel C shows that the model closely matches the litigant recovery rate in bankruptcy (0.189 in data vs. 0.204 in model), validating the bankruptcy haircut mechanism that is central to our policy analysis. This close fit is particularly important because it directly identifies how much tort victims lose when firms file for bankruptcy protection—the key externality that drives excessive risk-shifting by highly leveraged firms.

Overall, the model provides a reasonable approximation of firm behavior across financing, investment, litigation, and bankruptcy dimensions. The model successfully captures the core mechanisms we aim to study: firms strategically choose negligence levels that create litigation risk, leverage amplifies risk-shifting incentives through the substantial bankruptcy haircut, and bankruptcy law parameters affect both ex-ante negligence choices and ex-post victim compensation. The parameter estimates provide economically meaningful magnitudes, and the estimated litigation haircut ($\kappa = 0.467$) creates sufficient cost externalization to generate the risk-shifting behavior documented in the data.

7 Counterfactual Analysis

Having established that the model successfully replicates key empirical patterns in firm financing, litigation outcomes, and bankruptcy decisions, we now leverage the estimated structural parameters to evaluate alternative bankruptcy policy regimes. The model's ability to capture the strategic interaction between leverage choices and negligent behavior makes it well-suited to assess how changes in bankruptcy law affect ex-ante incentives and welfare. We examine four counterfactuals that modify the treatment of tort claims in bankruptcy along dimensions currently debated by courts, Congress, and legal scholars. Table 4 summarizes the results across all policy scenarios.

7.1 Costless Discharge of Tort Liabilities

Recent legal innovations have attempted to separate liability discharge from bankruptcy costs. In the "Texas Two-Step," a firm creates a subsidiary, transfers tort liabilities to it, and files the subsidiary for bankruptcy while the parent continues operating. Similarly, third-party releases in the Purdue Pharma case attempted to discharge the Sackler family's liability without the family itself filing for bankruptcy. Our first counterfactual (CF1) models these strategies by allowing firms to obtain the κ haircut on litigation liabilities without bearing bankruptcy costs ξ or deadweight losses. In other words, we model a counterfactual world in which the Texas Two-Step strategy were unambiguously legal.

The results reveal catastrophic moral hazard. Switching from the current bankruptcy system to one in which Texas two-steps are unambiguously legal, average negligence increases 411% from 0.42 to 2.13, as firms face dramatically reduced expected liability for harmful behavior. The probability of lawsuits rises from 17.3% to 71.4% as widespread negligence generates extensive harm to customers. Firm behavior adjusts substantially to exploit the new regime. Average leverage declines from 37.4% to 33.6% because firms no longer require high debt levels to shift tort costs through bankruptcy—they can discharge liabilities costlessly regardless of capital structure. The bankruptcy filing rate collapses from 0.73% to 0.13%, consistent with subsidiary bankruptcies that leave parent companies operating. The regression coefficient linking lawsuit probability to leverage falls from 0.131 to 0.028, as the strategic complementarity between debt and negligence breaks down when discharge becomes costless.

Despite avoiding bankruptcy costs, equity values decline 6.4% from 77.9 to 72.9. This reflects an equilibrium composition effect: costless discharge enables marginal, low-productivity firms to profitably operate with extreme negligence, fundamentally changing the distribution of active firms. Average productivity falls from 0.15 to 0.02 and average capital declines from 70 to 59, even though each firm optimizes given the new environment. Tort victims suffer doubly, facing vastly higher lawsuit frequency (71% versus 17%) and lower recovery rates when firms file bankruptcy (15.9% versus 20.4%), as the proliferation of negligent behavior overwhelms the bankruptcy system.

Interestingly, investment rates only rises modestly from 8.1% to 10.8%. Thus, while prioritizing firms over tort plaintiffs does incentivize greater investment, the impact is quite small relative to the large increase in customer harm.

The results strongly support judicial skepticism toward only-liability-subsidiary bankruptcies and third-party releases. The Supreme Court's 2024 rejection of Purdue's bankruptcy plan and the Third Circuit's 2023 dismissal of Johnson & Johnson's talc bankruptcy appear well-founded. Conversely, the decision of the Fourth Circuit Appeals Court to legitimize

Georgia-Pacific's Texas-Two-Step bankruptcy appears to set a harmful precedent. Allowing firms to discharge tort liabilities without bearing bankruptcy costs creates severe moral hazard that outweighs any efficiency benefits from reduced deadweight losses.

7.2 Granting Tort Claims Superpriority

Several legal scholars have argued that tort claimants should receive superpriority over financial creditors in bankruptcy, rather than sharing the bankruptcy estate *pari passu* under current law (Section 2). The rationale is that tort victims are involuntary creditors who did not consent to bearing risk, unlike bondholders who can demand compensation ex ante. Our second counterfactual (CF2) implements this proposal by giving tort claimants first claim on the bankruptcy estate before any distribution to financial creditors.

Tort superpriority produces primarily redistributional effects with modest behavioral responses. Average negligence declines 3.6% from 0.42 to 0.40, lawsuit probability remains essentially unchanged (17.3% to 17.2%), and bankruptcy rates stay flat (0.73% to 0.76%). Average leverage falls modestly from 37.4% to 36.0%. The limited behavioral response occurs through debt pricing. When tort claimants receive priority, bondholders anticipate lower recovery in bankruptcy. Bond prices decline from 96.1% to 95.7% as creditors demand higher yields to compensate for subordination risk. This makes debt marginally more expensive, which slightly reduces optimal leverage. Since leverage and negligence are complements in the risk-shifting mechanism, the small increase in debt costs indirectly reduces negligence.

The primary effect is redistributional: tort victim recovery nearly doubles from 20.4% to 38.9% as they claim the bankruptcy estate before creditors. Crucially, equity values increase slightly (+0.8%), indicating this is nearly pure redistribution from bondholders to victims with shareholders essentially unaffected. This small increase in equity values, which arises since the inefficient agency conflict between debt holders and equity holders is mitigated, explains the small increase in investment as well. The regression coefficient linking lawsuits to leverage falls from 0.131 to 0.108, as tort priority eliminates the dilution channel whereby high leverage reduces victim recovery through *pari passu* sharing.

Tort superpriority offers an attractive policy if the primary objective is compensating victims without disrupting firm behavior or capital allocation. The reform achieves substantial victim gains through redistribution from consenting creditors who can price the risk ex ante, with minimal deadweight losses from behavioral distortions.

7.3 Equalizing Treatment In and Out of Bankruptcy

Prominent bankruptcy scholars have argued that tort claimants should recover as much in bankruptcy as they would through successful litigation outside bankruptcy. Under current law, the bankruptcy process reduces tort claims through delays, negotiated settlements, and the κ haircut (Section 2). Our third counterfactual (CF3) eliminates the firm's ability to improve its litigation bargaining position through bankruptcy by setting $\kappa = 0$. While litigants can still be impaired when the firm has insufficient value to pay their claims, the litigants recover the same percentage of their claim as other creditors.

Equal treatment produces the strongest behavioral response of the single-policy reforms. Average negligence declines 5.8% from 0.42 to 0.39, as firms can no longer use bankruptcy to extract concessions from tort victims. The probability of lawsuits falls from 17.3% to 16.9% as improved deterrence reduces harmful behavior. Investment increases from 8.1% to 8.4% as firms build productive capacity with better safety incentives. Tort victim recovery increases 48.5% from 20.4% to 30.3%, as the bankruptcy haircut disappears. Bond prices decline modestly from 96.1% to 95.9% as creditors face slightly higher expected tort claims in bankruptcy, though the effect is smaller than under CF2 since priority remains unchanged.

