

Strategic Debt Restructuring

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We analyze a distressed firm indebted to many creditors. The firm's owners have the option of choosing the sequence of restructuring negotiations with the creditors. We show that sequencing flexibility is beneficial to firm owners, and that the optimal sequencing of restructuring negotiations involves exploiting the firm's liabilities to some creditors so as to moderate the demands of others. Moderately distressed firms will eschew renegotiations with creditors in strong bargaining positions. Severely distressed firms will extract concessions from all creditors. In this case, owners can gain if they can credibly commit to conditional restructuring agreements that link the concessions of one creditor to concessions by others.

One of the most pervasive financial transactions in business is recontracting by financially distressed firms. Such recontracting is circumscribed by institutional constraints, such as bankruptcy law and commercial codes, as well as by covenants written into debt contracts. Despite these constraints, financially distressed debtors do maneuver, often outside of formal bankruptcy. This maneuvering takes many forms. Coffe and Klein (1991) point out that stockholders of distressed firms frequently attempt to acquire confidentially corporate debt for cash at terms tailored to particular creditors. Debtors also frequently offer to inject personal funds into the business and/or guarantee loans with personal assets. A fairly interesting example of creative maneuvering was provided by Jim Manzi (ex-CEO of Lotus), who, in his attempt to save his 1997 start-up venture, Nets Inc., used over \$1 million in personal funds to satisfy creditor demands [Judge and Baker (1997)].

The ability of creditors to void preferential payments made to other creditors before bankruptcy and the stringent disclosure requirements built into U.S. law appear to limit the ability of firms to pay off firm-selected creditors. The massive scale of corporate liabilities relative to the individual assets

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of executives frequently precludes the effective use of personal guarantees. However, room for strategic maneuvering remains. For example, consider the bailout of Dome Petroleum in 1982 in which Canadian but not U.S. banks made concessions [Williams (1984)]. A particularly interesting case is the financial restructuring of Northwest Airlines, in which the firm, using the threat of bankruptcy, negotiated sequentially with unions and unsecured creditors to extract concessions from both groups. In these negotiations, one of the counterparties (the unions) negotiated an agreement with the firm, making their concessions conditional on concessions by other creditor groups [Ott (1993)].

In each case noted above, a debtor initiated 1-1 negotiations with one or more creditors. These creditors held large claims and acted strategically. The effect of the claims of one creditor on the debtor's leverage with other creditors was salient.¹ The aim of this article is to model debt restructurings of this sort.² We analyze negotiations conducted between outside claimholders and a firm under the shadow of bankruptcy. Bankruptcy is costly and may (or may not) feature absolute priority violations. Claims against the firm are held by more than one strategic agent. Creditors differ by the sizes of their nominal claims, the payments they can extract in bankruptcy, and their ability to gain concessions in prebankruptcy negotiations. In this context, we address the following questions:

- When is flexibility in choosing the sequence of restructuring negotiations valuable to distressed firms?
- Which sequencing strategies will distressed firms optimally pursue?
- When will debt restructurings feature conditional concessions by creditors?

Our analysis shows that strategic flexibility is valuable and that a firm's optimal pattern of debt contract renegotiations involves "playing" creditors against one another, using the demands of strong creditors to limit the required concessions to weaker creditors. In general, distressed firms follow strategies involving eschewing renegotiations with smaller creditors or better-secured creditors in order to use these creditors' claims to extract larger concessions from larger or less well-secured creditors. However, when nominal claims greatly exceed the firm's economic value, distressed firms attempt to extract concessions from all creditors.³

¹ A strict interpretation of creditors as holders of explicit financial claims is not required. Rather, a creditor is any agent with a contractual claim on the firm's cash flows. This definition could include, for example, labor unions with long-term employment contracts.

² The effect of legal systems on the resolution of financial distress, particularly the effect of the U.S. bankruptcy system, has been the focus of extensive research. See, for example, Brown (1989), Giammarino (1989), Aghion, Hart, and Moore (1992).

³ Other articles consider using the claims of one creditor to mitigate the demands of other creditors. See, for example, Perotti and Spier (1993) and Noe and Rebello (1993). These authors do not model endogenous offer sequencing.

Strategic flexibility generates a nonmonotonic relationship between the nominal value of claims against the firm and the actual payoffs on these claims. As the nominal value of claims increases, the strategic position of the creditor improves until the point where the creditor's stake becomes so large that she is willing to make very large concessions to avoid corporate bankruptcy. The distressed firm, realizing this fact, will target that creditor in restructuring negotiations. This targeting lowers the effective payoff to the creditor.

Finally, we extend the debt renegotiation game to permit firms to propose "conditional agreements" in which one creditor's concessions are linked to concessions by other creditors. At first sight, it might seem that conditional agreements would make shareholders worse off because such agreements allow some creditors to wiggle out of concessions if other creditors are obdurate. However, this conjecture is not correct. Permitting conditional agreements weakens the hand of creditors and strengthens the hand of debtors. The reason is as follows: In major restructurings, in which many creditors are forced to make concessions, the concessions of one creditor strengthen the bargaining position of other creditors by reducing the need for further creditor concessions. By proposing a conditional agreement, the debtor can prevent an individual creditor from exploiting the concessions of other creditors to reduce her own concessions. Thus conditionality will be optimal for debtors in radical restructurings. This conclusion is consistent both with anecdotal evidence and with Betker's (1995) study of prepackaged bankruptcies.

However, conditional offers are not always beneficial to debtors. In less extensive restructurings, when the firm is only moderately distressed, concessions may be impossible to extract in early negotiations, or it may be the case that the security interests of small creditors are so large that their restructuring payoffs are not affected by the concessions made by other creditors. In these cases, shareholders cannot gain from using conditional offers. Thus our analysis is also consistent with restructurings in which solvency is restored solely by concessions from a single creditor.

Both the modeling approach and the topic modeled in this article relate to the existing literature. The model developed here has the flavor of an incomplete contracts model.⁴ Firms are controlled by managers with firm-specific human capital. This capital can be applied only if the manager chooses to exert effort. Moreover, because the manager cannot commit *ex ante* to providing effort, effort will be applied only when it is in the manager's *ex post* interest. This inability on the manager's part to commit to an effort level forces some degree of debt forgiveness when the firm is distressed.

⁴ See Hart (1990) for a comprehensive introduction to these issues and Harris and Raviv (1995) for an application to the design of bankruptcy procedures.

As in other incomplete contracts models, the process of renegotiation results in efficient effort application.⁵

Although the incomplete contracts paradigm employed in this article is common with much of the corporate finance literature, the article has several unique features. One such feature is our focus on optimal sequencing of negotiations and fluid strategic prebankruptcy negotiation rather than on debt and monitoring or on design of optimal bankruptcy mechanisms.⁶ A number of articles have examined the effects of numerous creditors on economic efficiency and firm value. For example, Winton (1995) models the monitoring role of multiple creditors in the context of costly state verification. Berglof and von Thadden (1994) consider the optimal debt maturity decision in an incomplete contracts setting. Their focus is on the effect of claims due at various dates. Our work focuses on multiple obligations due at the same point in time. Bolton and Sharfstein (1996) analyze the role of multiple creditors after default. They do not model the extensive form game of contract renegotiation. Instead, they take a reduced-form approach and divide value using a nonstrategic solution concept (the Shapley value). In contrast, our work focuses on negotiation tactics before default. Thus of necessity, we cannot take a reduced-form approach and must model the noncooperative strategic game played between debtor and creditors.

This article is organized as follows. Section 1 contains the basic setup for the model as well as some background results used in the later analysis. Section 2 provides a detailed analysis of the optimal negotiation sequence and its economic driving forces. Section 3 analyzes the effect of permitting conditional offers in the debt negotiations. Section 4 discusses the robustness of our results and Section 5 concludes.

1. Model and Background Results

1.1 Basic framework

Consider a two-period, three-date economy. All parties are risk neutral and the risk-free interest rate is 0. At date 0, the residual ownership rights to the firm are held by an owner-manager, who we call, for simplicity, the *manager*. The manager is indebted to a group of creditors. The manager has human capital, and she must exert effort at date 1 to apply this human capital to

⁵ However, forgiveness in the event of financial distress can distort, ex ante, prefinancial distress effort incentives; through this effect, an optimal capital structure for the firm can be derived. To keep the article focused, we do not model these questions in this draft of the manuscript. For details, see Noe and Wang (1998b).

⁶ The extant research on restructuring with multiple creditors [see, e.g., Gertner and Sharfstein (1991)] does allow debtors strategic flexibility in that debtors can choose the class of creditors with which they will negotiate. However, the value of strategic flexibility is limited. Only one class of debt acts strategically: bank debt. Other classes of debt are prevented from making concessions by free-rider problems. These considerations ensure that only one pattern of negotiation has any chance of success: negotiating only with the strategic creditor. Thus this strand of research does not analyze the effect of a multiplicity of strategic creditors on recontacting outcomes.

