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A nonlinear wealth transfer from shareholders to creditors around Chapter 11 filing[☆]

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ABSTRACT

Past literature has assumed that negative stock returns around Chapter 11 filing are solely due to new adverse information about firm value. This paper argues that there is also a nonlinear wealth transfer from shareholders to creditors causing shareholder loss. The magnitude of the wealth transfer can be quantified in a setting where equity is a call option on firm assets as in the [Merton \(1974\)](#) model. The wealth transfer originates from maturity shortening of the call option as a result of Chapter 11 filing. I present a parsimonious model to explain why Chapter 11 can be voluntarily filed by managers acting in the interest of shareholders with the existence of the wealth transfer. The model-predicted stock return has comparable magnitude as observed stock returns around filing, and explains the cross-sectional variation of the latter.

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1. Introduction

Chapter 11 filing is an extremely negative event for shareholders in as short as a few days. Past literature documents that shareholders on average lose about 30% of their stock value around filing time (see [Altman, 1971](#); [Lang and Stulz, 1992](#)). The large magnitude of negative stock returns has been interpreted as evidence that filing reveals significant amounts of new adverse information about firm value. For example, [Datta and Iskandar-Datta \(1995\)](#) state “Bankruptcy filing conveys information about

the cash flow prospects of the firm leading to a reassessment of the true value of its assets”. While acknowledging new information about firm value is one of the factors causing negative stock returns around filing, I argue that theoretically, there is also a nonlinear wealth transfer from shareholders to creditors as a result of filing.

To understand why there is a wealth transfer from shareholders to creditors, it is important to know how Chapter 11 works. Chapter 11 bankruptcy is a form of corporate financial reorganization, which typically allows companies to continue to function while they follow debt repayment plans. From the definition it is obvious there are two fundamental elements of the Chapter 11 process. First, the firm continues its business; second, all debt needs to be paid off. Shareholders will only receive pay-offs if the firm value turns out to be higher than the value of *all* debt at the time of forming a reorganization plan. Without Chapter 11 filing, the firm only needs to honor the debt that is due. Hence, Chapter 11 filing accelerates payments to creditors. The accelerating process of debt payments constitutes a nonlinear wealth transfer from shareholders to creditors. What is interesting here is that the nonlinear wealth transfer alone can cause shareholder

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loss even if filing does not convey any new adverse information about firm value.

The magnitude of the wealth transfer can be quantified in a setting where equity is a call option on firm assets as in Merton (1974) model. When a distressed firm does not file for Chapter 11, shareholders have a chance to turn around the firm until the due date of the debt. Without any anticipation of filing, equity can be valued as a call option whose maturity depends on the structure of remaining debt maturities. Once Chapter 11 is filed, equity value is equal to a new call option value with a maturity that is the *expected* time period from filing to the point when a reorganization plan is formed and submitted to the court. This time period is shorter than the original remaining debt maturity. Thus, with everything else equal, equity value becomes lower after filing. Normally the management remains in control after filing and has 120 days of exclusivity to submit a reorganization plan, and another 60 days to solicit approval for the plan. After the expiration of the 180-day period, any interested party including creditors can submit a reorganization plan. Although the court sometimes extends the exclusivity period, to the extent that reorganization plans submitted later or by creditors are less lenient to shareholders, the 180-day period can be viewed as a period when shareholders can extract any value if the option pays off. Therefore, the equity value after filing is equal to an option value whose maturity is around 180 days (0.5 years). When filing is anticipated to some extent, pre-filing equity value is a probability weighted average of the high and low option value, and the post-filing equity value is just the low option value. To capture how much stock prices should drop due to the wealth transfer from shareholders to creditors, I estimate explicitly the degree of anticipation and the two option values using the option formula in Black and Scholes (1973).

The wealth transfer effect of filing naturally explains the existence of involuntary Chapter 11 filings: cases filed by creditors. One puzzle is why we observe voluntary Chapter 11 filings by managers whose interests are aligned with shareholders. I present a parsimonious model to answer this question. In the model, only managers know the true firm value and make the decision about whether to file for bankruptcy in the interest of shareholders. For shareholders, Chapter 11 comes with both benefits and costs. The benefit originates from the automatic stay feature of the Chapter 11 process. Once a firm files for Chapter 11, the court prohibits all creditors from taking action against the firm pending an approval of a reorganization plan by the court. This gives the firm temporary relief from collection attempts, lawsuits, and foreclosure procedures. The cost of filing is generated by the nonlinear wealth transfer from shareholders to creditors explained above. The benefits of filing are significantly higher for low-value firms than high-value firms, while the costs are the same. In equilibrium, all low-value firms file for Chapter 11 voluntarily and high-value firms do not file. Thus, filing reveals the true firm value to shareholders through a “signaling” effect and generates the nonlinear wealth transfer. The model not only captures the nonlinear wealth transfer effect, but

also formally addresses how new adverse information is incorporated into share prices around filing in a theoretical framework. In reality, we observe both voluntary and involuntary filings. Although involuntary filings are not formally modeled in this paper, the effect of filing on stock value remains the same. New adverse information about firm value and the wealth transfer from shareholders to creditors are still the two main forces driving stock prices downward.

My model is related to other theory work in the bankruptcy literature. Several papers also evaluate claims on bankrupt firms in an option framework. Bebchuk (1988, 2000) proposes a new method of dividing the reorganization pie among claim-holders in the Chapter 11 reorganization process by issuing tradable options, replacing the current bargaining process. He argues that when the true firm value is unknown, bargaining is inefficient. However, the value of all claims on the bankrupt firm can be synthesized using options with different strike prices, regardless of the true firm value. Bebchuk and Chang (1992) develop a sequential bargaining model of the negotiations between shareholders and creditors within Chapter 11. Shareholders have incentives to delay the reorganization process to prolong the option maturity they have on firm assets, while delayed reorganization can hurt overall firm value due to additional financial distress costs. In equilibrium, creditors are willing to sacrifice some of their claims for shareholders to achieve faster reorganization resolution. The argument is empirically supported by Franks and Torous (1994), who find that Chapter 11 reorganizations have lower equity deviations from absolute priority and lower creditor recovery rates, compared to out-of-court exchange offers. Russel, Branch, and Torbey (1999) use Black and Scholes (1973) formula to evaluate post-filing bankrupt stocks and find that overall, they are not overpriced. My paper adds to the theory literature on bankruptcy by modeling two aspects of voluntary Chapter 11 filing: new adverse information is revealed to the market through a “signaling” effect given that filing is only the optimal choice of low-value firms; there exists a nonlinear wealth transfer from shareholders to creditors as a result of filing, which alone can cause shareholder loss. To my knowledge, this paper is the first in the literature unifying these two effects in one simple model. Additionally, I use the model to explain abnormal stock returns around Chapter 11 filing with an empirical analysis.

The empirical results are summarized as follows. Sample average elasticities of the option value with respect to the change of the option maturity and firm value are 0.68 and 2.43, respectively. The sample average of option maturity shortening is –70%. Thus, a 70% drop in the option maturity causes the option value to decrease 48%; a 10% reduction in firm value generates a 24% decrease in the option value. The large magnitude of the decrease in the option value due to maturity shortening alone is interesting. The average total change of the option value through these two channels is –63%. Accounting for an average 28% for investors’ perceived filing probability, the model-predicted stock return has a mean of –54%. The model successfully captures the mean

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