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## EMPLOYEE BANKRUPTCY TRAUMA

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## Employee Bankruptcy Trauma

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### ABSTRACT

*Bankruptcy filings are thought to be traumatic events that demoralize workers and spark employee flight. Using social media data, I present evidence suggesting that this belief is both accurate and, to a large extent, overstated. Online employee reviews show that employees of distressed firms are much more likely to complain about corporate culture and the firm's financial struggles after their employer files for Chapter 11. This may translate into real action, as I also observe a sharp increase in employee departures immediately following the bankruptcy filing. However, viewed in fuller context, these departures are best described as a continuation of a steady rise in employee attrition that began, on average, a year prior to bankruptcy, suggesting that workforce response to Chapter 11 filings is more a story of continued flight from a distressed employer than an abrupt shift following a federal bankruptcy filing.*

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## 1. INTRODUCTION

It is widely assumed that employees suffer and become demoralized when their employer files for Chapter 11 bankruptcy. For example, when Hertz filed for Chapter 11 in 2020, it warned that, for the duration of the bankruptcy proceeding, “our employees will face considerable distraction and uncertainty and we may experience increased levels of employee attrition.”<sup>1</sup> In the financial and legal literature, what I refer to as “employee bankruptcy trauma” has long been recognized as one of the indirect costs of bankruptcy (e.g. Opler and Titman 1994; Altman 1984; Bris, Welch, and Zhu 2006).<sup>2</sup> Hertz explained that “publicity associated with the Chapter 11 case” could discourage its employees, causing some workers to lose motivation and others to flee, and that the firm would have a harder time finding new workers to replace them.<sup>3</sup> In other words, the institutional design of bankruptcy law, with its reliance on highly public federal court hearings, creates a trade-off: firms may benefit from accessing the tools that Congress provided to resolve financial distress, but at the cost of, among other things, reducing the firm’s ability to retain, motivate and attract a value-maximizing workforce.

However, there are reasons to be skeptical of the prevailing narrative and to instead be optimistic that Chapter 11 might make things better. After all, Chapter 11 firms are nearly always suffering from financial distress prior to any bankruptcy filing and the experience of employees may not change as a result of a court filing. Indeed, the employee experience could very well improve as employers obtain the powers of a Chapter 11 debtor. Among other things,

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<sup>1</sup> Hertz Global Holdings, Inc., Prospectus Supplement (Form 424B5) (June 12, 2019), [https://www.sec.gov/Archives/edgar/data/1657853/000110465920073132/tm2022223-1\\_424b5.htm](https://www.sec.gov/Archives/edgar/data/1657853/000110465920073132/tm2022223-1_424b5.htm).

<sup>2</sup> For example, one company asked creditors to agree to an out-of-court restructuring in part to avoid “disruptions to our . . . employees” and “reputational damage resulting from the filing of a bankruptcy case.” *See* CIT Group Inc., Offering Memorandum, Disclosure Statement and Solicitation of Acceptances of a Prepackaged Plan of Reorganization (Form 8-K, Ex. 99-2) (October 1, 2009), <https://www.sec.gov/Archives/edgar/data/0001171825/000095012309047816/y02330exv99w2.htm>.

<sup>3</sup> *See fn. 1 above.*

bankruptcy law allows firms to relax financial constraints with new borrowing (Triantis 1993, 2000; Ayotte and Skeel 2013) and to pay retention and incentive bonuses when necessary (Ellias 2018). Moreover, there are reasons to be suspicious that firms like Hertz might opportunistically deploy the specter of mass employee departure to pressure bankruptcy judges into agreeing to quick bankruptcy cases, and as such, less judicial oversight (Ayotte and Ellias 2022).

In this paper, I use new data to provide the first empirical evidence of how employees of Chapter 11 firms respond to their employer's bankruptcy filing. The question is important, because employee bankruptcy trauma is one of several hypothesized indirect costs of bankruptcy that shape how practitioners advise companies to use the bankruptcy system. Companies often delay and avoid filing for bankruptcy due to concerns that it would damage the business even if the tools of bankruptcy law might be helpful in resolving financial distress. Bankruptcy judges routinely abbreviate the Chapter 11 process after being told that the firm cannot survive a prolonged bankruptcy case (Jacoby and Janger 2014).<sup>4</sup> To the extent that employee bankruptcy trauma turns out to lack an empirical basis, it would suggest that a channel – not the only one, but an important one – through which a bankruptcy filing theoretically damages a firm may be less important than policymakers assume. Conversely, to the extent that employee flight is substantial and widespread, it would provide additional support for speeding bankruptcy proceedings as much as possible.

This paper's approach is to look for evidence of employee responses to Chapter 11 bankruptcy filings in social media data, which offer initial, albeit imperfect, insights. As further explained below, I build a new dataset that combines two social media data sources – employee

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<sup>4</sup> See e.g. *In re Lehman Bros. Holdings Inc.*, 445 B.R. 143, 154 (Bankr. S.D.N.Y. 2011) (noting that employees were fleeing the firm after a bankruptcy filing, justifying a quick auction with little time for creditors to investigate alternatives).

reviews from Glassdoor and employee work history from social media profiles – to learn more about how employees react to their employer’s Chapter 11 filing. I use a combination of manual coding, machine learning and statistical analyses to look for evidence supporting the prevailing view that bankruptcy filings damage the firm and evidence supporting the possibility that bankruptcy oversight may not change much at all and might even make things better.

Using Glassdoor data, I document a battery of new facts about how employees review their employer after a Chapter 11 filing. I use a combination of hand-coding and machine learning to study the text of a dataset of 1.7 million employee reviews. The data tell a nuanced story: while reviewing employees do not appear to downgrade their employer after it files for bankruptcy relative to pre-bankruptcy reviews of the same firm, the content of their reviews change significantly. In a firm fixed effects regression framework, I find that reviews left by employees immediately after a bankruptcy filing are more likely to complain that their employer is financially distressed compared to reviews immediately prior to the filing, which is consistent with the view that the publicity around a bankruptcy filing increases the salience of a firm’s financial condition for employees. Among other changes in review content, they are also more likely to note that the firm is performing poorly, to complain about the firm’s corporate culture and to express frustration with the firm’s underinvestment in needed resources.

Next, I look for evidence that employees flee Chapter 11 firms using social media data. Using public social media profiles, I first establish that financially distressed firms have a significantly higher rate of employee attrition, and that Chapter 11 status is associated with a higher rate of attrition in the cross-section even after controlling for firm financial distress. Focusing on Chapter 11 firms, attrition appears to begin to increase in the year prior to bankruptcy and then sharply spike after the firm enters bankruptcy protection. The median

reorganizing Chapter 11 firm loses roughly 10% of total headcount by the time it leaves bankruptcy protection, including both employee departures and new arrivals. Firms filing for Chapter 11 are typically in shrinking industries, but the median industry peer sheds a smaller proportion of workers (-5%) over the same period that the Chapter 11 firm is reorganizing in bankruptcy court.

Finally, I also look for evidence that a bankruptcy filing could be associated with lasting damage, a possibility I refer to as “lingering bankruptcy trauma.” The basic idea is that the reputational taint of bankruptcy could linger and discourage employees even after the firm formally reorganizes in Chapter 11. I find instead that firms appear to stabilize post-bankruptcy: controlling for firm financial condition, employees of firms that reorganized in bankruptcy do not appear to be more likely to complain that their firm is currently distressed or was distressed in the past. Reviewing employees also appears to sharply reduce their complaints about corporate culture after their employer leaves bankruptcy. Additionally, observed attrition falls in line with industry peers. In sum, bankruptcy filings do appear to bring relief to the employees of struggling firms, but only after the company emerges from bankruptcy.

Taken together, the evidence in the study suggests that the story of Chapter 11 employee departure may have more to do with pre-existing financial distress than abrupt adjustments following a bankruptcy filing. Further, it appears that successful reorganizations are associated with the firm returning to levels of attrition consistent with industry norms and that employee discussion of financial distress diminishes, suggesting that bankruptcy law’s powerful tools for reorganizing translates into the workplace.

To be sure, these conclusions come with caveats. The study relies on imperfect social media data that may be unrepresentative and without random assignment I am observing the

cross-section of firms that select in Chapter 11, making it impossible to truly isolate the workforce response to a bankruptcy filing. I can only observe the firms and industries that use the bankruptcy system, so while that is a large range of employer it is possible that this analysis might be different for types of firms that seldom file for Chapter 11 to solve financial troubles, such as professional services firms. I also cannot conclusively identify that employees are responding to the news of bankruptcy even if they write reviews or find new jobs around the time of the bankruptcy filing. Some of the evidence is also ambiguous, as employee departure can, in some cases, be part of value maximizing business plans. But overall, the study provides a first glimpse into an important question and the evidence does not support the view that bankruptcy filings lead to, on average, massive waves of employee flight and dislocation.

This paper proceeds as follows. Section II situates this research project in the broader financial and legal literature. Section III uses Glassdoor data to examine how employee reviews change when a firm is financially distressed and when it is in Chapter 11. Section IV uses LinkedIn data to study the relationship between financial distress, bankruptcy status and workforce turnover. Section V examines post-bankruptcy firms and Section VI briefly analyzes the implications of the findings. Section VII concludes.

## 2. LITERATURE REVIEW

This paper stems from a broader empirical project that aims to help clarify theoretical confusion in the literature, which often refers interchangeably to “the indirect costs of bankruptcy” and “the indirect costs of financial distress,” usually without identifying the specific, additional costs that a formal bankruptcy procedure creates for firms. A common approach is to treat the formal bankruptcy system as a state of “super distress” (e.g., Sautner and

Vladimirov 2018). This cannot be right, however, at least all of the time. As a matter of theory, firms file for Chapter 11 when they believe that doing so is value maximizing and restructure outside of bankruptcy when they believe that is the value maximizing course of action (Bratton and Levitin 2018). While some firms file for bankruptcy because they need immediate court protection, other firms simply believe that accessing the tools of bankruptcy law is the right medicine for their problems.

I refer to the theoretical damage that bankruptcy law imposes on a company above and beyond the existing costs of financial distress as “bankruptcy trauma.” Donaldson et. al. (2020, p. 8) suggest that the additional deadweight costs of bankruptcy, above and beyond the deadweight costs of financial distress, are “professional fees, inefficient judicial decisions, separations from suppliers/trade creditors/customers and other factors.” This project seeks to examine one potential channel through which bankruptcy trauma might damage a firm – employee flight and demoralization, which could lead to lost productivity – and to look for evidence that bankruptcy law changes a firm’s ability to recruit, motivate and retain employees.

I focus on the fear of employee flight because the belief that the bankruptcy system both demoralizes employees and inspires them to leave their jobs is widely held by practitioners and shapes corporate decision-making. For example, a prominent guide for bankruptcy lawyers warns that the failure to hide preparations for a Chapter 11 filing will negatively affect employee morale and harm the business (Gross et al. 2020). In 2010, when a newspaper filed for bankruptcy, it warned that a potential “cost of the [bankruptcy filing]” was “disruptions to our business, employees and customers.”<sup>5</sup> Bankruptcy law goes to lengths to protect the assets of

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<sup>5</sup> Disclosure Statement Filed by James T. Wilson-BJJ Jr. on behalf of Morris Publishing Group LLC., *In re* Morris Publishing Group, LLC et al., No. 10-10134-JSD (Bankr. S.D. Ga. Jan. 19, 2010), ECF No. 12.



Chapter 11 debtors, but no court can issue an order keeping employees from being distracted or forcing them to remain at their jobs.

As a result of the specter of employee flight and other bankruptcy costs, judges have developed doctrines to allow firms to leave bankruptcy quickly (e.g. Baird and Rasmussen 2002), but this flexibility may come at the expense of the statutory scheme and procedural safeguards of Chapter 11. For example, Chapter 11 provides creditors with legal protection, such as the right to receive disclosure about the firm and a mandatory 28-day period to object to insufficient disclosure before a creditor vote on a plan of reorganization.<sup>6</sup> Bankruptcy judges routinely disregard these protections when evidence suggests that the underlying business is being damaged by operating in Chapter 11 and have even been willing to abbreviate the bankruptcy process to a single day, in part out of fear that fragile firms cannot survive Chapter 11 (LoPucki 2022).

Despite the widespread belief that bankruptcy trauma negatively impacts the value of distressed companies, relatively little is known about the channels through which bankruptcy stigma might operate (Lubben 2014). In the case of the workforce channel, it could be employee response to reputational damage (Branch 2002) or the fear of employees that the firm's performance will suffer even more as a result of lost sales, lost opportunities due to managerial distraction, underinvestment or asset substitution (Altman 1984; Opler and Titman 1994). It could also be a strategic decision on the part of individual employees who, anticipating some corporate change that could affect their jobs or wages, rationally reduce their investment in their relationship with the firm (Andres et. al 2021).