Notably, equity values increase 1.2% despite higher liability per lawsuit. The deterrence effect—fewer lawsuits through reduced negligence—generates sufficient savings to offset the higher cost per lawsuit when harm occurs. Moreover, equity values increase as the inefficient agency conflict between equity holders and debt holders is less relevant: higher debt prices discipline equity holders and deter high leverage states where inefficient negligence occurs. However, the regression coefficient linking lawsuits to leverage falls from 0.131 to 0.115, the smallest decline among reforms, as financially distressed firms continue to jointly choose high leverage and high negligence independent of strategic risk-shifting.

Equalizing treatment inside and outside bankruptcy strengthens deterrence while compensating victims, with efficiency gains that benefit even shareholders. The reform eliminates the bankruptcy subsidy to negligent behavior without requiring priority changes that might disrupt credit markets. The modest equity value increase suggests political economy barriers may be lower than anticipated.

7.4 Combining Superpriority and Equal Treatment

Our fourth counterfactual (CF4) combines tort superpriority with equal treatment, implementing a comprehensive reform where tort victims receive both first priority in the bankruptcy estate and "fair treatment" in that bankruptcy delay strategies cannot be used to force litigants to take a haircut. This reform represents the most extensive protection for involuntary creditors consistent with recent legal scholarship.

This comprehensive reform produces complementary effects that exceed either single policy. Average negligence declines 5.4% from 0.42 to 0.39, similar to CF3's deterrence effect. The fraction of firms using high leverage (exceeding 60%) falls by half from 3.8% to 1.9%. Investment increases to 9.0%, the highest of any reform, as firms build productive capacity under improved liability internalization. Tort victim recovery increases 221% from 20.4% to 65.5%, far exceeding either policy alone. Victims benefit from both priority and full recovery, with the combined effect multiplicative rather than additive. The probability of lawsuits remains essentially unchanged at 17.2%, as the deterrence effect is offset by composition changes in firm behavior.

Remarkably, equity values increase 1.6%, the largest gain among all reforms. This reflects the combination of improved deterrence, higher productive investment, and full liability internalization that together enhance firm value despite higher expected tort payments. Bondholders bear the primary cost: bond prices fall to 95.5%, the lowest of any reform, as they are subordinated to substantially larger tort claims. The regression coefficient falls to 0.087, similar to CF2, as the priority component eliminates the dilution channel.

Comprehensive reform achieves both policy objectives—deterring negligent behavior and compensating victims—while increasing shareholder value. The main redistribution occurs from bondholders to victims rather than from equity holders to victims. Since creditors can price subordination risk ex ante through higher yields, the reform appears both feasible and desirable from an efficiency perspective. The equity value increase suggests political economy constraints may be weaker than anticipated if shareholders are pivotal in policy debates.

7.5 Policy Implications

The counterfactual analysis provides clear guidance for ongoing policy debates. Costless discharge mechanisms such as the Texas Two-Step and third-party releases should be prohibited. CF1 demonstrates that allowing firms to discharge tort liabilities without bearing bankruptcy costs creates severe moral hazard, with negligence increasing 411% and victims left worse off. The Supreme Court's skepticism in the Purdue Pharma case and the Third Circuit's rejection of Johnson & Johnson's talc bankruptcy strategy appear well-founded.

If the primary policy objective is immediate victim relief without disrupting capital markets, tort superpriority (CF2) offers an efficient solution. It achieves substantial victim gains (+90% recovery) through redistribution from consenting creditors with minimal behavioral distortions. If strengthening deterrence is the priority, equal treatment (CF3) proves most effective among single-policy reforms, reducing negligence 5.8% while improving victim compensation 48.5%, with efficiency gains sufficient to increase equity values.

Comprehensive reform (CF4) dominates by combining superpriority and equal treatment. It achieves strong deterrence, exceptional victim compensation (+221% recovery), and the highest equity value gains (+1.6%). The policies operate through complementary channels: equal treatment strengthens deterrence by eliminating the bankruptcy subsidy to negligent behavior, while superpriority improves victim recovery through favorable redistribution.

The results challenge conventional wisdom about bankruptcy reform. Comprehensive protection for tort victims does not harm shareholders—it benefits them through improved deterrence and productive investment. The primary distributional conflict is between bondholders and victims rather than between equity holders and victims. Since credit markets can price subordination risk efficiently through ex ante yield adjustments, political economy barriers may be lower than anticipated. Policymakers should seriously consider comprehensive reforms that combine superpriority with equal treatment to simultaneously strengthen deterrence and protect involuntary creditors.

8 Conclusion

Bankruptcy was designed to give honest but unfortunate debtors a fresh start, not to provide a strategic escape hatch for firms that harm their customers. We develop and estimate a dynamic structural model to evaluate how bankruptcy law shapes ex-ante firm behavior when firms face litigation risk. Our framework captures three critical incentives: firms strategically choose negligence levels, leverage decisions that shift litigation costs to creditors, and bankruptcy timing that reduces victim compensation. These incentives create a risk-shifting mechanism whereby highly leveraged firms engage in excessive negligence because limited liability allows them to externalize litigation costs onto creditors and victims through bankruptcy.

The estimated model successfully replicates key empirical patterns in firm financing, litigation outcomes, and bankruptcy decisions. We find that negligence increases sharply with leverage, particularly for low-productivity firms approaching financial distress. This risk-shifting behavior emerges because equity holders capture immediate profits from cutting corners while expecting to shift litigation costs through bankruptcy's reduced recovery for tort claims.

Our counterfactual analysis yields clear policy guidance for ongoing debates. Costless discharge mechanisms such as the Texas Two-Step subsidiary bankruptcies and third-party releases that separate liability reduction from bankruptcy costs create catastrophic moral hazard. These strategies enable firms to discharge tort obligations without bearing bankruptcy costs, causing negligence to increase substantially and leaving victims worse off despite avoiding deadweight losses. The Supreme Court's 2024 rejection of Purdue Pharma's bankruptcy plan and circuit court skepticism toward Johnson & Johnson's talc strategy appear well-founded.

Among feasible reforms, comprehensive protection combining tort superpriority with equal treatment dominates all alternatives. This policy gives tort victims first claim on the bankruptcy estate and eliminates the bankruptcy haircut, achieving strong deterrence, exceptional victim compensation, and the highest equity value gains. Remarkably, shareholders benefit from comprehensive reform through improved deterrence and productive investment. The primary distributional conflict occurs between bondholders and victims rather than between equity holders and victims, suggesting that political economy barriers may be lower than commonly believed.

These results challenge conventional wisdom about bankruptcy reform. Comprehensive tort creditor protection does not harm firm value but rather enhances value by strengthening deterrence and encouraging investment in productive capacity rather than negligent cost-cutting. Credit markets can efficiently price subordination risk through ex-ante yield adjustments. Bondholders rationally anticipate subordination and demand higher returns, making the reform efficiency-improving when accounting for strengthened deterrence and enhanced victim compensation.

The policy implications are clear. Policymakers should seriously consider comprehensive reforms that simultaneously strengthen deterrence and protect involuntary creditors. The bankruptcy system should not subsidize negligent behavior by allowing firms to externalize harm onto victims who cannot price risk ex ante. Equal treatment inside and outside bankruptcy, combined with priority for tort claims, aligns private incentives with social welfare while maintaining efficient capital allocation. Our quantitative framework demonstrates that protecting tort victims in bankruptcy can achieve the dual objectives of compensating innocent victims and deterring harmful corporate behavior, objectives that reinforce rather than conflict with each other.