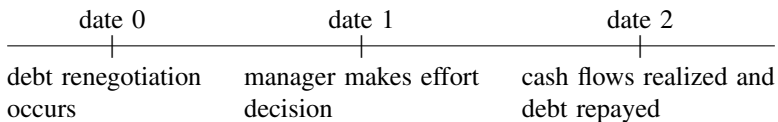
the assets of the firm. There are two possible effort levels for the manager: 0 and 1. The effort level 0 represents the decision not to exert effort and 1 represents the decision to exert effort. The manager's utility function is assumed to be additively separable with respect to the cash flow she receives, w , and her effort, $\mathcal{E}$, and is given by the following function:

$$U_e(w, \mathcal{E}) = w - C \mathcal{E}; \quad (w, \mathcal{E}) \in [0, \infty) \times \{0, 1\}. \quad (1)$$

This specification implies that the manager incurs a disutility of C if she applies effort ($\mathcal{E} = 1$) and no disutility if she does not apply effort ($\mathcal{E} = 0$).

The focus of this article is on the impact of multiple creditor classes, each capable of strategic action. We study the two-creditor case in this article, but the results do not change qualitatively in the multiple-creditor case.⁷ Consider two creditors, A and B , who hold claims with face values D_A and D_B , respectively, against the firm's future cash flows. Both claims are due at date 2. If the cash flows of the firm, x , exceed the firm's (possibly renegotiated) debt obligations, creditors are paid in full and the manager receives the residual cash flows, $x - D_A - D_B$. If the cash flows are not sufficient to pay off all of the claims at date 2, the firm goes into bankruptcy. If the firm enters bankruptcy, we assume that the cash flows are divided among the creditors and the manager. Creditors A , B , and the manager receive the fractions β_A , β_B , and β_e of the final cash flows, respectively, where $0 \leq \beta_j \leq 1$, $j = A, B$, or e , and $\beta_A + \beta_B + \beta_e = 1$. This specification permits general priority structure and absolute priority violations in bankruptcy.⁸

At date 1, the manager makes an effort decision. If the manager exerts effort, the firm generates cash flows of H at date 2. If the manager does not provide effort at date 1, the value of the firm's assets reverts to their value without managerial human capital. This value is represented by L and termed the *liquidation value* of the assets. At date 0, the manager cannot commit to an effort level that is not in her ex post (date 1) interest or commit not to attempt to recontract.⁹ The timeline of the model is shown below:



Debt negotiations work as follows. First the manager selects a creditor with whom she will negotiate. We call this creditor the *first creditor*. The manager

⁷ See Noe and Wang (1998b) for details.

⁸ We are indebted to a referee for suggesting the use of managerial effort as the base of debt renegotiation. Another example that stresses the importance of effort incentives in restructurings is Venkataraman (1996).

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then decides either to (i) pass the first creditor, or (ii) offer a new claim value to the first creditor. If the first creditor is passed, the first creditor's debt remains outstanding and the manager moves on to the remaining creditor. We call this creditor the *second creditor*. The manager can either pass the second creditor or make an offer to her. The manager may not attempt to negotiate again with the passed creditor. This assumption of no "return option" is extreme. However, as long as some chance of value dissipation is associated with passing a creditor and then returning to make a new offer, the basic insights in this article remain unchanged. We discuss these issues in detail in Section 5. Because modeling the return option complicates the analysis and provides no new insights, we defer modeling of the return option to that section.¹⁰

If the manager makes an offer to the first creditor, the first creditor has three options: (i) accept the offer, (ii) exercise her own pass option, or (iii) reject the offer. If the offer is accepted, the face value of this creditor's debt claim is set to the offer value. If the first creditor passes, her original debt claim remains outstanding, negotiations with her terminate, and the game proceeds to negotiations with the remaining creditor. If the first creditor rejects the initial offer without passing, there is a probability of $1 - \rho_i$, $i \in \{A, B\}$, that all the value of the assets is dissipated.¹¹ We assume that

$$\rho_i \in (0, \frac{1}{2}]. \quad (2)$$

As will become apparent in the subsequent analysis, this assumption ensures that the second party to move in the 1-1 negotiation, one of the creditors, captures no more than half of the value subject to negotiation. To our knowledge, all extant alternating-offer bargaining models have this property that the first mover captures at least half of surplus. Imposing Equation (2) seems desirable in our settings because it allows us to avoid considering results arising from unrealistic specifications of the 1-1 bargaining that deprive the manager of the first-mover advantage. Such specifications could transfer all surplus to creditors and eliminate the ability of the manager to force deviations from absolute priority. We could certainly work out our results for restructurings over this region of the parameter space. However, empirically such results are of little interest.

If dissipation does not occur, the first creditor has the opportunity to make a final offer to the manager. When responding to the creditor's final offer,

¹⁰ As in any bargaining model, if there is no cost associated with delays caused by passing a creditor and then returning, it is not possible to obtain any determinant prediction regarding the outcome of negotiations.

¹¹ The assumption that all value—not just the portion of value attributable to managerial effort—is dissipated is intended to capture, albeit in an extreme fashion, the idea that prebankruptcy negotiations with creditors are costly to the firm and creditors. In Noe and Wang (1998b), we consider the impact of eliminating negotiation costs by assuming that breakdown only leads to forced exit from the current negotiations and the start of the next negotiation; we show that our conclusions are robust to our assumptions regarding the costs of negotiation breakdown.

the manager has the same three options the creditor had when responding to the manager's offer: accept, pass, or reject. Accepting the offer revises the debt face value, passing the offer leaves the debt intact, and rejecting the offer results in a 100% chance of value dissipation. The 100% probability of dissipation ensures that the bargaining game has a finite length, but, as shown in Section 5, is not required to obtain any of the results of the article.¹² If value dissipation has not occurred, then the manager moves on to the second creditor, and either passes this creditor or makes an offer to her. If the second creditor receives an offer, negotiations proceed exactly as they did with the first creditor, that is, the remaining creditor has the same options as the first creditor: accept, pass, or reject. If the remaining creditor passes, her debt claim remains unchanged and the bargaining phase of the game ends. If the offer is accepted, the debt face value is set to the accepted offer, and the bargaining phase ends. If the second creditor rejects the offer, then, as before, she and the manager play the Osborne–Rubinstein bargaining game outlined above.

After the bargaining phase at date 0, the manager decides whether to provide effort at date 1. Cash flows, which depend on the manager's effort, are realized at date 2. The creditors then receive their (possibly renegotiated) debt face values if the cash flows are enough to repay all outstanding claims, or liquidation values if bankruptcy occurs.

The manager negotiates with the two creditors sequentially and selects the optimal sequence to maximize her payoff. We assume that negotiations are public; that is, each creditor can observe all actions of the manager and the other creditor. Thus each creditor knows whether she is the first or second creditor with whom the manager has tried to negotiate. She also knows the outstanding claim the other creditor holds against the firm.¹³ We restrict our attention to outcomes of the negotiations that can be supported by subgame perfect Nash equilibria. Because information is perfect, and our game has finite length, such equilibria can be identified by backward induction [see Kuhn (1953)].

We impose four parametric restrictions on our analysis:

Assumption 1. *The first-best choice is for the manager to apply her human capital effort and generate high cash flows of H at time 2, that is, $H - C > L$.*

¹² This formulation is similar to that used in Osborne and Rubinstein (1990) in that we assume that the rejection of an offer engenders a probability of negotiation breakdown. It is also similar to the original Rubinstein (1982) and Stahl (1972) bargaining games. In the explicit bargaining models formulated in Rubinstein's and Stahl's setups, the rejection of an offer delays settlement, and this delay lowers the utility of the parties because early settlement is preferred to late settlement. We chose the Osborne and Rubinstein approach because it has the simplest strategic bargaining model (fewest subgames) of which we are aware that leads to a nontrivial division of the gains from bargaining. In Section 5, we show that such an alternating-offer bargaining model produces exactly the same results.

¹³ We focus on the public debt negotiations because they are more realistic under U.S. debtor-creditor law. It is possible to extend the analysis to account for confidential negotiations. For a study of strategic confidential negotiations, see Noe and Wang (1998a).

Assumption 1 implies that, if there is no debt outstanding, the optimal strategy for the manager is to exert effort at time 1.

Assumption 2. *Creditor payoffs in liquidation are less than the face values of debt claims; that is, $\beta_i L < D_i$ for creditor $i \in \{A, B\}$.*

This assumption ensures that the creditors have incentives to renegotiate with the manager to avoid liquidation. Without this assumption, the debts would be fully collateralized and the creditors would never concede anything to the manager if debt renegotiations were to occur.

Assumption 3. *Priority violations in bankruptcy are not large enough to induce managerial effort; that is, $\beta_e H - C < \beta_e L$.*

To understand this assumption, note that the manager's utility in bankruptcy equals her cash payoff less the costs of her effort. Thus if the manager applies effort and the high cash flow results, the manager receives cash flow $\beta_e H$ under bankruptcy. In addition, the manager has a disutility of effort given by C . Our additive specification of manager's utility in effort and cash flows implies that the manager's utility is $\beta_e H - C$. If the manager does not exert effort, her disutility of effort is 0 and she receives a cash flow of $\beta_e L$. Therefore the manager's utility equals $\beta_e L$. Assumption 3 implies that $\beta_e L > \beta_e H - C$. This means that the manager will not provide effort if she foresees bankruptcy. If this assumption were to be violated, then bankruptcy might lead to first-best effort and there would exist parameter values of the model under which the manager would eschew renegotiations and force bankruptcy.

