“There and back again”
How do bankruptcy duration and pre-negotiation impact future refiling rates for large corporate firms?

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I: Introduction

Within any well-functioning liberal economic system, the bankruptcy system plays a critical role in preserving firm value. It serves as a safety net for businesses, allowing them to avoid fire-sale liquidation and instead seek to maintain their status as going-concern entities, preserving their economic value to society. Moreover, the system ensures that all stakeholders, including employees, suppliers, and creditors, are protected and given an equitable and orderly opportunity to assert their rights.

The primary product of a corporate bankruptcy is the Plan of Adjustment, a detailed proposal submitted by the bankrupt company's management or a court-appointed trustee to the bankruptcy court, prepared with the assistance of bankruptcy attorneys, financial advisors, and other experts, and approved by the presiding bankruptcy judge and the company's creditors. It outlines the steps the company intends to take to address its financial difficulties and emerge from bankruptcy as a viable and profitable business. One of the central purposes of the Plan is to ensure that the emerging company has a path forward and will avoid future liquidation or further reorganization. To achieve this, the plan may include a number of different steps, such as debt restructuring (exchanging prepetition debt for equity or newly issued debt in the emerging company) or asset sales (selling off certain assets or subsidiaries to generate cash to repay creditors to reduce the firm's leverage and improve liquidity.

While a firm's emergence from bankruptcy might be a sign of hope and renewal, in some cases, companies may find themselves in financial distress again and end up refiling for bankruptcy. Firms must in theory under the Bankruptcy Code demonstrate to the court that further reorganization is not likely to be needed, fulfilling a feasibility test. However, in reality, the court typically exercises little independent oversight of the processes, and Plans are

confirmed merely when the relevant interested parties agree to them. Corporate bankruptcy proceedings impose significant costs on firms both directly and implicitly, estimated to be 1-6% and 11-17% of enterprise value depending on the industry respectively (LoPucki and Kalin, 2001). As such, refiling represents a failure of the reorganization process, both in symbolic and economic terms. Corporate bankruptcy refilings have become increasingly prevalent in recent years, with a growing number of firms opting to file for bankruptcy multiple times. Building on the prior literature, the object of this paper is to empirically test existing theories about potential predictors and determinants of bankruptcy refilings.

II: Literature Review

The first key area of prior literature relevant to this paper concerns the factors that determine whether a firm liquidates, sells, or emerges successfully in any given reorganization. LoPucki (2015) finds that firms assigned to experienced judges, received debtor-in-possession (DIP) loans (interim financing provided with court approval to provide liquidity to the bankruptcy firm), pre-negotiated a Restructuring Support Agreement (a proto-Plan) with creditors, and filings in a low-interest rate environment were all positively associated with successful emergence. Out-of-court prenegotiation allows the Debtor to reduce time in bankruptcy court by soliciting its creditor's acceptance of the Plan in advance of commencing proceedings. Larger firms also emerged at higher rates than smaller ones. Other factors include the degree of unionization within the labor force, underfunded pension plans (Campelo et. al 2018), and the presence of tort claims (Hardiman, 1985), all of which introduce new classes of stakeholders into bankruptcy proceedings in addition to the Debtor firm's existing creditors.

Bankruptcy refilings are alarmingly common for medium to large corporate bankruptcies in the United States. LoPucki and Whitford (1993), one of the earliest studies on the topic, found that 14 (32%) of their sample of 43 large public Chapter 11 cases filed by 1984 refiled within four years. More contemporary data shows this trend has continued: from 1984 to 2009, there were 215 firms (~20-25%) that filed twice and 10 (~1%) that filed thrice (Altman 2009).

Researchers have identified two major groups of factors that contribute to refiling. Within the group of factors related to the conduct of the process itself, bankruptcy duration is among the most commonly cited determinant of refiling. Once again, since the confirmation of a Plan often merely requires the agreement of parties as opposed to a truly rigorous feasibility testing process, quick bankruptcies have been found to be associated with higher refiling rates. Shorter bankruptcies may only allow time for parties to contemplate restructuring a firm's capital structure instead of fixing the underlying operational challenges that may have brought the firm into financial distress. Fast resolution certainly provides benefits in the form of a reduction in short-term costs; however, empirical evidence has shown a negative association between in-court bankruptcy duration and subsequent refiling rates.