Future research could extend our framework in several directions. First, incorporating multiple dimensions of corporate misconduct beyond negligence would illuminate broader governance implications. Second, examining how bankruptcy reform affects innovation incentives could reveal important trade-offs between deterrence and risk-taking. Third, analyzing the interaction between tort liability and alternative regulatory mechanisms such as product safety standards or mandatory insurance would inform optimal policy design. Understanding how bankruptcy law shapes ex-ante corporate behavior remains essential for designing legal institutions that balance creditor rights, victim compensation, and productive efficiency.

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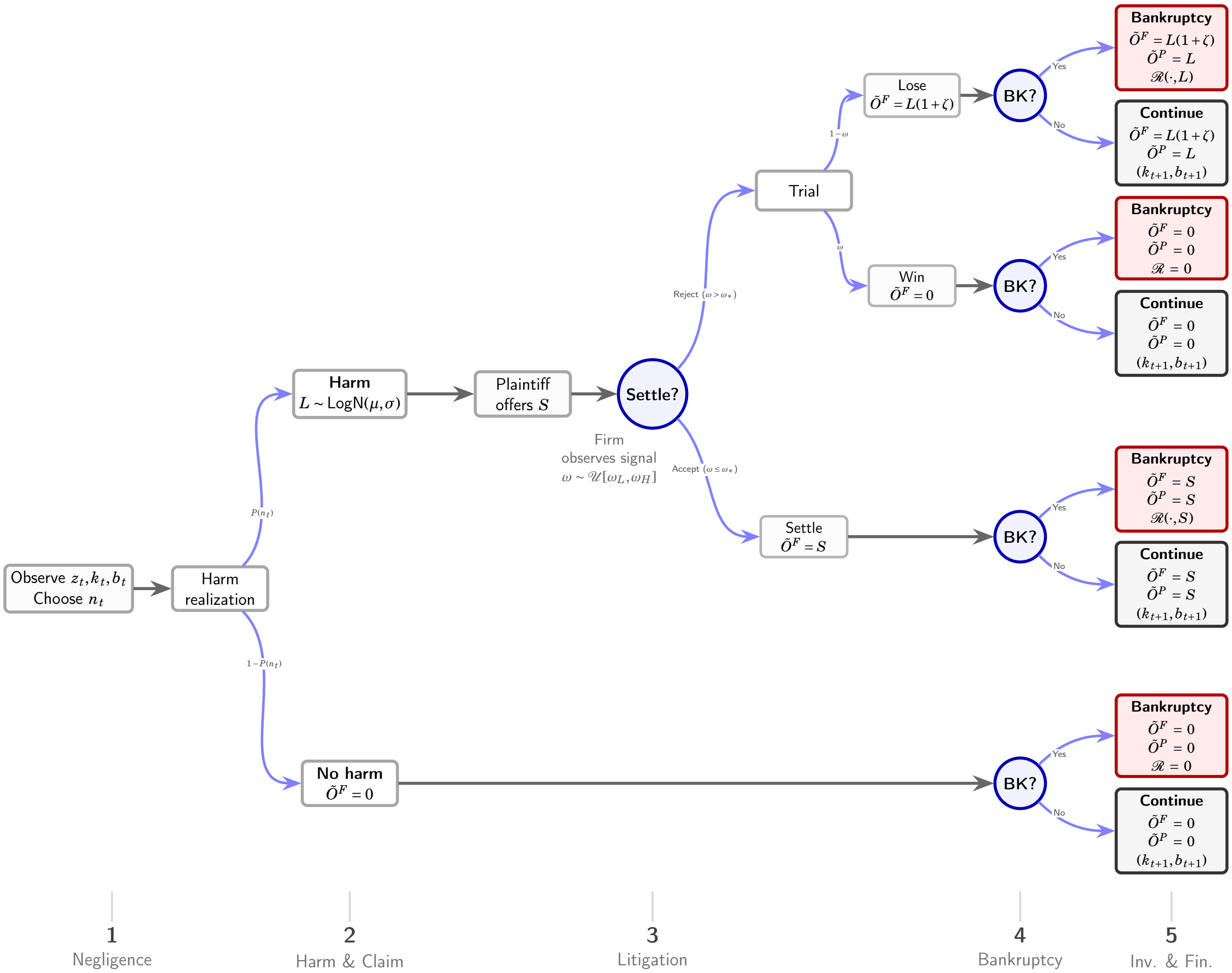
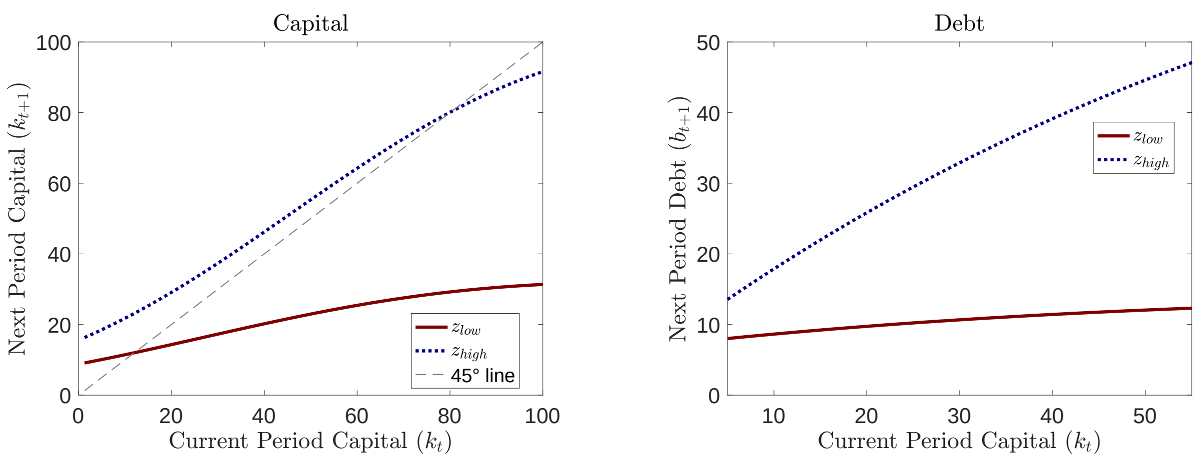