Assumption 4. *The manager will not provide first-best effort if debt contracts are not renegotiated; that is, $D_A + D_B > H - C - \beta_e L$.*

Assumption 4 precludes first-best effort in the absence of contract renegotiation. From Assumption 3, the manager will not provide first-best effort if such effort will result in bankruptcy. Thus for first-best effort to be applied it would have to be the case that, absent renegotiation, the payoff to the manager from exerting effort equals the residual cash flow in solvency $H - D_A - D_B$, less the disutility of effort, C . That is, the payoff to the manager, given effort and solvency, is $H - D_A - D_B - C$. If the manager does not exert effort, then the firm goes into bankruptcy. By Assumption 2, the firm is unable to satisfy creditors in this case. The manager receives her liquidation payoff $\beta_e L$ and incurs no disutility of effort. Thus the manager's payoff is $\beta_e L$. Assumption 4 ensures that $H - D_A - D_B - C < \beta_e L$. That is, the manager will gain from providing effort if debt claims are not renegotiated.

1.2 Analysis: negotiations with the second creditor

We initiate the analysis by considering payoffs to the manager and creditors for a fixed negotiating sequence. Later we determine the optimal sequencing of negotiations from the perspective of the manager. Let D_1 and D_2 represent the original face values of the first and the second creditors' claims.¹⁴ The analysis of the negotiations will be performed via backward induction, starting with the manager's effort choice at date 1. Her effort choice depends on whether the firm will be in bankruptcy at date 2 and thus depends on the (possibly renegotiated) debt claims outstanding. We denote the renegotiated debt claims as D'_1 and D'_2 . If the total debt face value is small, the manager exerts effort, produces the cash flows of H , and pays off both creditors. The payoff to the manager in this case is $H - C - D'_1 - D'_2$. If the total debt is high, the manager does not provide effort because the highest amount she receives in bankruptcy, $\beta_e H$, does not cover the cost of effort by Assumption 3. Thus the firm has a cash flow of L at date 2, and it goes into bankruptcy. In this case, the manager receives $\beta_e L$. Combining the two cases, the optimal strategy for the manager is to exert effort at date 1 if $D'_1 + D'_2 \leq H - C - \beta_e L$, and to shirk otherwise. Let $V = H - C - \beta_e L$ represent the maximum amount that both creditors can possibly extract from the manager while still assuring she will choose to exert effort. We have established the following lemma.

Lemma 1. *At date 1, the manager provides effort if $D'_1 + D'_2 \leq V$. Otherwise, the manager does not exert effort.*

Now we consider the negotiation with the second creditor. The incentives in this negotiation depend on the renegotiated debt claim of the first creditor, D'_1 . First of all, if D'_1 is so high that V is less than D'_1 , the manager will never provide effort at date 1, and the second creditor will receive the liquidation payment of $\beta_2 L$ no matter what her claim value is. When V is greater than D'_1 , there is some room for negotiation between the manager and the second creditor. If the second creditor's original claim, D_2 , is less than $V - D'_1$, she can pass any managerial offer and keep her claim intact. The manager still exerts effort at date 1 and pays off both creditors at date 2. In this case, the second creditor is certain to receive the full value of her claim at date 2 through her passing strategy, so the optimal strategy for the manager is to pass the second creditor and to provide effort at date 1.

If the second creditor's original claim, D_2 , is higher than $V - D'_1$, the manager has no incentive to provide effort at date 1 if the claim is not reduced. Thus the second creditor's payoff is the payoff from bankruptcy, $\beta_2 L$, if she chooses to hold out. If the second creditor chooses to bargain, there is a probability $1 - \rho_2$ that the assets will be dissipated and a probability ρ_2 that the creditor will be in a position to make a final offer to the manager.

¹⁴ We use the subscripts 1 and 2 to denote the first and second creditor with whom the manager negotiates. This creditor can be either creditor A or creditor B .

As long as this final offer is less than $V - D'_1$, the manager will accept the offer and exert the effort necessary to generate a high cash flow. Any demand for a higher claim value, if accepted, will make the position of the manager worse than it would be under liquidation, and thus such demands will be passed by the manager. The creditor, by simply passing, can obtain a payoff of $\beta_2 L$; the expected payoff from negotiating and making an offer that will be rejected is $\rho_2 \beta_2 L$. Thus the creditor is better off passing the initial managerial offer than she is if she rejects the initial offer and then makes a final offer that will be passed by the manager. Thus we only need to consider the creditor presenting an acceptable final offer. This strategy results in an expected payoff of $\rho_2(V - D'_1)$. The creditor will not accept any offer from the manager that is less than the maximum of the payoffs from bargaining and liquidation. That is, any initial manager proposal of new debt face value that is less than $\max[\beta_2 L, \rho_2(V - D'_1)]$ will be rejected by the second creditor. Making an offer that will be rejected is clearly suboptimal for the manager. Hence the manager will propose the new debt value of $\max[\beta_2 L, \rho_2(V - D'_1)]$ as long as this new value, together with the first creditor's claim, leaves the manager enough incentive to exert effort at date 1; that is, $V - D'_1 \geq \beta_2 L$. The argument developed above is summarized in the following lemma.

Lemma 2. *Given the first creditor's (renegotiated) claim D'_1 and the second creditor's claim D_2 , the manager will eschew effort if the manager's payoff from providing effort is less than what she gets in bankruptcy; that is*

$$V < D'_1 + \beta_2 L. \quad (3)$$

Otherwise, the manager can find a claim value acceptable to the second creditor such that the manager provides effort at date 1 and repays both creditors at their (renegotiated) claim values. This new claim value of the second creditor is

$$D'_2 = \begin{cases} D_2 & \text{if } D_2 \leq V - D'_1 \\ \max[\beta_2 L, \rho_2(V - D'_1)] & \text{if } D_2 > V - D'_1. \end{cases} \quad (4)$$

1.3 Negotiations with the first creditor

The analysis of the negotiations with the first creditor reveals the essence of the sequential negotiation problem: Creditors have to take into account the demands of other creditors when formulating negotiating strategies. When a creditor makes an offer, that creditor must leave the manager "ready and willing" to strike a deal with other creditors. Otherwise, foreseeing the eventual collapse of negotiations and the liquidation of the firm, the manager will reject the offer.

To initiate the formal analysis of negotiations with the first creditor, we first determine the payoffs to the first creditor from rejecting an initial managerial

offer and bargaining. To perform the formal analysis, we need to determine how much the creditor can extract from the manager if the creditor makes a final offer. The creditor is going to choose a final offer with the highest face value subject to the constraint that the manager have enough debt capacity left to promise the minimum acceptable debt value to the second creditor and to recover the cost of the effort she supplies at date 1. From previous discussions, this final offer by the first creditor is the largest D'_1 such that the liquidation condition of Equation (3) is not satisfied. Hence the final demand that the first creditor can make is $V - \beta_2 L$. Allowing the probability of $1 - \rho_1$ that values dissipate after rejection of the initial managerial offer, the expected payoff of the first creditor employing this strategy is $\rho_1(V - \beta_2 L)$.

If the first creditor passes the initial offer, her payoff depends on whether liquidation is forced in the final round of negotiations. If the liquidation condition of Equation (3) is satisfied at D_1 , passing forces liquidation with certainty, and the first creditor receives $\beta_1 L$. In contrast, liquidation is avoided as long as D_1 does not satisfy Equation (3). In this case, the first creditor must receive at least D_1 regardless of what strategy the manager follows because the first creditor can always pass and thereby force a payment of D_1 at date 2. Thus it is always optimal for the manager to pass the first creditor when Equation (3) is not satisfied for D_1 . If Equation (3) is satisfied for D_1 , passing the first creditor results in sure liquidation and a payoff of $\beta_e L$ for the manager. Similarly, if the creditor rejects the manager's offer and bargains, the manager receives her reservation payoff in bankruptcy. The minimal offer that can induce the creditor to eschew both the passing strategy and the bargaining strategy is $\max[\beta_1 L, \rho_1(V - \beta_2 L)]$. The manager is willing to offer this amount as the new debt face value D'_1 because such D'_1 ensures that the liquidation condition of Equation (3) is not satisfied in the negotiation with the second creditor and that the manager can extract a higher payoff than her reservation value $\beta_e L$.

Lemma 3. *When negotiating with the first creditor, the manager passes the first creditor if $D_1 \leq V - \beta_2 L$. Otherwise, she offers $\max[\beta_1 L, \rho_1(V - \beta_2 L)]$ to the first creditor and this offer is accepted.*

Note that no matter whether D_1 satisfies Equation (3) or not, the manager and the two creditors can always find a solution through negotiations to induce the manager to supply effort at date 1 and avoid liquidation at date 2. The foregoing argument leads to a complete specification of equilibrium payoffs of the two creditors and the manager. The payoffs are recorded in the following theorem.

