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Stephanie Rosenkranz
Utz Weitzel

Universiteit Utrecht
Utrecht School of Economics

Tjalling C. Koopmans Research Institute
Utrecht School of Economics
Utrecht University

Janskerkhof 12
3512 BL Utrecht
The Netherlands
telephone +31 30 253 9800
fax +31 30 253 7373
website www.koopmansinstitute.uu.nl

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How to reach the authors

Please direct all correspondence to the first author.

Stephanie Rosenkranz
Utrecht University
Utrecht School of Economics
Janskerkhof 12
3512 BL Utrecht
The Netherlands.
E-mail: s.rosenkranz@uu.nl
Utz Weitzel
Radboud University Nijmegen
Economics Department
Postbus 9108
6500 HK Nijmegen
The Netherlands
E-mail: g.weitzel@fm.ru.nl

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Breaking and entering' of contracts as a matter of bargaining power and exclusivity clauses

Stephanie Rosenkranz[a]
Utz Weitzel[b]

[a]Utrecht School of Economics
Utrecht University

[b]Economics Department,
Radboud University Nijmegen

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Abstract

We analyze the effect of liquidated damage rules in exclusive contracts that are negotiated in a sequential bargaining process between one seller and two buyers with endogenous outside options. We show that assumptions on the distribution of bargaining power influence the size of the payment of damages and determine which contractual party benefits from including liquidated damage rules. Furthermore, we show that the effect of the payment of damages on the efficiency of the consummated deals depends on the possibility to sign more than one contract. Only if this is *not* possible, damage rules may prevent the breaking and entering of contracts and thus lead to inefficient deals in the market of corporate control, or allow for 'naked' exclusion in the context of supplier contracts with externalities.

Keywords: sequential bargaining, bargaining power, outside option, liquidated damage rules, termination fees, exclusivity agreements

JEL classification: G34; C78; D44; C71

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1 Introduction

In many situations two parties bargain over a contract (letter of intent, memorandum of understanding, preliminary agreement) that governs a transaction at a later point in time. Negotiations over real estate, mergers or bankruptcy asset purchases are typical examples, where actual ownership is transferred at a later stage, often after other offers have been considered and a third party (notary, shareholders, regulators, courts) has affirmed the agreement. Usually in these circumstances a contracting party can withdraw from the deal after its conclusion. In practice, the possibility that a party may wish to withdraw from the current contract to sign a better deal with some other party is recognized by provisions for payment of damages. "Damages under common law are frequently compensatory in the sense that they exactly compensate for breach; i.e., they leave the breached-against partner in the same financial position as before the breach. As an alternative to externally determined damages, parties to a contract may write damage rules into the contract itself. Such provisions are called liquidated damage rules" (Diamond and Maskin (1979), p.283).

The theoretical literature on the effect of different damage rules is subdivided into two branches, each relating to a specific context, that evolved almost independently over the past 30 years.

In one branch of the literature, payments for damages are discussed in the context of breach of production or supplier contracts with externalities. Diamond and Maskin (1979) study rather generally the effect of different damages rules on equilibrium search and breach behavior, when individuals in a contract may wish to continue search to find a better match on the market. They find that when damages are determined endogenously by the parties (liquidated damages), these privately stipulated damages can be higher than compensatory damages and the parties enjoy some power over potential contract partners. In combination with exclusive dealing agreements Aghion and Bolton (1987) show that an incumbent may be able to use such a contract as a barrier to entry (resulting in 'naked' exclusion), or at least as a means to extract surplus from a more efficient entrant. More recently Simpson and Wickelgren (2007) consider exclusive contracts with exogenous (compensatory) damages under the assumption that buyers are either independent or are competing against each other in a downstream market. In this scenario contracts will always be breached in favor of a deal with a more efficient entrant. With independent buyers the incumbent is indifferent between paying buyers for signing the exclusive contract and not offering the contract in the first place. Efficient entry is not prevented and the incumbent has no power. With Bertrand competition among the buyers the incumbent profits through the damages for breach, while buyers end up being indifferent between signing the contract (and paying damages) or not signing. For procurement contracts Tirole (1986) discusses the effect of exogenous (compensatory) damages on investment incentives in case that trade is observable and verifiable by third parties. He observes that compensatory damages influence the bargaining process by increasing the investing party's power. De Meza and Selvaggi (2007) come to similar conclusions in a setting in which trade is non-contractible but where resale is possible. They find that liquidated damages may help to restore buyers' investment incentives by appropriately redistributing bargaining power between the contracting parties. Reagan and Stulz (1993) discuss the establishment of a bond as one possibility for parties to convince the other party that it will not default if future spot prices are lower than the contract price it offers, thus as a means to ensure long-term contracts.

In another branch of the theoretical literature payments for damages are discussed in the context of the market for corporate control, where they are usually labeled 'termination fees'. The theoretical literature on termination fees is largely auction-related as surveyed by Roosevelt (2000) for bankruptcy sales and by Boone and Mulherin (2007a) for mergers. Termination fees have been advocated in this literature as a way to achieve some commitment in relationships that are governed by sequential renegotiations. In these contributions, which are discussed in more detail in Section 4, the damages are compensatory as the size of the fee is assumed to be exogenously determined. Empirically, liquidated damage rules have mostly been studied in the context of mergers (e.g., by Officer (2003)), where Boone and Mulherin (2007a) find that up to 79 per cent of merger pre-contracts include such termination fees.

We aim to contribute to both strands of the theoretical literature by focusing on the process by which payments for damages are determined. We thereby identify the implicit assumptions of the above literature concerning the contractual framework that drive some of the main results. For both strands we show that the effect of the payment of damages on the efficiency of the consummated deals depends on the possibility to sign more than one contract (among other determinants). Only if this is *not* possible, damage rules may prevent efficient deals in the market of corporate control, or allow for 'naked' exclusion in the context of supplier contracts with externalities. Furthermore, we show that in both strands assumptions on the distribution of bargaining power influence the size of the payment of damages and determine which contractual party benefits from including liquidated damage rules.

In our approach payments for damages are endogenous and an outcome of a negotiation process between parties with different bargaining power under the assumption that alternative deals present an outside option.[1] More specifically, we analyze two-stage negotiations between one seller and two consecutive buyers, where the seller can withdraw from an exclusive contract by paying liquidated damages to the respective buyer. The agreement of the first stage serves as an outside option in the second-stage negotiations, and vice versa. Analogously to Shaked and Sutton (1984), we assume that, following any offer by the seller, the 'insider' buyer can always reply with a counter-offer before the seller switches over to negotiate with an outsider buyer.

In a *first* scenario we assume that contracts are exclusive, but, unlike Shaked and Sutton (1984), we also assume that more than one contract can be signed, such that a breach of contract leads to payment of liquidated damages in equilibrium. This implies that the seller can return to the first buyer even if an agreement is reached with the outside buyer. In this case, exclusion of more efficient buyers is not possible and a less efficient buyer can use liquidated damage rules in an exclusive contract only to extract a rent from a more efficient agreement. In equilibrium, the seller accepts liquidated damage rules in exchange for a greater share of gains of trade.

Hence, when we allow for sequential negotiations, in extension to the results of Diamond and Maskin (1979), Aghion and Bolton (1987), and Simpson and Wickelgren (2007), exclusivity agreements in combination with liquidated damage rules are not sufficient to exclude more efficient buyers.

In a *second* scenario we assume a more rigid form of exclusivity, i.e., that only

[1] Aghion and Bolton (1987) consider endogenous termination fees when the seller makes a take-it-or-leave-it offer. Diamond and Maskin (1979) consider exogenous damages and assume that the surplus is split equally. Simpson and Wickelgreen (2007) consider exogenous damages and assume that the seller makes a take-it-or-leave-it offer. De Meza and Selvaggi (2007) consider a bargaining setting with resale in which the surplus is split equally, and briefly discuss endogenous damages.

one contract can be signed at a time because of additional contractual restrictions, as, e.g., no-shop clauses.[2] Here, 'naked' exclusion of more efficient buyers is possible. Liquidated damages rules allow the less efficient first-stage buyer to protect a deal against more efficient buyers. From the perspective of the seller, even a deal with the less efficient buyer (protected by liquidated damages and a no-shop clause) can be optimal, provided it is negotiated first.

Moreover, our bargaining approach applies to more general settings. Osborne and Rubinstein (1990) and, more generally, Houba and Bennett (1997) showed that under simultaneous bargaining between a seller and two buyers, competition between the buyers has no effect on the equilibrium price, if the seller can threaten to opt out. For a sequential negotiation process in which the price as well as liquidated damages are negotiated simultaneously, we show that the equilibrium price is above the simultaneous outcome. Further, this result of our model explains the use of no-shop clauses in contracts, provides a rationale for pre-contracts, and for deals with less efficient buyers, as our application to mergers and acquisitions also illustrates.

The paper proceeds as follows. Section 2 describes the model and its results. Section 3 analyzes no-shop clauses as an additional contractual agreement. In Section 4 we apply our results to the context of mergers. Section 5 summarizes and concludes.