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<sup>6</sup> See FED. R. BANKR. P. 3017.

In the M&A context, Andres et. al (2021) use several measures of firm productivity (for example, sales as a ratio to employees) and find an association between rumors that a firm will be involved in M&A and reduced employee productivity, consistent with transformative corporate transactions causing “low employee morale, increased stress, resistance to change, higher turnover and lower productivity” (Burlew, Pederson and Bradley 1994, p. 22). Shleifer and Summers (1988) contend that M&A transactions, which are routinely the outcome of a bankruptcy process, often involve redistribution of wealth from employees to investors.

This paper joins an emerging literature exploring the relationship between human capital and financial distress (Matsa 2018). Brown and Matsa (2016) study data from an online job board and find that an increase in credit default swap prices is associated with reduced applicant interest in the jobs posted by 40 prominent financial firms. Baghai, Silva, Thell and Vig (2021) use Swedish administrative data to show that workers with the highest cognitive and noncognitive skills (as measured by scores on Swedish military entrance exams that were mandatory at the time for 18-year-old men) are relatively more likely to leave firms in the three years prior to bankruptcy. Gortmaker et. al. (2022) examine employee behavior around negative credit events such as “downwatches” from ratings agencies and find that employees appear to engage in increased networking activity (such as initiating new connections) in the wake of a downwatch announcement, suggesting that workers respond to credit deterioration by looking to flee.

In another related paper, Graham et al. (2021) use yearly census microdata to identify substantial employee losses associated with their employers’ decision to file for bankruptcy. They use a sample of 234,000 workers employed by 120 firms that filed for Chapter 11 bankruptcy between 1992 and 2005. Their major finding is that compared to control firms,

employees of Chapter 11 firms were likely to earn less money in the lead up to bankruptcy and appear to suffer a significant earnings penalty that endures for several years after the bankruptcy.

This paper builds on prior work by studying a vast array of data – employee reviews and social media profiles – and bringing them together to tell a cohesive story about employee response to formal bankruptcy filings. Prior literature focuses on firms that are financially distressed or uses the visible nature of a federal bankruptcy filing to identify a sample of distressed firms, with a hope of learning more about the effects of financial distress. The advantage of this approach is that it allows me to try to disentangle, as best as possible, a firm’s financial distress from its decision to restructure in Chapter 11 – that is, to learn about the additional costs that the formal bankruptcy system may impose on financially distressed firms, which are presumably counterbalanced by the benefits of Chapter 11. The lessons of the project are relevant not just for the literature on optimal capital structure and labor economics, but also the large literature on the design of an ideal insolvency regime (e.g. Adler 1997; Schwartz 1998).

### 3. HOW DO EMPLOYEES EXPERIENCE CHAPTER 11 FILINGS?

In this section, I use evidence from Glassdoor reviews to study how employees respond to the decision of their firm’s board of directors to reorganize their finances through the bankruptcy system.

As a threshold matter, there are a number of data limitations that qualify this analysis. First, I am not using a sample of random employee survey responses – the employees providing reviews are either motivated by their interests in finding another job (and hence spending time on a job search website) or are motivated to review their employer because they want to share their views of their company with the world. Second, while the topics that employees choose to

discuss in written reviews are likely the topics that are most salient to them at the time they write the review, Glassdoor is not performing an in-depth interview that might uncover deeper motivations. Third, financially distressed firms do not randomly select Chapter 11 and do not randomly choose to file for Chapter 11 with different levels of preparation for bankruptcy.

Accordingly, the analysis in this section should be understood as looking for evidence consistent with the hypothesis that a bankruptcy filing increases the salience of the firm's financial condition for employees (consistent with the view that Chapter 11 negatively impacts a firm's reputation), and hence, demoralizes employees and hurts a firm's culture (and, perhaps, its productivity, although that I cannot observe directly). As I will describe, the results are consistent with this view.

### 3.1. Glassdoor Data Description and Sample Preparation.

The first dataset in this study was provided by Glassdoor, which is a widely used website where employees post reviews of their current and former employers. Glassdoor uses a “give to get” model where website visitors interested in reading the websites' employee reviews must provide an employee review of their own. While this dataset is crowdsourced and, as such, suffers from reporting bias and other potential sources of measurement error, other research has shown, among other things, that increasing Glassdoor ratings are associated with improved financial performance (Green et al. 2018). Researchers studying the reliability of Glassdoor data have found that Glassdoor reviews contain both positive and negative feedback and that reviewers are not just using the website to vent frustration (Landers, Brusso, and Auer 2019). Employers take Glassdoor so seriously that they encourage employees to provide positive reviews online (Winkler and Fuller 2019; Chung 2020). While it is not a perfect dataset, it

provides a window into a large sample of contemporaneous employee survey responses for Chapter 11 firms, which is not available anywhere else to the best of my knowledge.

Glassdoor respondents provide two different categories of information: quantitative reviews on pre-defined attributes and text responses to broad, open-ended questions. First, Glassdoor reviewers rate their companies on several attributes on a scale of 1-5 (including overall satisfaction, satisfaction with senior management, career opportunities, compensation and other categories). Second, Glassdoor respondents provide responses to open-ended questions providing the “pros” and “cons” of working at the employer, including “the best reasons” and “downsides” of working at the company.

The data used in this paper consists of employee reviews that were submitted between January 2008 and December 2018. Glassdoor’s initial dataset for this period consists of 6.3 million reviews covering 424,000 employers. I begin by merging Glassdoor’s data with a cross-walk file generously shared by Green, Huang, Wen, & Zhou (2018) who hand-matched Glassdoor’s internal identifiers to CRSP, which I mapped back to the dataset of SEC filings and stock returns maintained by Sharadar. I then work with a team of research assistants who hand-matched three additional lists of firms to the Glassdoor data: (1) the list of firms that filed for Chapter 11 maintained by Next Generation Research; (2) the list of firms with public bond debt maintained by MergentFISD; and (3) the list of firms with privately traded bank loans maintained by Data in Harmony. The final sample includes 1.7 million reviews written by the employees of 6,781 employers, of which 1,006 filed for bankruptcy during the sample period.

I supplement the Glassdoor dataset by linking it to other datasets and gathering more data. To gain additional insight into the financial condition of these companies, I use bond price data from TRACE and public stock market pricing data from Sharadar. I also downloaded all of

the Securities & Exchange Commission filings of each sample firm. For each Chapter 11 firm, I obtained additional information on the firm's bankruptcy from documents on the court docket, especially the disclosure statement for the plan of reorganization.

I take two main approaches to identifying firms in financial distress. The first is market-based and the second relies on the firm's accountants to provide information. First, I identify a sample of firms with outstanding bond debt that is trading at or below 70 cents on the dollar, on average, in a given calendar quarter, yielding a sample of 2,715 firm-quarter periods of distress, corresponding to 749 firms and 35,026 employee reviews. Second, I look for firms whose auditors have issued going-concern qualifications as disclosed in documents filed with the SEC, which I use automated searches and machine learning to identify, yielding a sample of 453 firms corresponding to 1,723 quarters and 9,310 employee reviews. A going-concern qualification is a statement from a firm's auditor expressing doubt that the firm will be able to pay its debts and continue operating (Menon and Schwartz 1987).

To gain more insight into the aspects of the employee reviews that go beyond the numerical measures in the categories that Glassdoor studies, I use a combination of hand-coding and machine learning to learn more about themes that closely tie to financial distress and its sources and consequences. After reviewing a random sample of Glassdoor reviews, I created a list of seven themes that capture elements of either poor firm performance or financial distress. A team of research assistants that then coded a stratified random 1% sample as a training set, or 18,197 employee reviews, in search of these themes, as Table 1 summarizes.<sup>7</sup>

[Table 1 here]

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<sup>7</sup> The stratified sample draw is summarized in Part A of the Data Appendix.

I then train a supervised machine learning model to label the rest of the corpus by leveraging the hand-coded training data. I first converted each review to word embeddings in a continuous bag of words vector space model using the Word2Vec package. I trained a support vector classifier model using a term frequency inverse document frequency transformer (TF-IDF), which gives greater weight to words that occur less frequently in the data. The model appeared to be highly accurate both in machine validation tests and in hand-examination of the labels that the model attached to the rest of the corpus, as the Data Appendix discusses. For example, examining the “*Firm is Financially Distressed*” classification, in five-fold cross-validation the model was 87.2% accurate and hand-inspection of machine labeled reviews showed a similar high degree of accuracy.<sup>8</sup>

### 3.2. Cross-Sectional Associations Between Financial Distress, Bankruptcy Status and Employee Reviews.

[Table 2 here]

Glassdoor collects demographic information on its survey respondents and asks them to rank the employer on a variety of metrics, including approval of the CEO and outlook for the business. Table 2 summarizes those metrics for the firms not in financial distress, distressed but not in bankruptcy and Chapter 11 firms. While Panel A of Table 2 suggests that the reviewers appear to be demographically similar, their perception of the firm in Panel B follows a general pattern where reviewers rate healthy firms the best, financially distressed firms in the middle and Chapter 11 firms the worst, which is consistent with two potential explanations: Chapter 11 may be particularly traumatic for employees or, that the firms that file for Chapter 11 are endogenously bad firms that have revealed their type through a bankruptcy filing.

[Table 3 here]

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<sup>8</sup> The results below are qualitatively similar relying only on the human coded sample.

Table 3 summarizes the themes evident in the text of the reviews, comparing the reviews left by employees of healthy firms to those left by employees of financially distressed firms and the reviews left by employees of Chapter 11 debtors. In general, employees of Chapter 11 firms are somewhat more likely to criticize their leadership, as the Glassdoor survey responses also indicated. They are significantly more likely to note that the firm is suffering from financial distress, and that the firm is performing poorly. They are also more likely to complain about “underinvestment,” which means that they either believe they lack the resources to do their job or that the firm is not spending money on things like needed software or facility upgrades. Interestingly, they are seven times as likely to complain that there is a problem with corporate culture, which may speak to some of the indirect strains that financial distress may put on a business. As the internal Glassdoor data summarized in Table 2 suggests, reviewing employees of financially distressed firms appear to be less happy than reviewing employees of healthy firms.

[Table 4 here]

In Table 4, I investigate the relationship between an employee’s overall rating of their employer, financial distress and bankruptcy status. Glassdoor’s most important metric is the question which asks employees to provide an “overall rating” of their employer. As the Table shows, in Model 2, without control variables, employees of Chapter 11 firms appear to rate their employers about 27% lower than employees of non-Chapter 11 firms. However, in Model 3, I add a dummy variable that takes on a value of 1 if the firm’s debt prices or auditor going concern qualification suggest it is financially distressed. The statistically significant association between Chapter 11 status and the dependent variable disappears, although the financial distress variable remains statistically significant and robust to additional control variables, including firm size



(Model 4) and firm fixed effects (Model 5). While obviously not conclusive, this Table provides suggestive evidence that employee dissatisfaction may have more to do with financial distress than the federal bankruptcy filing.

### 3.3. Changes in Employee Reviews After a Bankruptcy Filing.

Tables 1-4 establish basic associations in the cross-section of the data which generally follow theoretical predictions and provide suggestive evidence that it may be financial distress, not bankruptcy status, that best explains why reviewing employees think less of employers that reorganize in Chapter 11. To examine this possibility further, I limit the sample to firms that file for Chapter 11 and examine changes in employee ratings around the time of a bankruptcy filing. I first examine the overall Glassdoor firm rating and I then discuss evidence from text of the reviews themselves.

#### 3.3.1 Evidence from Glassdoor Ratings.

[Figure 1 here]

Figure 1 shows the difference in the raw mean of the Glassdoor overall rating before and after a Chapter 11 filing. As Figure 1 suggests, while the trend is not unambiguous, the cohort of employees that leave Glassdoor reviews appear to have a somewhat higher opinion of their employer in the period immediately following a bankruptcy filing relative to the period immediately preceding the bankruptcy filing.

[Table 5 here]

In Table 5, I use a firm fixed effects regression design to examine the statistical significance of the potentially positive trend in Figure 1. As the Table shows, the relationship between bankruptcy status and the company's overall rating is not robust, and as such does not appear to provide strong evidence that that employees' opinion of their employer changes after a

Chapter 11 filing. In sum, the best interpretation of the data is that bankruptcy status is not strongly correlated with a statistically significant change in how employees rate their employer, relative to how other reviewing employees of those same employers thought about their employer in the months leading up to the bankruptcy filing.