Theorem 1. *In all equilibria, negotiations always succeed, and the manager provides effort at date 1, and pays off both creditors their renegotiated debt*

values. The payoffs to the first creditor, π_1 , the second creditor, π_2 , and the manager, π_e , are given as follows:

$$\begin{aligned}\pi_1 &= \begin{cases} D_1 & \text{if } D_1 \leq V - \beta_2 L; \\ \max[\beta_1 L, \rho_1(V - \beta_2 L)] & \text{if } D_1 > V - \beta_2 L; \end{cases} \\ \pi_2 &= \begin{cases} D_2 & \text{if } D_2 \leq V - \pi_1; \\ \max[\beta_2 L, \rho_2(V - \pi_1)] & \text{if } D_2 > V - \pi_1; \end{cases} \quad (5) \\ \pi_e &= H - C - \pi_1 - \pi_2.\end{aligned}$$

2. Optimal Negotiation Sequences

Let $\pi_j[i \rightarrow k]$ represent the payoff to the j th creditor negotiated with by the manager, given that the manager is following the policy of negotiating with creditor i first and creditor k next. For example, $\pi_2[A \rightarrow B]$ is the payoff to the second creditor negotiated with by the manager given that the manager negotiates with creditor A first and then with creditor B . Thus $\pi_2[A \rightarrow B]$ is the payoff to creditor B given that she is the second creditor. Let $\pi[i \rightarrow k]$ represent the total payments to creditors if the manager negotiates first with creditor i and then with creditor k . Using Equation (5) of Theorem 1, the total creditor payoffs are defined for both negotiation sequences. Because the manager determines the order of negotiations, and because along the equilibrium path no dissipation of value occurs, the manager will choose the negotiation sequence that minimizes the total payments to creditors. Thus we see that the negotiation sequence consisting of negotiating first with creditor A and then with creditor B will be followed only if $\pi[A \rightarrow B] \leq \pi[B \rightarrow A]$; similarly, the negotiation sequence consisting of negotiating first with creditor B and then with creditor A will be followed only if $\pi[B \rightarrow A] \leq \pi[A \rightarrow B]$.

In principle, Theorem 1 thus provides a complete characterization of any renegotiation sequence. However, the general conditions for this optimal negotiation sequence are not very easy to interpret and do not provide a great deal of insight into the economic forces that drive the payoffs in renegotiations. For this reason, we now provide a detailed and graphical analysis of the optimal strategic maneuvers by the manager and the resulting manager and creditor payoffs. We investigate how the original debt values (D_A, D_B), the bargaining power of the creditors in negotiation (ρ_A, ρ_B), and the reservation values of the creditors in liquidation ($\beta_A L, \beta_B L$), affect the optimal sequence of negotiations that the manager chooses.

2.1 Special case: no liquidation value

First, we consider the special case of zero liquidation value; that is, we assume that $L = 0$. This allows us to obtain transparent results on the effects

of outstanding debts and bargaining power on the manager's optimal negotiation sequence.

When the liquidation value is zero, the rent V that is subject to negotiation is the firm value given the manager's effort H less the cost of her effort C . When both debt claims are high (greater than $H - C = V$), the manager is indifferent between the sequences even if the bargaining powers of the two creditors are not equal. To see this, note that the first creditor with whom the manager negotiates can demand the whole value, V , as the final offer. Her bargaining power determines that she will accept $\rho_1 V$. The negotiation between the manager and the second creditor will then concern how to split the remaining value, $(1 - \rho_1) V$. The second creditor can extract the fraction ρ_2 of this value, and the manager receives $(1 - \rho_2)(1 - \rho_1) V$ from negotiating with both creditors. Clearly the payoff to the manager is independent of the negotiation sequence, although the payoff to each creditor depends on the sequence.

Theorem 2. *When liquidation value equals 0, and both creditors hold debt claims that exceed V (the value subject to negotiations), the manager is indifferent between the two negotiation sequences.*

However, when at least one claim is below V , the sequence affects the manager's payoff. Suppose one claim, say the claim of creditor A , is large, greater than the bargaining value V , and the other claim, say the claim of B , is smaller than this value. The small creditor, B , can always pass to ensure a full payment if she is approached first. The large creditor, A , is then forced to moderate her demands accordingly in the next negotiation. The total payment to creditors from negotiating first with B and then with A is thus given by

$$\pi[B \rightarrow A] = D_B + \rho_A(V - D_B). \quad (6)$$

If creditor A is approached first by the manager, this creditor can make a final demand of all the bargaining value and is willing to accept an initial offer of $\rho_A V$. The fact that the manager has committed $\rho_A V$ to creditor A may force creditor B to make some concessions. Creditor B will make concessions if B 's claim is greater than the remaining value to be bargained over; that is, if $D_B > (1 - \rho_A) V$. The total payment to creditors from negotiating first with A and then with B is thus given by

$$\pi[A \rightarrow B] = \begin{cases} \rho_A V + D_B & \text{if } D_B \leq (1 - \rho_A) V \\ \rho_A V + \rho_B(1 - \rho_A) V & \text{if } D_B > (1 - \rho_A) V. \end{cases} \quad (7)$$

We see that negotiating first with A and then with B produces smaller total payments to creditors only if $D_B > \max[\rho_B, 1 - \rho_A] V$. Because $\rho_i \leq \frac{1}{2}$, $\max[\rho_B, 1 - \rho_A] = 1 - \rho_A$. Thus negotiating first with A and then with B produces a smaller total payment to creditors only if $D_B > (1 - \rho_A) V$. Otherwise, passing B first and then negotiating with A is optimal.

Theorem 3. Suppose there is no liquidation value, and, without loss of generality, $D_A > V > D_B$. In this case, debt renegotiations are characterized as follows:

- (i) If $D_B > (1 - \rho_A)V$, the manager's optimal negotiating sequence is to negotiate with the large creditor, A , first and the small creditor, B , next. The manager's payoff is given by $\rho_A V + \rho_B(1 - \rho_A)V$.
- (ii) If $D_B < (1 - \rho_A)V$, then the optimal sequence is to first pass the small creditor, B , and then negotiate with the large creditor, A . The payoff to the manager is given by $D_B + \rho_A(V - D_B)$.

The intuition for these two theorems can be seen from the way the negotiating sequence alters the options of the creditors. Given no liquidation value, when both creditors hold large claims, the creditors have no other option except to negotiate with the manager. Although the setup of the bargaining game plays a role in the exact indifference result, the fact that both creditors have only one viable strategy ex ante is the key contributing factor. In contrast, when one creditor holds a claim that is less than V , this creditor has passing as the other viable strategy ex ante. The manager then can judiciously choose the negotiating sequence to her advantage. If the small claim is very small, the optimal sequence is to first pass the small creditor, and then bargain with the large creditor. If the small claim is not so small, the manager can strip the passing option of the small creditor by negotiating with the large creditor first. This sequence of large creditor first and small creditor second is optimal to the manager because both creditors are forced to make concessions. However, only one creditor is forced to renegotiate if the small creditor is approached first.

When both claims are less than the total value available to negotiations, the manager cannot extract concessions from both creditors. The first creditor approached can always pass and force the second creditor to negotiate. Thus the total payments to creditors when both claims are less than V are given by

$$D_1 + \rho_2(V - D_1). \quad (8)$$

If the bargaining powers of the two creditors are the same, it is less costly for the manager to pass the creditor with the smaller nominal claim and bargain with the holder of the larger claim. If the claim sizes are the same, the optimal strategy is to pass the creditor with higher bargaining power and negotiate with the creditor with lower bargaining power. In general, the manager chooses to pass the creditor in the stronger bargaining position and negotiate with the creditor in the weaker bargaining position. The creditor's bargaining position is negatively correlated with her debt value before negotiation and positively correlated to her bargaining power in the negotiations.

Theorem 4. Suppose the liquidation value of the firm is zero and both claims are less than V . Then passing creditor A first and negotiating with

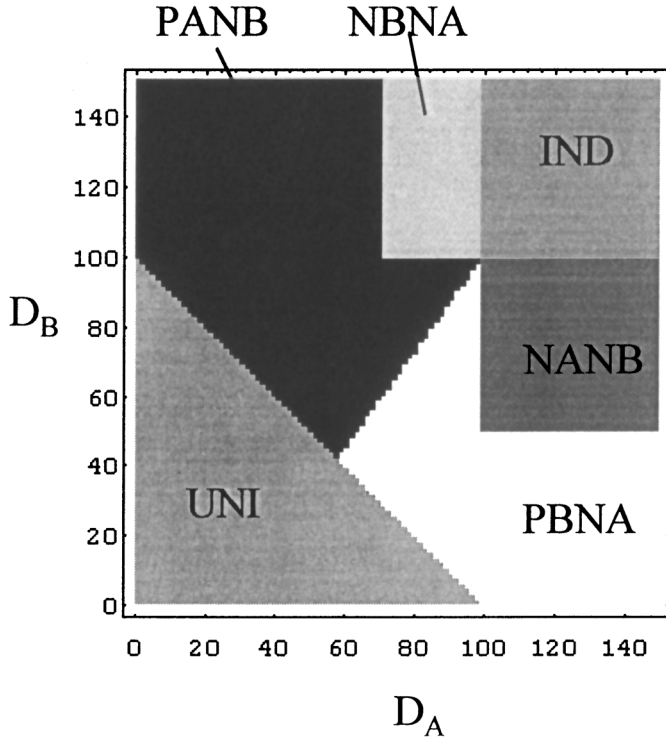


Figure 1

Optimal negotiation sequence when firm liquidation value is zero

The parameters are as follows: $H - C = 100$, $L = 0$, $\rho_A = 0.5$, $\rho_B = 0.3$. PiNj indicates the strategy of passing creditor i and negotiating with creditor j . NiNj indicates the strategy of negotiating first with creditor i and then with creditor j . IND indicates that the entrepreneur is indifferent between negotiating sequences. UNI indicates the region that is uninteresting because neither creditor will make concessions.

creditor B next is optimal whenever $(1 - \rho_B) D_A + \rho_B V \leq (1 - \rho_A) D_B + \rho_A V$.
 Passing creditor B first and negotiating with creditor A next is optimal whenever $(1 - \rho_A) D_B + \rho_A V \leq (1 - \rho_B) D_A + \rho_B V$.