LoPucki and Doherty (2001) find companies emerging from bankruptcy courts in Delaware and the Southern District of New York, known for being quick, efficient, and cost-effective, were disproportionately likely to refile compared to other jurisdictions. Using the 2005 Bankruptcy Abuse and Consumer Protection Act, which limited Debtors' ability to draw out bankruptcies and encouraged pre-negotiation, as a natural experiment, Teloni (2015) came to similar findings. Post-reform bankruptcies decreased in length and increased in rates of prepackaging and refiling.

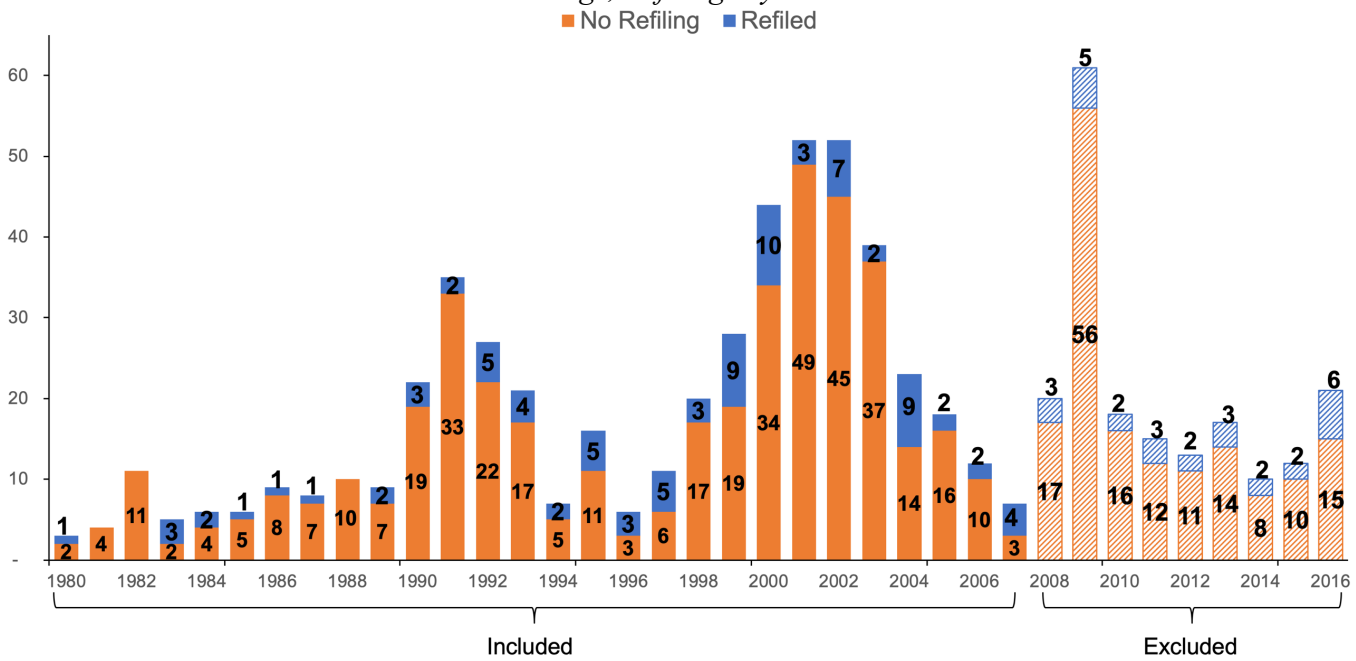
Systemic capacity also can affect the ability of parties to rigorously vet a Plan: Iverson (2017) finds that during periods of heavy caseloads and time-constrained courts, firms stay in bankruptcy longer, are more likely to sell assets or obtain DIP financing and are more likely to refile after emergence.

However, while refiling may be a product of a poorly conducted bankruptcy process, certain industries face waves of bankruptcies that result from macroeconomic factors and differences in capital structures across industries (Altman 2006). Firms with large real capital expenditure in sectors like heavy industry are more frequent culprits in large corporate bankruptcy filings than are technology or life sciences firms given the former's propensity to finance projects with debt.