2 A bargaining model for contracts with liquidated damage rules

A seller S of a single indivisible commodity and a reservation price $\pi_S = 0$ sequentially meets two buyers, denoted B_1 and B_2, with reservations prices $\pi_1 > 0$, and $\pi_2 > 0$ respectively. The negotiations with a buyer B_i are over a contract (x_i, t_i) that specifies the selling price x_i and liquidated damages $t_i \geq 0$. Liquidated damages t_i have to be paid from seller S to buyer B_i in case the seller wants to execute a contract with the other buyer B_j after having signed a contract with B_i with $i \neq j$. We assume that any offer (x_i, t_i) at both stages $i = 1, 2$ is a combination of x_i and t_i that cannot be accepted or rejected independently of

[2] For a definition of no-shop clauses see Section 3.

each other.[3] All payments from a potential agreement will be paid out after the last stage.

We assume that the bargaining process at both stages can be described by the alternating offers procedure suggested by Rubinstein (1982). We assume that at time 0 the seller S makes an offer (x_1, t_1) to the buyer B_1 with probability $\lambda_1 \in [0, 1]$, which is a proposal of a division of the surplus. Analogously to Shaked and Sutton (1984) we assume that once a player receives an offer from the other player, he can take one of the following three actions: he can accept the offer, implying that the agreement is struck and that the players divide the surplus according to the accepted offer, or he can reject the offer and make a counter-offer at time $\Delta > 0$. If this counter-offer is accepted by the first player then the agreement is struck, otherwise the first player makes another counter-counter-offer at time 2Δ. This process of offers and counter-offers continues until a player accepts an offer. Thirdly, a player can reject an offer and decide to leave the negotiation table to take up a (potential) outside option, in which case the negotiations end in disagreement. Ending the negotiations in this way is understood as a *strategic* decision.[4]

After the negotiations at the first stage (which end in disagreement because the seller opted out, or in agreement with an accepted offer), the seller may have the opportunity to bargain with another buyer B_2 at the second stage, according to the same procedure. The probability that the seller makes an offer in these negotiations is $\lambda_2 \in [0, 1]$. Thus, we assume that the possibility to make a deal at the second stage gives the seller an outside option at the first stage and vice versa. For simplicity and without loss of generality we assume that all players' disagreement payoffs are zero.

In case the bargaining process at any stage ended in agreement, the outcome is a contract (x_i, t_i) specifying a share of x_i for the seller, and $\pi_i - x_i$ for the buyer, and liquidated damages t_i that have to be paid to buyer B_i in case the seller decides for the contract with B_j, with $i, j = 1, 2$ and $i \neq j$. In case of perpetual

[3]This assumption relates to the model of 'multi-issue' bargaining as analyzed by Fershtman (1990). In our setting, however, the surpluses of the two items never coexist. Either the deal is struck and ownership will be transferred, or the deal will be broken and the termination fee will be paid.

[4]In Rubinstein's original approach a player has only two actions to choose from: he can only reject or accept an offer (with the same consequences as before) and may receive a disagreement payoff if negotiations end in disagreement or break down for some *exogenous* reason. We discuss the implications of this possibility in the conclusion.

disagreement the utility vector is $(0, 0, 0)$. At the last stage, the seller decides for one of the two contracts. The sequence of decisions is depicted in Figure 1, where it is indicated with (S/B_i) if the seller makes an offer, with (B_i/S) if buyer B_i makes an offer, with "y" if a player accepts an offer, with "n" if a player rejects an offer, and with "nn" if a player rejects and opts out. We define N' as the game which begins immediately following an offer by the "insider", and where the S is free at this time to switch to the outsider. Note that the game immediately following a switch by the firm is the same as our initial game; we label this game N.

[insert Figure 1 here]

Note that we assume that the seller can switch from one buyer to the other, but that he can only return to a buyer with which he has not yet signed a contract already. This implies that M' is analogous to M, with the difference that B_1 is the "insider".[5] We apply backward induction to characterize the equilibrium offers of all players. At the final stage, seller S chooses the larger of the two offers x_i with $i = 1, 2$. Denote a decision for x_1 as $q = 1$, and a decision for x_2 as $q = 0$. The utility vectors (u_S, u_{B_1}, u_{B_2}) are $(x_1, \pi_1 - x_1 - t_2, t_2)$ if $q = 1$, and $(x_2, t_{1,}\pi_2 - x_2 - t_1)$ if $q = 0$.

2.1 Bargaining at the second stage

Suppose that there exists a contract between S and B_1 in Stage 1, specifying x_1 and t_1 (node M in Figure 1). In their negotiations, buyer B_2 and S anticipate that seller S in Stage 3 will decide between the two contracts and choose the higher of the two offers.

The seller can guarantee to get the payoff x_1 by opting out when he has the option (after an offer by B_2). He can also secure (practically) x_1 by offering the buyer a small compensation ε to ensure his accepting the offer, he himself will then get $x_1 - \varepsilon$, and the utilities at node M will be $u_S = x_1 - \varepsilon/2, u_{B_2} = \varepsilon/2, u_{B_1} = t_1$.

[5] Analogous to Shaked and Sutton (1984) the seller can switch between buyers, but different to their model, we assume that negotiations can continue after one agreement has been struk. The game ends when both agreements are struck or gains of trade in one of the negotiations are zero.

Thus, in any equilibrium, S should get at least x_1. But if B_2 wishes to have a deal with S he should be able to give him at least $x_1 + t_1$, so that the seller receives at least x_1 after paying liquidated damages t_1 to the other buyer. This is only possible if $\pi_2 \geq x_1 + t_1$.

When it is the *seller* who makes an offer he would be better off securing the buyer's agreement by giving him his continuation value δb_2 and cashing the difference (after paying the compensation t_1 to B_1): $\pi_2 - \delta b_2 - t_1$. We will confirm later under which circumstances this is indeed better than having a deal with B_1 and paying compensation t_2, or indeed simply continuing the negotiations with B_2 (thus securing δx_2 for himself). Here the seller gets $\pi_2 - \delta b_2 - t_1$, and the buyer gets δb_2.

When it is the *buyer* who makes the offer there could be two cases, depending on whether the offer of the first stage negotiation x_1 is larger or smaller than δx_2.

a) $\delta x_2 > x_1$: The buyer gives the seller $\delta x_2 + t_1$, of which the seller gets δx_2 net, and the buyer takes the difference $\pi_2 - \delta x_2 - t_1$.

b) $\delta x_2 \leq x_1$: The buyer gives the seller $x_1 + t_1$, of which the seller gets x_1 net, and the buyer takes the difference $\pi_2 - x_1 - t_1$.

Further below we will show under which circumstances this is better than either receiving a compensation t_2, or not having at deal at all, or simply continuing the negotiations with S (thus securing δb_2 for himself).

Depending on the first stage contract (x_1, t_1), the equations to determine the decisions x_2 and b_2 at node M, for $q = 0$ and $q = 1$ respectively, are the following:

$$x_2 = \begin{cases} \lambda_2(\pi_2 - \delta b_2 - t_1) + (1 - \lambda_2)\delta x_2 & \text{if } \delta x_2 > x_1 \\ \lambda_2(\pi_2 - \delta b_2 - t_1) + (1 - \lambda_2)x_1 & \text{if } \delta x_2 \leq x_1 \\ x_1 & \end{cases} \begin{matrix} \text{and if } & q = 0 \\ & \\ \text{if} & q = 1 \end{matrix} \tag{1}$$

$$b_2 = \begin{cases} \lambda_2\delta b_2 + (1 - \lambda_2)(\pi_2 - \delta x_2 - t_1) & \text{if } \delta x_2 > x_1 \\ \lambda_2\delta b_2 + (1 - \lambda_2)(\pi_2 - x_1 - t_1) & \text{if } \delta x_2 \leq x_1 \\ t_2 & \end{cases} \begin{matrix} \text{and if } & q = 0 \\ & \\ \text{if} & q = 1 \end{matrix} \tag{2}$$

Simultaneously, the seller and the buyer B_2 negotiate over liquidated damages t_2 that will be paid to buyer B_2 in case the seller decides for x_1 at Stage 3 ($q = 1$), after having reached an agreement with B_2 at Stage 2. Anticipating the sequence of decisions, the seller might have been able to negotiate a higher offer at Stage 1 due to the fact that the Stage 2 contract represented a relevant outside option. We assume that the difference between the offers that buyer B_1 receives at the first stage with and without an outside option represents the surplus of the liquidated damages negotiations.[6] In the case of breach of the agreement with B_2, S receives x_1 from B_1 and B_2 receives t_2, provided that x_2 represented a relevant outside option in the first stage negotiations. Without a contract with B_2, first stage negotiations would have led to an offer of $\tilde{x}_1$. We will confirm later that $\tilde{x}_1 = \lambda_1\pi_1$. From this difference, the seller pays t_2 to B_2 and keeps g_2 for herself:[7]

$$g_2 = \begin{cases} 0 & \text{if} \quad q = 0 \\ \lambda_2(x_1 - \delta t_2 - \lambda_1\pi_1) + (1-\lambda_2)\delta g_2 & \text{if} \quad q = 1 \end{cases} \tag{3}$$

$$t_2 = \begin{cases} 0 & \text{if} \quad q = 0 \\ \lambda_2\delta t_2 + (1-\lambda_2)(x_1 - \delta g_2 - \lambda_1\pi_1) & \text{if} \quad q = 1 \end{cases} \tag{4}$$

Equations (1) to (4) summarize the two interrelated bargaining situations. They state that if the seller decides for a contract with buyer B_1 at Stage 3, after having signed an agreement with buyer B_2, the latter receives t_2, while the seller receives x_1 from buyer B_1. Moreover, if the seller decides for a contract with B_2 no liquidated damages will be paid to buyer B_2.

