Bankruptcy Duration Determinants for U.S. Pharmaceutical Firms

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ABSTRACT

Determinants of bankruptcy duration for U.S. pharmaceutical firms are analyzed which are useful in explaining the variation of duration in bankruptcy. Findings indicate pharmaceutical firms with complex capital structures stay longer in bankruptcy due to bargaining and coordination problems. The tenure of pharmaceutical firms is also positively related to time in bankruptcy. Bankruptcy is resolved more expeditiously when firms file Chapter 11 with a pre-packaged bankruptcy reorganization plan.

Keywords: Bankruptcy, Financial Distress, Pharmaceutical, Chapter 11

INTRODUCTION

The pharmaceutical industry is an important sector of the global economy. In addition to the enormous benefits provided to society in terms of enhancing both the longevity and quality of life, the industry has a significant economic impact in terms of contributing to a nations GDP while providing job opportunities to millions of workers. In the U.S. alone, the pharmaceutical industry generated over $529 billion in annual revenue in 2022 and accounted for over 42 percent of the global pharmaceutical market. [1] Along with business risks shared among other industries, pharmaceuticals rely heavily on research and development to sustain earnings over the long run. In the event of a patent expiration, a precipitous decline in earnings may result. Sustaining revenues may also rely on acquisitions or strategic alliances formed with other related companies in which litigation or lawsuits may arise. Government oversight and intervention associated with various phases of clinical trials (often costly and time consuming) are mandated for a new product to reach the market; failure at any point could ultimately result in the product's demise and add considerable uncertainty to the firm's future.

Due to the unique nature of the pharmaceutical industry, some companies will experience financial distress and resort to bankruptcy. Some will exit relatively quickly, others will experience a lengthy stay under bankruptcy protection. A shorter duration in bankruptcy is generally in the interest of all stakeholders due to the costs associated with bankruptcy. Direct costs are the deadweight losses associated with the legal and administrative expenses that accrue during bankruptcy proceedings. Indirect costs are the costs of under-investment resulting from missed opportunities to invest in positive net present value projects. In the absence of a constructive reorganization plan, it may be in the best interest of all stakeholders for the firm to liquidate sooner rather than later. Direct and indirect costs borne by existing stakeholders are lessened while allowing the purchasing firm an opportunity to better exploit the value of the assets.

A pharmaceutical firm confronted with extenuating circumstances (product recalls, patent infringements, class-action lawsuits) but otherwise a viable economic concern, may require legal protection to resolve such circumstances. Bankruptcy can offer relief and afford the firm time to successfully reorganize thereby benefiting stakeholders over the long-run. The bankruptcy outcome as well as determinants associated with bankruptcy duration are certainly of concern to stakeholders.

This study examines determinants associated with bankruptcy outcome and time in bankruptcy for a sample of 67 U.S. publicly traded pharmaceutical firms filing Chapter 11 from 2000 to 2022. Ceteris paribus, findings show reorganized firms resolve creditor claims and exit bankruptcy more quickly than liquidated firms require to finalize their disposition. Established firms also spend more time to complete their reorganization than for liquidated firms to finalize their disposition. Distressed firms that gain creditor support for a reorganization plan prior to bankruptcy filing resolve their reorganization more quickly. In the case of firms which liquidate, the incident of top-management resignation prior to filing, the discovery of fraud, and initial intent to sell assets under Section 363 of the U.S. Bankruptcy Code independently coincide with less time spent in bankruptcy.

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THE 1978 BANKRUPTCY REFORM ACT

Financial distress occurs when a firm's liabilities (or probable future liabilities) exceed the firm's assets. Barring the possibility of negotiating with creditors outside of court to resolve the matter, firms can opt to file for bankruptcy under Chapter 7 or Chapter 11 of the 1978 Bankruptcy Reform Act. Under Chapter 7, a court appointed trustee sells the firm's assets and the proceeds are distributed amongst the creditors in the order of absolute priority claim with any remaining proceeds distributed to the owners. In a Chapter 11 filing, the firm maintains its assets and creditor claims are stayed for an initial 120-day exclusivity period. This period can be extended at the option of the presiding judge if warranted. Various committees are formed to represent the interests of debtholders and stockholders. There must be general consent on the reorganization plan among all claimholders in order for a firm to successfully exit from Chapter 11 bankruptcy. More than half of all voting classes of creditors must consent to the plan and more than two thirds of impaired creditors must consent to the plan before a court approved confirmation of the plan is granted. In the event the court approves the reorganization plan, a period of time elapses in which the provisions of the plan are implemented. The effective date of the reorganization plan marks the point in time coinciding with the successful completion of all agreed terms and conditions specified within the confirmation plan leaving the firm officially discharged from bankruptcy.

PRIOR STUDIES RELATED TO BANKRUPTCY OUTCOME AND DURATION

Three areas of bankruptcy research include those studies that investigate bankruptcy (1) filings, (2) outcomes, and (3) duration (time spent in bankruptcy). All of these areas of bankruptcy research rely significantly on accounting variables to explain or predict; however, this paper focuses on non-accounting data known at the time of filing, or shortly thereafter, to explain bankruptcy duration.

Earlier studies focusing on bankruptcy filings by U.S. firms are predominately predictive in nature and employ discriminatory analysis in conjunction with the use of accounting data and financial ratios to predict bankruptcy, Altman (1968) and Ohlson (1980). In addition, similar models are applied to the prediction of bankruptcy outcome, Pastena & Ruland (1986) and Casey et al. (1986). Other studies build upon these and apply their models to specific industry sectors. Chun, et. al (2013) apply the Ohlson model to predict bankruptcy in the pulp and paper industry. Panigrahi (2019) validates the Altman (1968) "Z" score model using a select set of non-distressed pharmaceutical companies and find those with a high "Z" score are indeed corroborated with strong financial health. Finally, studies which examine bankruptcy duration also exist. Bandopadhyaya (1994) examines bankruptcy duration for U.S. publicly held companies and finds the interest burden of a firm and firm industry conditions are influential factors related to bankruptcy duration. Li (1999) and Orbe et al. (2002) consider bankrupt firms with high-yield debt and associated bankruptcy durations.