III: Data

This paper will use data from the UCLA LoPucki Bankruptcy Research Database, which tracks publicly listed debtors in the U.S. with more than $100mm in prepetition assets. The sample has 1218 total observations, includes both Chapter 7 (liquidation) and 11 (reorganization) cases, and begins from 1979 until the end of 2022. However, data on refiling for cases filed after 2008 is not representative since the database authors ceased detailed tracking of post-emergence performance. Since bankrupt firms often emerge as new entities or as parts of other corporations, manual research is required to track sample observations. Given these restrictions, the sample is restricted to include bankruptcy cases filed between 1980 and the end of 2007. Firms that do not emerge from bankruptcy and are liquidated are excluded from the sample. The total restricted sample has 504 observations for prepetition variables.

Exhibit 1:
Filings, Refilings by Petition Date



The dependent variables are a dummy indicating a refiling event and a scalar measuring time-to-refiling. Independent variables include measures of post-emergence financial health, duration of the case (filing date to plan confirmation), pre-negotiation (entering bankruptcy with a negotiated Restructuring Support Agreement between creditors and the Debtor), DIP financing (interim financing to support the firm's operation while the Debtor is in court), asset sales (Section 363), venue (in particular, SDNY and DE relative to other jurisdictions), the presence of tort/litigation claims in the case, unionization rate, macroeconomic environment (GDP growth and rate environment – important since senior tranches of debt often have floating rate debt), and size of the firm (measured by assets, liabilities, and employees). The Southern District of New York and Delaware were chosen specifically because of their centrality to the bankruptcy industry, representing greater than half of the sample, and

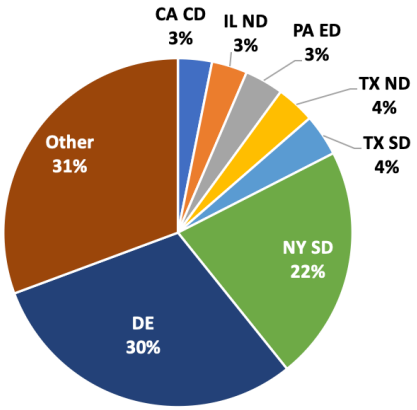


Exhibit 2:
Filings by Venue

documented propensity to have higher filing rates (LoPucki and Doherty 2001). Jurisdictions other than these two venues are represented by an omitted "Other" variable.

Table 1a:
Summary Statistics

	Mean	Std. dev.	Min	Max
Refiling within 5 years	0.170	0.376	0.000	1.000
Time from emergence to subsequent refiling (years)	4.212	3.157	0.342	18.753
Debtor-in-Possession financing	0.274	0.446	0.000	1.000
Case Duration (years)	1.311	1.361	0.050	10.986
Prenegotiated/Prepackaged	0.387	0.487	0.000	1.000
Involuntary Filing	0.036	0.186	0.000	1.000
Forum Shopping	0.646	0.479	0.000	1.000
Delaware	0.372	0.484	0.000	1.000
Southern District of New York	0.211	0.408	0.000	1.000
CEO Turnover while in-court	0.324	0.468	0.000	1.000
Emerging in Section 363 Sale	0.105	0.306	0.000	1.000
Tort claims	0.069	0.253	0.000	1.000

Note: Observations: 698. All variables are dummies unless otherwise stated in parenthesis

Forum shopping indicates a bankruptcy filed in a venue far from the debtor firm's headquarters. Involuntary filings occur when creditors force the firm into bankruptcy by alleging violations of their various indenture or loan agreements. Table 1A describes these qualitative independent variables as well as the key outcome variable, refiling.

The dataset includes measures of the Debtor's financial performance, assets, and liabilities prior to entering and after emerging from bankruptcy which will be used to calculate leverage ratios. Since not all firms emerge as public companies with disclosed financials, the subset of the sample with these variables available is considerably smaller. Moreover, a small

number of firms filed as private companies but emerged as public ones (captured by the disparity between At Emergence and Avg Chg. observations).

Table 1B describes the financial and operating characteristics of firms at the point of their last annual report filing (Form 10-K) and their first 10-K following emergence from bankruptcy. Financial figures (EBITDA, Assets, Liabilities) are measured in $mm.