To determine the equilibrium offers, we will consider first the situation in which the first stage offer x_1 is smaller than the seller's continuation value, i.e., $x_1 < \delta x_2$. Suppose furthermore that $\pi_2 \geq x_1 + t_1$ holds. Obviously, this implies that the seller will decide for B_2 at the last stage ($q = 0$). Solving (1) to (4) simultaneously for x_2, b_2, g_2 and t_2 leads to the following outcomes:

$$\begin{aligned} x_2 &= \lambda_2(\pi_2 - t_1) \text{ and } b_2 = (1-\lambda_2)(\pi_2 - t_1), \\ g_2 &= t_2 = 0. \end{aligned}$$

With this solution the condition $\delta x_2 > x_1$ becomes $\delta\lambda_2(\pi_2 - t_1) > x_1$.

[6]While the exact specification of the surplus for these negotiations will have an effect on the intervals in which specific equilibria exist, it does not change our overall findings qualitatively.

[7]While we assume here that liquidated damages are only included in the contract whenever a buyer anticipates that the seller will decide for a contract with the other buyer, our results generalize to the case in which liquidated damage rules are always specified, thus also when in equilibrium the contract is not terminated. In equilibrium the buyers' agreement to the contracts, i.e. $b_i \geq 0$, restricts liquidated damages such that including them does not change the outcome.

Suppose now that the first stage offer x_1 is larger than the seller's continuation value, i.e.,$\delta x_2 \leq x_1$. The contract of Stage 1 now represents a relevant outside option. If the players anticipate that seller S will decide for B_2 at the last stage $(q = 0)$, solving (1) to (4) simultaneously for x_2, b_2, t_2 and g_2 leads to the following outcomes:[8]

$$\begin{aligned} x_2 &= \frac{1-\lambda_2}{1-\lambda_2\delta}x_1 + \frac{\lambda_2(1-\delta)}{1-\lambda_2\delta}(\pi_2 - t_1) \text{ and } \quad b_2 = \frac{1-\lambda_2}{1-\lambda_2\delta}(\pi_2 - x_1 - t_1), \\ g_2 &= t_2 = 0. \end{aligned}$$

Substituting the solution into the condition leads to $\delta\lambda_2(\pi_2 - t_1) \leq x_1$. If the players anticipate $q = 1$, buyer B_2 will ensure the seller's agreement and at the same time maximize liquidated damages, which leads to:

$$\begin{aligned} x_2 &= x_1 \text{ and} \\ t_2 &= (1-\lambda_2)(x_1 - \lambda_1\pi_1), \\ g_2 &= \lambda_2(x_1 - \lambda_1\pi_1). \end{aligned}$$

Suppose next that $\pi_2 < x_1 + t_1$ holds. The surplus π_2 is not large enough to give S at least x_1 after paying t_1 to buyer B_1. Buyer B_2 would still prefer the seller's agreement, as he can ask for liquidated damages t_2. He would therefore offer $x_2 = \pi_2 - t_1$ and claim liquidated damages $t_2 = (1-\lambda_2)(x_1 - \lambda_1\pi_1)$ as specified above, while the seller decides for a contract with B_1 (and hence $q = 1$). Obviously, this solution will only be agreed upon by S and B_2 in case $t_2 \geq 0 \wedge \pi_2 < x_1 + t_1 \Leftrightarrow \pi_2 - t_1 > \lambda_1\pi_1$. If the second stage surplus is not sufficiently large, the seller will not sign an agreement with B_2.

Hence, we can now summarize the second stage decisions at nodes M. The

[8] With $\delta = 1$ the solution simplifies to $x_2 = x_1$ and $b_2 = \pi_2 - x_1 - t_1$, and $g_2 = t_2 = 0$.

offer at Stage 2, best stated for $\delta = 1$, will be

$$x_2^* = \begin{cases} \pi_2 & \text{if } \lambda_2(\pi_2 - t_1) \leq x_1 \text{ and } \lambda_1\pi_1 + t_1 \leq \pi_2 < \pi_1 + t_1 \\ x_1 & \text{if } \lambda_2(\pi_2 - t_1) \leq x_1 \text{ and } \pi_1 + t_1 \leq \pi_2 \\ \lambda_2(\pi_2 - t_1) & \text{if } \lambda_2(\pi_2 - t_1) > x_1 \text{ and } \pi_1 + t_1 \leq \pi_2 \end{cases} \quad (5)$$

$$t_2^* = \begin{cases} (1-\lambda_2)(x_1 - \lambda_1\pi_1) & \text{if } q = 1, \\ 0 & \text{else.} \end{cases}$$

We thus obtain the outside option outcome: the payoff of the seller is simply the maximum of his outside option and what he can get if he never opts out.

Suppose finally that there exists no contract between S and B_1 in Stage 1 (node $N\prime$), i.e. that the seller has no outside option yet. Both players will anticipate decisions that will be characterized by (5), but with the indices for B_1 and B_2 reversed (node $M\prime$).[9] If no gains of trade from (second time) negotiations with B_1 are anticipated, offers at N' are determined by simultaneously solving:

$$\begin{aligned} x_2 &= \lambda_2(\pi_2 - \delta b_2) + (1-\lambda_2)\delta x_2 \\ b_2 &= \lambda_2 \delta b_2 + (1-\lambda_2)(\pi_2 - \delta x_2) \end{aligned}$$

which leads to $x_2^* = \lambda_2\pi_2$, and will be the outcome if $\pi_1 < \lambda_2\pi_2$.

2.2 Bargaining at the first stage

In their negotiations, buyer B_1 and S anticipate that the seller S at Stage 3 will decide between the two contracts, if he had signed both, and will choose the higher of the two offers. The players (at node N in Figure 1) also perfectly anticipate the outcome of the second stage negotiations between S and B_2 as characterized above.

When it is the *seller* who makes an offer, he would be better off securing the buyer's agreement by giving him his continuation value δb_1 and cashing the difference $\pi_1 - \delta b_1 - t_2$ (after possibly paying the compensation t_2 to B_2 in case the

[9] Note that the game actually is a multi-stage game, because of the fact that the seller can always return to a buyer with which he did not yet achieve an agreement. Applying backward induction properly would first require an analysis of the game starting at node M'. This game, however, is strategically equivalent to the analysed game staring at node M but with Buyer B_1 instead of Buyer B_2.For convenience, to avoid redundancy and because of spatial constraints, we skip the analysis of this game.

seller finds it beneficial to sign a second agreement in period 2). We will confirm further below under which conditions this is better than having a deal with B_2 and paying compensation t_1, or securing δx_1 for himself by simply continuing the negotiations with B_1.

When it is the *buyer* who makes the offer there could again be two cases:

a) $\delta x_1 \leq x_2$: The buyer B_1 gives the seller $x_2 + t_2$, of which the seller gets x_2 net, and the buyer takes the difference $\pi_1 - x_2 - t_2$.

b) $\delta x_1 > x_2$: The buyer B_1 gives the seller $\delta x_1 + t_2$, of which the seller gets δx_1 net, and the buyer takes the difference $\pi_1 - \delta x_1 - t_2$.

Again, we will confirm later under which circumstances this is better than either receiving a compensation t_1, or not having at deal at all, or securing δb_1 for himself by continuing the negotiations with S.