### *3.3.2. Evidence from the Content of Glassdoor Reviews.*

An advantage of the Glassdoor data is that reviewers, in addition to responding to numerical survey questions, are also given open-ended text boxes to fill in describing “pros” and cons” of working at their employer. The text of the employee review reveals what factors the employee considered salient to the review at the time the employee provided it. To the extent that financial distress looms larger in the thinking of employees, it might signal a higher-than-normal level of attrition if employees respond to financial distress in the way that conventional wisdom predicts even if reviewing employees’ overall numeric rating of their employer does not appear to change after the bankruptcy filing.

[Figure 2 here]

Figure 2 below shows the average likelihood that a review contains complaints about one of the hypothesized themes in the year around a bankruptcy filing. The Figure shows some striking relationships in the data. Most noticeably, discussion of financial distress increases dramatically, at least in the cross-section, between the month prior to bankruptcy and the period immediately after a bankruptcy filing. Complaints about the firm’s overall performance follow a similar trajectory. Employee complaints about corporate culture exhibit a similar spike, although complaints about corporate culture are less common in the data than discussion of firm financial condition. The trend is more ambiguous for some other themes of interest, with complaints about pay, employee overwork and firm leadership not displaying a clear pattern.

[Table 6 here]

In a firm fixed effects regression framework, I find that six of the eight negative themes are statistically more common in the bankruptcy sample, relative to the period immediately prior to bankruptcy. In particular, as Table 6 shows, employees are roughly 22 percentage points more likely to note that their employer is performing poorly, 18 percentage points more likely to note their employer's financial distress, 6 percentage points more likely to complain that the firm is underinvesting in the tools they need to do their jobs, 2 percentage points more likely to complain that their employer is not presenting them with growth opportunities and 1 percentage point more likely to complain of being overworked. In contrast, I do not find strong relationships in the data suggesting that complaints about pay or firm leadership change after the firm files for bankruptcy, which is re-assuring as pay and firm leadership do not usually change immediately after a bankruptcy filing.

In sum, the evidence suggests that reviewing employees after a bankruptcy filing do not appear to downgrade their employer – but they are more likely to complain about the firm's financial condition and operating performance and to suggest that they lack the resources they need to do their job. They are also more likely to complain about corporate culture. These results are strikingly consistent with the prevailing view that bankruptcy filings are demoralizing. Clark (2001) suggests that the two most important reasons why workers voluntarily leave jobs are job security and compensation, and it stands to reason that the evidence of increased salience of financial distress from the employee reviews might inspire employees to fear for their jobs and leave, which is the possibility I examine next.

#### 4. DO EMPLOYEE FLEE FIRMS AFTER A CHAPTER 11 FILING?

In this section, I use LinkedIn data to look for evidence that employees flee Chapter 11 firms. While LinkedIn data creates selection concerns, it is also a gigantic dataset that provides at least some insight into workforce composition and change around a bankruptcy filing. I begin by describing the data. I then show that, in general, financially distressed firms have higher levels of attrition than financially healthier firms. This attrition appears to be heavier on average for firms that file for Chapter 11, who, the data suggest a wave of heightened attrition immediately after filing for bankruptcy which appears to be best understood as the continuation of a pre-existing trend.

##### 4.1. Data Description.

I obtained two snapshots of public LinkedIn users from two analytics firms: Datahut and CoreSignal. The Datahut snapshot is current as of May 2017 and the CoreSignal snapshot is current as of January 2021.<sup>9</sup> I worked with a team of research assistants to identify all firms in the dataset who either: (1) filed for Chapter 11 bankruptcy or (2) had publicly or privately traded debt. An important data challenge is that firms file for Chapter 11 and issue debt typically at the level of the corporate family, which sometimes may consist of many employers. To overcome this challenge, a team of research assistants studied each firm on the list to identify what employers might be associated with the company and then searched the data to identify all resume items that appeared to be associated with each corporate family. The final sample consists of 15.34 million jobs identified from 11.05 million total resumes, corresponding to 7,288 employers of whom 1,610 filed for Chapter 11 bankruptcy at some point in the sample

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<sup>9</sup> To make use of all of the data, I include profiles in the analysis only if I have a version of the profile that was accessed by one of the vendors after any relevant time period.

period.<sup>10</sup> Additional information on the data cleaning process is available in the Data Appendix. After identifying the matching profiles, I link the dataset to the same sources of data that the Glassdoor dataset was linked to: securities filings, firm fundamentals and data on stock, bond and loan trades.

Table 7 summarizes characteristics of the employees who departed the sample employers throughout the sample period and also characteristics of those employers. As Panel A shows, the employees who depart firms that are financially healthy, distressed and in Chapter 11 look relatively similar in terms of gender, age, education and test scores. Chapter 11 employees do appear to be, on average, longer tenured at the employer (about 10.6 months more than the departing employees of financially healthy firms) and longer tenured in the workforce (nearly two years longer tenured than the departing employees of financially healthy firms.)

#### 4.2. Workforce Attrition and Financial Distress.

As a threshold matter, I investigate the relationship between financial distress and attrition. For each firm in the sample, I calculate the percentage of their LinkedIn workforce that departs in a given sample month.<sup>11</sup> To get the benefit of market evidence of solvency, I divide LinkedIn employers in any given month into bond market deciles, where the 1<sup>st</sup> decile represents the most distressed 10% of LinkedIn employers based on bond prices, where a bond trading at a discount to face value provides market evidence that investors fear the firm will not be able to keep the promises it has made to bond investors. Conversely, highly solvent issuers have bonds

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<sup>10</sup> The 1,610 employers that filed for Chapter 11 in the sample correspond to 643 jointly administered Chapter 11 cases.

<sup>11</sup> I limit this analysis, to the greatest extent possible given data constraints, to full time equivalent employees and exclude contractors who really work for consulting firms.

that trade in the 9<sup>th</sup> decile, and the market's view of the solvency of the issuer roughly increases between the two extremes. Figure 3 shows the average level of workforce attrition.

[Figure 3 here]

In general, as Figure 3 illustrates, firms that bond traders consider riskier are also firms that lose relatively more of their workforce. Or, to state it differently, in the cross-section it appears that relatively more distressed firms shed relatively more workers in the average sample month.

[Table 8 here]

Next, I examine the cross-section of the sample to learn more about how attrition from Chapter 11 firms differs from firms that are financially distressed but not in Chapter 11. I study the same departure rate variable from Figure 3 in a regression framework. Table 8 shows those results. In Model 1, with no control variables, bankruptcy status is associated with higher employee departures. In Model 2, I control for financial condition and the Chapter 11 dummy remains statistically significantly and positively associated with the departure rate. The magnitude of the financial distress coefficient is also smaller than the Chapter 11 dummy. I introduce additional controls for industry attrition and the national unemployment rate in Models 3 and 4 and the results remain similar, although the financial distress dummy variable loses its statistical significance with full firm fixed effects. To contextualize the numbers, the sample mean departure rate is 1.1%, implying that in Model 4, with firm fixed effects, Chapter 11 status is associated with about 1.4% percentage points higher attrition (or more than a 120% increase relative to the sample mean).

#### 4.3. Workforce Attrition after a Chapter 11 Filing.

After establishing the baseline relations in the data, I study Chapter 11 employers more closely to look for evidence of an outflow of employees after a Chapter 11 filing. There is some measurement error in the data, as LinkedIn employees provide the month of employment and the termination of employment, not the specific date. The analysis also relies on self-reported resume data, which is inherently messy. Figure 4 shows the average rate of employee departure after a Chapter 11 filing.

[Figure 4 here]

For Figure 4, I expand the sample to a full four years around a bankruptcy filing (-36 months prior to the petition month and 12 months afterwards) to highlight the stark relationship in the cross-section of the data: There appears to be a spike of employee departures in the months following Chapter 11, suggesting that employee departures really do increase following a bankruptcy filing. However, the graph also provides important context for that finding, as attrition clearly increases in the year prior to bankruptcy, albeit with a sharp increase around the time of the bankruptcy filing. Thus, it is probably most accurate to say that the data suggest that, on average, Chapter 11 firms experience elevated levels of employee turnover in the year prior to bankruptcy, relative to historic norms, and a sharp spike around the time of a bankruptcy filing.

In Table 9, I use regression analysis to study the Chapter 11 firms in the year around a bankruptcy filing and I find evidence that elevated rate of employee departure after Chapter 11, identified in Figure 4 above, is statistically significant and robust in a firm fixed effects regression analysis. Model 4 suggests that, with firm fixed effects, Chapter 11 employers experience attrition that is about 1 percentage point higher than the period immediately prior to bankruptcy. As Figure 4 suggests, the six months prior to bankruptcy also appears to be

characterized by relatively higher attrition, which means that the bankruptcy period is statistically significantly worse from the standpoint of worker retention.

[Table 9 here]

One question that this analysis cannot answer is whether these are voluntary or involuntary departures. As a matter of law, it is relatively bad strategy to fire employees immediately after filing for bankruptcy, since any employment law damages claims would have priority in bankruptcy.<sup>12</sup> To investigate the possibility that these are layoffs, however, I calculate the number of months between the Chapter 11 employer job and the next job for each departing employee when such information is in the LinkedIn sample. As a matter of theory, we might expect involuntary departures to be followed by relatively longer periods of unemployment.

[Figure 5 here]

Figure 5 shows the average period of unemployment does not seem to be longer than the period immediately following a bankruptcy filing, providing suggestive evidence that the spike in departures may not be a wave of mass layoffs.

To learn more about how meaningful this relatively higher level attrition during the bankruptcy period appears to be, I calculate, for each sample firm that reorganizes in Chapter 11, two test statistics: (a) the amount of the firm's pre-petition workforce that is still employed by the firm upon the day of bankruptcy exit; and (b) the net change in total head count at the conclusion of the bankruptcy process, which takes into account the firm's ability to replenish its workforce. A weakness in this approach is that it omits any firms that liquidated as a result of

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<sup>12</sup> See 11 USC 503.



workforce attrition, since they would be excluded from the sample because they failed to reorganize. However, in reviewing the bankruptcy filings of the sample firms I did not identify any firms who made public statements suggesting this explained their bankruptcy outcome, but that does not eliminate the possibility that there are some.

[Figure 6 here]

The first graph in Figure 6 shows that the median Chapter 11 firms loses 16% of its petition date employees by the time it leaves bankruptcy. While this is a sizable number, distressed industry peers sustained similar losses (13% for the median firm) over the period that the sample firm is in bankruptcy. In the second graph in the Figure, headcount change (which includes both new employees as well as pre-bankruptcy employees) suggests a similar pattern, where the firm's overall industry shrinks over the bankruptcy period (-5%) and the Chapter 11 debtor's level of net headcount change is higher (-10%). In unreported results, two-sided T tests suggest that these differences are, in fact, statistically significant.

## 5. DOES BANKRUPTCY TRAUMA LINGER FOR EMPLOYEES AFTER EMERGING FROM BANKRUPTCY?

The evidence above suggests that Chapter 11 employees are more likely to discuss the firm's financial condition and to complain about themes related to financial distress. Chapter 11 firms also appear to experience elevated rates of employee departure in the cross-section, although not that much more than distressed peers. This raises the question of whether these relationships in the data persist after bankruptcy. Put differently, does bankruptcy trauma linger as some sort of continuing penalty that affects a firm's workforce after bankruptcy? To assess

this possibility, I look for evidence of lingering bankruptcy trauma in the cross-section of employee reviews and data on workforce turnover.

### 5.1. Glassdoor Ratings and Review Content.

[Figure 7 here]

In Figure 7, I graph the percentage of Glassdoor reviews that contain the themes from Section 3 in the year surrounding the bankruptcy filing. I restrict the Figure to the themes that were statistically significant in Table 6. I also add “Past Distress” as a theme, which is defined in Table 2 as a review that discusses how “the firm used to be distressed” or “used to be in bankruptcy.” For most of the themes of interest, Figure 6 shows an apparent decline in employee discussion. Employees appear to be much less likely to discuss the firm’s financial distress – which presumably is no longer present after a bankruptcy reorganization – and to complain about corporate culture. Overall, Figure 6 provides suggestive evidence that exiting bankruptcy presents a fresh start for employees.

[Table 10 here]

In Table 10, I use regression models to study the cross-section of Glassdoor reviews to look for evidence of lingering bankruptcy trauma. As the Table shows, the key associations from Table 6 – Chapter 11 status was associated with higher propensity to discuss financial distress and underinvestment – do not appear to be statistically significantly associated with the themes of interest in post-Chapter 11 employee reviews. Post-Chapter 11 employees appear to continue to be more likely to mention that their firm is performing poorly, but the magnitude of those coefficients is significantly smaller than when the firm was operating under bankruptcy protection.