More recent studies have focused on the determinants which influence both bankruptcy outcome and bankruptcy duration. Denis and Rodgers (2007) were the first to examine this relationship. They find the greater a bankrupt firm's industry-adjusted operating margin (i.e., industry comparable operating income before depreciation over total asset book value) the less time spent in bankruptcy. They note; however, this applies only to their sample firms which are

able to successfully reorganize. Jaggia and Thosar (2019) consider ex ante determinants that may influence a bankruptcy court's decision to approve a reorganization plan or decide whether liquidation should occur. They find firm size, appointment of a creditors committee, debt prepackaging and judge experience play a role in both the resulting outcome and time spent in bankruptcy. Ayadi, et. al 2019 examine bankruptcy outcome and duration related to publicly held Canadian firms under the Companies' Creditors Agreement Act. Their findings indicate reorganized firms tend to exit bankruptcy faster while company age and size are positively related to bankruptcy duration.

SAMPLE CONSTRUCTION AND DATA SOURCES

Sample firms include publicly traded pharmaceutical firms (NYSE, AMEX, NASDAQ) whose Standard Industry Classification (SIC) specific-group number is 2830 and voluntarily or involuntarily filed Chapter 11 from 2000 to 2022. The sample was derived from a list of all publicly traded firms filing Chapter 11 made available through the Office of the General Counsel of the Securities and Exchange Commission. The primary SIC code was found within the EDGAR U.S. Securities and Exchange Commission database. There were initially 75 firms with the SIC code 2830. Company descriptions and characteristics useful in identifying important event dates and company outcomes were obtained from in-depth reviews of NEXIS news reports, 8-K and 10-K reports, and bankruptcy court transcripts related to important events associated with the bankruptcy. In the event any two or more sources yielded inconsistent dates, only the earliest date was retained. To form the final sample, two companies that filed Chapter 7 and did not subsequently convert to Chapter 11 were eliminated; five companies that had indeterminate outcomes were eliminated; and one company was eliminated whose outcome was still pending at the end of 2023. This resulted in a final sample of 67 firms. Table 1 (Appendix) shows the sample distribution by outcome and bankruptcy filing year. Panel A shows the average time in bankruptcy is 29.2 weeks.

Reorganized (liquidated) firms spent the longest (shortest) time in bankruptcy. Reorganized and liquidated firms comprise 39%, and 61% of the sample, respectively. Panel B describes the distribution of the sample by time in bankruptcy and alternative bankruptcy resolution outcome. The distribution of time in bankruptcy exhibits substantial variation across resolution outcomes as well as type of bankruptcy outcome. For all sample firms, 26 cases (39%) were resolved within 16 weeks. For liquidated firms, 19 (46%) were resolved within 16 weeks while 7 (27%) of reorganized firms were resolved within 16 weeks.

DETERMINANTS OF TIME IN BANKRUPTCY

This section presents and discusses firm-specific variables posited to impact time spent in bankruptcy. Each of these variables exist either prior to the bankruptcy filing or within a month following the bankruptcy filing. They include complexity of capital structure, firm age, existence of a pre-packaged bankruptcy arrangement, top management resignation prior to filing,

the discovery of fraud, and the disclosure of intent to sell assets under Section 363 of the U.S. Bankruptcy Code. [2]

Capital Structure Complexity

Bolton and Sharfstein (1996) show the number of creditors can affect the outcome of debt renegotiation.[3] Betker (1995) provides evidence that firms with relatively more complex capital structures exhibit greater coordination issues involving large bankrupt firms leading to more prolonged time in bankruptcy.[4] Further, a majority of firms filing Chapter 11 are found to pledge nearly all their assets to secured lenders, Ellias and Stark (2020). Hotchkiss et al. (2023) examine capital structure complexity and find evidence that the use of secured debt coupled with blanket liens on all firm assets exacerbates the problem of creditor claim priority in the event the debtor subsequently files for bankruptcy. This may be of lesser concern for relatively small firms which have a simple capital structure consisting of a single secured claim on long-lived assets and an unsecured loan on other assets such as inventory. Pharmaceutical firms contained in the sample vary widely from small, early development stage companies focusing on a niche product to large, well established pharmaceutical firms offering a plethora of diversified products marketed internationally. As a proxy for complexity, the number of distinct major classes of creditors listed in the firm's 10-K report within a year prior to filing is considered. [5]

Firm Age

T he tenure of a firm prior to filing can play an important role in bankruptcy duration and outcome. Firm age may be related to firm size while also proxying for the degree of knowledge-based resources possessed by a company. [6] This is particularly relevant to pharmaceutical companies in the way of large investments contributing to R&D and product innovation. Ayadi et. al (2019) examines distressed Canadian public firms filing under the Companies' Creditors Agreement Act and finds relatively older firms spend more time in bankruptcy due to more "complex structures"; however, they do not examine the relationship between firm age and bankruptcy outcome.

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[2] Reliance on accounting data was limited. There were some firms in the sample that did not file 10-K reports for over a year prior to bankruptcy leaving only stale accounting information related to size, leverage, and profitability measures. In addition, there were pharmaceutical firms included in the sample that filed bankruptcy for reasons other than out of pure financial necessity. Examples include using bankruptcy as a means to navigate through potential legal liabilities resulting from addictive drug misuse, patent infringement lawsuits, false quality assurances provided to regulatory agencies, and protection from contractual obligations. Further, development-stage pharmaceuticals were included in the sample which often had very little (if any) sales, or in the case where company assets were so small, financial ratios would be greatly skewed if even calculable. In each of these instances, accounting information would yield at best a distorted image of the firm's true financial position and/or operating performance.

[3] Bolton and Sharfstein (1996) analyze how the number of creditors affects the outcome of debt renegotiation but do not consider bankruptcy law in their model.

[4] The complexity of a firm's capital structure has been found to be related to firm size. Eberhart, Moore, and Roenfeldt (1990) and Franks and Torous (1994) observe that relatively large firms involve more claimants' in bankruptcy negotiations leading to more bargaining complexity and coordination problems arising among all parties involved in Chapter 11 proceedings.

[5] In the absence of a 10-K report, 10-QSB and 10-KSB40 reports were considered.

[6] For the 67 firms in the sample, firm age and capital structure complexity are correlated at 33% while firm age and total assets are correlated at 77%.