Anticipating (5) from the second stage means that the second stage negotiations may represent a relevant outside option at the first stage. Anticipating the seller's choice at Stage 3, the equations to determine the decisions on x_1 and b_1 at node N are the following:

$$x_1 = \begin{cases} x_2 & \text{if } q = 0 \\ \left.\begin{array}{ll} \lambda_1(\pi_1 - \delta b_1 - t_2) + (1 - \lambda_1)x_2 & \text{if } \delta x_1 \leq x_2 \\ \lambda_1(\pi_1 - \delta b_1 - t_2) + (1 - \lambda_1)\delta x_1 & \text{if } \delta x_1 > x_2 \end{array}\right. & \text{if } q = 1 \end{cases} \tag{6}$$

$$b_1 = \begin{cases} t_1 & \text{if } q = 0 \\ \left.\begin{array}{ll} \lambda_1 \delta b_1 + (1 - \lambda_1)(\pi_1 - x_2 - t_2) & \text{if } \delta x_1 \leq x_2 \\ \lambda_1 \delta b_1 + (1 - \lambda_1)(\pi_1 - \delta x_1 - t_2) & \text{if } \delta x_1 > x_2 \end{array}\right. & \text{if } q = 1 \end{cases} \tag{7}$$

Following the same reasoning as at the second stage, the seller and the buyer B_1 simultaneously negotiate over liquidated damages t_1 that would be paid to buyer B_1 in case the seller decides for x_2 at Stage 3, after having reached an agreement with B_1 in Stage 1:

$$t_1 = \begin{cases} \lambda_1 \delta t_1 + (1 - \lambda_1)(x_2 - \delta g_1 - \lambda_2 \pi_2) & \text{if } q = 0 \\ 0 & \text{if } q = 1 \end{cases} \tag{8}$$

$$g_1 = \begin{cases} \lambda_1 (x_2 - \delta t_1 - \lambda_2 \pi_2) + (1 - \lambda_1)\delta g_1 & \text{if } q = 0 \\ 0 & \text{if } q = 1 \end{cases} \tag{9}$$

We know from the analysis of Stage 2 that the second stage offer will always be *larger or equal* to the first stage offer x_1, unless we have $\pi_2 < \pi_1 + t_1$. Note that even when securing the seller's agreement, the buyer B_1 can not prevent that the seller signs a second agreement at Stage 2.

i) To determine the equilibrium offers at this stage, we will first consider the situation in which the second stage offer x_2 is larger than the seller's continuation value, i.e., $\delta x_1 \leq x_2$. Moreover, suppose that $\delta\lambda_2(\pi_2 - t_1) \leq x_1$ and that $\pi_2 \geq x_1 + t_1$ hold, such that $x_2^* = x_1$. Finally, suppose also that $\pi_1 \geq x_2 + t_2$ holds. We will relax each of these assumptions later on.

Along the seller's decision at Stage 3, we need to distinguish two cases: Consider first the case that S decides for B_1 at stage 3 ($q = 1$). From the analysis of the second stage, i.e. (5) we know that this implies that $t_2^* = (1 - \lambda_2)(x_1 - \lambda_1\pi_1)$. Substituting x_2 and t_2 accordingly and solving (6) to (9) simultaneously for the first-stage values x_1, b_1, t_1 and g_1 leads to:

$$\begin{aligned} x_1 &= \alpha_1\pi_1 \quad \text{with } \alpha_1 \equiv \frac{1 + (1 - \lambda_2)\lambda_1}{2 - \lambda_2} \\ \text{and } b_1 &= g_1 = t_1 = 0 \end{aligned}$$

The equilibrium offers specified in the contracts therefore will be:

$$\begin{aligned} x_2^* &= x_1^* = \alpha_1\pi_1 \\ t_2^* &= (1 - \alpha_1)\pi_1 \quad \text{and} \quad t_1^* = 0. \end{aligned} \tag{10}$$

Suppose next that still $x_2^* = x_1$ holds, but that S decides for B_2 in Stage 3 ($q = 0$). This implies $t_2^* = 0$ and leads to:

$$x_1 = \alpha_2\pi_2 \quad \text{with} \quad \alpha_2 \equiv \frac{1 + (1 - \lambda_1)\lambda_2}{2 - \lambda_1}$$

Substituting these solutions into Stage 2 leads to the following equilibrium offers specified in the contracts:

$$\begin{aligned} x_1^* &= x_2^* = \alpha_2\pi_2 \\ t_1^* &= (1 - \alpha_2)\pi_2 \text{ and } t_2^* = 0. \end{aligned} \tag{11}$$

Given the seller's third stage decision, he will prefer the contract with B_1 if the surplus at the first stage is sufficiently large, hence if $\alpha_1\pi_1 > \alpha_2\pi_2$, or:[10,11]

$$\frac{\alpha_1}{\alpha_2}\pi_1 > \pi_2$$

Hence, since we assumed $x_1 + t_1 \leq \pi_2$ as well as $x_2 + t_2 \leq \pi_1$, (10) constitutes an equilibrium, if $\frac{\alpha_1}{\alpha_2}\pi_1 > \pi_2 > \alpha_1\pi_1$ and (11) constitutes an equilibrium, if $\alpha_2^{-1}\pi_1 > \pi_2 > \frac{\alpha_1}{\alpha_2}\pi_1$.

Now suppose that $x_1 + t_1 > \pi_2$. Anticipating $x_2^* = \pi_2$ from the second stage, equilibrium offers will be

$$x_2^* = x_1^* = \pi_2 \quad \text{and} \quad t_1^* = 0, t_2^* = (1 - \lambda_2)(\pi_2 - \lambda_1\pi_1). \tag{12}$$

As $x_2 + t_2 \leq \pi_1$ also has to hold, (12) constitutes and equilibrium if $\alpha_1\pi_1 > \pi_2$. In this case, buyer B_1 will not offer (11) but rather $x_1 = \pi_2$ as this is enough to ensure the seller's agreement and also to ensure that the seller decides for a contract with B_1 at Stage 3. Note that if $\pi_2 < \lambda_1\pi_1$, buyer B_2 does not represent a relevant outside option in the first stage negotiations, leading to $t_2 = 0$.

Alternatively, suppose that $\pi_1 < x_2 + t_2$ holds. B_1 will not be able to offer (11). He will ensure the seller's agreement such that he at least earns liquidated damages t_1, anticipating that the seller decides for a contract with B_2 at Stage 3. With $x_2 = \pi_1$, equilibrium offers will be:

$$x_2^* = x_1^* = \pi_1 \quad \text{and} \quad t_2^* = 0, t_1^* = (1 - \lambda_1)(\pi_1 - \lambda_2\pi_2). \tag{13}$$

Obviously, we need $x_1 + t_1 \leq \pi_2$ to hold, which implies that (13) constitutes an equilibrium if $\alpha_2^{-1}\pi_1 < \pi_2$.

Note, furthermore, that $\lambda_2^{-1}\pi_1 = \pi_2$ leads to liquidated damages of $t_1 = 0$. In this case, the surplus that is achievable with buyer B_1 does not represent a relevant outside option in the negotiations with buyer B_2.

ii) Now suppose that $\delta\lambda_2(\pi_2 - t_1) > x_1$ holds such that $x_2 = \lambda_2(\pi_2 - t_1)$. As this implies that $x_1 < x_2$, it means that S decides for B_2 at Stage 3 ($q = 0$).

[10] Note that for $\lambda_i \in [0, 1]$ we have $\alpha_i \leq 1$ with $i = 1, 2$. Furthermore, $\alpha_i < \alpha_j$ for $\lambda_i < \lambda_j$.

[11] It is straigthforward to verify that the conditions $\delta\lambda_2(\pi_2 - t_1) < x_1$ and $\delta x_1 \leq x_2$ hold if $x_1^* = x_2^*$ in equilibrium.

From (5) we know that $t_2 = 0$. In this case, buyer B_1 would like to maximize liquidated damages t_1. Solving (6)-(9) for $\delta x_1 \leq x_2$ reveals that $x_2 > x_1$ can only hold in case $\pi_1 < \lambda_2\pi_2$, because otherwise B_1 would prefer to offer $x_1 = x_2$. As the seller does not benefit from the first stage offer, gains of trade for the liquidated damages negotiations are zero, thus $t_1 = 0$. Hence, if $\lambda_2^{-1}\pi_1 < \pi_2$ there will be no agreement on the first stage and the seller will sign a contract with the second buyer only, with $x_2 = \lambda_2\pi_2$. Moreover, the seller will also not sign a contract with the first buyer at a later stage as there no gains of trade in case $\pi_1 < \lambda_2\pi_2$.

iii) Finally consider the situation in which the second stage offer x_2 is smaller than the seller's continuation value, i.e., $\delta x_1 > x_2$. Given the second stage analysis, it must be that $\lambda_1\pi_1 + t_1 > \pi_2$, because this is the only situation for which B_2 will not offer at least x_1. Solving equations (6)-(9) leads to $x_1 = \lambda_1\pi_1$ and $t_1 = 0$. In this case, the surplus that is achievable with buyer B_2 does not represent a relevant outside option in the negotiations with buyer B_1. Hence, the seller will sign a contract with the first buyer only, with $x_1 = \pi_1\lambda_1$.