[Table 11 here]

In Table 11, I examine the reviews in the year [-6 months, +6 months] around a bankruptcy exit, and I look for evidence that post-bankruptcy reviewing employees became less likely to discuss themes related to financial distress. In general, the results suggest that this is true: compared to firms in the final six months of the Chapter 11 cases, post-bankruptcy reviewing employees are less likely to discuss financial distress (-6.7%), underinvestment (-5%), poor firm performance (-5%), and bad corporate culture (-5%). This is, again, consistent with the reduction of financial constraints that we would expect to be associated with a bankruptcy discharge and inconsistent with lingering bankruptcy trauma.

## 5.2. Employee Departures.

[Figure 8 here]

I also look for evidence that lingering bankruptcy trauma is associated with employee departure. To do so, I first examine how well firms retain the workers who they employed when they left bankruptcy and how that compares with industry peers. Figure 8 shows that the median firms loses about 47% of its exit date workforce by the one-year anniversary of the end of the bankruptcy case, which is similar to industry peers over the same period. I also examine the extent to which these workers are replaced after leaving bankruptcy and find that the industry peers shrink at similar rates after the Chapter 11 firm leaves bankruptcy. Post-Chapter 11 firms appear to shrink by about 32% in the year following emergence from Chapter 11, while post-Chapter 11 firms shrink about 35%. In unreported results, I find using two-sided T-tests that the difference between the distributions of Chapter 11 firms versus industry peers (and distressed peers) is statistically significant.

## 6. ANALYSIS.

While this study cannot offer causal evidence conclusively proving that bankruptcy filings impact a firm's workforce, the results offer support for the view that some employees may respond to bankruptcy filings by leaving. The shift in content in employee reviews around that time provides suggestive evidence that employees may become more aware of the firm's financial struggles after a bankruptcy filing and, as is often alleged, that bankruptcy puts pressure on a firm's workforce. The study also puts that finding in context, however, as it is clear that the spike in departures around the time of a bankruptcy filing must be viewed in light of the increase in departures that begins months prior to any bankruptcy filing for the average Chapter 11 firm. While it is hard to properly assess a counterfactual, the departure rates visible in Figure 6 between Chapter 11 firms and their industry peers are quite similar, with the major difference appearing to come from a relatively lower level of hiring, as compared to industry peers. Future research is needed to understand how bankruptcy filings might alter the hiring activity of Chapter 11 firms, but at the very least, the results do not support the view that there is a massive race for the door as soon as the average firm enters bankruptcy protection.

The study offers evidence relevant for at least two policy debates among scholars of bankruptcy and financial distress. The first goes to the costs of bankruptcy (e.g. Bris, Welch, and Zhu 2006), where the article presents the first empirical evidence of a sustained increase in employee departure in Chapter 11 – a proposition that has often been assumed, but never documented. Workforce response appears to be an indirect cost of bankruptcy, although further research is needed to learn more about how workforce composition changes in Chapter 11 and whether those changes are distinct when compared to changes associated with financial distress outside of bankruptcy.

The second debate goes to the question of bankruptcy success (e.g. LoPucki and Whitford 1993; Altman 2014) and the benefit that firms receive from reorganizing in Chapter 11. The study suggests that the employees of the average firm that successfully reorganizes in Chapter 11 appear to almost immediately consider the firm's financial troubles less salient and complain less about underinvestment and the firm's culture, at least based on the reviews employees leave on online message boards. Post-bankruptcy attrition also appears to be similar to levels of attrition in the industry as a whole. Taken together, this provides suggestive evidence that bankruptcy law provides a fresh start, at least insofar as this one important metric goes.

The study also bears on questions relating to the administration of the bankruptcy system. Bankruptcy judges often abridge statutory requirements on the theory that value is maximized through very quick Chapter 11 cases. Here, the study offers two countervailing datapoints. First, it is clear that firms appear to benefit from fresh starts, so the faster firms receive discharge orders, the better. On the other hand, the level of incremental attrition in Chapter 11 does not appear to be so high as to justify disregarding other policy goals of Chapter 11, such as promoting creditor rights, fair voting processes and maximizing estate value.

Additionally, the lengthy period of relatively higher employee turnover prior to any bankruptcy filing raises questions as to whether firms are waiting too long to file for bankruptcy – a question that deserves the attention of future research.

## 7. CONCLUSION.

Practitioners and financial theorists have long claimed that a bankruptcy filing is traumatic for employees, demoralizing workers and prompting them to leave. There is, however,

substantial reason to doubt that a change in legal status would prompt workers to leave, given that Chapter 11 firms suffer from pre-existing financial distress, and to worry that instead companies choose to opportunistically deploy worries of “workers heading to the exits” to try to convince bankruptcy judges that the assets of the firm were wasting away.

The results in this largely support the view that bankruptcy filings increase the salience of firm financial condition, increasing worker dissatisfaction even if workers do not appear to rate their employers relatively lower on average. The results also suggest that Chapter 11 firms experience relatively higher levels of employee departure, consistent with the worry that bankruptcy law can imperfectly protect the firm’s ability to retain workers. However, the expressed sentiment in employee reviews does not appear to be associated with a level of bankruptcy period attrition that greatly exceeds what industry peers experience over the same period. Additionally, the sharp wave of attrition that appears to accompany a bankruptcy, while significant, is clearly the continuation of an existing trend.

Importantly, the conclusions in this study rest on observed behavior, and it is possible that some firms that would have experienced massive “runs for the exit” simply choose not to file for bankruptcy, and thus are not observed in the sample. This is an important asterisk that qualifies the analysis. Further research is needed to understand the connections between ex ante capital structure and workforce flight risk.

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Figure 1. Glassdoor Rating around a Chapter 11 Filing.



Figure 1 shows the mean employer rating around the time of a bankruptcy filing. A firm is included in the sample if it has at least one employee review in the given month and each firm is given equal weight in computing the mean. The black dashed line indicates the month of the bankruptcy filing.

Figure 2. Glassdoor Review Content Themes around a Chapter 11 Filing.

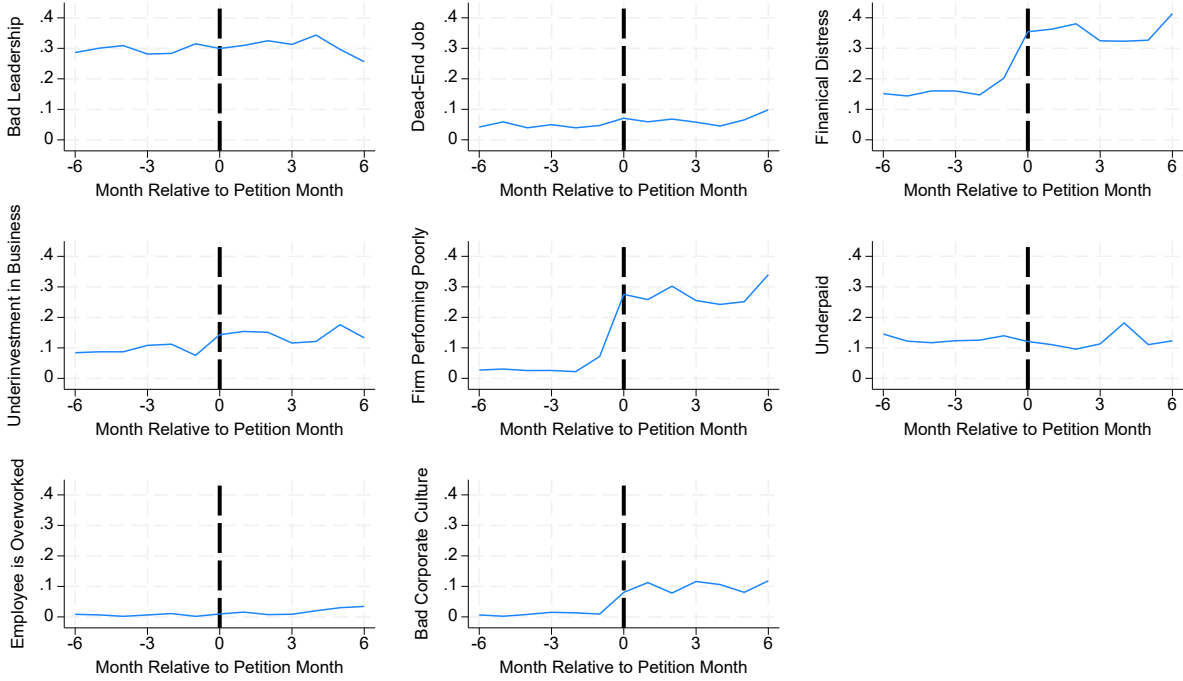


Figure 2 shows the likelihood that a given employee review in a given month mentions a theme of interest in the year surrounding a bankruptcy filing. The unit of analysis is firm-month and the red dashed line is the month that the firm filed a bankruptcy petition. Themes are defined in Table 1.

Figure 3. Bond Prices and Employee Departure Rate.

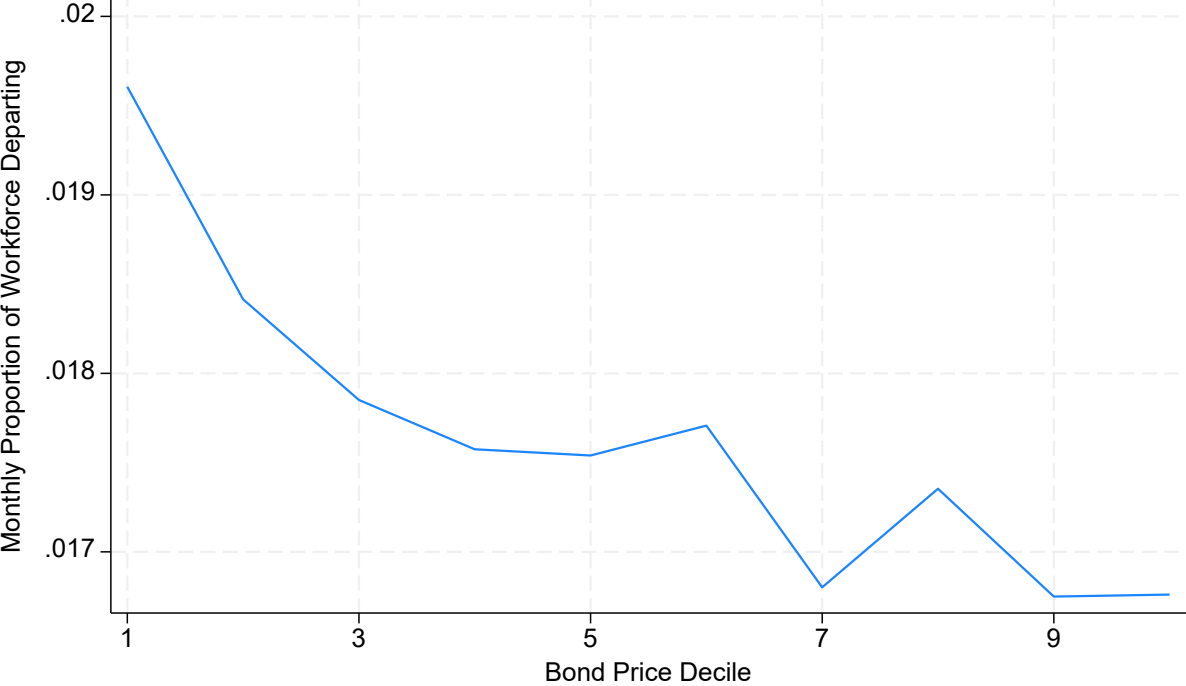


Figure 3 shows the mean rate of employee departure graphed over bond price decile, where bond price decile is defined in each sample month. Bonds in the first decile are the most distressed bonds in the overall bond market, trading at a strong discount to par, with market estimates of firm solvency increasing as bond prices increase. The unit of analysis is firm-month departure rate, assigned to rolling deciles for each month-year.

Figure 4. Employee Departure around a Chapter 11 filing.