The above results are illustrated in Figure 1, which is a graphic depiction of regions in which particular strategies are optimal. As is evident from the figure, negotiating sequence plays an important role when at least one of the claims is smaller than the value to be negotiated.

2.2 Positive liquidation values

If the firm has some residual value without the manager's effort input, or, in other words, if the firm has a positive liquidation value, the optimal negotiation sequence for the manager is affected in rather subtle ways. To focus on the effect of liquidation value, we assume that the two creditors have the same debt face value and equal bargaining powers. If the debt level is low

enough to ensure that only one claim is renegotiated, the manager always passes the first creditor and negotiates with the second creditor. Because both creditors hold claims of identical face value, the manager must choose the creditor who will have to make the larger concession if she is negotiated with second. Hence the creditor who receives less under bankruptcy is the target for second negotiation. But if the debt level is so high that both claims will be subject to renegotiation regardless of sequence, the (weakly) optimal strategy for the manager is to negotiate first with the creditor with the smaller liquidation value and second with the creditor with the larger liquidation value.

Theorem 5. *Suppose that the two creditors are identical in all respects except the liquidation value of their claims; that is, suppose that $D_A = D_B = D$, $\rho_A = \rho_B = \rho$, and $\beta_A > \beta_B$. Then if the debt level is low enough to ensure that only one claim is renegotiated, that is, $D \leq V - \beta_A L$, then it is optimal to pass the well-secured creditor, A, and negotiate with the poorly secured creditor, B. Whenever the debt value is large enough to force negotiations with both creditors, that is, $D > V - \beta_B L$, then it is weakly optimal to negotiate with the poorly secured creditor, B, first and then negotiate with the well-secured creditor, A. The optimality is strict if creditors receive more than their liquidation payments when the well-secured creditor is negotiated with second.*

Proof. See the appendix.

The intuition behind this result can be understood from another perspective. The liquidation option places a lower bound on the amount creditors can capture from the manager in negotiations. In any scenario, the manager needs to pay at least $\beta_A L + \beta_B L$ to the two creditors. Only a fraction of a secured creditor's claim value— $D_i - \beta_i L$, the payoff in excess of liquidation value—is in play in the negotiations with the manager. For this reason, positive liquidation value reduces the effective size of the creditor's claim from D_i to $D_i - \beta_i L$. On the one hand, when creditor claims are not too large, and thus only one claim needs to be renegotiated in order to prevent bankruptcy, the effectively smaller nominal size of the better-secured claim leads the manager to pass this claim and negotiate only with the less-well-secured creditor.

On the other hand, when the debt claims of both creditors are so large that both claims must be renegotiated, reducing the security of the first creditor's claim and increasing the security of the second creditor's claim by an equal amount lowers the total payment to creditors for the following reason. The reduction in security of the first creditor's claim has the direct effect of increasing that creditor's excess gain. However, this effect is more than compensated for by two effects on the second creditor: (i) The increase in the excess gain of the first creditor lowers the ability of the second creditor to extract gains; and (ii) the increased security of the second creditor's claim

reduces her excess gains. Together these two effects on the second creditor dominate the effect on the first creditor.

This result is illustrated in Figure 2. This figure shows the regions of debt face value and bargaining power combinations that support particular optimal negotiation sequences when the liquidation value of the firm is positive. Note that for large nominal claims and large bargaining powers, negotiating first with the poorly secured creditor and then with the well-secured creditor is optimal. For small nominal claims, passing the well-secured creditor and negotiating with the poorly secured one is optimal. When priority is enforced by bankruptcy courts, a creditor's security position depends on seniority. Thus our analysis leads us to predict that in major out-of-court restructurings, when the nominal claims exceed firm value slightly, only poorly secured creditors will be targeted for renegotiations, and well-secured creditors will be paid off in full. On the other hand, when liquidation values are moderately large, and nominal claims are very high relative to asset values, the manager will target poorly secured creditors first, and then move on to negotiate with well-secured creditors. This sequencing pattern is consistent with the sequencing observed by Betker (1995) in his empirical analysis of prepackaged bankruptcies.

3. Conditional Offers

In this section, we consider extending our base setup of modeling public, debtor-initiated, strategic prebankruptcy restructurings by examining conditional offers.¹⁵ Our analysis will show that permitting agreements between creditors and the manager that are conditional on concessions by other creditors has a significant impact on the payoffs to the parties, particularly when nominal claims are very high relative to asset values.

A conditional offer is an offer whereby one creditor proposes a reduced face value for her own debt claim, conditioned on the agreement of other creditors to accept a specified reduction in the face values of their claims as well. Under U.S. law, conditionality can arise in prepackaged bankruptcies when an attempt is made to get one class to agree to the terms of the prepackaged bankruptcy after other classes have agreed (see Betker (1995)). However, conditional offers can arise outside of the context of formal prepackaged bankruptcies.

We are interested in determining the cases in which a positive incentive for the use of conditional offers in equilibrium is present. The second creditor cannot propose a conditional offer. The first creditor has no incentive to propose a conditional offer because her payoff at the final offer stage is always

¹⁵ As pointed out earlier, public negotiations are a reasonable assumption under U.S. corporate law. However, we can model restructurings when sequencing information is confidential. It is also straightforward to extend our analysis to permit some of the firm's debt to be held by nonstrategic creditors. See Noe and Wang (1998b) for details.

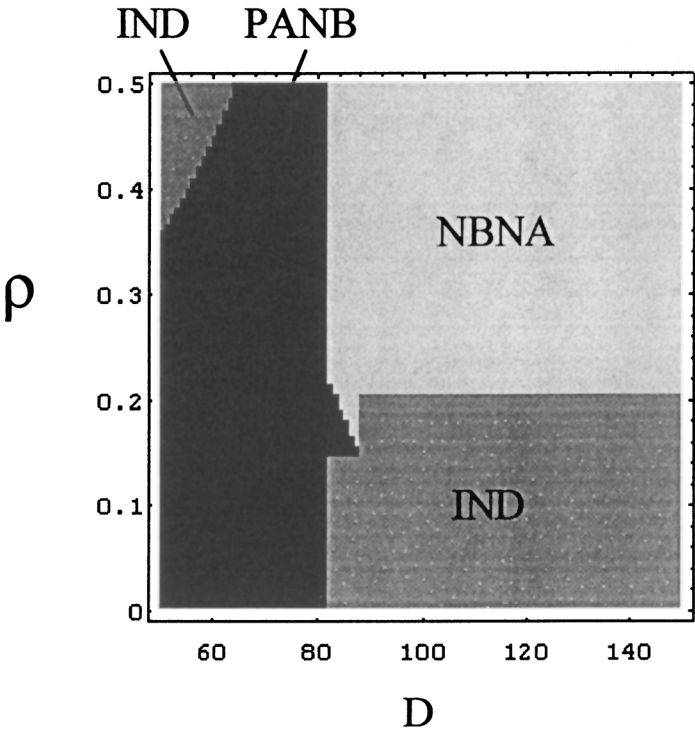


Figure 2
Optimal negotiation sequence when firm liquidation value is positive
The parameters are as follows: $H - C = 100$, $L = 30$, $\rho_A = \rho_B = \rho$, $\beta_A = 0.6$, $\beta_B = 0.4$, $\beta_c = 0$, $D_A = D_B = D$. PANB indicates the strategy of passing creditor A and negotiating with creditor B. NBNA indicates the strategy of negotiating first with creditor B and then with creditor A. IND indicates that the entrepreneur is indifferent between the negotiating sequences.

determined by the value of the manager's pass option. The value of this pass option is predicated only on the payoff from rejecting the final creditor offer. This payoff is independent of creditor concessions in negotiations. Thus only the manager has an incentive to employ a conditional offer. To determine when conditional offers will be utilized, we only need to determine when a conditional offer will support an equilibrium that produces a higher managerial payoff than is produced in the unconditional offer setting analyzed earlier.

We follow an approach similar to the one used in previous sections: We use 1 and 2 to represent the order in which the creditors are approached. A conditional offer is represented by an ordered pair of numbers: (D_1^c, D_2^c) . If a conditional agreement is reached with creditor 1, then creditor 1 agrees to accept a debt face value of D_1^c subject to creditor 2 acceptance of a debt face value of D_2^c .

By definition, only the second creditor approached can receive a conditional offer. As in the case of unconditional offers, the second creditor can accept the offer, pass the offer, or negotiate with the manager. If the offer is accepted, then both parties receive the payments dictated by the conditional offer. If the offer is passed, then the first creditor's debt level reverts to its original level and negotiations end. If the creditor negotiates, there is a probability of $1 - \rho_2$ that value is dissipated. If value is not dissipated, the creditor is able to make a final offer. This offer can be either to accept the conditional offer or to propose a division of value inconsistent with the conditional offer. If an inconsistent division is proposed and accepted, the first creditor's claim reverts to its original level. As in the previous sections, if a final offer is rejected, all value is dissipated.