Pre-packaged Bankruptcy Filing

The U.S. Bankruptcy Code contains a provision (section 1126) which allows a debtor to re-structure terms of their debt contract prior to filing Chapter 11. This may be in the form of concessions made between the debtor and creditor such as a debt-for-equity swap, extending the term of the original loan or some combination. The intent of a pre-arranged agreement is to more expediently facilitate the bankruptcy proceeding thus curtailing both direct and indirect costs associated with time in bankruptcy.

Betker (1995) finds prepackaged bankruptcies benefit firms facing a short-term liquidity crisis. Tashjian, Lease and McConnell (1996) provide evidence that prepackaged bankruptcies, which combine the characteristics of out-of-court restructuring and Chapter 11 bankruptcy, can result in cost savings and reduce time spent in Chapter 11. McConnell and Servaes (1991) caution, however, that pre-packaged filings are unlikely to be successful when there are a large number of creditors with competing interests. Bebchuk and Chang (1992) submit that at the time the prepackaged plan is formulated, creditors will also anticipate the outcome of Chapter 11. LoPucki and Doherty (2015) provide a comprehensive study examining a variety of factors influencing whether a bankrupt firm will successfully reorganize or eventually liquidate. A key factor found to have a significant positive effect on a company successively reorganizing was the incident of a pre-packaged filing. LoPucki and Doherty (2015) consider two distinguishable types of pre-packaging arrangements: pre-packaged and pre-negotiated. Pre-negotiated is where the debtor drafted "a term sheet for a plan and obtained the consent of at least one major creditor constituency to those terms". For a pre-packaged plan, there need only be "sufficient acceptances" on the part of creditors. Hotchkiss et al. (2023), point to the existence of a Restructuring Support Agreement (RSA). Unlike a pre-negotiated plan which is developed through negotiations prior to the Chapter 11 filing, an RSA takes the form of a contractual agreement between the debtor and major creditors before or after the Chapter 11 filing. When creditors consent to the RSA, they are bound not to vote against the plan agreement (a lock-up) virtually ensuring their support for the plan. A dummy variable is used to identify firms that filed for bankruptcy under a pre-packaged plan. For 11 of 26 reorganized firms in the sample, prepack equals one if either a pre-negotiated or RSA plan was in place at the time of filing.[7] None of the liquidated firms in the sample had a bona fide pre-packaged plan.[8]

[7] Pre-negotiated and RSA plans are separately considered in the analysis. A pre-negotiated plan is a dummy variable that equals one if the debtor developed a reorganization plan that had a majority support of creditors prior to the filing. A restructuring support agreement (RSA) is a dummy variable that equals one if secured creditors unanimously agreed to support the proposed reorganization plan prior to the filing. Each was found to have a significant negative impact on time spent in bankruptcy. For brevity, the presence of any form of pre-packaged plan is considered, regardless of whether the plan was pre-negotiated or an RSA since it does not alter any conclusions.

[8] There were two liquidated firms in the sample which had a "pre-arranged" package pursuant to which the company planned to sell substantially all its assets to a suitor contingent upon filing Chapter 11. This sort of arrangement is merely a conduit to facilitate asset sales rather than an attempt to reorganize and therefore is disregarded as a pre-packaged filing.

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Top Management Resignation

The unexpected resignation by top management may signal the firm's future prospects are poor. Beams et. al (2011) point to the existence of a moral hazard issue taking place between top management employed as agents acting on behalf of the principals they represent. Top management may be privy to information that place them in a position to make decisions that align with their own interests to the detriment of the principals they represent. On one hand, if management is aware of impending bankruptcy, other stakeholders would benefit by management taking proactive actions (pre and post filing) contributing to a successful reorganization. Gilson (1989) finds that managers who resign from financially distressed firms realize that it is more difficult to procure employment with publicly traded firms for several years thereafter and come at substantial personal costs. On the other hand, if conditions associated with financial distress are very dire and management knows the likelihood of liquidation is near certain, then an early departure from the firm leaves them with little to lose. It is therefore expected top management resignation will result in less time spent in bankruptcy. A dummy variable of one was assigned to 3 of 26 reorganized companies and 9 of 41 liquidated firms in the sample where key executives resigned within six months prior to bankruptcy filing.

Discovery of Fraud

Karpoff, Lee, and Vendrzyk (1999) show that firms operating in the defense industry which were investigated, indicted, or suspended for fraud experienced significantly negative abnormal stock returns. Although the study does not examine the effect of fraudulent acts on creditors, it is plausible to assume creditors may be adversely affected by such acts as well. Take for example the case of Able Laboratories, a generic drug manufacturer. Able filed Chapter 11 in July 2005 facing product recalls by the Food and Drug Administration. An investigation revealed that company executives overseeing quality control covered up manufacturing deficiencies. The company was liquidated less than a year after filing. The assets were sold for $23.15 million; secured creditor claims of $7 million were paid in full, unsecured creditors recovered 27 percent of their claims, and shareholders received nothing. Although the absolute priority rule was enforced by the bankruptcy court, it does illustrate the swiftness by which fraudulent acts are resolved with the offending company almost always being liquidated. A dummy variable was assigned to 6 of 41 liquidated companies in the sample which were involved in fraudulent activities. No reorganized firms in the sample were associated with fraudulent activities.

Section 363 Sale

Under Section 363 of the U.S. Bankruptcy Code, a debtor can file Chapter 11 and choose to sell the firm in its entirety to settle creditor claims.[9] LoPucki and Doherty (2015) were the first to document the likelihood of liquidation given a firm's announcement to sell off its assets under Section 363 of the U.S. Bankruptcy Code. The announcement of intent to sell assets can take place at either the onset or shortly after the bankruptcy filing and serves as a signal to the

[9] Unlike a Chapter 7 bankruptcy liquidation in which a court-appointed trustee is assigned to liquidate the firm's assets, a 363 sale allows the debtor in possession some flexibility in the way of administering asset sales.

market the firm's prospects of reorganizing are slim. Gilson, Hotchkiss & Waldock (2022) find evidence Section 363 sales are common among relatively small firms. Although no known study exists which documents the relationship between the announcement of intention to sell assets under Section 363 and the duration in bankruptcy, a Section 363 sale process is fairly straightforward and the announcement of a Section 363 sale is expected to be associated with a shorter time in bankruptcy.[10]

CHARACTERISTICS OF DETERMINANTS AND EMPIRICAL METHODOLOGY

Descriptive Statistics

Table 2 (Appendix) reports descriptive statistics for bankruptcy time-determinants used in the analysis. Panel A of Table 2 shows the average number of creditor classes (Complexity) for all sample outcomes is 3.1 and ranges from zero to 16 distinct classes with a standard deviation of 2.47.[11] Panels B and C show reorganized (liquidated) pharmaceutical firms have an average of 4.31 (2.34) classes of creditors with a standard deviation of 3.25 (1.39); the difference, accounting for variability, is significant at less than 1%.