We can now summarize our findings and present the following result:

Proposition 1 *Suppose realization of utilities is postponed until all stages are completed. At the final stage the seller will be confronted with the following contracts*:

$$
\begin{array}{ll}
(x_1, t_1) = (\lambda_1\pi_1, 0) & \textit{if} \;\; 0 \leq \pi_2 < \lambda_1\pi_1; \\
(x_1, t_1) = (\pi_2, 0) \quad \textit{and} \quad (x_2, t_2) = (\pi_2, (1-\lambda_2)(\pi_2 - \lambda_1\pi_1)) & \textit{if} \;\; \lambda_1\pi_1 \leq \pi_2 < \alpha_1\pi_1; \\
(x_1, t_1) = (\alpha_1\pi_1, 0) \quad \textit{and} \quad (x_2, t_2) = (\alpha_1\pi_1, (1-\alpha_1)\pi_1) & \textit{if} \;\; \alpha_1\pi_1 \leq \pi_2 < \frac{\alpha_1}{\alpha_2}\pi_1; \\
(x_1, t_1) = (\alpha_2\pi_2, (1-\alpha_2)\pi_2) \quad \textit{and} \quad (x_2, t_2) = (\alpha_2\pi_2, 0) & \textit{if} \;\; \frac{\alpha_1}{\alpha_2}\pi_1 \leq \pi_2 < \alpha_2^{-1}\pi_1; \\
(x_1, t_1) = (\pi_1, (1-\lambda_1)(\pi_1 - \lambda_2\pi_2)) \quad \textit{and} \quad (x_2, t_2) = (\pi_1, 0) & \textit{if} \;\; \alpha_2^{-1}\pi_1 \leq \pi_2 < \lambda_2^{-1}\pi_1; \\
(x_2, t_2) = (\lambda_2\pi_2, 0) & \textit{if} \;\; \lambda_2^{-1}\pi_1 \leq \pi_2.
\end{array}
$$

In equilibrium the seller decides for the contract that specifies $t_i = 0$.

The proposition states that we need to distinguish six different regions, as exemplified in Figure 2 for $\lambda_1 > \lambda_2$. We will discuss the result from the perspective of the first two bargaining partners. The first contract in the proposition considers the case in which the seller's outside option is rather low in comparison with the surplus of the first deal. In this Region I the offer is determined by the seller's relative bargaining power. In Regions II and III the second-stage negotiations provide the seller with a relevant outside option. The contracts will be signed at both stages, the seller will decide for buyer B_1 and will pay liquidated damages to buyer B_2 for providing him with an outside option. The difference between Regions II and III is that in Region II the first stage buyer B_1 still makes a positive profit as the outside option is too low to allow the second stage buyer to capture the full surplus. In Region III, however, $b_1 = 0$. In Regions IV and V the roles are reversed in the sense that the first stage contract provides the seller with a relevant outside option in the second stage negotiations. The seller decides for the second stage offer and pays liquidated damages to the first stage buyer. Finally, in Region VI, the seller's outside option is so attractive that no deal will be signed at the first stage.

[insert Figure 2 here]

For a successful deal we can conclude that the larger the seller's outside option x_2 for any given surplus π_1 the higher the likelihood that liquidated damage rules will exist (i.e. that the deal will be positioned in Region II to V). This is in line with intuition since liquidated damages are only offered when the outside option is greater than the seller's share of current surplus, determined by its bargaining power. Correspondingly, the comparative static properties of the functions $\lambda_1\pi_1$, $\lambda_2^{-1}\pi_1$ and $\frac{\alpha_1}{\alpha_2}\pi_1$ in the proposition reveal that Regions I and VI are enlarged (reduced) with an increase in the seller's (buyers's) bargaining power λ_i (and $(1-\lambda_i)$ respectively) with $i = 1, 2$. Thus, the likelihood of termination provisions decreases with the seller's bargaining power.

Although we consider only the case in which the seller has an alternative bargaining partner at the second stage, an extension to the case in which both players have an outside option is straightforward and leads to analogous results. With this extension it is possible to also determine conditions under which seller and/or buyer liquidated damages will be negotiated. The direction of the net effect of the respective fees is then determined by their relative surpluses.[12]

[12]See Rosenkranz and Weitzel (2007) for details.

2.3 Efficiency of the deal

The following corollary shows that in the above scenario liquidated damages will be included in an exclusive contract, even if the surplus of the deal under consideration is higher than in the respective expected outside option. Moreover, given the sequence of negotiations, if liquidated damages are paid, the offer will always be the same at the two stages. This implies that the seller is equally well off, even when striking the deal with the less efficient buyer.

Corollary 1 *Suppose* $\lambda_i > \lambda_j$.

i) The contract will include liquidated damages, even with the more efficient buyer B_j*, whenever* $\pi_i < \pi_j < \frac{\alpha_i}{\alpha_j}\pi_i$.

ii) A contract with a less efficient buyer B_i *will ensure the same (highest possible) offer for the seller as a contract with the more efficient buyer* B_j*, if* $\pi_i < \pi_j < \frac{\alpha_i}{\alpha_j}\pi_i$.

Proof. Note that $\frac{\alpha_i}{\alpha_j} \gtrless 1$ for $\lambda_i \lesseqgtr \lambda_j$. For part i) see Proposition 1. Result ii) comes from the fact that, in equilibrium, the seller must be indifferent between the deals at the two stages. ■

If the seller has an attractive outside option he agrees to pay a fee to the buyer to be able to breach the contract. In this context liquidated damages are a rent that the buyer can extract, and the seller is willing to pay, in order to enable a higher offer from another buyer. Note that the seller does not have an advantage if he can decide which of the two buyers to contact first.

2.4 The effects of bargaining power and outside options on liquidated damages

If the negotiations are influenced by the outside option as stated in Proposition 1, in equilibrium, both, liquidated damages and the respective offers, are functions of the relative bargaining power of the players, as well as of the value of the outside options. The greater the bargaining power of a seller, the greater his share of the surplus. Moreover, the seller is interested to pay lower liquidated damages in case of contract breach.

Analyzing comparative static properties of the equilibrium offers, we conclude the following corollary:

Corollary 2 *(i) If the expected surplus from the outside option with B_i is sufficiently high, i.e., $\alpha_i \pi_i \leq \pi_j \leq \frac{\alpha_i}{\alpha_j} \pi_i$, liquidated damages t_j paid to buyer B_j are a decreasing function of the seller's bargaining power while the accepted offer x_i of buyer B_i (with $i \neq j$) is an increasing function of the seller's bargaining power.*

(ii) If the expected surplus from the outside option with B_i is sufficiently higher than that with B_j, i.e., $\lambda_i \pi_i \leq \pi_j \leq \alpha_i \pi_i$, liquidated damages $t_j = (1 - \lambda_j)(\pi_j - \lambda_i \pi_i)$ paid to buyer B_j are a decreasing function of the seller's bargaining power with buyer B_j, while the accepted offer of buyer B_i is independent of the seller's bargaining power.

Proof. For Part (i), note that α_i is an increasing function of λ_i for $i = 1, 2$. Part (ii) is obvious. ■

Furthermore, we can consider the impact of differences in the players' bargaining power in the deal under consideration and the bargaining power in the expected outside option negotiations. Analyzing comparative static properties of (10), (11), (12), and (13) with respect to the relative level of bargaining power in the two deals, we conclude the following corollary:

Corollary 3 *The larger the relative bargaining power of the seller in the seller's outside option negotiations with B_i, the lower will be the liquidated damages t_j that the seller has to pay to buyer B_j.*

Proof. See the arguments in the Appendix. ■

An increase in bargaining power is beneficial. Interestingly, the result holds irrespective of whether bargaining power at the second-stage negotiations is lower or higher (in absolute terms) than the bargaining power in first-stage negotiations. Moreover, this effect is stronger the larger the bargaining power of the seller at the first stage.

The effect of the value of the outside option on the negotiations is rather straightforward. We see that the higher the outside option, the more likely will the players agree to include liquidated damage rules. Furthermore, liquidated damages are first increasing in the outside option and then decreasing. This property is summarized in the following corollary:

Corollary 4 *(i) If the expected surplus from the outside option with B_j is sufficiently high, i.e., $\frac{\alpha_i}{\alpha_j} \pi_i \leq \pi_j < \alpha_j^{-1} \pi_i$, liquidated damages t_i are an increasing function of the seller's outside option π_j.*

(ii) If the expected surplus from the outside option with B_j is sufficiently higher, i.e., $\alpha_j^{-1}\pi_i \leq \pi_j \leq \lambda_j^{-1}\pi_i$, liquidated damages t_i are a decreasing function of the seller's outside option π_j.

Proof. Inspection of (11) and of (13) reveals these properties. ■

Even when including liquidated damage rules, the less efficient buyer cannot protect the deal. Liquidated damages are a rent this buyer can extract from the more efficient outside option deal. If the expected surplus from the outside option is sufficiently high, but not too high, liquidated damage rules serve the purpose of fully extracting all surplus from the outside option deal. The higher the surplus in that deal, the larger the fee that has to be paid. This is reflected in the first part of Corollary 4. If the surplus from the outside option is sufficiently high, such that agreement to liquidated damages with the less efficient buyer can only be ensured by offering the full surplus, this buyer will no longer be able to extract all remaining surplus from the outside option deal and liquidated damages will decrease. The rent is the smaller the closer the actual offer is to the Nash bargaining solution in the outside deal. Obviously, this difference is decreasing in the outside option surplus.

3 No-shop clause as an additional contractual agreement

Now consider the situation in which the first buyer can add a clause to the contract that restricts the seller from seeking other offers and agreements: a so called no-shop clause.[13] While overly restrictive clauses may be rejected by the courts, the prohibition to sign another contract is frequently assumed to be reasonable. For our strategic situation this implies that in Figure 1 the last stage disappears, because by signing an agreement with buyer B_2 the first agreement with B_1 is automatically breached. Moreover, the seller can not negotiate liquidated damages when signing a contract with B_2, as the seller cannot fall back on Buyer

[13] Such clauses are more restrictive than exclusive agreements as treated in the previous section. In the previous section contracts were exclusive in the sense of Diamond and Maskin (1979) and Aghion and Bolton (1987), where a contract is an agreement to carry out a single project, or Simpson and Wickelgren (2007) where the contract binds the seller to sell his products to a single buyer. Under a no-shop clause, a party (in our case the seller) is forbidden from taking any action, such as seeking or considering an alternative, possibly higher offer, which would render the consummation of the agreement less likely.