To determine the payoffs to the players when the manager adopts a conditional offer, we proceed by backward induction. First, consider the negotiation with the second creditor, assuming that the first creditor has accepted the conditional agreement (D_1^c, D_2^c) . The incentives in this negotiation depend on the renegotiated debt claim of the first creditor, D_1^c . First of all, if D_1^c is so high that V is less than $D_1^c + D_2^c$, the manager will not provide effort at date 1 even if the conditional agreement is accepted. Such an outcome yields the manager a payoff less than that obtained in any unconditional equilibrium. So we need not consider such offers further.

Now, consider the case when $V \geq D_1^c + D_2^c$. In this case, the conditional agreement can restructure the firm. To analyze this case, first consider the optimal final offer by the second creditor. The second creditor can either propose the conditional agreement at this point, yielding a payoff of D_2^c , or opt for making her own proposal. If the second creditor makes a different proposal, the face value on the first creditor's claim reverts to D_1 .

The manager can always pass the final proposal. Passing the final proposal, however, leaves the original debt level intact and thus yields a payoff of $\beta_e L$ to the manager. The maximum debt face value the second creditor can impose, without inducing the manager to pass her offer, is $\max[V - D_1, 0]$. Thus the final offer from the second creditor is $\max[D_2^c, (V - D_1)^+]$. Now, consider the second creditor's response to the manager's offer. The second creditor can either pass the offer, securing in a payoff of $\beta_2 L$ or negotiate, securing an expected payoff of $\rho_2 \max[D_2^c, (V - D_1)^+]$. Thus a successful offer by the manager must promise the second creditor at least $\max[\beta_2 L, \rho_2 D_2^c, \rho_2 (V - D_1)^+]$. The creditor will accept this offer and offering more than this amount is never optimal for the manager. Next, note that the conditional debt level of the second creditor, D_2^c , never exceeds the maximum of $\rho_2 (V - D_1)^+$ and $\beta_2 L$ because, whenever $D_2^c > \max[\rho_2 (V - D_1)^+, \beta_2 L]$, the manager can simply reduce D_2^c and lower her total payment to creditors. Offering less than $\max[\rho_2 (V - D_1)^+, \beta_2 L]$ ensures that

the conditional offer will be rejected and thus prevents successful renegotiation of the debt claims. Thus it must be the case that in any subgame perfect equilibrium,

$$D_2^c = \max[\rho_2(V - D_1)^+, \beta_2 L]. \quad (9)$$

In any subgame perfect equilibrium featuring an accepted conditional offer, the payment to the second creditor, π_2^c , satisfies

$$\pi_2^c = \max[\beta_2 L, \rho_2(V - D_1)]. \quad (10)$$

Comparing to π_2 from Theorem 1, this payment is never greater than what the second creditor receives under unconditional offers. The inequality is strict when the first creditor has a large claim and the second creditor has low collateral, that is, the payoff of the second creditor is determined by negotiation under unconditional offers.

Next, consider the payment to the first creditor. Because her payoff depends only on the liquidation payment of the second creditor, not the renegotiated payment of the second creditor, conditional offer by the manager has no effect on this negotiation. Hence the first creditor receives the same payoff as she does under unconditional offers, that is,

$$\pi_1^c = \begin{cases} D_1 & \text{if } D_1 \leq V - \beta_2 L \\ \max[\beta_1 L, \rho_1(V - \beta_2 L)] & \text{if } D_1 > V - \beta_2 L \end{cases}. \quad (11)$$

Comparing Equations (10) and (11) with Equation (5) shows that, for any fixed negotiating sequence, the payoff to creditors is no higher under conditional offers than it is under unconditional offers. Because the payoff under conditional offers is the maximum between the two possible negotiating sequences, the following result is immediate.

Theorem 6. *If the manager restructures debt with conditional offers, her payoff will never be lower, and sometimes will be higher, than her payoff would be if debt were restructured using an unconditional restructuring proposal.*

At first sight, this result seems to be counterintuitive. However, when many creditors are forced to make concessions in major restructurings, the concessions of one creditor strengthen the bargaining position of other creditors by reducing the need for further creditor concessions. By proposing a conditional agreement, the manager commits to a tough negotiating stance and prevents the creditor from exploiting the concessions of other creditors. Hence when adopting conditional offers, the manager strengthens her bargaining position and receives at least as high a payoff as she does with unconditional offers.

Under some conditions, the weak inequality between the payoffs under conditional and unconditional offers is satisfied as an equality. Although general conditions for equality are algebraically complex, the following sufficient conditions for equality are easy to verify. In the argument given below for any creditor i , let i' represent the other creditor.

Theorem 7. *If either*

(a) $\min[V - D_A - \beta_B L, V - D_B - \beta_A L] \geq 0$ or

(b) *there exists a creditor, i , such that*

(i) $V - D_i - \beta_{i'} L \geq 0$ and

(ii) $\beta_i L \geq \rho_i(V - \pi_1[i' \rightarrow i])$,

then the payoffs to the manager will be the same under conditional and unconditional offers.

Proof. If (a) is satisfied, then the first creditor never makes any concessions. Thus, as shown by Equations (5), (10), and (11), the payoffs to both creditors are the same under conditional and unconditional offers for both renegotiating sequences. Now suppose (b) holds. In this case, if the negotiation sequence calls for placing i first, then creditor i will not make any concessions under either a conditional or an unconditional offer. Thus the payment to i , the first creditor, will be D_i . Therefore the payoff to the second creditor must equal

$$\max[\beta_{i'} L, \rho_{i'}(V - D_i)]$$

under both conditional and unconditional offers. Thus total payments are the same under both offers. Next, consider sequences under which creditor i is the second creditor. As can be seen from Equations (5) and (10), the payoff to the first creditor is always the same under conditional and unconditional offers. In other words, $\pi_1^c[i' \rightarrow i] = \pi_1[i' \rightarrow i]$. By assumption (ii) and Equation (5), the payoff to creditor i under an unconditional offer is $\beta_i L$. Because $D_{i'} \geq \pi_{i'}$, it must also be the case, as can be seen from Equation (10), that the payoff to creditor i under a conditional offer is the same and equal to $\beta_i L$. ■

Theorem 7 provides simple sufficient conditions for conditional offers to be ineffective in extracting additional creditor concessions. A simple sufficient condition for conditional offers to be effective is that, along the optimal renegotiation sequence, both creditors are forced to make concessions and the security interest of the second creditor is not so large as to protect that creditor from making concessions. As we have seen in previous sections,

identifying the optimal negotiation sequence is complicated by the liquidation option. Thus simple conditions for conditional offers to increase creditor concessions are not obvious. However, the situation is completely transparent in the absence of liquidation options.

Theorem 8. *Suppose that $L = 0$ and that $D_A > D_B$. Then, whenever $D_A > V$ and $D_B > (1 - \rho_A)V$, conditional offers will produce lower creditor payoffs than unconditional offers.*

Proof. Theorems 2 and 3 show that under the assumptions of the theorem with unconditional offers, an optimal offer sequence is to negotiate first with creditor A and then with creditor B. From Equation (5), we see that this sequence produces total payments to creditors equal to

$$\rho_A V + \rho_B (V (1 - \rho_A)). \quad (12)$$

If a conditional offer is utilized by the firm, and the $A \rightarrow B$ sequencing is followed, then the total payoffs to creditors will equal

$$\rho_A V + \rho_B (V - D_A)^+ = \rho_A V. \quad (13)$$

Comparing Equations (12) and (13), we see that total creditor payoffs are higher under unconditional offers. ■

Roughly speaking, Theorems 6, 7, and 8 show that, if the manager can commit to conditional offers, then, when the firm is sufficiently distressed, conditional offer structures will be employed. Under the ancillary hypothesis that U.S. bankruptcy law relating to prepackaged bankruptcies facilitates commitment to conditional offers, the above results show that firms have an incentive to utilize prepackaged bankruptcies when they are highly distressed. Note that we obtain this result even though we assume the classical holdout problems caused by nonstrategic creditors are not present. In fact, we show that, even when all creditors are strategic, conditional offers have a role to play in reducing the ability of small and/or well-secured creditors to resist concessions in reorganizations. However, at least in strategic settings such as ours, the set of parameters under which conditionality will improve the welfare of owners is limited. Thus our analysis is consistent with anecdotal evidence that suggests that firms sometimes renegotiate only the claims of a single creditor without using conditional offers.

4. Robustness of Results to Key Assumptions

In general, even the most well-accepted bargaining models are sensitive to assumptions about the precise nature of the bargaining game.¹⁶ Unfortunately there is no one formulation of multilateral, or even bilateral, bargaining situations that stands out as the uniquely correct way of modeling the bargaining process. Nevertheless, as Hart (1990) has pointed out, contracting in the real world is radically incomplete and, for this reason, a significant fraction of value is actually allocated through bargaining. Thus the allocation of value through bargaining is of such importance that large literature in finance and economics has been developed to analyze bargaining situations despite the limitations discussed above. One requirement of this literature is that its conclusions should be at least qualitatively robust to a range of modifications of the underlying bargaining structure.

In this section we show that this is the case with our analysis. More specifically, we consider two assumptions that have greatly simplified our analysis: first, the assumption that the bargaining structure in individual negotiations specifies that the debtor and creditor each are able to make only one offer; and, second, the assumption that, once a creditor is passed and a new creditor is approached, the new creditor is effectively forced to bargain with the manager because the manager cannot return to the passed creditor. In this section, we show that our results are qualitatively robust to these assumptions. In fact, we develop natural extensions of our framework that drop these simplifying assumptions yet produce exactly the same allocations as our base model.