Panel A of Table 2 shows for all sample outcomes, the average time from incorporation to bankruptcy filing (AGE) is 17.36 years with a standard deviation of 20.12 years. The smallest incorporation period is 1 year, the largest 153 years. Panels B and C of Table 2 show that reorganized (liquidated) firms have an average age of 23.79 (13.29) years with a standard deviation of 30.06 (7.71); the difference, accounting for variability, is significant at less than 5%.

Descriptive statistics associated with three separable forms of pre-packaged filing arrangements for reorganized firms are presented in Panel B of Table 2 (none of the liquidated sample firms contained a prepackaged plan). The incident of either a pre-negotiated agreement or RSA occurred in 27% of the 26 firms that reorganized with a standard deviation of 45%. Prepack denotes the existence of either a pre-negotiated or RSA package in place at the time of bankruptcy filing with an average (standard deviation) of 42% (50%). Panels B and C of Table 2 show the resignation of a key executive occurring within 6 months of bankruptcy filing. Resignation for reorganized (liquidated) firms shows a mean of 12% (22%) with a standard deviation of 33% (42%), the difference not being significant. The discovery of fraudulent

[10] The announcement of firm's intention to sell its assets under Section 363 does not necessarily equate to an expedient (much less immediate) resolution. There must first be convincing evidence that an unimpeded sale of assets would better preserve the value of firm's asset value rather than a more protracted bankruptcy proceeding as argued by Jacoby & Janger (2014). Further, the court sets the sale date in which bidders make competing offers. The court must then determine whether the winning bid satisfies court-approved conditions necessary to finalize the asset sale. Of the 41 liquidated firms in the sample, 26 opted to liquidate under Section 363 of the U.S Bankruptcy code where both the average and median number of weeks in bankruptcy was 15 with a range of 2 to 39 weeks. For the remaining 15 liquidated firms, the average (median) time in bankruptcy was 32.3 (38.4) weeks with a range of 4 to 59 weeks.

[11] Two companies in the sample reported no bank debt in their financial statements prior to filing. Antex Biologics, Inc. and Northfield Laboratories, Inc. (both development stage companies) filed Chapter 11 due to insufficient cash to fund further product research. Both companies liquidated after spending less than 10 and 15 weeks in bankruptcy respectively.

activities occurred only for liquidated firms in the sample with an average (standard deviation) of 15% (36%). An asset sale under Section 363 of the U.S Bankruptcy Code occurred only for liquidated firms in the sample. Of the 41 liquidated firms, 26 (63%) selected to use a Section 363 sale to facilitate their liquidation.

Bankruptcy Duration Effects of Determinants

Table 3 (Appendix) presents the relationship of selected determinants to time in bankruptcy. Panel A of Table 3 shows a pre-negotiated plan is associated with an average of 18.67 weeks in bankruptcy compared to an average of 49.81 weeks absent a plan. The existence of an RSA is associated with an average of 20.43 weeks in bankruptcy compared to an average of 49.17 weeks absent an RSA. Firms having either a pre-negotiated plan or RSA (Prepack) spend an average of 17.64 weeks in bankruptcy compared to an average of 58.88 weeks absent a plan. The existence of any type of pre-filing arrangement results in significantly less time spent in bankruptcy. The occurrence of top management resignation (non-resignation) in reorganized firms shows an average bankruptcy time of 46.43 (40.78) weeks with a standard deviation of 48.6 (33.88), the difference is not significant.

Panel B of Table 3 shows resignation (non-resignation) of top management prior to bankruptcy results in liquidated firms spending an average of 14 (23.59) weeks in bankruptcy with a standard deviation of 11.55 (14.89), the difference significant at 5%. Resignation diminishes the time spent in bankruptcy for liquidated firms. The discovery of fraud (no fraud) in liquidated firms show an average bankruptcy time of 18 (22.09) weeks, the difference is not significant. Liquidated firms that choose to sell (not sell) their assets under Section 363 of the U.S Bankruptcy Code spend an average of 15.27 (32.27) weeks in bankruptcy, the difference significant at less than 1%. Selecting to sell assets under Section 363 of the Bankruptcy Code reduces the time in bankruptcy for liquidated firms.

Methodology

Maximum likelihood parametric models are fitted using failure time data (i.e., time in bankruptcy) composed of covariates and a random disturbance term that is assumed to follow the Weibull or Log-logistic distribution. The regression models use the covariates to explain the time (duration) bankrupt firms spend in bankruptcy.[12] The time in bankruptcy, *T,* is the period (in weeks) from the bankruptcy filing date to the confirmation date. These distributions are used because parameter estimates that assume a normal distribution are sensitive to extreme values and normality assumptions are violated.

The hazard function determines the probability that a firm exits from Chapter 11 protection at time *T*, conditional on it having stayed there for *t* periods. For the Weibull distribution:

[12] The selection of these two models is based on the model fit and distributional assumption underlying the time in bankruptcy. An alternative exponential distributional specification was considered where the hazard function is specified $h(t, X) = \lambda$. The Exponential model, however, assumes the hazard rate is constant and does not allow duration dependence unlike the Weibull and Log-logistic models. Bandopadhyaya (1994) finds the hazard of firms exiting Chapter 11 exhibits positive duration dependence. Results in Table 4 show that α is consistently greater than 1, and supports Bandopadhyaya's (1994) evidence that the hazard of Chapter 11 firms displays positive duration dependence.