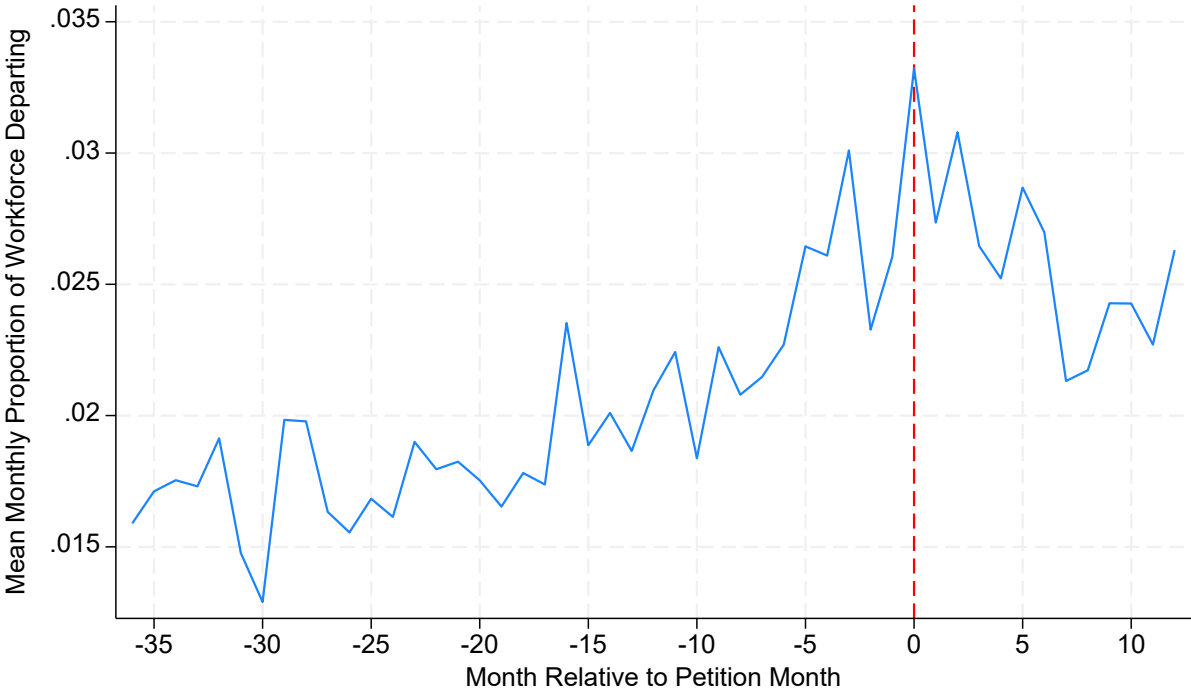


Figure 4 shows the workforce departure rate in the months leading up to a bankruptcy filing for the firms that file for Chapter 11 bankruptcy. The unit of analysis is firm-month.

Figure 5. Months Not Employed for Departing Workers.

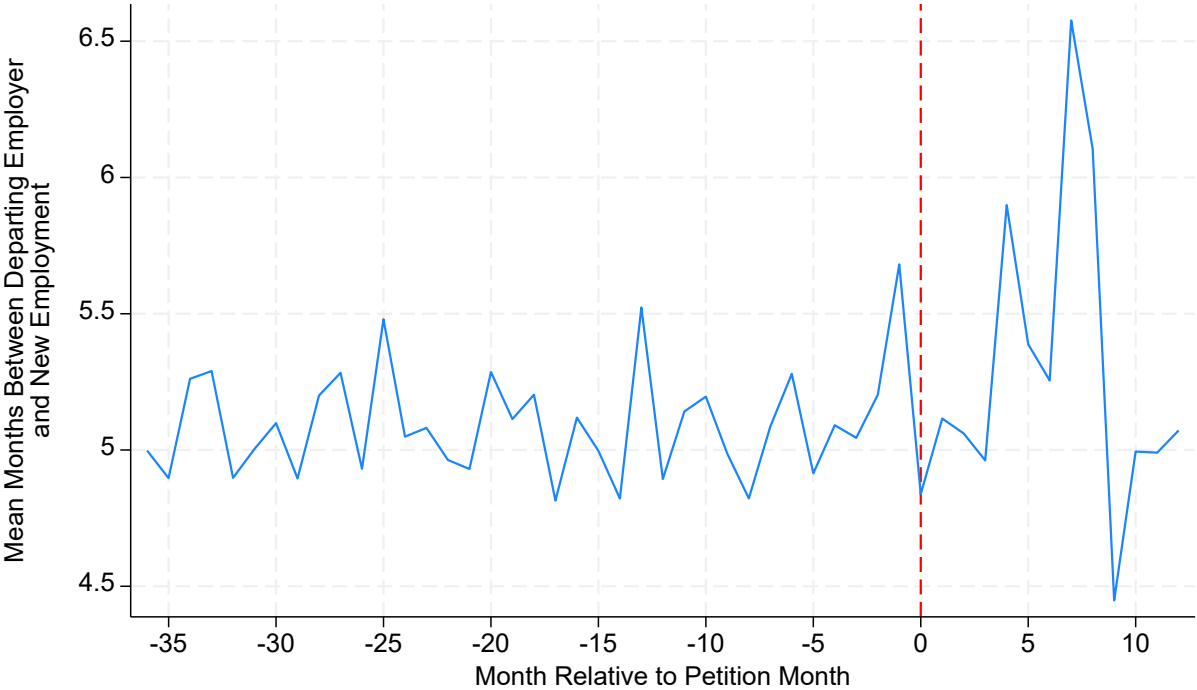


Figure 5 shows the average number of months of post-departure unemployment for departing employees in the four years surrounding a bankruptcy filing.

Figure 6. Employer Head Count Changes over Bankruptcy Period, versus Industry Peers.

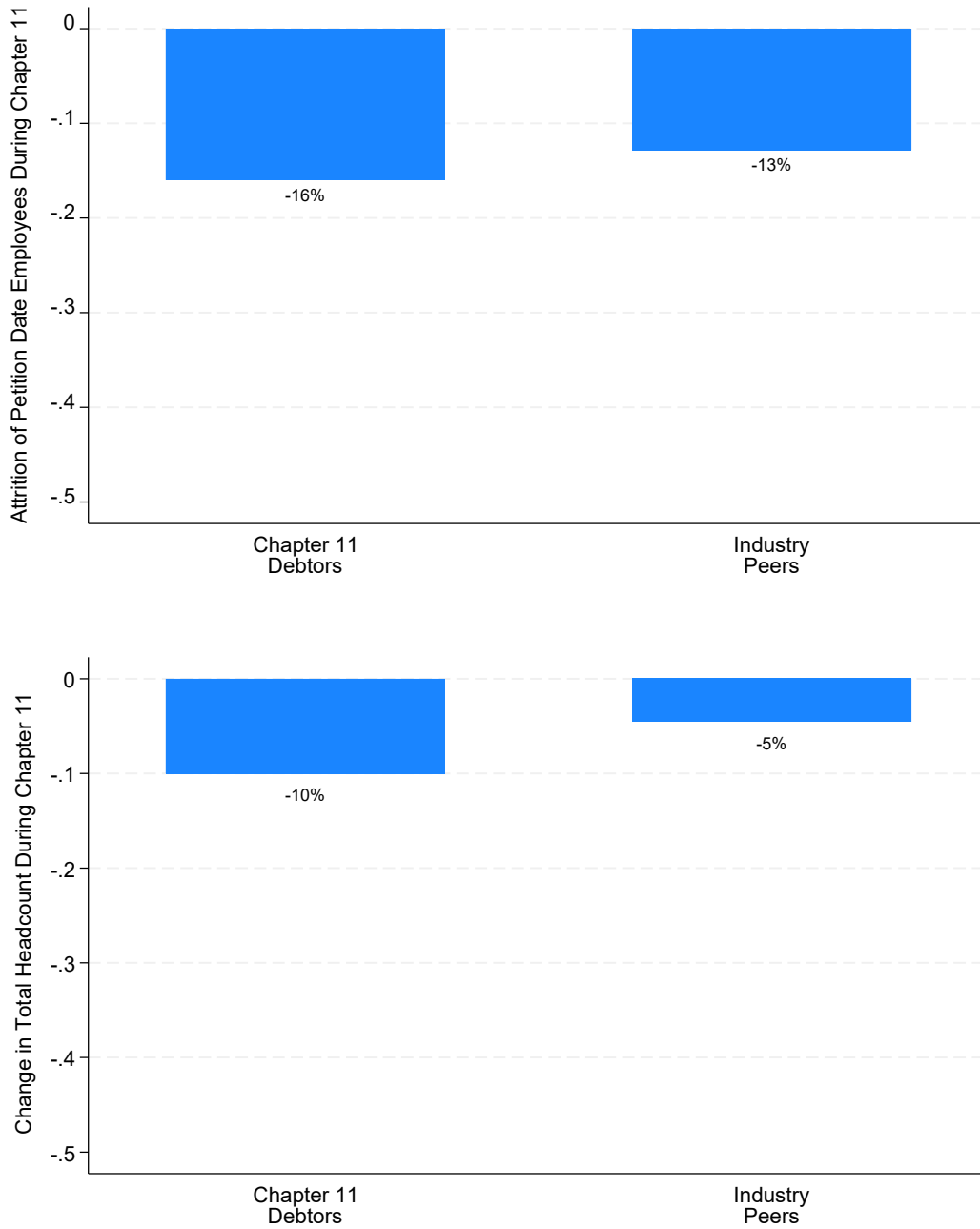


Figure 6 shows (a) attrition from petition date date, which gives the proportion of the firm’s employees on the date of bankruptcy filing that leave the firm during the bankruptcy period; and (b) net headcount change, which is the percentage change in firm headcount over the course of the bankruptcy period. To contextualize the Chapter 11 graph, Figure 6 also shows the attrition at non-bankrupt industry peers over the bankruptcy period. Industry peers are identified with four-digit SIC codes.

Figure 7. Glassdoor Review Content Themes After Exiting Bankruptcy.

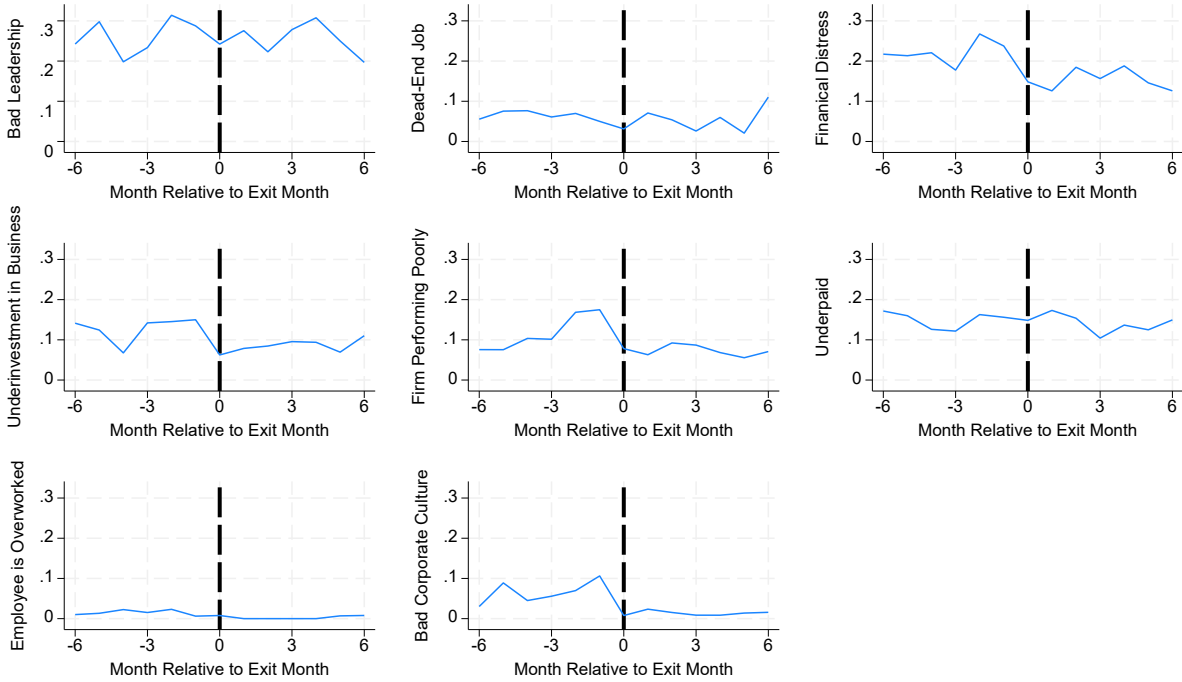


Figure 7 shows the likelihood that a given employee review in a given month mentions a theme of interest in the year surrounding an exit from bankruptcy. The unit of analysis is firm-month and the red dashed line is the month that the firm exited Chapter 11 protection. Themes are defined in Table 1. The graph is restricted to firms that reorganized in Chapter 11 as standalone debtors.



Figure 8. Employer Head Count Change over Post-Bankruptcy Period, versus Industry Peers.