Table 1b:
Summary Statistics, Cont'd

	Before Filing	At Emergence	Avg. Chg.[1]
Total Assets	2,317 (7,669)	2,464 (8,949)	-90% (1.08)
Total Liabilties	2,358 (8,609)	1,889 (7,076)	-56% (0.94)
Solvent	0.56 (0.50)	0.91 (0.29)	NM
EBITDA[2]	75.96 (611.49)	124.72 (520.93)	-3.10 (1.34)
Leverage Ratio (Liabilities/EBITDA)[3]	10.28x (4.31)	8.11x (3.92)	-2.82x (5.12)
Negligable/Negative EBITDA[4]	0.27 (0.44)	0.30 (0.46)	NM
Risk-free rate	6.45% (0.03)	5.83% (0.02)	-0.61% (0.02)
Annual GDP Growth	1.99% (0.02)	2.63% (0.01)	0.64% (0.03)
Employees	8,401 (18,922)	7,501 (16,923)	-62% (1.19)
Union % of total employement	0.17 (0.26)	0.20 (0.27)	1% (0.13)
Observations	562	299	269

Notes: Standard deviation in parentheses. All financial figures are in $mm. NM: "not meaningful."
1. For the change column, some values expressed as percentages to mitigate the effect of large outliers
2. EBITDA comes from the last filed 10-K prior to bankruptcy instead of LTM Petition EBITDA
3. The leverage ratio excludes negative values and those exceeding 20x as they are not meaningful
4. Firms levered to greater than 20x EBITDA are considered to have negligable EBITDA

The variable "Solvent" indicates whether the firm's balance sheet assets exceed its liabilities – as the data comes from financial statements, this reflects accounting as opposed to market valuations. Since many firms in the sample have negative or close to no EBITDA, therefore making their leverage ratios not meaningful, those firms are excluded from the leverage ratio and instead recorded as having negative/negligible EBITDA, a dummy variable to be included in the logit regression alongside leverage.

Once again, the composition of the sample changes as firms emerge from bankruptcy. The class of firms with financial data at emergence are larger measured by assets, employ fewer employees, earn more in EBITDA, and have lower leverage and balance sheet liabilities. The average rate of unionization increases. However, the right-most column provides an alternative view by reporting firm-level average changes. Balance sheet reported assets declined on average by 90%, liabilities by 56%, and leverage decreases by 2.82 turns of EBITDA. Employment also falls by 62% and unionization increases by 1%. Broadly speaking, firms in the sample emerge as smaller entities with lower, but still significant leverage.

IV: Methodology

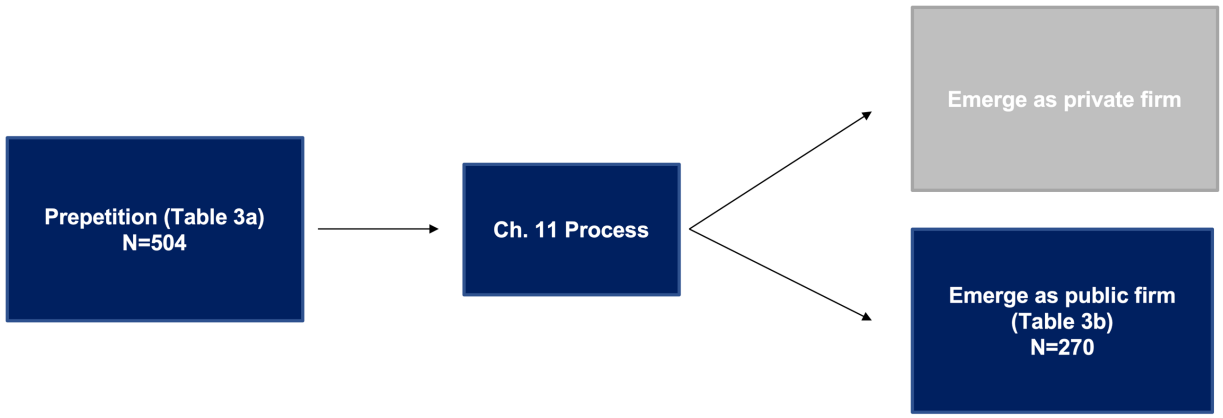
The research objective of this paper is to assess pre-existing theories about factors contributing to bankruptcy refilling. To accomplish this goal, I use a series of logit regressions with a dummy indicating refiling within five years as the dependent variable, as LoPucki and Doherty (2001) do in their study of Delaware bankruptcies. Given the changes in sample

composition on either side of the in-court bankruptcy process, I split my analysis into two sections: firms with prepetition data (Table 3a) and firms with post-emergence data (Table 3b). I begin each section with a simple regression in Equation (1)

(1) $Y_{\text{refile}} = \beta_0 X_{\text{duration}} + \beta_1 X_{\text{prepack}}$

using only the two primary independent variables of interest, case duration, and a dummy indicating prepackaging/pre-negotiation.