Figure 1. Model Timeline

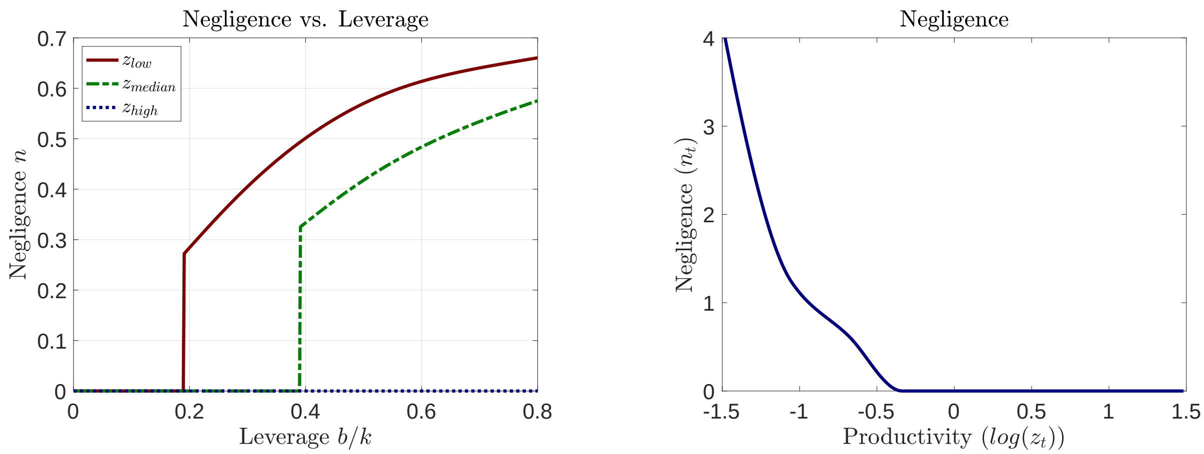
This figure illustrates the within-period timing of the model. Let $\tilde{O}^F$ denote the realized litigation obligation of the firm and let $\tilde{O}^P$ denote the realized litigation claim for the plaintiff. In Stage 1 (Negligence), the firm observes its productivity z_t, capital stock k_t and debt value b_t, and chooses negligence level n_t, which increases profits but creates harm risk $P(n_t)$. In Stage 2 (Harm and Claim), harm either occurs with probability $P(n_t)$ (drawing loss L from a log-normal distribution) or does not occur with probability $1-P(n_t)$. If harm occurs, the plaintiff makes a take-it-or-leave-it settlement offer S. In Stage 3 (Litigation), the firm privately observes its trial win probability $\omega \sim \mathscr{U}[\omega_L, \omega_H]$ and decides whether to accept the settlement (paying $\tilde{O}^F = S$) or reject and proceed to trial. At trial, the firm wins with probability ω (paying $\tilde{O}^F = 0$) or loses with probability $1-\omega$ (paying $\tilde{O}^F = L(1+\zeta)$, where ζ represents deadweight costs). In Stage 4 (Bankruptcy), the firm decides whether to file for bankruptcy given its litigation obligation. In Stage 5 (Investment and Financing), if the firm continues, it chooses next period's capital k_{t+1} and debt b_{t+1}; if the firm files for bankruptcy, plaintiffs receive recovery $\mathscr{R}(\cdot)$ (which equals zero if no harm or trial victory, $\mathscr{R}(\cdot, S)$ if settled, or $\mathscr{R}(\cdot, L)$ if trial loss), and the financial lenders receive the rest of the bankruptcy recovery.



(a) Capital Policy Function **(b) Debt Policy Function**

Figure 2. Capital and Debt Policy Functions

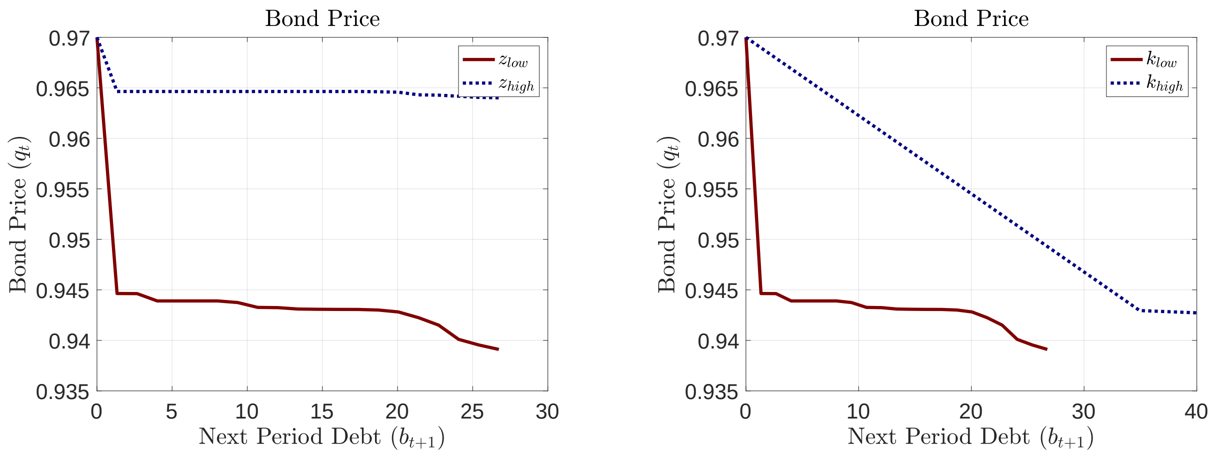
Notes: This figure displays the optimal capital and debt policy functions. Panel (a) shows the optimal capital choice k_{t+1} as a function of current capital k_t for two productivity levels. The policy function shows that larger firms choose higher capital levels for the following period, reflecting persistent firm size dynamics. Panel (b) plots the optimal debt choice b_{t+1} as a function of current capital k_t for two productivity levels. The red solid line represents low productivity ($z = z_{low}$) and the blue dashed line represents high productivity ($z = z_{high}$).



(a) Negligence vs. Leverage **(b) Negligence vs. Productivity**

Figure 3. Optimal Negligence Choice

Notes: This figure displays the optimal negligence choice n_t as a function of leverage and productivity. Panel (a) shows negligence as a function of leverage b_t/k_t for three productivity levels: low (red solid line), median (green dashed line), and high (blue dotted line). Negligence increases dramatically with leverage for low-productivity firms, demonstrating the risk-shifting incentive. High-productivity firms exhibit much lower negligence across all leverage levels due to higher continuation values that deter default-inducing behavior. Panel (b) shows negligence as a function of productivity z_t. Negligence is a decreasing function of productivity, with low-productivity firms choosing substantially higher negligence levels. This reflects that distressed firms with low continuation values have stronger incentives to engage in risk-shifting behavior.



(a) Capital Variation **(b) Productivity Variation**

Figure 4. Bond Price as a Function of Debt

Notes: This figure displays the bond price q_t as a function of debt b_t. Panel (a) shows variation across capital levels: the red solid line represents low capital ($k = k_{low}$) and the blue dashed line represents high capital ($k = k_{high}$). Panel (b) shows variation across productivity levels: the red solid line represents low productivity ($z = z_{low}$) and the blue dashed line represents high productivity ($z = z_{high}$). Bond prices decline with debt as default risk increases. Larger firms and high-productivity firms enjoy higher bond prices at every debt level due to greater collateral value, debt capacity, and lower default risk. The kink in the low-productivity line in panel (b) reflects a sharp increase in default probability as distressed firms approach their debt capacity.

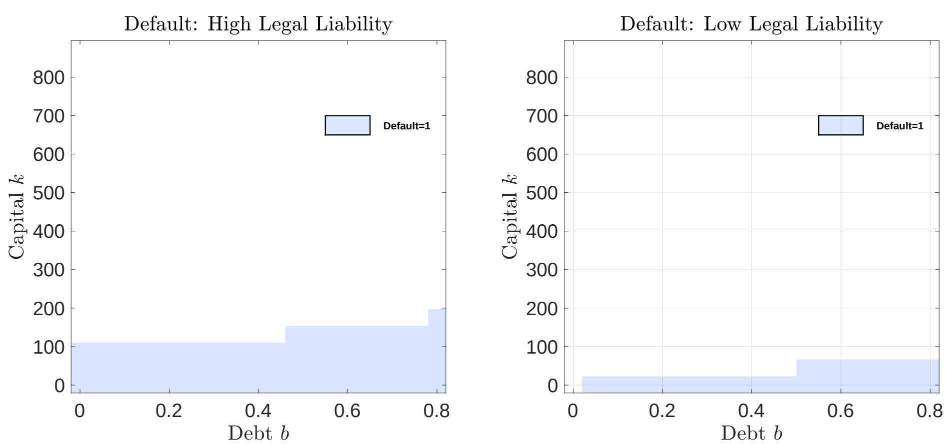


Figure 5. Default Decision Regions

Notes: This figure maps the optimal default decision $d(z_t, k_t, b_t, \tilde{O}^F, n_t)$ across the state space of leverage b_t/k_t (horizontal axis) and capital k_t (vertical axis). The left panel shows the default region under high legal liability, where firms with substantial litigation obligations choose bankruptcy at moderate leverage ratios. The right panel shows the default region under low legal liability, where default is essentially absent.