$$h(t,X) = \lambda\alpha(\lambda t)^{\alpha-1} \quad (1)$$

For the Log-logistic function:

$$h(t,X) = \frac{\lambda\alpha(\lambda t)^{\alpha-1}}{1+(\lambda t)^{\alpha}} \quad (2)$$

where $\alpha > 0$ and $\lambda > 0$ are the parameters of the distribution. The shape parameter, α, describes the evolution of the hazard, λ represents the variability present in the distribution. In equations 1 and 2, the hazard displays positive (negative) duration dependence when $\alpha > 1$ ($\alpha < 1$). Positive (negative) duration dependence means that the probability of emerging from Chapter 11 increases (decreases) with an increase in the elapsed time in bankruptcy protection. Given a set of covariates, *X*, the hazard is specified as follows:

$$h(t,X) = \exp(-X\beta)$$
$$X\beta = \beta_0 + x_1\beta_1 + \ldots + x_K\beta_K \quad (3)$$

From equation (3) a positive (negative) coefficient for a covariant implies it has a negative (positive) effect on the hazard, and hence, a positive (negative) effect on duration.
The econometric specification is similar to that of Bandopadhyaya (1994) but does not involve censoring since all firms had complete duration times.

EMPIRICAL RESULTS

Weibull Model regression results are presented on the left-side of each panel in Table 4 (Appendix). For robustness, results of the Log-Logistic model are presented alongside the Weibull model. [13] The last two rows of each table show the estimates of distribution parameters (λ, α) associated with each model.

Panel A of Table 4 presents regression results for complexity and firm age considered separately on bankruptcy duration. The coefficient associated with complexity for all sample firms is positive and significant in both models implying more creditor classes contribute to longer bankruptcy duration. The positive relationship to bankruptcy duration is likely due to more severe coordination problems among all parties involved in Chapter 11 proceedings consistent with Eberhart et. al (1990) and Franks & Torous (1994). Note the magnitude of the complexity coefficient is less for reorganized firms than liquidated firms. Ceteris paribus, reorganized firms resolve creditor claims and exit bankruptcy more quickly than liquidated firms require to finalize their disposition. Creditors may perceive the likelihood of a firm reorganizing successfully is good and to alleviate associated direct and indirect bankruptcy costs, it would be

[13] Although more difficult to interpret, the log-logistic model permits non-monotonic behavior of the hazard specification and is therefore a more flexible hazard specification than the Weibull function. The signs and statistical significance of all coefficients in each Log-logistic model are consistent with that of the Weibull model. Focus is made on the sign and strength each variable has in relation to associated bankruptcy outcome and duration taken collectively.

in their collective interest to bargain or make other concessions to expedite the firm's departure from bankruptcy.

The coefficient associated with firm age for all sample firms is positive and significant in both models. This implies that more established firms spend more time in bankruptcy. This result is consistent with Ayadi et. al (2019). Next, observe that the magnitude of the firm age coefficient is greater for reorganized firms than liquidated firms. Ceteris paribus, established firms that reorganize take longer to complete their reorganization than for liquidated firms to finalize their disposition. More established pharmaceutical firms which successfully reorganize have likely deployed their assets and intellectual resources successfully enough in the past to allow them to survive longer. Thornhill & Amit (2003) apply a resource-based view in explaining the failure mechanism inherent among older firms hypothesizing that resistance to adapt to a changing competitive environment contributes to failure. This finding takes the view bankruptcy is a necessary condition for failure; however, it is insufficient to conclude those firms will cease to exist. Established pharmaceutical firms which are eventually able to reorganize must be aware of the valuable resources and capabilities they possess and are at risk if the time and effort to promote a successful reorganization is not expended. On the other hand, less established firms may not possess such attributes and when confronted with comparable financial, legal or regulatory challenges, the likelihood of reorganization would logically seem smaller. The choice to liquidate may better preserve asset value thereby leading to less time spent in bankruptcy.

Panel B of Table 4 introduces firm age along with complexity into the models. For all sample firms and outcomes, the magnitude of both the complexity and age coefficient is diminished in both models; however, the relationship between reorganized and liquidated firms is preserved.

Panel C of Table 4 introduces prepackaged bankruptcy into the model. Since only reorganized firms in the sample contain a prepackaged plan (11 of 26 reorganized firms), focus is made on the effect this variable has on time in bankruptcy and associated impact on other time determinants pertaining to reorganized firms. The negative sign attached to the prepackaged coefficient (significant at a level of 1%) indicates such an arrangement diminishes time spent in bankruptcy. This is consistent with the findings of Tashjian, Lease and McConnell (1996), and Li (1999). The introduction of prepackaging slightly lowers the magnitude of the complexity coefficient in both models while maintaining the same level of significance. The magnitude of the firm age coefficient effect is also lessened with the significance of the firm age coefficient becoming greater in the Log-logistic model. Pharmaceutical firms which reorganized and had a prepackaged reorganization plan in place prior to filing bankruptcy spend significantly less time in bankruptcy.

Panel D of Table 4 introduces the incident of top management resignation prior to bankruptcy filing. For all outcomes, the sign associated with the resignation coefficient is negative and significant indicating the incident of resignation lessens the time spent in bankruptcy. Further, the sign and magnitude of complexity, firm age and prepackaging coefficients are preserved for reorganized firms. In both models, the resignation coefficient for reorganized firms is not significant; however, for liquidated firms, the resignation coefficient is negative and highly significant indicating resignation by top management prior to bankruptcy filing is associated with a shorter bankruptcy duration. Both models also show the magnitude and significance of the resignation coefficient is virtually the same for liquidated firms.

Panel E of Table 4 introduces the discovery of fraudulent activities. Since only

liquidated firms in the sample are associated with fraud (6 of 41), focus is made on the effect this variable has on time in bankruptcy and associated impact on other time determinants pertaining to liquidated firms. The fraud coefficient (significant at a level of 1%) indicates that fraud is negatively related to time spent in bankruptcy. The magnitude and significance of the fraud coefficient is virtually the same for both models and has a negligible impact on all other time determinants.

Panel F of Table 4 introduces the effect of a firm's intention to sell firm assets under Section 363 of the U.S. Bankruptcy code. Since only liquidated firms in the sample (26 of 41) opt for a 363 sale, focus is made on the effect this variable has on time in bankruptcy and associated impact on other time determinants pertaining to liquidated firms. The 363 sale coefficient (significant at a level of 1%) indicates that a 363 sale is negatively related to time spent in bankruptcy. In the Weibull model, the complexity coefficient becomes less significant while the magnitude of the resignation coefficient declines. The Log-logistic model, which offers a slightly better goodness of fit than the Weibull model, shows consistent results with the Weibull model along with a smaller decline in the resignation coefficient.