Exhibit 3:
Sample Sections Overview



I then include other qualitative variables such as DIP financing, venue (including bankruptcy hubs SDNY and DE and omitting the remainder), CEO turnover, torts, and §363 asset sale in regressions. Lastly, I add financial and operating variables and year-fixed effects. Fully specified regressions are included in the appendix. For consistency in comparing the results of the regressions in Table 3b, I further restrict the sample to only include firms with financial and operational data available, a set of 273 observations. Since many firms still have negative or negligible EBITDA after emergence (and therefore large or undefined leverage ratios), using leverage ratios is still challenging. I chose to include them in Columns 7 and 9 since they are a

key indicator of financial distress although this further reduces the available sample to 196 observations.

V: Results

The logit regression estimations of Equations 2 and 3 are reported in Tables 3a and 3b respectively. I report the marginal effects of increases in all variables at their sample means on the probability of refiling within five years. The corresponding p-values are below in brackets.

Broadly speaking, there is mixed (at best) evidence to support the theory that shorter or prenegotiated bankruptcy processes lead to a high incidence of bankruptcy recidivism as argued by LoPucki (2001). Case duration and renegotiation had neither a statistically nor economically significant relationship to refiling rates in the prepetition regressions (Table 3a), although prenegotiation came close to 10% significance in Column 1. DIP financings, which provide the Debtor liquidity to operating under bankruptcy, thereby reducing the time pressure on the process, showed significant results ranging between 14.5 and 14.7% at the mean. Cases with tort claimants refile with less frequency, with a -10% statistically significant effect at the mean, but this effect loses its significance after measures of firm size are added. Since large tort claims might be considered a relatively non-recurring problem, particularly compared to say an upstream natural resources producer reliant on commodity prices, their negative association with refiling makes sense intuitively. For example, pharma manufacturer Mallinckrodt Plc. failed after intense litigation for its role in the opioid crises and defrauding government healthcare agencies paralyzed its otherwise leveraged, but not quite distressed business.

The phenomenon of Delaware-filed bankruptcies refiling appears to apply beyond the scope of LoPucki (2001)'s analysis in the 1990s, with an effect of between 13-14.5%.

Table 3a:
Logit Regression with Pre-Petition Independent Variables

Outcome: Refiling within 5 years	(1)	(2)	(3)	(4)
Case Duration (years)	-0.013	-0.001	0.003	0.007
	[0.374]	[0.971]	[0.815]	[0.717]
Prenegotiated/Prepackaged	0.068	0.043	0.046	0.048
	[0.116]	[0.313]	[0.309]	[0.299]
Debtor-in-Possession financing		0.145	0.090	0.147
		[0.034]	[0.147]	[0.069]
Forum Shopping		-0.072	-0.058	-0.040
		[0.184]	[0.246]	[0.408]
Delaware		0.135	0.131	0.145
		[0.049]	[0.038]	[0.021]
Southern District of New York (SDNY)		0.045	0.078	0.080
		[0.462]	[0.208]	[0.188]
CEO Turnover while in-court		-0.025	-0.037	-0.046
		[0.545]	[0.322]	[0.212]
Tort claims		-0.102	-0.078	-0.069
		[0.029]	[0.109]	[0.159]
Emerging in Section 363 Sale		-0.024	-0.036	-0.089
		[0.690]	[0.550]	[0.040]
Prepetition Liabilities (log)			-0.065	-0.056
			[0.000]	[0.005]
Prepetition EBITDA			-0.0001	-0.0001
			[0.141]	[0.078]
Prepetition Employees (log)			0.048	0.041
			[0.015]	[0.031]
Prepetition Unionization Rate			0.097	0.112
			[0.175]	[0.116]
Degrees of Freedom	503	486	423	414
Year Fixed Effects				Yes
Pseudo R-squared	0.014	0.044	0.084	0.101

Notes:
Dependent variable: Refiling within 5 years. Coeffecients represent marginal effects at the sample mean for each scalar variable and effect of discrete change from 0 to 1 for dummy variables. P-value of each coefficient in parentheses.