B_1's offer x_1. The contract at the second stage will not be terminated once it is signed.

The equations to determine the decisions x_2 and b_2 at node M are given by (1) and (2) with $q = 0$. Suppose first that $\delta x_2 > x_1$ holds. Solving simultaneously for x_2 and b_2 leads to the following outcomes:

$$\begin{aligned} x_2 &= \lambda_2(\pi_2 - t_1) \\ b_2 &= (1 - \lambda_2)(\pi_2 - t_1) \end{aligned}$$

Suppose now that the contract of Stage 1 represents a relevant outside option, hence $\delta x_2 \leq x_1 \leq \pi_2 - t_1$. In this case the solution is:

$$\begin{aligned} b_2 &= \frac{(1 - \lambda_2)(t_1 - \pi_2) + x_1(1 - \lambda_2)}{\delta\lambda_2 - 1} \\ x_2 &= \frac{\lambda_2(t_1 - \pi_2)(1 - \delta) - x_1(1 - \lambda_2)}{\delta\lambda_2 - 1} \end{aligned}$$

and with $\delta = 1$:

$$\begin{aligned} x_2 &= x_1 \\ b_2 &= \pi_2 - x_1 - t_1 \end{aligned}$$

Hence, we can now summarize the second stage decisions. The offer at Stage 2 (with $\delta = 1$) will be:

$$x_2 = \begin{cases} Max\{x_1, \lambda_2(\pi_2 - t_1)\} & \text{if } \lambda_1\pi_1 \leq \pi_2 - t_1, \\ 0 & \text{else.} \end{cases}$$

At the first stage, S and B_1 anticipate the second stage outcome. Suppose first that $\delta_1 x_1 \leq x_2$ and that $\delta x_2 < x_1 \leq \pi_2 - t_1$ such that $x_2 = x_1$. Solving (6) to (9) for $q = 1$ for the first stage values leads to:

$$\begin{aligned} x_1 &= \alpha_2\pi_2 \\ b_1 &= \pi_1 - \alpha_2\pi_2 \\ t_1 &= (1 - \alpha_2)\pi_2. \end{aligned}$$

Of course, this is only a solution if all values are positive and if $\alpha_2\pi_2 > \lambda_1\pi_1$, hence if:

$$\frac{\lambda_1}{\alpha_2}\pi_1 < \pi_2 < \frac{1}{\alpha_2}\pi_1 \tag{14}$$

It is straightforward to check that the upper bound is always larger than π_1 for $\lambda_1, \lambda_2 \in [0,1]$, while the lower bound is smaller than π_1 if $\lambda_2 > 1 - \lambda_1$. If (14) is not satisfied, the analysis is analogous to that in the previous section, such that we can summarize the results in the following proposition:

Proposition 2 *Suppose the realization of utilities is postponed until all stages are completed. At the final stage the seller will be confronted with the following contracts:*

$$\begin{array}{llll}
(x_1,t_1) = (\lambda_1\pi_1, 0) & & & \textit{if} \;\; 0 \le \pi_2 < \frac{\lambda_1}{\alpha_2}\pi_1; \\
(x_1,t_1) = (\alpha_2\pi_2, (1-\alpha_2)\pi_2) & & & \textit{if} \;\; \frac{\lambda_1}{\alpha_2}\pi_1 \le \pi_2 < \alpha_2^{-1}\pi_1 \\
(x_1,t_1) = (\pi_1, (1-\lambda_1)(\pi_1 - \lambda_2\pi_2)) & \textit{and} & x_2 = \pi_1 & \textit{if} \;\; \alpha_2^{-1}\pi_1 \le \pi_2 < \lambda_2^{-1}\pi_1 \\
x_2 = \lambda_2\pi_2 & & & \textit{if} \;\; \lambda_2^{-1}\pi_1 \le \pi_2
\end{array}$$

In equilibrium, the seller will sign a contract with B_2 if $\pi_2 > \alpha_2^{-1}\pi_1$, else with B_1.

Hence, the first stage buyer can use liquidated damages in combination with a no-shop clause to protect the deal and prevent the seller to negotiate with the (possibly even more efficient) second buyer. The difference to a situation without such a clause is, as discussed before, that with a no-shop clause the seller chooses a contract that includes liquidated damages whenever $\frac{\lambda_1}{\alpha_2}\pi_1 \le \pi_2 < \alpha_2^{-1}\pi_1$. Moreover, there is no range of values for π_2 for which the second buyer offers his entire surplus in order to extract some of the rents generated by B_1 and S. This is because the seller automatically terminated the contract with B_1 when signing a contract with B_2. S would thus not terminate the contract with B_2. Hence, even when facing a more efficient buyer at the second stage, i.e. if $\pi_1 < \pi_2 < \alpha_2^{-1}\pi_1$, the seller would not breach the contract at the first stage, and, moreover, would also agree to liquidated damage rules at the first stage, as this ensures him a better offer from the first buyer.

Interestingly, when we allow for sequential negotiations, in extension to the results of Diamond and Maskin (1979), Aghion and Bolton (1987), and Simpson and Wickelgren (2007), exclusivity agreements in combination with liquidated damage rules are not enough to exclude more efficient buyers. Only when we additionally allow the first stage negotiation partners to restrict the seller from seeking further offers, we find 'naked' exclusion. Hence, a no-shop clause is (within limits and in combination with liquidated damage rules) an effective deal protection device.

4 Application to mergers and acquisitions

The results derived in the previous sections can straightforwardly be applied to the context of mergers. Most mergers that are announced by public targets are based on a preliminary merger agreement, signed by the target management, which still has to be approved by the shareholders. Such agreements often include liquidated damages referred to as 'termination fees', payable by the target to the bidder in cash, in the event that the target cancels the agreement to accept a competing (bust-up) bid.[14] Practitioners agree that termination fee provisions "have become the most hotly negotiated provisions in these acquisitions" (Kling et al. (1997)) and that they are often expected in merger negotiations (Levy (2002)). In the last two decades Delaware courts repeatedly took a critical, but at times also generous stance on termination fees.[15] The central question is why target managers voluntarily agree on termination fees, which inevitably lead to a decrease in shareholder value if the target accepts a bust-up bid.

An *agency-related answer* is that self-serving incumbent managers use termination fees to lock into bidders who maximize their personal utility (see Kahan and Klausner (1996)). This concern explains the significant judicial attention to termination fees in conjunction with alleged shareholder coercion and breach of target management's fiduciary duties. All the more so as termination fees are a popular contractual device in mergers and acquisitions.[16]

In contrast to the agency perspective, the current theoretical literature also offers shareholder oriented explanations for termination provisions. The *cost com-*

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[14] Similar contracting devices are 'lockups' that grant the incumbent bidder a call option on the target's shares or assets, exercisable in the event that the target terminates the merger agreement.

[15] Prominent cases include Unocal Corp. v. Mesa Petroleum (493 A.2d 946 (Del. 1985)), Revlon Inc. v. MacAndrews & Forbes Holdings (506 A.2d 173 (Del. 1986)), Paramount Communications Inc. v. QVC Network Inc (637 A.2d 34 (1993)) and Brazen v. Bell Atlantic (695 A.2d 43 (1997)).

[16] Depending on the sample and period of observation up to 79% of the analyzed merger agreements include termination fees and up to 29% include lockup options. See Boone and Mulherin (2007a), Bates and Lemmon (2003), Officer (2003), and Burch (2001).

pensation approach assumes that potential acquires bear bidding-related costs that decrease competition for the target unless these costs are taken account of in the form of termination fees. Berkovitch and Khanna (1990) provide such a model in which targets decide to employ termination fees that directly correspond to exogenously given bidding costs. The *commitment approach* argues that termination fees increase the credibility of the target's claim that the winning bid will not be reneged upon, which can result in generally higher takeover premiums (Povel and Singh (2006)). Both of these approaches (jointly referred to as cost/commitment approach) explain termination provisions within an *auction setting*.

Recent evidence shows that both auctions and bargaining play a more or less equally important role in mergers. Boone and Mulherin (2007b) divide the takeover process into two phases: a private phase before the announcement of a merger agreement, and a public phase after such an announcement. When taking the private phase into account, Boone and Mulherin (2007b) find that competing bids are much more common than is publicly observed. In fact, in roughly 50% of the mergers the target received at least one other competing bid before or after the merger announcement. The results, however, concurrently support a bargaining approach to mergers. Bargaining is most prominent in the other 50% of merger cases, where the targets negotiated with only one interested party throughout the whole process. Even in tender offers bargaining plays a significant role. Comment and Jarrell (1987) report that four-fifths of all successful cash tender offers are negotiated between bidders and target managers before expiry.