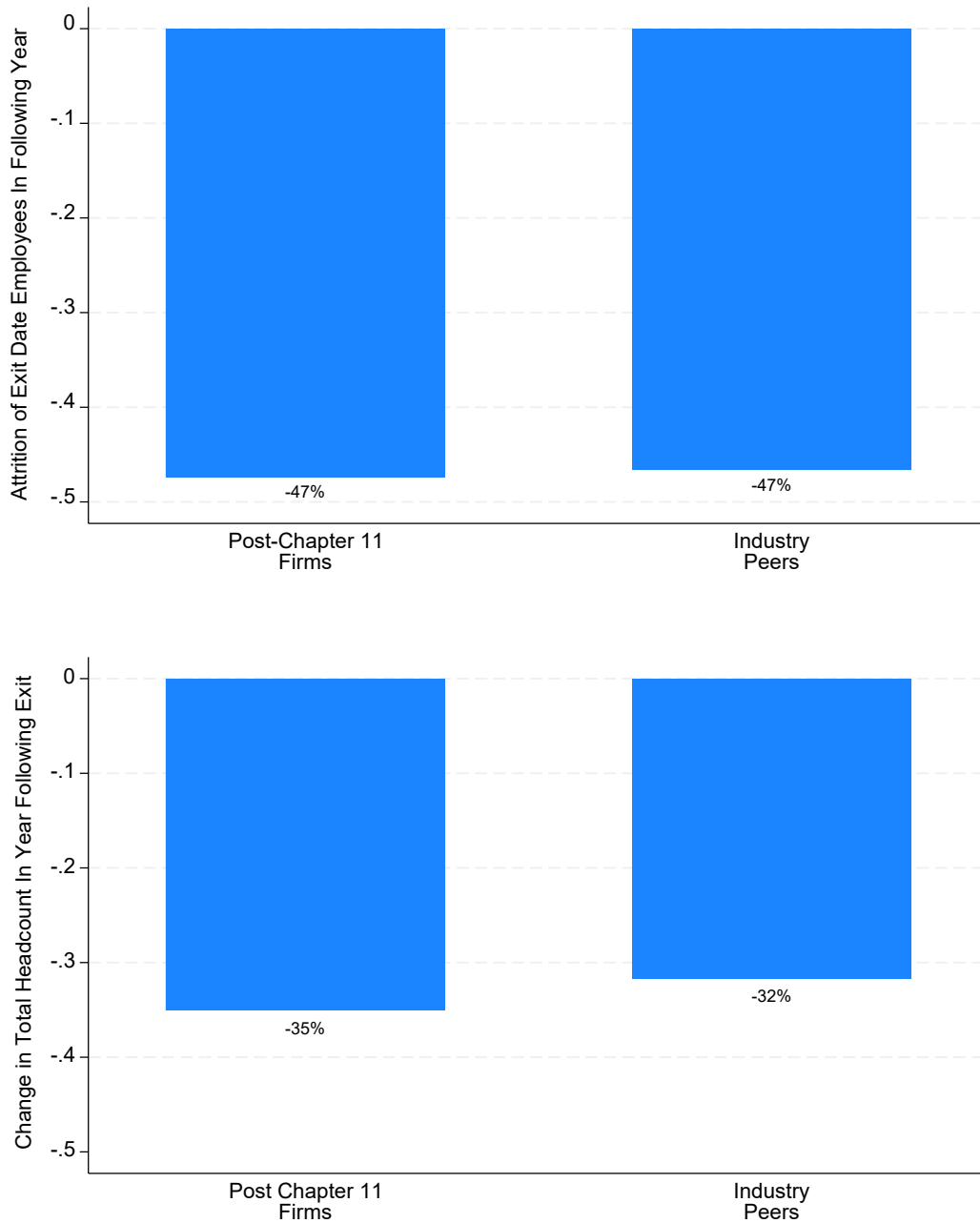


Figure 8 shows two statistics: (a) attrition from exit date, which gives the proportion of the firm’s employees on the date of emergence from bankruptcy that leave the firm within the first year post-bankruptcy; and (b) net headcount change, which is the percentage change in firm headcount a year after bankruptcy exit as compared to the firm’s social media headcount at the time of emergence from bankruptcy. To contextualize the post-Chapter 11 graph, Figure 6 also shows the attrition at non-bankrupt industry peers over the bankruptcy period. Industry peers are identified with four-digit SIC codes.

Table 1. Glassdoor Employee Review Themes with Examples.

Category	Example
<p>Bad Leadership</p> <p>Discussion of poor or incompetent management; inconsistent/bad leadership; disorganization; poor spending decisions; unattainable goals.</p>	<p>“The way you are treted and the indecision and poor ability to run the company by executives. Very little time to complete many projects. Upper management spends money as if they have a bottomless bank account. Even Bill Gates bank account ends somewhere. I would suggest that everyone look elsewhere in order to find a job”</p> <p>“No support or teamwork. Management didn't seem to care about the patients, cared more about saving and making money. Would not recommend working for this company.”</p>
<p>Lack of Growth Opportunities</p> <p>No ability for the employee to grow at the company.</p>	<p>“Pay sucks, a lot of micro managing, no career progression”</p> <p>“Overworked, underpaid, high turnover. Little opportunity for growth.”</p>
<p>Financial Distress</p> <p>Discussion of bankruptcy, closures, restructuring, outsourcing for financial reasons, being understaffed, taking over the jobs of employees who are fired, layoffs, inability to retain or attract quality employees, not enough to do at work.</p>	<p>“Company going through bankruptcy, VGTs are stealing their business, the gov is hard to work with, customers can be very”</p> <p>“Payroll has been slashed company wide recently. Even FT hourly associates are at 32-35 hours instead of 40. . . . Far behind in technology, and it gets in the way of customer service.”</p> <p>“Based on financial situation, have doubts about long term future.”</p>
<p>Underinvestment in Business</p> <p>Outdated Business and Equipment; Not spending enough or investing; Lack of Training; Employee cites a lack of needed resources for the business to succeed.</p>	<p>“... the company's inventory system is a mess. If an item doesn't have a ticket with its UPC or SKU it is nearly impossible to find that item within the system and even employees who have been working with the company for years stifle with the system.”</p> <p>“Some processes were outdated and behind the times, making simple tasks more difficult. Lacked a uniformed way of doing things across the difference branches.”</p>
<p>Poor Compensation</p> <p>Employee is not paid enough.</p>	<p>“underpaid, raises and bonuses only happen for the people who do not do anything, HR doesn't care, i am surprised this is still a company”</p>
<p>Past Financial Distress</p> <p>Employee discusses the firm’s previous financial distress, whether in or out of a Chapter 11 bankruptcy.</p>	<p>“The post-bankruptcy reorganization ... seems to consist of reductions in benefits (which up ‘till now, were excellent), reductions in staffing (as in layoffs), and the same management team that drove the company into 40ankruptcy ...”</p>

	<p>“The only negative is over the past 6 years, we have seen many layoffs affecting numerous staff – then 5 months later hire at a very fast rate due to new contracts. And then the cycle repeats the next year.”</p> <p>“30 years of downsizing, ineffectual leadership and vision.”</p>
<p>Bad Company Culture</p> <p>Employee dislikes working at the company and/or dislikes coworkers.</p>	<p>“Some smart, jerky people, weak management principles, managers who aren’t good managers (just smart), cranking out new features with mediocre quality, too many design shortcuts in favor of faster releases, challenges getting adoption of breakthrough ideas due to risk-aversion”</p> <p>“horrible employer- dont treat employees right”</p> <p>“Culture is terrible here... it’s a total run over who ever you can to get as far as you can. The company violates so many employment laws it’s an absolute joke.”</p>

Table 2. Glassdoor Reviewer Characteristics, by Employer Financial Condition.

	Financially Healthy Firms	Financially Distressed, Not Bankruptcy	Chapter 11	Chapter 11 vs Healthy Firms	Chapter 11 vs Distressed, Non-Chapter 11 Firms
	Mean	Mean	Mean	Difference in Means	
<i>Panel A. Reviewer Characteristics.</i>					
Age (Approximate)	34.16	33.78	34.97	0.81***	1.19***
Male	.57	.57	.55	-0.02***	-0.02***
Highest Education: High School	.12	.14	.15	0.02***	0.00
Highest Education: Associates Degree	.03	.05	.05	0.01***	-0.00
Highest Education: College	.66	.64	.66	0.01	0.02**
Highest Education: Graduate School	.16	.13	.11	-0.05***	-0.02***
Works in Different State than Headquarters	.61	.72	.78	0.17***	0.06***
Highest Education: High School	.12	.14	.15	0.02***	0.00
Highest Education: Associates Degree	.03	.05	.05	0.01***	-0.00
Highest Education: College	.66	.64	.66	0.01	0.02**
Highest Education: Graduate School	.16	.13	.11	-0.05***	-0.02***
Annual Salary	74,490	76,466	74,159	-331	-2,306**
Annual Total Compensation	109,005	114,652	93,687	-15,317	-20,964
Years of Relevant Experience	5.87	6.06	5.68	-0.19	-0.38***
Works in Different State than Headquarters	.61	.72	.78	0.17***	0.06***
<i>Panel B. Employee Reviews.</i>					
Overall Employer Rating	3.29	3.	2.99	-0.30***	-0.01
Career Opportunities	3.1	2.8	2.68	-0.41***	-0.12***
Compensation & Benefits	3.27	2.95	2.91	-0.36***	-0.04**
Senior Leadership	2.87	2.61	2.49	-0.38***	-0.12***

Work/Life Balance	3.22	3.07	3.06	-0.15***	-0.00
Culture & Values	3.25	2.93	2.92	-0.33***	-0.01
Recommend Working at Company to Friend	.59	.47	.37	-0.21***	-0.10***
Business Outlook Better	.45	.31	.17	-0.28***	-0.14***
Business Outlook Same	.31	.31	.22	-0.09***	-0.08***
Business Outlook Negative	.24	.38	.61	0.37***	0.22***
CEO – Approve	.45	.34	.22	-0.24***	-0.13***
CEO – Disapprove	.19	.28	.43	0.24***	0.15***
CEO – No Opinion	.35	.38	.35	0.00	-0.02***

Table 2 summarizes the sample and numeric indicators from Glassdoor reviews. The Table divides the sample into reviews left by employees of three bins of firms based on the financial condition of the sample firm at the time that the employee left the review. “*Chapter 11 firms*” are firms that are currently operating in Chapter 11. “*Financially distressed*” firms are firms that either have: (1) a public bond issuance that is trading below 70 cents on the dollar in the quarter of the employee review, indicating that investors believe that the firm is unlikely to keep its promises; or (2) an auditor going concern qualification for the quarter of the employee review. “*Financially healthy firms*” are firms with public debt trading above 70 cents on the dollar and that are also not currently operating in Chapter 11. The unit of analysis is an employee review.

Table 3. Financial Distress Related-Themes from Review Text, by Employer Financial Condition.

	Financially Healthy Firms	Financially Distressed, Not Bankruptcy	Chapter 11	Chapter 11 vs Healthy Firms	Chapter 11 vs Distressed, Non-Chapter 11 Firms
	Mean	Mean	Mean		Difference in Means
Bad Leadership	.23	.28	.33	0.10***	0.05***
No Growth Opportunities for Employee	.06	.06	.06	0.01**	0.00
Firm Suffers from Financial Distress	.09	.13	.31	0.22***	0.17***
Underinvestment in Business	.06	.08	.11	0.04***	0.03***
Poor Firm Performance	.01	.02	.22	0.21***	0.19***
Poor Employee Compensation	.1	.11	.12	0.02***	0.01
Bad Corporate Culture	.01	.01	.07	0.07***	0.06***

Table 3 summarizes financial distress related-themes from the review text. The Table divides the sample into reviews left by employees of three bins of firms based on the financial condition of the sample firm at the time that the employee left the review. “*Chapter 11 firms*” are firms that are currently operating in Chapter 11. “*Financially distressed*” firms are firms that either have: (1) a public bond issuance that is trading below 70 cents on the dollar in the quarter of the employee review, indicating that investors believe that the firm is unlikely to keep its promises; or (2) an auditor going concern qualification for the quarter of the employee review. “*Financially healthy firms*” are firms with public debt trading above 70 cents on the dollar and that are also not currently operating in Chapter 11. The unit of analysis is an employee review.

Table 4. Financial Distress and Bankruptcy Status on Glassdoor Rating.

	(1)	(2)	(3)	(4)	(5)
	Glassdoor Overall Rating	Glassdoor Overall Rating	Glassdoor Overall Rating	Glassdoor Overall Rating	Glassdoor Overall Rating
Firm In Chapter 11	-.288*** (.046)	-.271*** (.075)	.024 (.092)	-.076 (.081)	.076 (.048)
Firm is Financially Distressed			-.29*** (.103)	-.232*** (.048)	-.063*** (.017)
Industry Peers Mean				.984*** (.076)	.929*** (.061)
Log Assets			.05*** (.017)	.022** (.01)	.026 (.038)
Observations	1,783,488	287,679	287,679	287,679	287,679
R-squared	0	0	.012	.062	.099
Number of Firms	6,778	1,236	1,236	1,236	1,236
Year FE	No	No	No	Yes	Yes
Firm FE	No	No	No	No	Yes

The dependent variable is the rating that a reviewing employee gave to her employer, on a scale of 1-5. The sample in Column 1 is the entire dataset of Glassdoor Reviews; Columns 2-6 are restricted to reviews left by employers with publicly traded bond debt. “*Firm in Chapter 11*” is a dummy variable that takes on a value of 1 if the reviewer’s employer was reorganizing in Chapter 11 bankruptcy at the time of the review. “*Firm is Financially Distressed*” takes on a value of 1 if either: (1) the firm has a publicly traded bond that traded below 70, on average, in the quarter of the review; or (2) the firm’s auditor, for the audit period corresponding to the quarter of the review, believes there is a risk that the firm will not be able to continue as a going concern. “*Industry Peers Mean*” is the mean equally weighted rating for all firms in the same four digit SIC-code industry as the Chapter 11 firm for the calendar year of the employee review. “*Log Assets*” is the logged accounting value of the firm’s assets, from SEC filings or from a Chapter 11 firm’s bankruptcy petition. Robust standard errors clustered at the employer level are in parentheses. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 5. Bankruptcy Status and Glassdoor Rating.