4.1 Structure of 1-1 negotiations

First, consider the bargaining structure in the individual negotiations. We assume that each party is able to make just one offer. In the last round of bargaining, the party able to make the offer, the creditor, has all the bargaining power. However, to reach the last round, the creditor must bear the risks associated with value dissipation from delay. This situation gives the first mover, the manager, some bargaining power in the first round of negotiations. By varying the dissipation costs we can induce a range of rent divisions. The unique feature of our model is that the rents one creditor can extract are limited by the size of the other creditor's claim. Is this result robust to a more complex model of bargaining that allows for an infinite number of offers and counteroffers?

We argue that our results are fairly robust in that more sophisticated alternating-offer bargaining games would yield essentially identical results.

¹⁶ For example, See Stahl (1990) and van Damme and Selten (1990) for demonstrations that the Rubinstein model is sensitive to the assumptions that the length of time between offers is exogenously fixed and that there is no smallest monetary unit.

That is, the size of delay costs would still determine the division of rents and each creditor's claim would still circumscribe the claims of the other creditor. Suppose, for example, that instead of a two-move bargaining game resulting from the rejection of an managerial offer, an infinite-date alternating round bargaining game in the style of Osborne and Rubinstein (1990) were played. In this game, the manager and the creditor alternate offers; each time an offer is rejected, there is an exogenous probability of, say, $\gamma \in (0, 1]$, that negotiations break down and all parties receive a payoff of zero. As Osborne and Rubinstein show, the unique subgame-perfect equilibrium for this game allocates $1/(1 + \gamma)$ of the value negotiated over to the first mover and $\gamma/(1 + \gamma)$ to the second mover. Once the second creditor in the bargaining sequence rejects the offer of the manager, the game is an Osborne–Rubinstein bargaining game. Hence, in any subgame perfect equilibrium, the remaining value to be negotiated will be divided so that the creditor (the second mover) gets $\gamma/(1 + \gamma)$; that is, the second creditor receives $(\gamma/(1 + \gamma))(H - C - \beta_e L - D'_1)$. Letting ρ represent $\gamma/(1 + \gamma)$, and working backward from this point in the game, we see that the payoffs in this game are identical to the payoffs in our simple two-move 1-1 negotiation game. Similar equivalence can be produced with other specifications of the individual bargaining game, as long as these specifications are not trivial—that is, all bargaining power is allocated to one party.

4.2 Pass option

Next, consider the second key assumption: no “right of return” after a creditor has been passed. We assume that if the entrepreneur passes a creditor then she can never go back to that creditor. That condition enables the manager to say to the second creditor “either you renegotiate or negotiations fail.” It seems that, absent this restriction on the right of return, the second creditor in the negotiation sequence could simply pass the manager's renegotiation offer, thereby forcing the manager to return to the first creditor. This issue is most crucial for those parameterizations of our model in which passing the first creditor is, in fact, an optimal strategy. For example, as shown by Theorem 3, when $D_B < (1 - \rho_A)V$ and $V < D_A$, the optimal sequence is to first pass the small creditor, B , and then negotiate with the large creditor, A . Qualitatively, this result implies that if only one creditor is targeted for debt renegotiation, *ceteris paribus*, it is best to target the larger creditor. A natural question arises as to whether our assumption of no right of return is critical for this result to hold. In the following section, we investigate the effect on our results if we allow the manager to return to negotiate with a previously passed creditor whenever her offer is passed by the other creditor.

We develop a new game form that is as close as possible to the form developed in our earlier base analysis, subject to the constraint that the new game form incorporates a right of return. To develop this game form, first define a “previously passed creditor” as a creditor who either was passed by the manager or previously passed an offer made by the manager. Impose the bargaining structure of our earlier base model with the following modification. Whenever a creditor passes an offer made by the manager, the manager has three options: (1) Make an offer to any creditor with whom a deal has yet to be struck, including a previously passed creditor; (2) pass a creditor who has not yet been passed; or (3) exit the game.

If the manager selects option (1) and makes an offer to a previously passed creditor, the next move is made by Nature. Nature makes a draw with two possible results, dissipation or nondissipation. Dissipation occurs with probability α and nondissipation occurs with probability $1 - \alpha$. If dissipation occurs, the game ends and all agents receive a payoff of 0. If nondissipation occurs, the manager proceeds with an offer to the selected creditor. The payoffs in this game are exactly the same as those specified in our base model, with one exception. Because, potentially, the negotiating game may never end, we have to specify payoffs in the event of nontermination. We assume in this case all agents receive a payoff of zero. Because liquidation value contributes nothing to the value of the pass option and complicates the analysis, we restrict attention to the no-liquidation-value case. Also, we restrict attention to the parameterizations of the model under which the pass option is actually used in our basic model. That is, we assume that $D_A > V$ and that $D_B < (1 - \rho_A) V$.

Note that when the dissipation probability α equals 1, the extended model produces the same equilibrium path payoffs as the base model. If the second creditor passes an offer from the manager after the first creditor has already been passed, she knows that all parties lose everything if the manager returns to negotiate again with either the first or second creditor. If the manager exits the game, then bankruptcy will not be avoided and the deal falls through. Thus, just as in the base model, the second creditor cannot viably exercise her pass option in response to a managerial offer after the first creditor has been passed. In this sense, our extended framework embeds the previous analysis.

What happens when $\alpha < 1$? We will show that as long as it is still the case that $\alpha > 0$, that is, as long as there is *some* cost associated with returning to renegotiate with a previously passed creditor, the results of our analysis

remain unchanged in the sense that an initial pass by the manager of creditor B forces exactly the same concessions from creditor A , the second creditor approached, along the equilibrium path of the base model.¹⁷

Theorem 9. *Suppose that $D_A > V$, $D_B < (1 - \rho_A)V$, and $L = 0$. Consider the extended game with multiple rounds of passes and suppose that there is some cost associated with returning to a passed creditor, that is, that $\alpha > 0$, then the following result holds. If the manager passes creditor B first and offers $\rho(V - D_B)$ to creditor A , this offer is accepted by creditor A .*

This result may seem surprising. However, it is consistent with the bargaining literature on one-sided bargaining, which shows that, under symmetric information, a player who can only refuse offers from another player, but cannot herself propose divisions of value, cannot extract a surplus from negotiation. We will establish this result for the finite round case here and leave the proof for the infinite round case to the appendix. Suppose the maximum number of passes is N . After the N th creditor pass, the manager can always force creditor A to accept her payoff from bargaining. This implies that if the manager offers creditor A her payoff from bargaining after the $N - 1$ th pass, then creditor A will prefer this offer to passing. If she chooses to pass, creditor A will be placed, at best, in the same situation as in our base model and, at worst, in a situation to face the loss of all values from dissipation. Clearly in this case, the extra round of pass options has no impact on the equilibrium outcome. Using backward induction, it can be shown that creditor A will accept an offer exceeding her payoff from bargaining from the start, just as in the base model. The same result obtains in the infinite-move version of the model. Of course, because we cannot use a simple backward induction argument, the proof becomes more complex—it can be found in the appendix. However, given that the result holds for any finite number of periods, it should not be surprising that it holds when the number of potential returns is infinite.

Theorem 9 shows, in the extended game, that permitting a return by the manager to a passed creditor per se will not modify the results of our analysis in a material fashion, although permitting return does complicate our analysis.¹⁸ It should be recognized, however, that some modifications of our

¹⁷ If $\alpha = 0$, then there is no cost associated with delay and no fixed endpoint of the bargaining game, and we cannot make any prediction as to the outcome of the game. However, this indeterminacy is not specific to our model, but holds generally in costless bargaining situations.

¹⁸ There are other model designs that could also preserve our results while eliminating the insulation of passed creditor from future offers. One such setup would be to allow returns but to assume that creditors are unable to obtain more than their initial debt face values in renegotiations, even if the manager voluntarily repudiates her initial contract. If we imposed this assumption, then the manager would simply renegotiate and offer the debt face value rather than pass the small creditor. This would eliminate the incentive to pass a creditor.

bargaining setup could alter our conclusions. The key to obtaining no alteration in the extended setup just analyzed was our assumption that a creditor's pass does not affect the manager's first-mover advantage. While this assumption is consistent with the way the pass option works in the base model, we could have departed even more radically from our base model to posit a bargaining regime in which the creditor's pass triggers a possible change in the sequencing of subsequent offers. To do so would change our results somewhat, but as long as there were *some* costs associated with returning to a passed creditor, the manager could use those costs to force *some* concessions from the large creditor who would be forced to absorb some distress costs. Thus, from a qualitative standpoint, it is hard to imagine a situation in which our results would be reversed completely.

5. Conclusions, Implications, and Extensions

In this article, we analyze sequential renegotiations of financial contracts in an environment characterized by contractual incompleteness through the analysis of a financially distressed firm indebted to creditors who hold claims of (perhaps) differing priorities. We show that sequencing flexibility is highly beneficial to debtors and that the optimal sequencing of restructuring negotiations involves exploiting the firm's liabilities to some creditors to moderate the demands of others. Conditions under which specific negotiation sequences are optimal are identified. Furthermore, we show that firms can gain if they can credibly commit to conditional restructuring agreements that link the concessions of one creditor to concessions by others.