Despite the importance of bargaining in mergers, the theoretical literature on termination fees is primarily auction-related and assumes such fees to be exogenously determined. Our model sheds some light on situations where auctions are less prominent, or where auctions are followed or accompanied by merger negotiations.

Applying our model, we assume that a target first negotiates with Bidder 1 and then, in a second stage, with Bidder 2. A potential offer from Bidder 2 represents an outside option for the target when negotiating with Bidder 1, and vice versa.[17] The main results of the model contribute the following insights to the existing theoretical merger literature:

[17] We purposely do not assume any bidding- or negotiation-related costs. An inclusion of such costs would not change the qualitative results of our model.

i) In equilibrium, a deal with the less efficient bidder can lead to equal premiums as attainable from a merger with the efficient bidder. This result adds to both the agency cost approach and the cost/commitment approach, where deals with inefficient bidders are considered suboptimal *for the shareholders*. According to our model, the target can be in a situation where it has a choice between the offers from two most efficient bidders. Like the agency cost approach, bargaining can thus provide an explanation for acquiror selection, but without compromising target shareholder value. Further, in line with the cost/commitment approach, we find that merger agreements with the most efficient bidder may also contain a termination fee clause.

ii) If the difference between the merger synergies with the two most efficient bidders is sufficiently small, the target may obtain the highest premium by merging with the less efficient bidder. This contra-intuitive result can be driven by two different factors. The first factor may be the sequential procedure, if no-shop clauses are added to the contract. Alternatively, differences in relative bargaining power can lead to this outcome, if the seller is in a better relative bargaining position against the less efficient buyer than against the more efficient buyer. This result sheds new light on the agency cost approach, as it provides an alternative rationale for the selection of less efficient bidders.

iii) Depending on the difference between the merger synergies with the two most efficient bidders, termination fees can be used either as a deal protection device or as a rent extraction device. If Bidder 1 has lower merger synergies, it can use termination fees in combination with a no-shop clause to protect an early deal, provided the relative difference to the potential synergies with Bidder 2 is sufficiently small. Above a critical value of relative differences in synergies, Bidder 1 is unable to protect its offer, but can still use the termination fee to extract a rent from Bidder 2. In equilibrium, the target accepts a fee, because it facilitates the negotiation of a higher premium with Bidder 2 (compared with the Nash bargaining solution without an offer from Bidder 1). This double role of termination fees combines the different interpretations of the agency cost approach on the one side and of the cost compensation approach on the other, which consider termination fees either to protect inferior deals or to improve prices, respectively.

iv) We find that the termination fee decreases with the bargaining power of the target. If the target has full bargaining power, it would not accept any termination fee provision at all, i.e. a termination fee of zero. Hence, a positive termination fee is a sign of some bargaining power on the side of the bidders, which use the device as deal protection (when combined with a no-shop clause) or rent extraction. From the target's perspective, a termination fee indicates that there exists a realistic outside option. Although the target cannot prevent a termination fee provision, it can use it to negotiate the maximum premium under the circumstances.

Two assumptions are central to our model. First, we assume that bargaining is sequential. In contrast to the sequential auction model of Povel and Singh (2006), the target does not exclude previous bidders from later stages in the process. This assumption could be satisfied in the following two cases.

i) In the first case, bargaining could be sequential because the target and Bidder 1 do not (yet) know the identity of potential competing bidders (Bidder 2). They may, however, have a common expectation of possible takeover prices in the market, which may be offered once the currently negotiated agreement is made public. Bidder 1 may be the only known bidder, or one of several bidders in a private pre-announcement phase. For example, Bidder 1 could be the winner of an auction in the private phase with whom the target (re)negotiates the merger agreement in the light of other potential bids after the public announcement. In line with this, Cramton and Schwartz (1991) conjecture that targets use termination fees to preserve their ability to conduct post-auction negotiations without discouraging entry in the preliminary auction.[18]

ii) In the second case, bargaining could be sequential, because the target simply enters exclusive negotiations with Bidder 1. Bidder 2 is known, but excluded. According to SEC filings, such exclusivity negotiation agreements

[18] One example is the acquisition of Instron Corp in 1999, where the target reneged on the winning bid and solicited new offers from other potential buyers. For details see DEFS14A SEC filing by Instron on July 23, 1999.

are quite common in takeover processes.[19] Recent merger negotiations between Barclays Bank and ABN Amro show that exclusivity agreements are also used by large public firms. Our model provides one explanation why targets may have an incentive to enter exclusivity agreements instead of bargaining multilaterally.

A second central assumption in our model is that the valuation of the target is, at least in expected terms, known to all parties involved.[20] In support of this notion, Cramton and Schwartz (1991) find that targets sometimes conduct preliminary auctions to discover the identity as well as the valuation of the highest-valuing bidder and then negotiate individually with this bidder. Boone and Mulherin (2007b) also report similar cases. The above-mentioned acquisition of Instron Corp provides a concrete example: interested bidders were invited to several rounds of more and more detailed valuations of the target, including due diligence, after each of which potential acquirors disclosed their updated valuation in sealed bids.

5 Conclusion

A seller with less than perfect bargaining power will agree to include liquidated damage rules in a contract if such a contract provides him with a better bargaining position in future negotiations. Liquidated damages allow less efficient buyers in sequential bargaining to extract rents from more efficient deals, depending on whether the contract is terminated or not. In contrast to simultaneous bargaining, buyer competition has a positive effect on the equilibrium outcome in a sequential process if the two surpluses are not too different in efficiency. This may explain the use of no-shop clauses in negotiations and also provides a rationale for the protection of deals with less efficient buyers.

Scholarly discussion on the role of termination fees (a specific example for liquidated damage rules) for merger contracts is ongoing, empirical evidence is

[19] A full text keyword search in all DEFM14A SEC filings (definitive proxy statements relating to a merger or acquisition) shows that 256 different proxy statements mention the word combination 'exclusivity agreement' at least once (in the period from May 2003 to May 2007). This compares with 110 hits for 'shareholder agreement', 297 hits for 'non-disclosure agreement', 528 hits for 'standstill agreement' and 5646 hits for 'confidentiality agreement'. The source of the files is the EDGAR online archive (www.sec.gov).

[20] This is a standard assumption in the bargaining literature.

not undisputed and Delaware court rulings are mixed. Most theoretical models assume termination fees to be exogenously given and explain them in an auction setting, either with bidding-related costs or seller commitment. As bargaining plays a significant role in the merger process, we apply our bargaining model to mergers to analyze the existence and role of termination fees in this context.

We find that early buyers can use liquidated damages as a rent extraction or as a deal protection device. In both cases sellers accept liquidated damages if they enable them to capture a greater share of the joint surplus.

When liquidated damages are combined with a no-shop clause they are used as a deal protection device (and thus may lead to 'naked' exclusion). It can then be optimal that agreements with the most efficient buyer contain liquidated damage rules, but a less efficient buyer may also use protective liquidated damage rules and still make an offer as high as that of the efficient buyer. Thus, in equilibrium, the seller may be able to select a less efficient buyer without compromising on the offer. If buyer surpluses are sufficiently close, the seller may only obtain the highest offer by striking an early deal with the less efficient buyer. This contra-intuitive result serves as an explanation for the use of no-shop clauses and provides a novel rationale for the selection of a less efficient buyer.

When liquidated damage rules are used as a rent extraction instrument, the less efficient buyer will not consummate the deal, but he can improve the future bargaining position of the seller by putting him 'into play' with a higher outside option. In return the seller is willing to accept liquidated damage rules that extract a rent from the late buyer.

In both roles, liquidated damages decrease with greater bargaining power of the seller. The existence of liquidated damage rules is a sign of some bargaining power on the side of the early buyer, but also indicates that there exists a relevant outside option for the seller.

Most of these results are driven by the sequential process in our bargaining model. Analogously to Shaked and Sutton (1984), we require that the 'insider' buyer can always reply with a counter-offer to any offer by the seller, before the seller switches over to negotiate with an outsider buyer. By this we guarantee that the seller can never make simultaneous offers to two different buyers. Interestingly, a sequential bargaining process can be exploited by the seller to maximize the equilibrium offer. More generally, Osborne and Rubinstein (1990) and Houba and Bennett (1997) show that, under simultaneous bargaining between a seller and two buyers, competition between the buyers has no effect on the equilibrium price, if the seller can threaten to opt out, as they find $p = \max\{\lambda_1\pi_1, \lambda_2\pi_2\}$. In the proposed sequential negotiation process we show that the equilibrium price is above the bilateral outcome with the most efficient buyer. Different to these models, we assume that the seller can sign two agreements and then decide at a third stage which one to breach. This introduces extra power on the side of the seller, which enables him in some circumstances to get higher offers in equilibrium, i.e. $p \leq \max\{\pi_1, \pi_2\}$. While this is comparable to an auction setting, asymmetric information in an auction on the side of the buyers shifts some power back to the buyers, such that $p = \min\{\pi_1, \pi_2\}$.