Table 1. Motivating Regressions

This table reports the results from two regressions. In both regressions, the unit of observation is a Compustat firm in a given year t. In the first column, the dependent variable is an indicator equal to one if the firm faces litigation in year t. The key independent variable is the firm's market leverage in year t. In the second column, the dependent variable is an indicator equal to one if the firm files for bankruptcy between year t and year $t+1$. The key independent variable is an indicator equal to one if the firm faces major litigation in the three years leading up to year t. Both regressions include year and firm fixed effects. Standard errors, clustered by firm, are presented in parentheses.

	Litigation	Bankruptcy
	(1)	(2)
Market Leverage	0.0581^{***}	0.0608^{***}
	(0.0086)	(0.0037)
Litigation in Last 3 Years		0.0024^{**}
		(0.0009)
Firm FE	Y	Y
Year FE	Y	Y
Observations	73573	73573
Adjusted R-sq.	0.224	0.0988

Table 2. Parameter Estimates

This table reports the model's parameter estimates. Panel A presents calibrated parameters. Panel B reports estimated parameters governing firm productivity, investment, and financing decisions. Panel C presents estimated parameters related to litigation and bankruptcy outcomes.

Panel A: Calibrated Parameters		Value	
β	Discount factor	0.97	
τ_c	Corporate tax rate	0.35	
τ_d	Dividend tax rate	0.15	
c	Coupon payment rate	0.027	
λ	Debt maturity rate	0.087	
Panel B: Parameters Governing Firm Operations		Value	Std. Error
ρ	Persistence of productivity shock	0.950	0.002
σ_ε	Std. dev. of productivity innovation	0.208	0.001
θ	Returns to scale	0.546	0.002
ϕ	Capital adjustment cost	0.023	0.003
δ	Capital depreciation rate	0.080	0.001
f	Fixed operating cost	1.869	0.033
γ_e	Proportional equity issuance cost	0.023	0.007
γ_{e0}	Fixed equity issuance cost	0.008	0.002
Panel C: Parameters Governing Litigation and Bankruptcy		Value	Std. Error
ω_L	Lower bound of defendant win probability	0.101	0.024
ω_H	Upper bound of defendant win probability	0.828	0.021
π	Negligence profitability scale	1.272	0.079
ι	Litigation probability sensitivity	0.606	0.109
κ	Litigation claim haircut in bankruptcy	0.467	0.174
μ	Log-normal location parameter for claims	-4.291	0.002
σ	Log-normal scale parameter for claims	2.275	0.023
ζ	Trial cost multiplier	0.661	0.194
ξ	Asset fire-sale cost	0.191	0.021

Table 3. Model and Empirical Moments

This table compares empirical moments from the data with model-generated moments used for parameter identification. Panel A presents firm-year panel statistics on leverage, profitability, investment, equity issuance, bankruptcy, and litigation. Panel B reports statistics on litigation outcomes including trial results, settlement rates, and claim distributions. Panel C shows litigant recovery rates in bankruptcy. The Identification column indicates which parameters are primarily identified by each moment.

Moment	Data	Model	Std. Err.	Identification
Panel A: Firm-year panel				
Average market leverage	0.278	0.374	0.0024	ξ
Serial correlation of profitability	0.603	0.893	0.0104	ρ
Within-firm variance of profitability	0.013	0.010	0.0002	σ_ϵ
Average investment rate	0.152	0.081	0.0007	δ
Variance of investment rate	0.024	0.050	0.0002	ϕ
Probability of equity issuance	0.225	0.097	0.0020	γ_{e0}
Average equity issuance / assets	0.050	0.096	0.0006	γ_e
Bankruptcy filing rate	0.009	0.007	0.0003	f
Probability of lawsuit	0.166	0.173	0.0029	ι
β(Lawsuit, Leverage)	0.058	0.131	0.0088	π
β(Bankruptcy, Lagged lawsuit)	0.002	0.015	0.0010	π
Average profitability	0.078	0.141	0.0014	θ, f
Average Tobin's Q	2.495	2.011	0.0215	θ, f
Average income growth	1.023	1.009	0.0024	ρ
Panel B: Litigation outcomes				
Defendant win rate (trials)	0.663	0.556	0.0093	ω_L
Settlement rate	0.596	0.358	0.0206	$\omega_H - \omega_L$
Average settlement / assets	0.033	0.033	0.0014	ζ
Std dev settlement / assets	0.065	0.062	0.0025	ζ
Average claim / assets	0.152	0.192	0.0177	μ
Std dev claim / assets	0.665	0.653	0.0504	σ
Panel C: Bankruptcy outcomes				
Litigant recovery in bankruptcy	0.189	0.204	0.0528	κ

Table 4. Counterfactual Comparison Across Policy Scenarios

This table presents equilibrium outcomes under the baseline estimated model and four counterfactual policy regimes. Baseline represents the estimated model with current bankruptcy law where tort claims receive a haircut κ and share the bankruptcy estate pari passu with financial creditors. CF1 (Costless Discharge) allows firms to reduce tort liabilities by the haircut κ without incurring bankruptcy costs, modeling strategies like the Texas Two-Step subsidiary bankruptcies and third-party releases. CF2 (Tort Superpriority) grants tort claimants first priority over financial creditors in bankruptcy while maintaining the haircut. CF3 (Equal Treatment) eliminates the bankruptcy haircut ($\kappa = 0$) so tort victims recover the same amount in bankruptcy as through successful litigation, while maintaining pari passu sharing with creditors. CF4 (Comprehensive Reform) combines both CF2 and CF3, giving tort victims superpriority and full recovery without any haircut. All counterfactuals are computed by resolving the model under the alternative bankruptcy rules while keeping other parameters at the baseline parameter estimates.

Moment	**Baseline**	**CF1**	**CF2**	**CF3**	**CF4**
Panel A: Firm Decisions					
Average Leverage	0.374	0.336	0.360	0.365	0.357
Fraction High Leverage (>0.6)	0.038	0.004	0.024	0.030	0.019
Average Negligence	0.417	2.126	0.402	0.393	0.394
Average Investment	0.081	0.108	0.090	0.084	0.090
Prob(Equity Issuance)	0.097	0.264	0.094	0.086	0.084
Avg Equity Issuance/Assets	0.096	0.090	0.095	0.097	0.095
Panel B: Firm Performance					
Average Equity Value	77.86	72.88	78.50	78.77	79.06
Average Profitability	0.141	0.104	0.142	0.143	0.143
Average Bond Price	0.961	0.969	0.957	0.959	0.955
Bankruptcy Rate	0.007	0.001	0.008	0.008	0.008
Panel C: Harm & Litigation					
Prob(Lawsuit)	0.173	0.714	0.172	0.169	0.172
β(Lawsuit, Leverage)	0.131	0.028	0.108	0.115	0.087
Settlement Rate	0.358	0.398	0.350	0.352	0.346
Defendant Win Rate	0.556	0.566	0.554	0.553	0.553
Avg Settlement/Assets	0.033	0.062	0.040	0.033	0.039
Avg Claim/Assets	0.192	0.165	0.189	0.181	0.177
Panel D: Bankruptcy Outcomes					
Litigant Recovery Rate	0.204	0.159	0.389	0.303	0.655

Internet Appendices:

Strategic Bankruptcy and Corporate Negligence

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A Numerical Solution Details

A.1 Computational Algorithm

We discretize three state variables b, z, k into grids of length N_b, N_z, N_k, respectively. We fix initial guesses $J_1^0(z,k,b)$ (equity value) and $q^0(z,k,b)$ (debt discount). At each iteration $i = 1,2,..$, we use $J_1^{i-1}(z,k,b)$ and $q^{i-1}(z,k,b)$ and the following approach to update to $J_1^i(z,k,b)$ and $q^i(z,k,b)$. We continue until the functions are similar at iterations i and $i-1$.