Our results are important because they shed light on timing issues relating to debt renegotiation tactics and on the potential for resolving financial distress efficiently when there are multiple claim holders without recourse to formal legal mechanisms. Our analysis shows that managers can utilize sequencing options to obtain higher ex post payoffs and that optimal strategies depend on the dissipative costs of liquidation and the relative size of creditor claims. Theorems 2–5 make definite predictions regarding the likelihood of various creditors to be the target of renegotiation attempts by a distressed firm and the relative magnitudes of creditor concessions in reorganization. Because the predictive variables are based on observable characteristics of the creditors, these predictions are subject to empirical validation. Such tests would require a dataset of out-of-court restructurings and a rather exhaustive analysis of the particulars of each debt renegotiation in the sample. In addition, our analysis of conditional offers predicts that such offers will lead to concessions by a broader group of creditors than unconditional offers, but that conditional offers will be attempted only when a firm's financial condition is very poor. Thus we predict a negative correlation between the use of conditional (as opposed to unconditional) offers and the firm's financial condition.

Testing these predictions would represent a natural way to extend our knowledge of the “tactical” aspects of financial recontacting. A number of directions for extending our understanding via model building are also apparent. One obvious extension would be to consider creditor-initiated restructurings. Another extension would be to model the effect of private managerial information regarding the firm’s true financial position. Such a model could provide insight into how the informational effects from choosing different offering sequences would change managerial tactics. Finally, a more dynamic picture of financial recontacting could be developed by modeling a multi-period capital structure choice. This would allow for a model of optimal debt maturity based on the incentive of the manager to structure claims so as to limit, through ex ante design, her ex post ability to renegotiate contracted debt payments. This analysis could extend the insights of Hart and Moore (1998) on optimal maturity structure, which were developed in a single-creditor context.

Appendix

Proof of Theorem 5. If $D \leq V - \beta_A L$, the first creditor approached by the manager can pass the negotiation and the second creditor has to negotiate. The total payment to both creditors when A is passed first, $\pi[A \rightarrow B]$, is $D + \rho(V - \beta_B L)$. The total payment when B is passed first, $\pi[B \rightarrow A]$, is $D + \rho(V - \beta_A L)$. Since $\beta_A > \beta_B$, $\pi[B \rightarrow A] < \pi[A \rightarrow B]$.

If $D > V - \beta_B L$, both creditors must negotiate their claims. When A is approached first, the payoff to creditor A , $\pi_1[A \rightarrow B]$, is $\max[\beta_A L, \rho(V - \beta_B L)]$, and the payoff to creditor B , $\pi_2[A \rightarrow B]$, is $\max[\beta_A L, \rho(V - \pi_1[A \rightarrow B])]$. When B is approached first, the payoff to creditor B , $\pi_1[B \rightarrow A]$, is $\max[\beta_B L, \rho(V - \beta_A L)]$, and the payoff to creditor A , $\pi_2[B \rightarrow A]$, is $\max[\beta_A L, \rho(V - \pi_1[B \rightarrow A])]$. Consider two cases, (i) $\beta_A L < \rho(V - \pi_1[B \rightarrow A])$ and (ii) $\beta_A L \geq \rho(V - \pi_1[B \rightarrow A])$. In case (i), the condition implies $\beta_A L < \rho(V - \beta_B L)$ and $\beta_B L < \rho(V - \beta_A L)$. Hence $\pi[B \rightarrow A] = \pi_1[B \rightarrow A] + \rho(V - \pi_1[B \rightarrow A])$, where $\pi_1[B \rightarrow A] = \rho(V - \beta_A L)$, and $\pi[A \rightarrow B] = \pi_1[A \rightarrow B] + \max[\beta_B L, \rho(V - \pi_1[A \rightarrow B])]$, where $\pi_1[A \rightarrow B] = \rho(V - \beta_B L)$. Because $\pi_1[B \rightarrow A] < \pi_1[A \rightarrow B]$, $\pi[B \rightarrow A] < \pi[A \rightarrow B]$. In case (ii), $\pi[B \rightarrow A] = \max[\beta_B L, \rho(V - \beta_A L)] + \beta_A L$ and $\pi[A \rightarrow B] = \pi_1[A \rightarrow B] + \max[\beta_B L, \rho(V - \pi_1[A \rightarrow B])]$. Since $\beta_A L \leq \pi_1[A \rightarrow B]$, $\pi[B \rightarrow A] \leq \pi[A \rightarrow B]$.

Proof of Theorem 9. Our proof follows the approach used by a number of bargaining articles [e.g., Osborne and Rubinstein (1990)]. First define $\bar{q}_A^*$ as the highest possible payoff to creditor A in any subgame perfect equilibrium in which at some previous point creditor B has been passed, and creditor A has just passed an offer and survived dissipation. Let $\bar{o}_A^*$ be the highest offer to creditor A in any subgame starting after creditor B has been passed at least once. Next, define the following sequence inductively:

$$x_0 = V; \quad x_n = \max[\rho_A(V - D_B), (1 - \alpha)x_{n-1}].$$

Next, for all n , define the following assertion:

$$\bar{q}_A^* \leq x_{n-1} \text{ and } \bar{o}_A^* \leq x_n. \quad (P(n))$$

Result 1. For all n , Equation P(n) is true.

Proof. The proof relies on induction. First we show that P(1) is true. Clearly the manager's offer is never greater than the entire project rent, $V = x_0$. Thus the highest possible payoff to creditor A , assuming that she passes the offer and breakdown does not occur, is for the manager to return to her with an offer of the entire rent. This produces a payoff to creditor A of at most $V = x^o$. Thus it is clear that $\bar{q}_A^* \leq V = x_0$. Now consider the offer by the manager. The manager knows that the only options of creditor A , other than accepting the offer, are to either (1) enter into negotiations with the manager or (2) pass the manager. Because there is an α probability of dissipation associated with passing, the payoff to creditor A from passing is no greater than $(1 - \alpha)\bar{q}_A^*$. We have just shown that $q_A^* \leq x_0$. Therefore the anticipated payoff from passing is less than or equal to $(1 - \alpha)x_0$. If negotiations are entered, the 1-1 negotiating situation is the same as in the base model. (There are no pass options for the creditor after negotiations are entered and thus no possibility of returns.) Thus the payoff to creditor A from bargaining equals $\rho_A(V - D_B)$. Thus the highest payoff the creditor can capture from not accepting a managerial proposal is $\max[\rho_A(V - D_B), (1 - \alpha)x_0] = x_1$. For this reason, any proposal greater than x_1 will be accepted by creditor A . This implies that no offer o greater than x_1 will ever be made by the manager, as such an offer is dominated by the offer $o - \epsilon$, for ϵ sufficiently small. Thus we have shown that offers to creditor B greater than x_1 will not ever occur in equilibrium. This establishes P(1).

Now, suppose P(k) is true. We will prove that this implies that P($k + 1$) is true. In this case, the best possible outcome for creditor A after she passes an offer and the dissipation fails to occur is for the manager to immediately make her another offer of $\bar{o}_A^*$. At this point the creditor will choose between accepting this offer and bargaining with the manager (passing the best possible offer is clearly suboptimal). This yields a payoff of $\max[\rho_A(V - D_B), \bar{o}_A^*]$. By the induction hypotheses, $\bar{o}_A^* \leq x_{k-1}$. Thus $\bar{q}_A^* \leq \max[\rho_A(V - D_B), x_{k-1}]$. By the construction of the sequence (x_n) , $x_k \geq \rho_A(V - D_B)$. Thus we have that $\bar{q}_A^* \leq x_{k-1}$, the first part of the statement of P(k). Because x_n is the highest payoff creditor A can achieve if she passes and dissipation does not occur with probability $1 - \alpha$, the manager can always ensure acceptance of any offer o such that $o > \max[\rho_A(V - D_B), (1 - \alpha)x_{k-1}]$. By the definition of the sequence (x_n) , $\max[\rho_A(V - D_B), (1 - \alpha)x_{k-1}] = x_k$. Thus we have established P(k).

In other words, P(1) is true, and P(k) $\Rightarrow$ P($k + 1$). This implies by induction that P(n) is true for all n .

Next, note that $\lim_{n \rightarrow \infty} x_n = \rho_A(V - D_B)$. Thus we have established the following result.

Result 2. $\bar{q}_A^* \leq \rho_A(V - D_B)$ and $\bar{o}_A^* \leq \rho_A(V - D_B)$.

Next, note that creditor A will reject any offer less than $\rho_A(V - D_B)$, as she can obtain at least this much by bargaining. Without an accepted offer from creditor A , the manager's payoff is 0. Thus the manager will never offer less than $\rho_A(V - D_B)$. This fact, combined with Result 2, implies that the manager will offer $\rho_A(V - D_B)$ to creditor A . This offer must be accepted in equilibrium. If the offer is not accepted, the manager could always increment the offer by a tiny amount, thereby ensuring certain acceptance. Because the amount of the increment is tiny, this strategy would be better than enduring the risk of dissipation from negotiations or from returning to the first creditor. Thus we have established the following result.

Result 3. In any subgame perfect equilibrium of any subgame of the extended model starting with a pass of creditor B by the manager, creditor B receives D_B , and creditor A receives $\rho_A(V - D_B)$, exactly the same payoffs as obtained in subgame perfect equilibria in all subgames of the base model starting with a pass of creditor B .

Therefore, permitting the manager to return to a passed creditor will not modify the results of our analysis, and the same equilibrium obtains as in our base model. ■

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