CONCLUSION

The pharmaceutical industry plays a vital role in the fulfillment of societal needs. With the onset of a pharmaceutical firm filing for bankruptcy, there are associated costs borne not only by the firm itself, but others as well including a disruption of essential medical products, crucial research for on-going medical afflictions, loss of employment (direct and indirectly related), in addition to losses sustained by suppliers, government, creditors and investors. With some knowledge of the time likely to be spent in bankruptcy and related outcome, certain of these costs may be mitigated by taking proactive actions on the part of various stakeholders to re-deploy assets in a manner that would be more beneficial than otherwise.

This study identifies firm-specific attributes useful in explaining the relationship between time in bankruptcy and alternative bankruptcy resolutions for pharmaceutical firms. Firm complexity and age are related to firm size and firm resource levels which impact bankruptcy duration and outcome. Another economic variable found to be significantly related to bankruptcy duration is the firm's choice to prepackage its debt restructuring as a means to facilitate a successful reorganization. Bankruptcy duration for liquidated firms is significantly reduced when the intention to sell firm assets is initiated under Section 363 of the U.S. Bankruptcy Code. Further, the discovery of fraud and top-management resignation prior to filing bankruptcy significantly diminishes bankruptcy duration for liquidated firms. This empirical analysis allows an evaluation of how these identifiable endogenous factors existing at or near the time of bankruptcy filing can be useful in making more informed decisions by stakeholders.

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APPENDIX

Table 1 Distribution of Bankrupt Firm Sample

Panel A: Distribution of sample by filing year and bankruptcy resolution outcomes

Year	Reorganized No.	Liquidated No.	Overall No.
2000	1	0	1
2001	0	2	2
2002	3	2	5
2003	2	4	6
2004	0	0	0
2005	0	1	1
2006	2	2	4
2007	1	1	2
2008	2	5	7
2009	1	1	2
2010	0	0	0
2011	0	1	1
2012	1	0	1
2013	2	0	2
2014	1	0	1
2015	2	1	3
2016	1	1	2
2017	0	2	2
2018	1	5	6
2019	2	6	8
2020	3	2	5
2021	0	1	1
2022	1	4	5
Total by Outcome	26	41	67
Proportion of Each Outcome	38.8	61.2	100
Average Weeks in bankruptcy	41.4	21.5	29.2

Panel B: Distribution of sample by time in bankruptcy and bankruptcy resolution outcomes

Number of	Reorganized		Liquidated		Overall	
Weeks (w)	No.	%	No.	%	No.	%
$w < 8$	4	15	7	17	11	16
$8 < w \leq 12$	2	8	5	12	7	10
$12 < w \leq 14$	1	4	2	5	3	4
$14 < w \leq 16$	0	0	5	12	5	7
$16 < w \leq 18$	2	8	2	5	4	6
$18 < w \leq 20$	0	0	5	12	5	7
$20 < w \leq 22$	0	0	1	2	1	1
$22 < w \leq 24$	2	8	3	7	5	7
$24 < w \leq 26$	1	4	0	0	1	1
$24 < w \leq 28$	2	8	1	2	3	4
$28 < w \leq 30$	0	0	1	2	1	1
$30 < w \leq 36$	0	0	2	5	2	3
$36 < w \leq 42$	0	0	4	10	4	6
$42 < w \leq 48$	1	4	2	5	3	4
$48 < w \leq 54$	2	8	2	5	4	6
$54 < w \leq 60$	1	4	1	2	2	3
$60 < w \leq 66$	2	8	0	0	2	3
$66 < w \leq 82$	2	8	0	0	2	3
$102 < w \leq 134$	3	12	0	0	3	4
Total	26		41		67	

Table 2 Descriptive Statistics

This table provides descriptive statistics of the determinants used in our analysis. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Prepack is a dummy variable that equals one if either a pre-negotiated or RSA plan was in place, zero otherwise. Resignation is a dummy variable that takes a value of one if there was an unexpected departure of a key executive(s) within 6 months prior to filing for bankruptcy, zero otherwise. Fraud is a dummy variable that takes a value of one if fraud was discovered while the firm was in bankruptcy protection, zero otherwise. 363 sale (Section 363 of the U.S. Bankruptcy Code) is a dummy variable that takes a value of one if the debtor announced the intention to sell all assets at the time of filing, zero otherwise.

Panel A: All firms (n=67)

Characteristics	Mean	Median	Std. Dev.	Minimum	Maximum
Complexity	3.10	2	2.47	0	16
AGE	17.36	13.15	20.12	1.002778	153
Pre-negotiation	0.10	0	0.31	0	1
RSA	0.10	0	0.31	0	1
Prepack	0.16	0	0.37	0	1
Resignation	0.18	0	0.39	0	1
Fraud	0.09	0	0.29	0	1
363 Sale	0.39	0	0.49	0	1

Panel B: Reorganized firms (n=26)

Characteristics	Mean	Median	Std. Dev.	Minimum	Maximum
Complexity	4.31	4	3.25	1	16
AGE	23.79	17.11	30.06	1.70	153
Pre-negotiation	0.27	0	0.45	0	1
RSA	0.27	0	0.45	0	1
Prepack	0.42	0	0.50	0	1
Resignation	0.12	0	0.33	0	1
Fraud	0	0	0	0	0
363 Sale	0	0	0	0	0

Panel C: Liquidated firms (n=41)

Characteristics	Mean	Median	Std. Dev.	Minimum	Maximum
Complexity	2.34	2.00	1.39	0	6
AGE	13.29	11.82	7.71	1.00	35.20
Pre-negotiation	0	0	0	0	0
RSA	0	0	0	0	0
Prepack	0	0	0	0	0
Resignation	0.22	0	0.42	0	1
Fraud	0.15	0	0.36	0	1
363 Sale	0.63	1	0.49	0	1

TABLE 3 Bankruptcy Duration Effects of Determinants

This table shows the relative effect each determinant has on bankruptcy duration (in weeks). Pre-negotiation is a dummy variable that equals one if there was a majority support for the reorganization plan by creditors prior to filing. Restructuring support agreement (RSA) is a dummy variable that equals one if there was unanimous consent by secured creditors prior to filing. Prepack is a dummy variable that equals one if there was either a pre-negotiated or RSA in place prior to filing. Resignation is a dummy variable that equals one if there was a departure of a key executive within 6 months prior to filing, 363 sale is a dummy variable that equals one if the debtor announced an intention to sell assets upon bankruptcy filing. Fraud is a dummy variable that equals one if there was discovery of fraudulent activity after the filing. Superscripts **, and *** denote statistical significance at the 5%, and 1% levels, respectively.