Additionally, let $G_{\tilde{O}}$ denote a $1 \times N_O$ grid of values starting at zero such that the probability that $L(1+\zeta)$ is contained on the grid is approximately one. It is worth emphasizing that this grid has multiple uses. Sometimes, we treat each point as a potential realization of L. Other times, each point is treated as a potential realization of $\tilde{O}^F = L(1+\zeta)$ or a potential realization of $\tilde{O}^F = S$ or of $\tilde{O}^P = S$.

Let G_n denote a $1 \times N_n$ grid of potential values of n.

At each iteration i, we loop through all $N_b \times B_z \times N_k \times N_n$ possible values of (z,k,b,n) and apply the following steps for each possible (z,k,b,n):

1. Note that in the optimization (4) in part 5 of period t, the optimal choice of k_{t+1}, b_{t+1} does not depend on n_t or $\tilde{O}^F$. Thus, to calculate $k_*^i(z,k,b)$ and $b_*^i(z,k,b)$ that solve the optimization (4), we can simply grid search over the $N_b \times N_k$ grid points that could potentially correspond to the solution (b_*, k_*). For each guess k_*, b_* of the optimal policies, the first line of (4) involving $n, \tilde{O}^F$ can be ignored and the expectation on the last line of (4) is taken by multiplying the $1 \times N_z$ vector $J_1^{i-1}(z', k_*, b_*)$ (each value of the vector is a different value of z') by the $N_z \times 1$ vector $\mathbb{P}(z'|z)$, which is calculated using equation (3). The third line of (4) is calculated using $q^{i-1}(z, k_*, b_*)$. Save the optimal values $k_*^i(z,k,b)$ and $b_*^i(z,k,b)$.

2. Loop over the N_O possible realizations of $\tilde{O}^F$ (on grid $G_{\tilde{O}}$). For each potential $\tilde{O}^F$, plug in $k_{t+1} = k_*^i(z,k,b)$ and $b_{t+1} = b_*^i(z,k,b)$ to equation (4) to calculate the $N_b \times N_z \times N_k \times N_O \times N_n$ array $J_5^i(z,k,b,\tilde{O}^F,n)$ containing the optimized objective values. Lines 3 and 4 of (4) are calculated as in step 1. Define

$$J_4^i(z,k,b,\tilde{O}^F,n) = \max(0\ ,\ J_5^i(z,k,b,\tilde{O}^F,n)) \tag{A.1}$$

   and

$$d^i(z,k,b,\tilde{O}^F,n) = \mathbb{1}\left(J_4^i(z,k,b,\tilde{O}^F,n) = 0\right). \tag{A.2}$$

3. Loop over the N_O possible values of L using the grid $G_{\tilde{O}}$. For each L, loop over the N_O possible choices S. For each (L,S), calculate $\omega_*(S,L)$ using equation (8) and

$J_4^i(z,k,b,S,n)$ and $J_4^i(z,k,b,0,n)$ and $J_4^i(z,k,b,L(1+\zeta),n)$. This last value will require interpolation.[4] Calculate $\mathscr{R}(z,k,b,L)$ and $\mathscr{R}(z,k,b,0)$ and $\mathscr{R}(z,k,b,S)$ using (11) and J_1^{i-1}. Calculate $\mathscr{D}(z,k,b,L)$ and $\mathscr{D}(z,k,b,0)$ and $\mathscr{D}(z,k,b,S)$ and save them for the last step. Calculate the plaintiff objective (10) at (L,S) using these values. Note $d(z,k,b,L(1+\zeta),n)$ will need to be calculated using the nearest point to $L(1+\zeta)$, not interpolation, since it must be zero or one.[5] We can exploit the uniform distribution:

$$\mathbb{E}[(1-\omega)\mathbb{1}(\omega > \omega_*(S))] = \frac{1}{\omega_H - \omega_L}\int_{\omega_*(S)}^{\omega_H}(1-\omega)d\omega = \frac{1}{\omega_H-\omega_L}\left(\omega_H - \omega_*(S) - \frac{\omega_H^2 - \omega_*^2(S)}{2}\right)$$
$$\mathbb{E}[(1-\omega)\mathbb{1}(\omega > \omega_*(S))] = 1 - \frac{\omega_H+\omega_L}{2} \text{ if } \omega_*(S) < \omega_L$$
$$\mathbb{E}[(1-\omega)\mathbb{1}(\omega > \omega_*(S))] = 0 \text{ if } \omega_*(S) > \omega_H.$$

Let $S_*(z,k,b,n,L)$ denote the S value that achieves the highest value of the plaintiff's objective. Save an $N_{\tilde{O}} \times 1$ vector containing $S_*(z,k,b,n,L)$ for each L and an $N_{\tilde{O}} \times 1$ vector containing $\omega_*(S_*(z,k,b,n,L),L)$ for each L.

4. Loop over the N_O possible values of L using the grid $G_{\tilde{O}}$. Calculate an $N_O \times 1$ vector $J_1(z,k,b,n,L)$ as

$$\begin{aligned} J_1(z,k,b,n,L) &= (1-P(n))J_4^i(z,k,b,0,n) \\ &+ P(n)\Big[J_4^i(z,k,b,S_*(z,k,b,n,L),n)\frac{\omega_*(S_*(z,k,b,n,L),L)-\omega_L}{\omega_H-\omega_L} \\ &+ \mathbb{E}[\omega\mathbb{1}(\omega > \omega_*(S_*(z,k,b,n,L),L))]J_4^i(z,k,b,0,n) \\ &+ \mathbb{E}[(1-\omega)\mathbb{1}(\omega > \omega_*(S_*(z,k,b,n,L),L))]J_4^i(z,k,b,L(1+\zeta),n)\Big]. \end{aligned} \tag{A.3}$$

In this equation, ω_* and S_* are calculated using the $N_O \times 1$ vectors from step 3. $J_4^i(z,k,b,L(1+\zeta),n)$ is interpolated. $\mathbb{E}[(1-\omega)\mathbf{1}(\omega > \omega_*(S_*(z,k,b,n,L),L))]$ is calculated using the formula above and $\mathbb{E}[\omega\mathbf{1}(\omega > \omega_*(S_*(z,k,b,n,L),L))]$ is calculated using the

[4] Note, if we make the grid $G_{\tilde{O}}$ include very high values, the firm will surely default after large realizations of L, so we can safely assume $J_4^i(L(1+\zeta)) = 0$ when considering values of L that are so high that $L(1+\zeta)$ is off the grid.