Larger firms by liabilities and EBITDA appear to refile at lower rates although refiling rates appear to be increasing in employee count. This suggests that a firm's labor intensity might affect its ability to successfully avoid re-entering bankruptcy. Overall, the prepetition model explains relatively little of the observed variation with the maximum Pseudo R-squared only reaching 10%.

On the other hand, within the subset of firms that emerged as public corporations (represented by Table 3b), prenegotiation appears to meaningfully affect refiling and increases the probability of refiling between 5.8 and 13.9% at the sample mean. No statistically significant effects exist for case duration, DIP financing, or forum shopping. Filing Delaware remains robust as a predictor and SDNY is also quite strongly significant where it was not before.

Table 3b:
Logit Regression with Post-Emergence Independent Variables

Outcome: Refiling within 5 years	(5)	(6)	(7)	(8)	(9)
Case Duration (years)	-0.012	-0.008	0.013	0.024	0.007
	[0.552]	[0.651]	[0.495]	[0.191]	[0.682]
Prenegotiated/Prepackaged	0.116	0.081	0.161	0.250	0.139
	[0.066]	[0.176]	[0.028]	[0.011]	[0.042]
Debtor-in-Possession financing		0.005	-0.027	0.059	-0.008
		[0.955]	[0.731]	[0.647]	[0.924]
Forum Shopping		-0.085	-0.064	-0.060	-0.079
		[0.284]	[0.469]	[0.622]	[0.326]
Delaware		0.231	0.207	0.101	0.235
		[0.029]	[0.091]	[0.486]	[0.044]
Southern District of New York (SDNY)		0.222	0.245	0.178	0.312
		[0.032]	[0.061]	[0.311]	[0.020]
CEO Turnover while in-court		-0.026	-0.032	-0.057	-0.042
		[0.641]	[0.602]	[0.418]	[0.468]
Post-Emergence Liabilities (log)			-0.013	-0.001	-0.033
			[0.417]	[0.965]	[0.169]
Post-Emergence Leverage			0.008		0.010
			[0.086]		[0.030]
Change in Leverage				0.005	
				[0.393]	
Post-Emergence Employees (log)					0.0199
					[0.376]
Post-Emergence Unionization Rate					0.173
					[0.030]
Degrees of Freedom	273	268	194	121	194
Year Fixed Effects				Yes	Yes
Pseudo R-squared	0.032	0.071	0.110	0.105	0.142

Notes:
Dependent variable: Refiling within 5 years. Coeffecients represent marginal effects at the sample mean for each scalar variable and effect of discrete change from 0 to 1 for dummy variables. P-values of each coefficient in brackets.

Firm size as measured by post-emergence liabilities and employee count does not hold statistical significance, in contrast to the prior regression and existing literature. Higher post-

emergence leverage does imply higher refiling odds, but to a lesser degree than one might expect at only 8-10% per turn of leverage. Marginal increases in unionization appear to have a statistically significant yet diminutive effect at the sample mean, 17% unionization, increasing refiling odds by only 0.173% per unit increase. Overall employee count does not have a statistically significant effect, in contrast to the general prepetition sample. This presents mixed evidence for labor intensity and inflexibility contributing to successful emergence viewed jointly with the larger effects observed in Table 3a.

VI: Conclusion

Overall, the speed of the in-court bankruptcy process does not seem to contribute to higher refiling rates. Prenegotiated plans perform worse than free-fall cases, but only for the subset of firms that emerge as public companies. Some causal link between prenegotiation and public emergence might exist; sophisticated specialist investors often lead prepackaged plans with the intention of exiting their investments through re-entry to the public markets. For them, executing a purely financial restructuring may be profitable because of the market inefficiencies in illiquid high-yield and distressed debt markets. Therefore, their incentives might lead them to seek out short-term solutions and avoid more fundamental changes that would prevent future financial distress. However, that prenegotiation was not significant for <u>all</u> firms in Table 3a makes this seem suspect.