Panel A:

Reorganized firms

	number	Mean	Median	Standard Deviation	Minimum	Maximum
Total firms	26	41.43	26.21	34.68	5.14	133.71
Pre-negotiation	7	18.67**	7.57	23.14	5.14	68.43
No Pre-negotiation	19	49.81	47.14	34.87	10.86	133.71
RSA	7	20.43**	13.86	21.98	5.14	68.43
No RSA	19	49.17	47.14	35.70	6.57	133.71
Prepack	11	17.64***	10.86	18.18	5.14	68.43
No Prepack	15	58.88	53.57	33.77	16.29	133.71
Resignation	3	46.43	23.14	48.60	13.86	102.29
No Resignation	23	40.78	26.43	33.88	5.14	133.71

Panel B:

Liquidated firms

	number	Mean	Median	Standard Deviation	Minimum	Maximum
Total firms	41	21.49	17.14	14.65	2.71	58.57
Resignation	9	14.00**	9.57	11.55	4.00	42.57
No Resignation	32	23.59	18.50	14.89	2.71	58.57
Fraud	6	18.00	14.71	18.58	2.71	53.71
No Fraud	35	22.09	18.00	14.12	5.43	58.57
363 Sale	26	15.27***	14.57	8.89	2.71	39.43
No 363 Sale	15	32.27	38.43	16.61	4.00	58.57

Table 4: Regression Results

The dependent variable is the number of weeks in bankruptcy to the time of a court-approved confirmation or court-approved liquidation. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Standard errors are in parentheses. Superscripts *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. † indicates the hypothesis that Alpha = 1 is rejected at the 1% level for both models.

Panel A

	Weibull Survival Regression			Log Logistic Survival Regression		
	All (n=67)	Reorganized (n=26)	Liquidated (n=41)	All (n = 67)	Reorganized (n=26)	Liquidated (n=41)
Constant	2.67***	2.87***	2.64***	2.45***	2.68***	2.32***
	(0.14)	(0.26)	(0.19)	(0.14)	(0.26)	(0.18)
Complexity	0.22***	0.19***	0.21***	0.20***	0.17***	0.23***
	(0.04)	(0.05)	(0.07)	(0.04)	(0.05)	(0.07)
Log-Likelihood	-68.94	-28.08	-40.21	-72.80	-30.60	-40.98
Lambda	0.06	0.10	0.07	0.04	0.07	0.05
Alpha†	1.72	1.68	1.77	2.47	2.22	2.74

	Weibull Survival Regression			Log Logistic Survival Regression		
	All (n=67)	Reorganized (n=26)	Liquidated (n=41)	All (n=67)	Reorganized (n=26)	Liquidated (n=41)
Constant	1.71***	1.61***	2.08***	1.54***	1.60***	1.77***
	(0.22)	(0.34)	(0.19)	(0.28)	(0.40)	(0.38)
AGE	0.65***	0.76***	0.45***	0.60***	0.66***	0.45***
	(0.08)	(0.12)	(0.13)	(0.11)	(0.14)	(0.15)
Log-Likelihood	-69.94	-25.44	-40.93	-71.78	-27.44	-41.74
Lambda	0.60	0.54	0.56	0.41	0.39	0.39
Alpha†	1.67	1.85	1.73	2.47	2.54	2.59

Table 4: Regression Results

The dependent variable is the number of weeks in bankruptcy to the time of a court-approved confirmation or court-approved liquidation. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Standard errors are in parentheses. Superscripts *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. † indicates the hypothesis that Alpha = 1 is rejected at the 1% level for both models.

Panel B

	Weibull Survival Regression			Log Logistic Survival Regression		
	All (n=67)	Reorganized (n=26)	Liquidated (n=41)	All (n = 67)	Reorganized (n=26)	Liquidated (n=41)
Constant	1.79***	1.51***	1.99***	1.48***	1.43***	1.67***
	(0.22)	(0.33)	(0.33)	(0.25)	(0.34)	(0.34)
Complexity	0.14***	0.11***	0.17**	0.14***	0.11***	0.19***
	(0.04)	(0.04)	(0.07)	(0.03)	(0.04)	(0.07)
	n=67	n=26	n=41	n=67	n=26	n=41
AGE	0.43***	0.60***	0.31**	0.46***	0.56**	0.31**
	(0.10)	(0.13)	(0.14)	(0.10)	(0.12)	(0.14)
Log-Likelihood	-60.75	-21.17	-38.07	-63.56	-23.59	-38.54
Lambda	0.05	0.07	0.06	0.04	0.06	0.05
Alpha†	1.92	2.19	1.85	2.82	3.01	2.87

Table 4: Regression Results

The dependent variable is the number of weeks in bankruptcy to the time of a court-approved confirmation or court-approved liquidation. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Prepack is a dummy variable that equals one if either a pre-negotiated or RSA plan was in place, zero otherwise. Standard errors are in parentheses. Superscripts *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. † indicates the hypothesis that Alpha = 1 is rejected at the 1% level for both models.