[5] Again, this can be treated as 0 if $L(1+\zeta)$ is off the grid.

following analog:

$$\mathbb{E}[\omega \mathbb{1}(\omega > \omega_*(S))] = \frac{1}{\omega_H - \omega_L} \int_{\omega_*(S)}^{\omega_H} \omega d\omega = \frac{1}{\omega_H - \omega_L} \left(\frac{\omega_H^2 - \omega_*^2(S)}{2} \right)$$
$$\mathbb{E}[\omega \mathbb{1}(\omega > \omega_*(S))] = \frac{\omega_H + \omega_L}{2} \text{ if } \omega_*(S) < \omega_L$$
$$\mathbb{E}[\omega \mathbb{1}(\omega > \omega_*(S))] = 0 \text{ if } \omega_*(S) > \omega_H.$$

5. Multiply the $N_O \times 1$ vector $J_1(z,k,b,n,L)$ by the $1 \times N_O$ vector $\mathbb{P}(L)$ given by the exponential distribution implied probability of a realization L. Call the resulting scalar $J_1(z,k,b,n)$.

6. Holding z,k,b fixed, view $J_1(z,k,b,n)$ as an $N_n \times 1$ vector. Choose the highest value and call it $J_1^i(z,k,b)$. Call the optimal n $n^i(z,k,b)$.

7. Thus far, we have viewed the fixed values z,k,b as time t values in evaluating formulas. In an abuse of notation, we now take the same fixed values z,k,b but interpret them as $k_{t+1} = k, b_{t+1} = b, z_t = z$ to calculate $q^i(z_t, k_{t+1}, b_{t+1}) = q^i(z,k,b)$. Loop over the N_O possible values of L using the grid $G_{\tilde{O}}$ and loop over the N_z possible values of z'. For each of the $N_O \times N_z$ potential values of L, z', we use the previously computed values to calculate $t+1$ default decisions based on the potential $t+1$ realization L, z' and the potential litigation outcomes:

$$d^{tmp}(0) = d^i(z',k,b,0,n^i(z',k,b))$$
$$d^{tmp}(L(1+\zeta)) = d^i(z',k,b,L(1+\zeta),n^i(z',k,b))$$
$$d^{tmp}(S_*(z',k,b,n^i(z',k,b))) = d^i(z',k,b,S_*(z',k,b,n^i(z',k,b)),n^i(z',k,b)).$$

We emphasize that z',k,b are all interpreted as $t+1$ values, and thus these are valid optimal default decisions at time $t+1$. By the same logic, we calculate potential recoveries using the values from step 2:

$$\mathscr{D}^{tmp}(0) = \mathscr{D}(z',k,b,0)$$
$$\mathscr{D}^{tmp}(L) = \mathscr{D}(z',k,b,L)$$
$$\mathscr{D}^{tmp}(S_*(z',k,b,n^i(z',k,b))) = \mathscr{D}(z',k,b,S_*(z',k,b,n^i(z',k,b))).$$

Next, we use k_*, b_* from step 1 to calculate the optimal choices $k_{t+2} = k_*(z',k,b)$ and

$b_{t+2} = b_*(z', k, b)$, noting again that z', k, b are interpreted as $t+1$ values. Define

$$\mathscr{P}^{tmp}(z', k, b) = (c + \lambda + (1-\lambda)q^{i-1}(z', k_*(z', k, b), b_*(z', k, b)))b, \tag{A.4}$$

which is the payoff creditors receive at $t+1$ if $z_{t+1} = z'$ and the firm does not default. We use all the above values to calculate:

$$\begin{aligned}
&q^{tmp}(z', k, b, L) = q^{tmp}(z_{t+1}, k_{t+1}, b_{t+1}, L_{t+1}) \\
&= (b^{-1})\beta \times \Big[(1 - P(n^i(z', k, b))) \times \big[(1 - d^{tmp}(0))\mathscr{P}^{tmp}(z', k, b) + d^{tmp}(0)\mathscr{D}^{tmp}(0)\big] \\
&+ P(n^i(z', k, b)) \times \Big(\frac{\omega_*(S_*(z', k, b, n, L), L) - \omega_L}{\omega_H - \omega_L} \\
&\times \big[(1 - d^{tmp}(S_*(z', k, b, n, L)))\mathscr{P}^{tmp}(z', k, b) + d^{tmp}(S_*(z', k, b, n, L))\mathscr{D}^{tmp}(S_*(z', k, b, n, L))\big] \\
&+ \mathbb{E}[(1 - \omega)\mathbb{1}(\omega > \omega_*(S_*(z', k, b, n, L)))] \\
&\times \big[(1 - d^{tmp}(L(1+\zeta)))\mathscr{P}^{tmp}(z', k, b) + d^{tmp}(L(1+\zeta))\mathscr{D}^{tmp}(L)\big] \\
&+ \mathbb{E}[\omega\mathbb{1}(\omega > \omega_*(S_*(z', k, b, n, L)))] \\
&\times \big[(1 - d^{tmp}(0))\mathscr{P}^{tmp}(z', k, b) + d^{tmp}(0)\mathscr{D}^{tmp}(0)\big] \Big)\Big].
\end{aligned}$$

Finally, for the given z', L in the loop, calculate $P(z'|z)$ and $P(L)$ using the exogenous distributions. Update:

$$q^i(z, k, b) = q^i(z_t, k_{t+1}, b_{t+1}) = \sum_{L \in G_{\tilde{O}}} \sum_{z' \in G_z} q^{tmp}(z', k, b, L) P(z'|z) P(L). \tag{A.5}$$

At this point, we move to the next value of z, k, b, n. Looping through all possible values completely defines a new iteration of the functions J^i and q^i. We repeat this until q^i is close to q^{i-1} and J_1^i is close to J_1^{i-1}.

A.2 Estimation Procedure

Our estimation strategy combines calibration of standard parameters with simulated method of moments (SMM) estimation to identify the key structural parameters governing firm behavior, litigation dynamics, and bankruptcy outcomes. We jointly estimate these parameters by minimizing the distance between model-implied moments and their empirical counterparts from Compustat and Audit Analytics.

A.2.1 Calibrated Parameters

We start with parameters that are standard in the literature. The discount factor β is set to match an annual risk-free rate of 3%. The maturity rate λ is set to match the average maturity of bonds in the Fixed Income Securities Database (FISD) issued by firms in our Compustat sample over the period 1970-2025. The coupon rate c is set to $(r+\lambda)/(1+r)-\lambda$, so that the price of default-risk-free debt is equal to $1/(1+r)$. The corporate tax rate, τ_c, is set to 35%; the dividend tax rate, τ_d, is set to 15%.

A.2.2 Estimated Parameters

We estimate the remaining 17 structural parameters using simulated method of moments: the production technology parameters (θ, ρ, σ_ϵ, δ), financing friction parameters (ϕ, γ_{e0}, γ_e, f), litigation parameters (μ, σ, ω_L, ω_H, ζ, ι, π), and bankruptcy parameters (ξ, κ). We use 21 moments to identify these parameters. Our identification strategy aims at making the model fit the data as closely as possible. Since we estimate these parameters in one joint SMM system, we allow each moment to respond to all parameters in estimation.

The SMM estimation minimizes a distance criterion between model-generated moments and actual data moments. For an arbitrary parameter vector Θ, we solve the dynamic problem and generate policy functions. We then use these policy functions to simulate a panel dataset of $(KN, T+100)$ observations, where K is the number of simulated panel datasets, N is the number of firms in the actual data, and T is the time dimension. The first 100 periods are discarded to start from the ergodic distribution.