LoPucki (2001)'s finding that Delaware court system's ascendency to a central role in corporate bankruptcy accompanied rising refiling rates, holds when looking at data outside their period of study. The argument for causality in the case of Delaware and the Southern District of

New York, and therefore the allegation that firms filing for bankruptcy there engage in regulatory arbitrage rather than seek professional judges experienced in complex and challenging bankruptcy cases, is not proven here, however.

Given the idiosyncrasies of the reasons why firms fail --economic or sectoral downturns, failed execution or executive incompetence, excessive borrowing/bad capital structure policy, etc.--, and the small sample size of large corporate bankruptcies, proving statistical significance is challenging and proving causality even more so. Bankruptcy is a blunt instrument used to address a multitude of business and legal issues, many of which may be exogenous. Some problems that force firms into court are purely financial or otherwise short-term in nature whereas others might be structural to the company's operating model and business. This paper explicitly included tort claims, a relatively exogenous and short-term risk, but not other potential common causes of distress in the regression. In the future, a more explicit incorporation of causes of distress/firm bankruptcy might help address the noisiness of the data and improve the predictive power of the logit model.

Appendix:

Exhibit 4: Full Regression Specifications

The prepetition regression is below in Equation (2):

(2) $Y_{\text{refile}} = \beta_0 X_{\text{duration}} + \beta_1 Prepack + \beta_2 DIP + \beta_3 SHOP + \beta_4 DE + \beta_5 SDNY +$

$\beta_6 CEOturn + \beta_7 TORT + \beta_8 363 + \beta_9 X_{\text{lnliabilities}} + \beta_{10} X_{\text{EBITDA}} + \beta_{11} X_{\text{lnempl}} +$

$+ \beta_{12} X_{\text{unionrate}}$

The post-emergence regression is below in Equation (3):

(3) $Y_{\text{refile}} = \beta_0 X_{\text{duration}} + \beta_1 Prepack + \beta_2 DIP + \beta_3 SHOP + \beta_4 DE + \beta_5 SDNY +$

$\beta_6 CEOturn + \beta_8 X_{\text{lnliabilities}} + \beta_9 X_{\text{lev}} + \beta_{10} X_{\text{lnempl}} + + \beta_{11} X_{\text{unionrate}}$

References:

Altman, Edward I., and Edith Hotchkiss. *Corporate Financial Distress and Bankruptcy: Predict and Avoid Bankruptcy, Analyze and Invest in Distressed Debt*. Hoboken, NJ: Wiley, 2006.

Altman, Edward I., Tushar Kant, and Thongchai Rattanaruengyot. "Post-Chapter 11 Bankruptcy Performance: Avoiding Chapter 22." *Journal of Applied Corporate Finance* 21, no. 3 (2009): 53–64. https://doi.org/10.1111/j.1745-6622.2009.00239.x.

Campello, Murillo, Janet Gao, Jiaping Qiu, and Yue Zhang, Bankruptcy and the Cost of Organized Labor: Evidence from Union Elections, *The Review of Financial Studies*, Volume 31, Issue 3, March 2018, Pages 980–1013, https://doi.org/10.1093/rfs/hhx117

Hardiman, Anne, Toxic Torts and Chapter 11 Reorganization: The Problem of Future Claims, 38 *Vanderbilt Law Review* 1369 (1985)

Iverson, Benjamin. "Get in Line: Chapter 11 Restructuring in Crowded Bankruptcy Courts." *Management Science* 64, no. 11 (2018): 5370–94. https://doi.org/10.1287/mnsc.2017.2808.

LoPucki, Lynn M., and Sara D. Kalin. "Failure of public company bankruptcies in Delaware and New York: empirical evidence of a race to the bottom." *Vand. L. Rev*. 54 (2001): 231.

LoPucki, Lynn M., and Joseph W. Doherty. "Why are Delaware and New York bankruptcy reorganizations failing." *Vand. L. Rev.* 55 (2002): 1933.

LoPucki, Lynn M., William C. Whitford, "Patterns in the Bankruptcy Reorganization of Large Publicly Held Companies ," *Cornell Law Review* 78, no. 4 (1992-1993): 597-618

Teloni, Foteini, Chapter 11 Duration, Preplanned Cases and Refiling Rates: An Empirical Analysis in the Post-BAPCPA Era (September 15, 2014). 23 *Am. Bankr. Inst. L. Rev*. 571 (2015), Available at SSRN: https://ssrn.com/abstract=2601755

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