	(1)	(2)	(3)	(4)	(5)
	Glassdoor Overall Rating	Glassdoor Overall Rating	Glassdoor Overall Rating	Glassdoor Overall Rating	Glassdoor Overall Rating
Firm In Chapter 11	.146** (.058)	.091* (.053)	.089* (.053)	.089* (.053)	.089* (.053)
Log Assets		-.035 (.135)	-.082 (.132)	-.082 (.132)	4.833*** (.069)
Industry Peers Mean			.617*** (.199)	.617*** (.199)	.617*** (.199)
Prepackaged Bankruptcy				1.51*** (.363)	14.26*** (.698)
Prenegotiated				-.741*** (.123)	24.219*** (.738)
Outcome is Liquidation					26.525*** (.748)
Firm Exits Bankruptcy in Sale					25.211*** (.759)
Observations	5,356	5,132	5,132	5,132	5,132
R-squared	.003	.167	.168	.168	.168
Number of Firms	397	376	376	376	376
Year FE	No	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes

The Table displays ordinary least squares regression models with standard errors clustered at the employer level in parenthesis. The unit of analysis is a Glassdoor Review left by a current employee of a firm that filed for Chapter 11 and the dependent variable is the employee's "overall rating," from 1-5, of the quality of the employer. The sample period consists of all reviews left in the six months prior to the Chapter 11 filing and six months after the company entered Chapter 11. "*Firm in Chapter 11*" is a dummy variable that takes on a value of 1 if the employer is reorganizing in Chapter 11 bankruptcy at the time of the review. "*Log Assets*" is the logged accounting value of the firm's assets from the bankruptcy petition. "*Industry Peers Mean*" is the mean equally weighted rating for all firms in the same four digit SIC-code industry as the Chapter 11 firm for the calendar year of the employee review. "*Prepackaged Bankruptcy*" takes on a value of 1 if the employer is reorganizing in a prepackaged Chapter 11 case, which means a vote on a plan of reorganization was already complete by the time of filing. "*Prenegotiated Bankruptcy*" takes on a value of 1 if the employer is reorganizing in a prenegotiated Chapter 11 case, meaning some creditors support a proposed plan but there is no completed vote on it to present to the judge at the beginning of bankruptcy. "*Outcome is Liquidation*" is a dummy variable that takes on a value of 1 if the firm liquidates in Chapter 11. "*Firm Exits Bankruptcy in Sale*" takes on a value of 1 if the firm was sold out of bankruptcy to a new owner, either through a plan of reorganization or a Section 363 sale. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$



Table 6. Bankruptcy Status and Review Themes.

	(1) Bad Leadership	(2) Dead-End Job	(3) Financial Distress	(4) Underinvest ment	(5) Firm Performing Poorly	(6) Underpaid	(7) Employee is Overworked	(8) Bad Corporate Culture
Firm In Chapter 11	.009 (.018)	.021** (.009)	.177*** (.022)	.059*** (.013)	.219*** (.021)	-.017 (.013)	.011*** (.004)	.089*** (.011)
Industry Peers Mean	.667** (.273)	1.219** (.505)	1.217*** (.223)	1.146** (.476)	1.24*** (.242)	1.278* (.738)	1.492** (.755)	.916*** (.33)
Log Assets	-.068 (.092)	-.074 (.068)	.171** (.084)	-.075 (.054)	.216*** (.078)	.08 (.09)	.112*** (.027)	.025 (.036)
Prepackaged Bankruptcy	-.615* (.35)	-.399** (.187)	.039 (.292)	-.422** (.173)	.672** (.267)	-.062 (.269)	.269*** (.071)	.104 (.146)
Prenegotiated	-.56 (.527)	-.553 (.351)	.812* (.46)	-.273 (.276)	1.159*** (.419)	.222 (.474)	.545*** (.138)	.158 (.218)
Observations	5,132	5,132	5,132	5,132	5,132	5,132	5,132	5,132
R-squared	.129	.11	.198	.104	.235	.107	.066	.113
Number of Firms	397	397	397	397	397	397	397	397
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The Table displays linear probability models with standard errors clustered at the employer level in parenthesis. The unit of analysis is a Glassdoor Review left by a current employee of the firm and each column represents a binary dependent variable that takes on a value of 1 if the theme was present in the review. Themes are defined in Table 1. The sample period consists of all reviews left in the six months prior to the Chapter 11 filing and six months after the company entered Chapter 11. “*Industry Peers Mean*” is the mean equally weighted rating for all firms in the same four digit SIC-code industry as the Chapter 11 firm for the calendar year of the employee review. “*Log Assets*” is the logged accounting value of the firm’s assets from the bankruptcy petition. “*Prepackaged Bankruptcy*” is a dummy variable that takes on a value of 1 if the firm filed for bankruptcy in a prepackaged Chapter 11 filing. “*Prenegotiated Bankruptcy*” is a variable that takes on a value of 1 if the firm described its bankruptcy as pre-negotiated on the petition date. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 7. Employee Profile and Employer Characteristics, by Employer Financial Condition.

Panel A. Characteristics of Employees of Sample Firms, by Firm Financial Condition at Time of Departure from Employer.

Characteristics	Financially Healthy Firms	Financially Distressed, Not Bankruptcy	Chapter 11	Chapter 11 vs Healthy Firms	Chapter 11 vs Distressed, Non-Chapter 11 Firms
Number of Employees	14,938,732	315,498	92,068		
Male	0.46	0.46	0.46	-0.00*	-0.01***
Age (approximate)	29.59	30.82	31.50	1.91***	0.68***
Highest Education: College or Above	0.70	0.72	0.70	-0.00	-0.01***
Years of Professional Experience	7.59	8.82	9.50	1.91***	0.68***
Years At Company at Departure	4.10	4.54	4.98	0.88***	0.44***
Median SAT Score	1195.41	1203.96	1186.11	-9.31***	-17.86***

Panel B. Median Characteristics of Consolidated Employers, by Firm-Month.

Characteristics	Financially Healthy Firms	Financially Distressed, Not Bankruptcy	Chapter 11	Chapter 11 vs Healthy Firms	Chapter 11 vs Distressed, Non-Chapter 11 Firms
Number of Firm Months	373559	8560	5928		
Current Employees	147.00	196.50	89.00	-58.00***	-107.50***
New Hires	2.00	2.00	0.00	-2.00***	-2.00***
New Hires as % of Current Employees	0.01	0.01	0.00	-0.01***	-0.01***
New Departures	2.00	3.00	2.00	0.00***	-1.00***
New Departures as % of Current Employees	0.01	0.01	0.02	0.00***	0.00***
Mean Departing Tenure (months)	41.00	39.75	48.00	7.00***	8.25***

New Departures as % of Current Employees	0.01	0.01	0.02	0.00***	0.00***
Quarterly Senior Bond Price	105.32	64.11	66.98	-38.34***	2.87*
Revenue (USD)	2889.40	642.20	538.24	-2351.16***	-103.96
Quarterly Market Capitalization	36.24	6.37	0.16	-36.07*	-6.21*
Quarterly Equity Investment Return	0.02	-0.09	-0.38	-0.41	-0.29***
Quarterly Senior Bond Investment Return	0.00	-0.02	-0.02	-0.02	0.01

“*Chapter 11 firms*” are firms that are currently operating in Chapter 11. “*Financially distressed*” firms are firms that either have: (1) a public bond issuance that is trading below 70 cents on the dollar in the quarter of the employee review, indicating that investors believe that the firm is unlikely to keep its promises; or (2) an auditor going concern qualification for the quarter of the employee review. “*Financially healthy firms*” are firms with public debt trading above 70 cents on the dollar and that are also not currently operating in Chapter 11. The unit of analysis is a public profile with a known date of departure. Variable definitions are in the Appendix.

Table 8. Financial Distress and Bankruptcy Status on Workforce Departure.

	(1)	(2)	(3)	(4)
	Monthly Proportion of Workforce Departing	Monthly Proportion of Workforce Departing	Monthly Proportion of Workforce Departing	Monthly Proportion of Workforce Departing
Firm In Chapter 11	.02*** (.003)	.02*** (.003)	.017*** (.003)	.014*** (.002)
Log Assets		0* (0)	-.001*** (0)	.001** (.001)
Firm is Financially Distressed		.002** (.001)	.002** (.001)	0 (.001)
Industry Peers Departure Rate			.805*** (.07)	.708*** (.115)
Monthly National Unemployment Rate Firm In Chapter 11			-.001*** (0)	-.001*** (0)
Observations	77862	77862	77862	77862
R-squared	.012	.012	.053	.126
Number of Firms	1122	1122	1122	1122
Year FE	No	No	Yes	Yes
Firm FE	No	No	No	Yes

The Table displays ordinary least squares regression with robust standard errors clustered at the firm level in parentheses. The unit of analysis is firm-month and the sample consists of the subset of the overall sample with publicly traded bonds. The dependent variable is the proportion of a firm's LinkedIn workforce that departs each month. The sample mean is 1.1%. "*Firm in Chapter 11*" is a dummy variable that takes on a value of 1 if the firm is reorganizing in Chapter 11 bankruptcy. "*Log Assets*" is the logged accounting value of the firm's assets from the bankruptcy petition. "*Firm is Financially Distressed*" takes on a value of 1 if the firm has a publicly traded bond that traded below 70, on average, in each quarter-year or if the firm's auditors have expressed the view that firm's survival as a going concern is unlikely. "*Industry Peers Departure Rate*" is the mean departure rate in a given calendar year in the firm's industry. "*Monthly National Unemployment Rate*" is the national unemployment rate in the month-year of the observation. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 9. Bankruptcy Status and Monthly Employee Departure Rate.

	(1)	(2)	(3)	(4)
	Monthly Proportion of Workforce Departing	Monthly Proportion of Workforce Departing	Monthly Proportion of Workforce Departing	Monthly Proportion of Workforce Departing
Firm in Chapter 11	.018*** (.003)	.017*** (.003)	.017*** (.003)	.011*** (.003)
Log Assets		-.002 (.001)	-.002* (.001)	.006 (.004)
Industry Peers Departure Rate			1.003* (.515)	-2.38*** (.555)
National Unemployment Rate			.001 (.001)	.001 (.001)
Observations	3245	3245	3245	3245
R-squared	.018	.02	.032	.274
Number of Firms	635	635	635	635
Year FE	No	No	Yes	Yes
Firm FE	No	No	No	Yes

The Table displays ordinary least squares regression with robust standard errors clustered at the employer level in parentheses. The unit of analysis is firm-month, with one observation for each month in the one-year window [-6 months, +6 months] around a Chapter 11 filing for firms that filed for bankruptcy relief. The dependent variable is the proportion of a firm's LinkedIn workforce that departs each month. The sample mean is 3.3%. "*Firm in Chapter 11*" is a dummy variable that takes on a value of 1 if the firm is reorganizing in Chapter 11 bankruptcy. "*Log Assets*" is the logged accounting value of the firm's assets from the bankruptcy petition. "*Industry Peers Monthly Departure Rate*" is the mean departure rate in a given month experienced by industry peers, excluding the sample firm. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 10. Post-Bankruptcy Periods and Review Themes.