Let x_{it} be the actual data vector, $i \in \{1,\ldots,N\}$, $t \in \{1,\ldots,T\}$, and let $y_{itk}(\Theta)$ be the simulated vector from simulation k, $i \in \{1,\ldots,N\}$, $t \in \{1,\ldots,T\}$, and $k \in \{1,\ldots,K\}$. Define the moment conditions as

$$\frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T}\left[h(x_{it}) - \frac{1}{K}\sum_{k=1}^{K} h(y_{itk}(\Theta))\right] \equiv \Psi^A - \Psi^S(\Theta), \tag{A.6}$$

where $h(y_{itk}(\Theta))$ is a vector of simulated moments and $h(x_{it})$ is the actual data moments. $\Psi^A = \frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T} h(x_{it})$, $\Psi^S(\Theta) = \frac{1}{NTK}\sum_{i=1}^{N}\sum_{t=1}^{T}\sum_{k=1}^{K} h(y_{itk}(\Theta))$.

The simulated moments estimator is defined as the solution to the minimization of

$$\hat{\Theta} = \arg\min_{\Theta} \left[\Psi^A - \Psi^S(\Theta)\right]' \hat{W} \left[\Psi^A - \Psi^S(\Theta)\right], \tag{A.7}$$

where $\hat{W}$ is a positive definite weighting matrix that converges in probability to a deterministic positive definite matrix W. It is constructed by calculating the inverse of the variance-covariance matrix of the data moments. Define Ω as the variance-covariance matrix of the data moments Ψ^A. Following Lee and Ingram (1991), under the estimating null, the variance-covariance of the simulated moments $\Psi^S(\Theta)$ equals $\frac{1}{K}\Omega$. Since Ψ^A and $\Psi^S(\Theta)$ are independent by construction, $\hat{W} = \left[\left(1+\frac{1}{K}\right)\Omega\right]^{-1}$. We calculate Ω using the influence function method following Whited and Erickson (2002). Following Nikolov and Whited (2014), we demean each variable at the firm level and then calculate the influence functions for each moment using the demeaned data. We then covary these influence functions by summing in both the cross-sectional and time series dimensions.

We use a simulated annealing algorithm for minimizing the objective function. This starts with predefined first and second guesses. For the third guess onward, it takes the best prior guess and randomizes from this to generate a new set of parameter guesses. Over time the algorithm "cools", so that the variance of the parameter jumps falls, allowing the estimator to fine-tune its parameter estimates around the global best fit. We restart the program with different initial conditions to ensure the estimator converges to the global minimum. The simulated annealing algorithm is extremely slow, which restricts the size of the parameter space that can be estimated. Nevertheless, we use this algorithm because it is robust to the presence of local minima and discontinuities in the objective function across the parameter space.

The simulated moments are asymptotically normal for fixed K. Denote $g(\Theta) \equiv \Psi^A - \Psi^S(\Theta)$. The asymptotic distribution of Θ is given by:

$$\sqrt{n}(\Theta - \hat{\Theta}) \xrightarrow{d} \mathcal{N}\left(0, avar(\hat{\Theta})\right), \tag{A.8}$$

where

$$avar(\hat{\Theta}) = \left(1+\frac{1}{K}\right)\left[\frac{\partial g}{\partial \Theta'} W \frac{\partial g}{\partial \Theta}\right]^{-1}\left[\frac{\partial g}{\partial \Theta'} W \hat{\Omega} W \frac{\partial g}{\partial \Theta}\right]\left[\frac{\partial g}{\partial \Theta'} W \frac{\partial g}{\partial \Theta}\right]^{-1}, \tag{A.9}$$

where $\hat{\Omega}$ is the probability limit of a consistent estimator of the covariance matrix. We calculate the estimate of this covariance matrix using the influence function of the moment vector clustered at the firm level following Erickson and Whited (2002).

B Empirical Appendix

B.1 Data, Sample, and Variable Construction

As discussed in Section 3.1, our Compustat sample covers all U.S. firms in the Compustat North America Fundamentals Annual database over the period 1970-2025. We exclude financial firms and regulated entities: SIC codes beginning in 6, 49, or 9. We drop firms with weakly negative or missing values of the following variables: sales; gross property, plants, and equipment (ppegt); or assets.

To merge Compustat with the IAA data, we obtain historical CIK codes from WRDS, as these codes often change after bankruptcy filings. We merge Compustat firm-year observations to lawsuits or bankruptcies by CIK. To capture bankruptcies filed by a Compustat firm's subsidiaries, or lawsuits targeting such a subsidiary, we use the WRDS mapping from Compustat firms to subsidiary names. After standardizing subsidiary names, we merge by exact name matches. Since employer identification numbers (EINs) are available for bankruptcies, we also rely on EINs to match bankruptcies to Compustat firms.

We calculate market leverage as the ratio of (i) total debt, calculated as the sum of long-term debt (dltt) and debt in current liabilities (dlc), to (ii) the sum of total debt and the market capitalization of equity (the product of csho and prcc_f).

To calculate the investment ratio, we impute missing values of capital expenditures (capx) to be zero, subtract the similarly imputed sale of PPE (sppe), and divide by the lagged value of gross PPE.

We calculate profitability as the ratio of operating income before depreciation (oibdp) to lagged assets. The growth rate of income is the ratio of oibdp to lagged oibpd. To calculate the serial correlation of profitability, we use the Stata command xtabond2 to estimate a panel regression of profitability on lagged profitability by the generalized method of moments (GMM). We then calculate the variance of the residuals from this regression.

We define equity issuance as the sale of common and preferred stock (sstk) minus preferred issuance,[6] where we impute a zero for sstk if it is missing. We normalize this by lagged assets (at). We replace equity issuance with a zero if equity issuance is less than 2% of lagged assets. Using this metric, we define an indicator for positive equity issuance.

We define Tobin's Q in three steps. First, we define book equity as (i) stockholders' equity (seq), which is imputed as assets minus liabilities if it is missing,[7] plus (ii) deferred taxes and investment credit (txditc), which is imputed as zero when missing, minus (iii) preferred equity (pstk), which is imputed as pstkl or pstkrv when missing. Second, we construct the

[6] This is the change in pstk, or the change in pstkl or pstkrv when pstk is missing. We impute a zero if all of these variables are missing or if the change is negative.

[7] We also attempt to impute as the sum of common equity and preferred equity when this is missing.

numerator for Tobin's Q as (i) the market capitalization of equity, plus (ii) the book value of assets, minus (iii) the book value of equity. This numerator represents the sum of the book value of liabilities and the market capitalization of equity. Finally, we divide by assets. We winsorize all continuous Compustat variables at 5% and 95%.

Finally, to construct the litigation variables, we begin with the set of lawsuits with a defendant that we can match to a firm in our Compustat sample. To measure the settlement rate, we keep lawsuits in which the outcome is one of the following three outcomes: (i) the defendant wins in trial; (ii) the plaintiff wins in trial; or (iii) the case is settled. We calculate an indicator for settlement and average across lawsuits to calculate the settlement rate. We then drop settlements and average an indicator for the defendant winning in trial to calculate the rate of defendant victories.

To measure moments related to lawsuit claim and settlement amounts, we replace claim or settlement amounts equal to zero as missing, following IAA's convention. We then divide the claim or settlement amount by the defendant's assets. If there are multiple defendants, we divide the claim or settlement amount by the number of defendants (i.e., assume each paid an equal share) and divide by the smallest defendants' assets. We winsorize these variables at 2% and 98%.

Finally, to calibrate the debt maturity parameter, we collect the set of all bonds issued by firms in our Compustat sample over the period from 1970 to 2025 from the Fixed Income Securities Database (FISD). We calculate the average maturity at issuance to equal 11.44 years and take the inverse to calculate $\lambda = 1/11.44 = 0.087$.