Panel C

	Weibull Survival Regression		Log Logistic Survival Regression	
	All (n=67)	Reorganized (n=26)	All (n = 67)	Reorganized (n=26)
Constant	1.94***	2.31***	1.67***	2.23***
	(0.20)	(0.27)	(0.23)	(0.25)
Complexity	0.14***	0.09***	0.14***	0.08***
	(0.03)	(0.03)	(0.03)	(0.03)
AGE	0.41***	0.43***	0.42***	0.44***
	(0.08)	(0.08)	(0.09)	(0.09)
Prepack	-0.62***	-0.84***	-0.53***	-0.89***
(n=11 reorganized)	(0.16)	(0.14)	(0.19)	(0.16)
Log-Likelihood	-55.56	-10.84	-59.86	-12.88
Lambda	0.05	0.05	0.03	0.04
Alpha†	2.10	3.23	2.99	4.49

Table 4: Regression Results

The dependent variable is the number of weeks in bankruptcy to the time of a court-approved confirmation or court-approved liquidation. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Prepack is a dummy variable that equals one if either a pre-negotiated or RSA plan was in place, zero otherwise. Resignation is a dummy variable that takes a value of one if there was an unexpected departure of a key executive(s) within 6 months prior to filing for bankruptcy, zero otherwise. Standard errors are in parentheses. Superscripts *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. † indicates the hypothesis that Alpha = 1 is rejected at the 1% level for both models.

Panel D

	Weibull Survival Regression			Log Logistic Survival Regression		
	All (n=67)	Reorganized (n=26)	Liquidated (n=41)	All (n = 67)	Reorganized (n=26)	Liquidated (n=41)
Constant	1.96***	2.26***	1.91***	1.75***	2.17***	1.77***
	(0.20)	(0.27)	(0.29)	(0.22)	(0.39)	(0.31)
Complexity	0.13***	0.10***	0.15**	0.13***	0.08***	0.17***
	(0.03)	(0.03)	(0.07)	(0.03)	(0.03)	(0.06)
AGE	0.42***	0.44***	0.40***	0.43***	0.44***	0.35***
	(0.09)	(0.08)	(0.13)	(0.09)	(0.09)	(0.13)
Prepack	-0.53***	-0.86***		-0.53***	-0.93***	
(n=11 reorganized	(0.17)	(0.14)		(0.20)	(0.16)	
Resignation						
(n=3 reorganized)	-0.31**	0.11	-0.60***	-0.44**	0.26	-0.59***
(n=9 liquidated)	(0.16)	(0.21)	(0.20)	(0.19)	(0.22)	(0.20)
Log-Likelihood	-53.86	-10.69	-34.63	-57.40	-12.16	-34.81
Lambda	0.05	0.05	0.06	0.03	0.04	0.04
Alpha†	2.15	3.23	2.01	3.10	4.60	3.17

Table 4: Regression Results

The dependent variable is the number of weeks in bankruptcy to the time of a court-approved confirmation or court-approved liquidation. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Prepack is a dummy variable that equals one if either a pre-negotiated or RSA plan was in place, zero otherwise. Resignation is a dummy variable that takes a value of one if there was an unexpected departure of a key executive(s) within 6 months prior to filing for bankruptcy, zero otherwise. Fraud is a dummy variable that takes a value of one if fraud was discovered while the firm was in bankruptcy protection, zero otherwise. Standard errors are in parentheses. Superscripts *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. † indicates the hypothesis that Alpha = 1 is rejected at the 1% level for both models.

Panel E

	Weibull Survival Regression		Log Logistic Survival Regression	
	All (n=67)	Liquidated (n=41)	All (n = 67)	Liquidated (n=41)
Constant	1.96***	1.83***	1.76***	1.69***
	(0.20)	(0.28)	(0.21)	(0.29)
Complexity	0.14***	0.22***	0.14***	0.23***
	(0.03)	(0.08)	(0.03)	(0.06)
AGE	0.42***	0.39***	0.43***	0.35***
	(0.08)	(0.12)	(0.08)	(0.12)
Prepack	-0.58***		-0.59***	
(n=11 reorganized)	(0.16)		(0.19)	
Resignation	-0.25*	-0.49***	-0.35*	-0.53***
(n=9 liquidated)	(0.15)	(0.19)	(0.19)	(0.20)
Fraud	-0.67***	-0.66***	-0.71***	-0.67***
(n=6 liquidated)	(0.20)	(0.25)	(0.25)	(0.25)
Log-Likelihood	-50.00	-31.89	-53.58	-31.66
Lambda	0.44	0.47	0.31	0.29
Alpha†	2.27	2.13	3.26	3.40

Table 4: Regression Results

The dependent variable is the number of weeks in bankruptcy to the time of a court-approved confirmation or court-approved liquidation. Complexity represents the number of distinct creditor classes as of the fiscal year-end prior to bankruptcy filing. AGE is the number of years from firm incorporation to Chapter 11 filing. Prepack is a dummy variable that equals one if either a pre-negotiated or RSA plan was in place, zero otherwise. Resignation is a dummy variable that takes a value of one if there was an unexpected departure of a key executive(s) within 6 months prior to filing for bankruptcy, zero otherwise. Fraud is a dummy variable that takes a value of one if fraud was discovered while the firm was in bankruptcy protection, zero otherwise. 363 sale (Section 363 of the U.S. Bankruptcy Code) is a dummy variable that takes a value of one if the debtor announced the intention to sell assets at the time of filing, zero otherwise. Standard errors are in parentheses. Superscripts *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. † indicates the hypothesis that Alpha = 1 is rejected at the 1% level for both models.

Panel F

	Weibull Survival Regression		Log Logistic Survival Regression	
	All (n=67)	Liquidated (n=41)	All (n=67)	Liquidated (n=41)
Constant	2.50***	2.49***	2.23***	2.20***
	(0.21)	(0.30)	(0.21)	(0.31)
Complexity	0.10***	0.15**	0.09***	0.14**
	(0.03)	(0.07)	(0.03)	(0.06)
AGE	0.36***	0.33***	0.41***	0.36***
	(0.07)	(0.09)	(0.07)	(0.11)
Prepack	-0.79***		-0.82***	
(n=11 reorganized)	(0.15)		(0.17	
Resignation	-0.34***	-0.61***	-0.35**	-0.56***
(n=9 liquidated)	(0.13)	(0.16)	(0.15)	(0.17)
Fraud	-0.61***	-0.63***	-0.59**	-0.59***
(n=26 liquidated)	(0.17)	(0.21)	(0.22)	(0.24)
363 sale	-0.55***	-0.55***	-0.65***	-0.55***
(n=6 liquidated)	(0.12)	(0.15)	(0.13)	(0.16)
Log-Likelihood	-41.37	-25.39	-43.30	-26.15
Lambda	0.04	0.05	0.03	0.03
Alpha†	2.57	2.55	3.80	2.87