	(1) Dead-End Job	(2) Financial Distress	(3) Underinvest ment	(4) Firm Performing Poorly	(5) Employee is Overworked	(6) Bad Corporate Culture
Firm In Chapter 11	.031*** (.011)	.124*** (.027)	.069*** (.017)	.191*** (.035)	.019*** (.007)	.091*** (.013)
Industry Peers Mean	1.013*** (.035)	1.008*** (.052)	1.078*** (.042)	.822*** (.079)	1.099*** (.12)	1.004*** (.121)
Log Assets	-.002 (.004)	-.013 (.012)	-.003 (.004)	-.005 (.006)	0 (.001)	.001 (.001)
Firm is Financially Distressed	.007* (.004)	.017** (.007)	.006 (.006)	.007*** (.002)	.002** (.001)	.009*** (.002)
Months 1-3 Post- Bankruptcy	.034 (.029)	-.007 (.031)	-.001 (.025)	.057** (.024)	-.009*** (.002)	-.001 (.009)
Months 4-6 Post- Bankruptcy	.013 (.022)	.02 (.054)	.017 (.027)	.05*** (.016)	-.009*** (.003)	-.017** (.007)
Months 7-9 Post- Bankruptcy	.018 (.019)	.033 (.041)	.026* (.015)	.083*** (.032)	-.01*** (.003)	-.017 (.015)
Months 10-12 Post- Bankruptcy	-.029** (.012)	.011 (.024)	.022 (.028)	.012 (.01)	-.01*** (.003)	-.004 (.013)
Log Assets	-.002 (.004)	-.013 (.012)	-.003 (.004)	-.005 (.006)	0 (.001)	.001 (.001)
Observations	159982	159982	159982	159982	159982	159982
R-squared	.024	.059	.036	.084	.016	.037
Number of Firms	3511	3511	3511	3511	3511	3511
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

The Table displays linear probability models with robust standard errors clustered at the employer level in parenthesis. The unit of analysis is a Glassdoor review, and each column represents a binary dependent variable that takes on a value of 1 if the theme was present in the review. Themes are defined in Table 1. The sample period consists of all reviews left in the sample period. “*Firm in Chapter 11*” is a dummy variable that takes on a value of 1 if the firm is reorganizing in Chapter 11 bankruptcy. “*Firm is Financially Distressed*” takes on a value of 1 if either: (1) the firm has a publicly traded bond that traded below 70, on average, in the quarter of the review; or (2) the firm’s auditor, for the audit corresponding to the quarter of the review, believes there is a risk that the firm will not be able to continue as a going concern. “*Industry Peers Mean*” is the mean of the corresponding theme in all reviews left in a given month by employees in the sample firm’s industry. “*Log Assets*” is the logged accounting value of the firm’s assets from the bankruptcy petition or securities filings. The various “*Months Post-Bankruptcy*” dummies take on a value of 1 if a reorganized firm is in the specified post-bankruptcy period. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 11. Bankruptcy Status and Review Themes around the time of Emergence from Chapter 11.

	(1) Dead-End Job	(2) Financial Distress	(3) Underinvest ment	(4) Firm Performing Poorly	(5) Employee is Overworked	(6) Bad Corporate Culture
Post-Bankruptcy	-.002 (.011)	-.067** (.027)	-.05*** (.017)	-.05** (.023)	-.015*** (.006)	-.053*** (.01)
Industry Peers Mean	.773*** (.217)	1.304*** (.301)	1.793*** (.404)	2.937*** (.59)	2.542*** (.937)	4.854*** (.814)
Log Assets	-.036 (.029)	-.082 (.06)	-.039 (.045)	.002 (.038)	-.008 (.016)	-.06*** (.018)
Prepackaged Bankruptcy	-.062 (.106)	-.334* (.197)	-.137 (.148)	-.061 (.119)	-.035 (.05)	-.282*** (.069)
Prenegotiated Bankruptcy	-.152 (.178)	.381 (.32)	-.373 (.257)	-.067 (.173)	-.075 (.086)	-.447*** (.103)
Observations	3954	3954	3954	3954	3954	3954
R-squared	.135	.184	.137	.225	.056	.149
Number of Firms	3511	3511	3511	3511	3511	3511
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

The Table displays linear probability models with standard errors clustered at the employer level in parenthesis. The unit of analysis is a Glassdoor review, and each column represents a binary dependent variable that takes on a value of 1 if the theme was present in the review. Themes are defined in Table 1. The sample period consists of all reviews left in the six months prior to exiting bankruptcy and the six months following the bankruptcy case. To the extent that a firm exited bankruptcy in fewer than six months, only the months of bankruptcy are included in the model. “*Post-Bankruptcy*” is a dummy variable that takes on a value of 1 if the firm reorganized in Chapter 11 in a prior month. “*Fama-French 48 Industry Mean*” is the mean of the corresponding theme in all reviews left in a given month by employees in the sample firm’s industry. “*Log Assets*” is the logged accounting value of the firm’s assets from the bankruptcy petition. “*Prepackaged Bankruptcy*” is a dummy variable that takes on a value of 1 if the firm filed for bankruptcy in a prepackaged Chapter 11 filing. “*Pre-negotiated Bankruptcy*” is a variable that takes on a value of 1 if the firm described its bankruptcy as pre-negotiated on the petition date. \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## Data Appendix.

### A. Glassdoor Stratified Sample.

The sample of Glassdoor reviews was drawn from a stratified random sample built around the goal of presenting human coders with a sample of employee reviews written by firms in a range of financial conditions, with a heavy emphasis on financially distressed firms measured using different criteria. To identify a range of financially distressed firms, I used three criteria to identify a sample of distressed-but-not-in-Chapter 11 firms: (1) firms whose stock price had fallen more than 30% in calendar year prior to the quarter of the employee review; (2) firms with bonds trading, on average in a given quarter, below 70 cents on the dollar for the quarter of the employee review; (3) firms whose auditors had issued a warning expressing concern that the firm would not be able to continue to operate as a going-concern in a securities filing covering the quarter of the employee review. I also separated reviews that employees wrote about their current employment versus reviews that employees wrote about past employment to avoid bias that could result from non-contemporaneous reflections.

The sample draw was as follows, where reviews were sorted into buckets sequentially in the order presented below (meaning that if a review fell into the first category, it was removed from the sample for subsequent random draws to populate the next strata):

Number of Reviews Presented to Coder	Strata Description	Total Strata Population	Strata as a Proportion of Full Sample	Strata as a Proportion of Coder Sample
3,347	Employee of Chapter 11 firm writes review while employed by Chapter 11 firm	3,387	0.00	0.18



2,000	Employee of Chapter 11 firm writes review after leaving the employment of a firm that was in Chapter 11 during their period of employment	4,807	0.00	0.11
5,000	Employee of financially distressed firm writes review while employed by financially distressed firm	73,365	0.04	0.27
2,500	Employee of firm that is growing, based on 30% increase in stock price in prior calendar year	859,124	0.48	0.14
2,000	Employee of firm that reorganized in Chapter 11 but did not work for the firm during the bankruptcy period writes review while employed by post-Chapter 11 firm	17,005	0.01	0.11
2,000	Employee of firm that worked for a firm that reorganized in Chapter 11 but did not work for the firm during the bankruptcy period writes review after leaving the employment of the post-Chapter 11 firm	21,071	0.01	0.11
1,000	Employee of a firm that is neither shrinking or growing based on prior year return between -30% and +30%	761,855	0.43	0.05
350	Other	42,914	0.02	0.02

A team of research assistants then reviewed each review of the sample after being trained using a coding guide. This training set was then used for machine classification.

#### B. Machine Learning Appendix

I assigned five research assistants 145 randomly selected machine coded observation to assess the reliability of the machine labeling. Each coder was given an entry to code using the “cons” from the Glassdoor review. The coders were trained on the themes in Table 1, and we regularly met to reach consensus on questionable observations. The research assistants also reviewed the machine classified observations to assess reliability. In post-machine classification

reliability testing, the reviewers were presented with 145 randomly selected machine labelled text blocks, blind to the label. The machine labeling was consistent with the majority of human coders in 92.41% of machine coded observations. Appendix Table 1 summarizes the agreement.

Appendix Table 1. Model Predicted Financial Distress Theme Coding Compared to Human Coder.

Human Coder Agreement?	Model Prediction		
	0	1	Total
0	4	7	11
1	51	83	134
Total	55	90	145

The Appendix Table summarizes human reliability checking of a random stratified sample that overweighted financially distressed firms of 140 coded Glassdoor survey responses, using the Glassdoor “con” field. Five human coders were asked to code each “con” to look for the theme of “*Firm is Financially Distressed*” and the Table compares the human consensus to the model predictions, where the human consensus reflects the agreement of three or more coders. All five coders agreed in 74% of observations, and four out of five coders agreed in 91% of observations.

#### A. Social Profiles Appendix.

The sample of social profiles comes from Datahut and CoreSignal, who compile information from LinkedIn. This data has been relied upon in other contemporaneous working papers (e.g., Ewens, Gupta and Howell 2023 and Garfinkel, Mayer, Strebulaev and Yimfor 2023). I began with a list of companies that filed for Chapter 11 bankruptcy between 2010 and 2020 and a list of companies with bonds (from TRACE and MergentFISD) and loans (from Data in Harmony) that traded during that period. An important data challenge is that firms file for Chapter 11 and issue debt typically at the level of the corporate family, which sometimes may consist of many employers. To overcome this challenge, a team of research assistants studied each firm on the list using public documents, court documents and news stories to identify what employers might

be associated with the company and then searched the data to identify all resume items that appeared to be associated with each corporate family.

I then cleaned the data with a combination of manual inspection and the removal of profiles that did not fit the format of the study. I removed resume items that appeared to be associated with temporary firms, consulting firms or contractors who were not actually employees at the employer, as temporary employees describe their employment in inconsistent ways. Further research is needed to understand the role that temporary employees play for firms that experience financial distress. After identifying matching profiles and cleaning bad matches, a research assistant unconnected to the initial classification did a final review of all matches in the dataset that yielded either 1000 resumes or more than 25% of the resumes of any individual debtor or borrower to confirm that the match results were reliable.

## B. Variable Definitions and Sources.

While there is overlap between the two datasets in the paper, there are also differences in how some variables are constructed based on the structure of the data.

### 1. Glassdoor Variables.

Variable Name	Description	Source
Age	Approximate Age	Internal Glassdoor Data
Male	Self-Reported Gender	Internal Glassdoor Data
Highest Education	Self-Reported Highest Education ranges from High School, Associates Degree, College or Graduate School	Glassdoor Data
Works in Different State than Headquarters	This variable takes on a value of 1 if the employee works outside of the headquarters state	Glassdoor Data
Annual Salary	Self-Reported Salary in Dollars	Glassdoor data
Total Compensation	Self-Reported Total Compensation, in Dollars	Glassdoor Data
Years of Relevant Experience	Self-Reported Years of Experience Relative to Current Position	Glassdoor Data

Overall Employer Rating	Self-reported “company rating” (1-5 scale)	Glassdoor Data
Career Opportunities	Self-reported opportunities to advance (1-5 scale)	Glassdoor Data
Compensation & Benefits	Self-reported rating of compensation & benefits (1-5 scale)	Glassdoor Data
Senior Leadership	Self-reported rating of the firm’s “senior” managers (1-5 scale)	Glassdoor data
Work/Life Balance	Self-reported rating of Work/life balance (1-5 scale)	Glassdoor data
Culture & Values	Self-reported rating of the company’s “culture & values”	Glassdoor Data
Recommend Working at Company to Friend	Self-reported response to this question: Would you recommend this company to a friend? (Yes/No)	Glassdoor data
Business Outlook	Self-reported prediction of business outlook (Better, Same or Negative)	Glassdoor data
CEO Approval	Self-reported approval or disapproval of CEO approve or disapprove of the CEO (where ‘no opinion’ was also an option)?	Glassdoor data

## 2. Social Profiles Variables.

Variable	Description	Source
Male	Proportion of Social Profiles with Male First Names.	Calculated Using Python gender-guesser library ( <a href="https://pypi.org/project/gender-detector/">https://pypi.org/project/gender-detector/</a> )
Age (approximate)	Assumed age based on social profile data, assuming employee was 22 at graduation from first university at time of departure	Social Profile Data
Highest Education: College or Above	Self-reported Social Profile Education Section	Social Profile Data
Years of Experience	Self-reported Years since graduating college at time of departure	Social Profile Data
Years at Company	Self-Reported Aggregate Time at Company at time of departure	Social Profile Data
Median SAT Score	Median SAT Score from National Center for Education Statistics Data in 2017 of All Admitted Students at Employee Undergraduate School. Automatic and Manual Matching to 50% of University Resume Items in Social Profile Data.	National Center for Education Statistics

Current Employees	Number of Employees in Each Consolidated Firm Month	Social Profile Data
New Hires	Number of New Hires in Each Consolidated Firm Month	Social Profile Data
New Hires as % of Current Employees	Proportion of Current Employees in Each Consolidated Firm Month That Are Current Employees	Social Profile Data
New Departures	Number of Departures in Each Consolidated Firm Month	Social Profile Data
New Departures as % of Current Employees	Proportion of Current Employees in Each Consolidated Firm Month That Depart Firm	Social Profile Data
Mean Departing Tenure (months)	Median Average Months at Employer of Departing Employees	Social Profile Data
Quarterly Senior Bond Price	Average Price of Senior Bond Issued by Firm in given calendar quarter	TRACE