The main results of this paper are robust with regard to several modifications to the proposed model.[21] First, instead of looking at one seller and two buyers, the model can also be applied to one buyer and two sellers. Here the buyer may be able to get a higher share of the joint surplus (pay a lower price) by accepting liquidated damages that are payable to the less efficient seller. Further, we can allow for two buyers and two sellers such that both first-stage players can opt out and negotiate with an alternative partner at the second stage. Both parties actually bargain over a single *net* termination fee, which represents the difference between the seller's and the buyer's termination fee. This modification can provide an explanation of reciprocal liquidated damages, which seem to be quite common in merger contracts. Hotchkiss et al. (2005) find reciprocal termination fees in 22% of more than 1100 US stock mergers (one-sided target termination fees accounted for another 34% of these deals).

Second, the agreement in the first stage does not have to represent an outside option in the second stage, but may also be a disagreement point. In contrast to the outside option, the disagreement point permanently changes the gains of trade. For example, if a merger announcement in the first stage signals that the target was undervalued, the respective increase in the target's stand-alone value represents a disagreement point in the second stage. Even if negotiations in the second stage break down and target shareholders also vote against the agreement of the first stage, the target still receives the disagreement point in the form of a permanent revaluation. Empirical studies of canceled mergers, however, find a non-permanent 'revaluation' effect that is primarily driven by the anticipation of

[21] These modifications are available in Rosenkranz and Weitzel (2007).

future, higher-valued bids.[22] This is more consistent with our premise of outside options.

Third, in line with the cost compensation approach of the merger theory, we can also include bidding-related costs in our model by deducting them from the gains of trade of the parties involved. This may render some agreements unprofitable, but does not change the main results of our analysis qualitatively. The crucial difference to auction models with cost compensation is that liquidated damages are determined by the seller's marginal revenues and not by the buyer's marginal costs. Hence, even when the seller participates in bidding costs, the primary motivation for including liquidated damages remains unchanged.

With reference to the different applications, several aspects of the model are empirically testable. Specifically for mergers, the model emphasizes how takeover premiums and termination fees are influenced by outside options and by the bargaining process. For example, if a bust-up offer is accepted and if a termination fee is paid by the target, we expect that the termination fee decreases in the difference between the synergies with the initial bidder and the synergies with the bust-up bidder.[23] Also, if bargaining is sequential - for example, when a target signs a contract that includes a no-shop clause - we expect a higher likelihood of termination fees and a higher takeover premium than in simultaneous bargaining with several bidders. Analogously, similar relations can be hypothesized, e.g., for prices and cancellation fees determined in real estate negotiations, or bankruptcy asset purchases.

[22] See, for example, Bradley et al. (1983) and Davidson et al. (1989).

[23] We acknowledge that information on joint synergies is hard to obtain and subject to interpretation. In some mergers, however, expected joint synergies are actually reported. For example, on April 23, 2007 Barclays and ABN Amro announced joint synergies of Euro 3.5bn by 2010 (of which Euro 2.8bn cost reductions and Euro 0.7bn revenue synergies). See SEC filing by ABN AMRO Holding N.V.; Commission File Number 001-14624; dp05435e_425.htm.

Appendix

Proof of Corollary 2 Consider the following derivatives:

$$\begin{aligned}
\frac{\partial t_j}{\partial \lambda_i} &= \frac{\partial\left((1-\alpha_i)\pi_i\right)}{\partial \lambda_i} = \frac{1-\lambda j}{\lambda_j - 2}\pi_i < 0 \quad \text{and} \\
\frac{\partial x_i}{\partial \lambda_i} &= \frac{\partial \alpha_i \pi_i}{\partial \lambda_i} = \frac{\lambda_j - 1}{\lambda_j - 2}\pi_i > 0,
\end{aligned}$$

with $\alpha_i = \frac{(1+(1-\lambda_j)\lambda i)}{2-\lambda_j}$.

Proof of Corollary 3 Assume $\lambda_j = \beta\lambda_i$. For $\alpha_j\pi_j \leq \pi_i \leq \frac{\alpha_j}{\alpha_i}\pi_j$ buyer B_i in equilibrium receives liquidated damages $t_i = (1-\alpha_j)\pi_j$ which we can rewrite to get $t_i = \left(1 - \frac{1+(1-\lambda_i)\beta\lambda_i}{2-\lambda_i}\right)\pi_j$. Differentiation with respect toβ leads to:

$$\frac{\partial t_i}{\partial \beta} = \frac{\pi_j\left(\lambda_i - \lambda_i^2\right)}{\lambda_i - 2} < 0 \;\; \forall \;\; \beta \in \mathbb{R}.$$

For $\lambda_j\pi_j \leq \pi_i < \alpha_j\pi_i$ buyer B_i in equilibrium receives a fee $t_i = (1-\lambda_i)(\pi_i - \lambda_j\pi_j)$ which we can rewrite to get $t_i = (1-\lambda_i)(\pi_i - \beta\lambda_i\pi_j)$. Differentiation with respect toβ leads to:

$$\frac{\partial t_i}{\partial \beta} = -(1-\lambda_i)\lambda_i < 0 \;\; \forall \;\; \beta \in \mathbb{R}.$$

Hence, the larger the relative bargaining power of the seller in the expected outside-option negotiations, the lower will be the liquidated damages the seller has to pay to the buyer.

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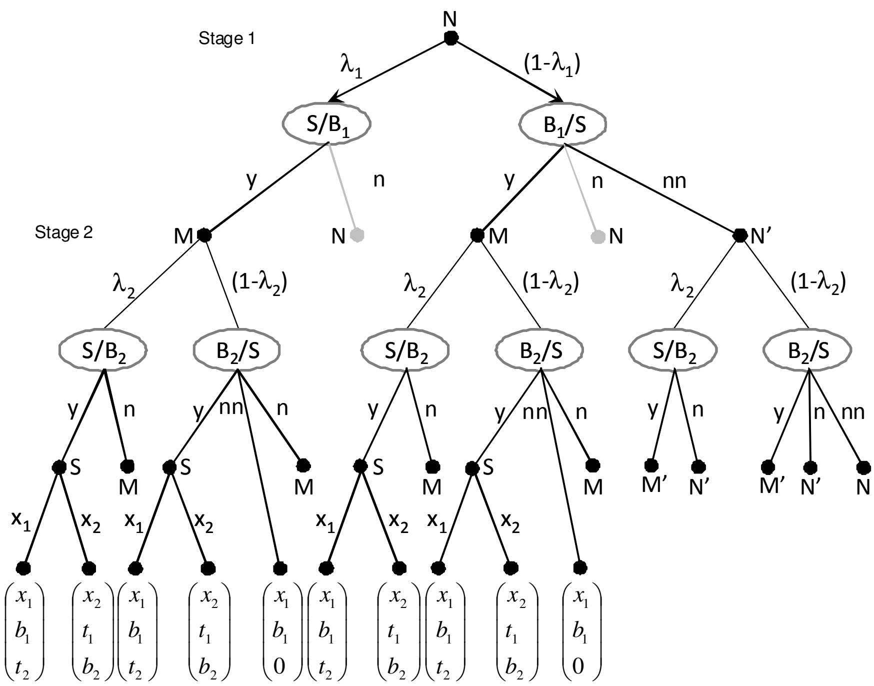

Figure 1: The sequence of decisions

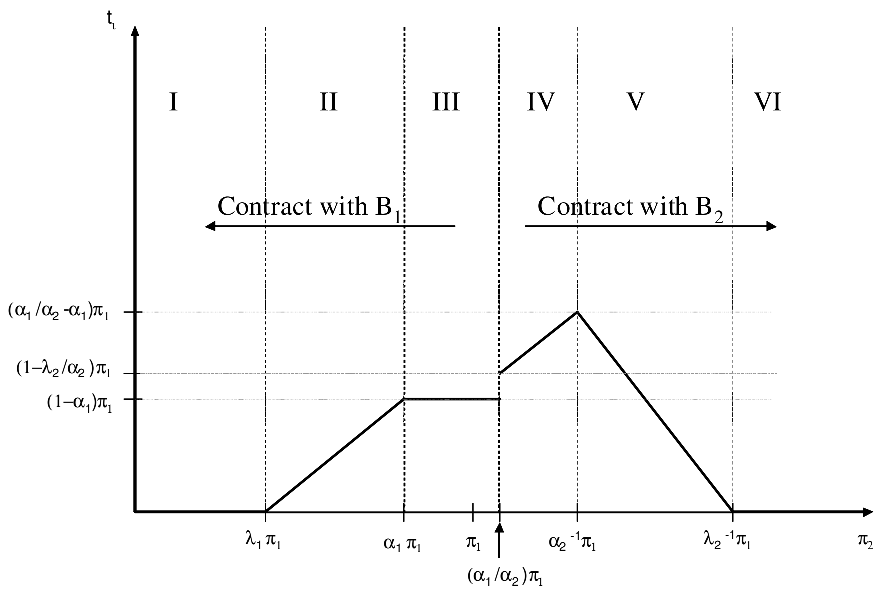

Figure 2: Regions defined by Proposition 1