ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Kirstein, Roland; Gerhard, Hans

Working Paper

The "Rainmaker's Dilemma": Bad Debt Loss Insurance in Settlement and Litigation

CSLE Discussion Paper, No. 2005-02

Provided in Cooperation with:
Saarland University, CSLE - Center for the Study of Law and Economics

Suggested Citation: Kirstein, Roland; Gerhard, Hans (2005) : The "Rainmaker's Dilemma": Bad Debt Loss Insurance in Settlement and Litigation, CSLE Discussion Paper, No. 2005-02, Universität des Saarlandes, Center for the Study of Law and Economics (CSLE), Saarbrücken

This Version is available at:
https://hdl.handle.net/10419/23073

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

The "Rainmaker's Dilemma": Bad Debt Loss Insurance in Settlement and Litigation

by Roland Kirstein* and Hans Gerhard**

Center for the Study of Law and Economics
Discussion Paper 2005-2

Abstract

In this paper, we analyze the impact of Bad Debt Loss Insurance on settlement outcomes. A huge success in a settlement or trial may turn into a disaster when the defendant goes bankrupt. "Rainmakers" face the following dilemma: the greater the success in court, the greater the defendant's bankruptcy risk.

The starting point of our paper is a simple trial and litigation model with perfect and complete information. We add the possibility of a defendant's bankruptcy as well as Bad Debt Loss Insurance for both the settlement and the trial stage. We demonstrate that trial insurance and settlement insurance may have different impacts on the outcome of settlement negotiations. Trial insurance tends to increase the settlement result; therefore, it generates a contract rent for the insurer and the insured. Settlement insurance, however, can under certain conditions have the opposite effect: it may decrease the settlement result.

JEL-Classification: *K41, C78, G22*

Encyclopedia of Law and Economics: *0330, 7400, 5700*

Keywords: *Strategic Insurance, British Cost Allocation Rule, Nash Bargaining Solution.*

*Senior Lecturer, corresponding author: Center for the Study of Law and Economics, Saarland University, Bldg. 31, Room 3.13, D-66041 Saarbrücken, Tel. ++49-681-302-3582, email: rol@mx.uni-saarland.de, homepage: http://rolandkirstein.de.

**Lawyer, Saarland University. We are grateful to Dominique Demougin, Oliver Fabel, Laszlo Goerke, Wolfgang Kerber, Annette Kirstein, Veronika Nolte, Anja Olbrich, Dieter Schmidtchen, Urs Schweizer, Birgit Will and other seminar participants in Saarbrücken and Hamburg for their valuable comments.

1 Introduction

This paper analyzes the impact of Bad Debt Loss Insurance (BDLI) on the trial and settlement behavior of creditors. BDLI covers the creditor's loss if his debtor goes bankrupt. In the typical BDLI case, the creditor has delivered a good and expects the due payment, but the debtor goes bankrupt before acquitting his debt. This type of BDLI case is independent of whether or not the creditor takes legal action.[1]

Successful legal action may as well lead to claims with a risk of bankruptcy. If a dispute about contractual obligations or in a tort case has arisen between two parties, then one party demands an amount of money from the other and threatens to go to court. Before a trial, the parties may negotiate a settlement. If the plaintiff prevails in court, or if the parties conclude a settlement, then the plaintiff has an enforceable claim against the defendant. However, the defendant may declare bankruptcy before payment is collected. This is the type of BDLI case we are interested in.

Ironically, the bankruptcy risk is greater, the greater the success in court. A landslide victory may turn into a disaster if the defendant's bankruptcy dramatically decreases the amount that can be collected. This is the subject of the novel "The Rainmaker" by John Grisham (1996): even tough the rainmaker, a young lawyer, has achieved an enormous award in his first trial, he did not collect any money, since the defendant was closed down after the trial. In such a case, the plaintiff does not receive the awarded judgement or the agreed-upon settlement, and he still has to pay his litigation costs.

Under the British cost allocation rule, the prevailing plaintiff would receive reimbursement for his litigation costs from his opponent. If, however, the latter goes bankrupt, then the prevailing plaintiff even has to bear his own costs (including the full amount of court fees). A similar risk awaits the plaintiff if he concludes a settlement. Even in this case, the defendant may go bankrupt. At least, the plaintiff does not have to bear the litigation costs. But still, the expected value of a settlement award is smaller than in a world without bankruptcy.

We define as "trial insurance" a Bad Debt Loss Insurance that covers the plaintiff's risk of the defendant's bankruptcy after having prevailed in court. In the same vein, we define "settlement insurance" as insurance which covers the risk of a defendant's bankruptcy after a settlement agreement. At the first glance, the bankruptcy risks for trial and settlement appear to be very

[1] Often the BDLI insurer requires him to do so.

similar. However, it is remarkable that insurers in reality only offer trial insurance, while settlement insurance seems to be non-existent.

Our model allows for a separate analysis of the impact trial and settlement insurance have on the settlement result (according to the symmetric Nash bargaining solution). We demonstrate that trial insurance is a "strategic insurance": according to Kirstein (2000), a strategic insurance is a device to improve the strategic situation between plaintiff and defendant to the benefit of the former.[2] The driving force of strategic insurance is the modification of the plaintiff's threat point in settlement negotiations.[3] The consequence of such a strategic move is an exploitation of the defendant. Hence, strategic insurance creates a cooperation rent between insurer and plaintiff even if both parties are risk-neutral.

Our model shows, however, that settlement insurance may fail to create a mutual benefit when both the insurer and the plaintiff are risk-neutral. This would explain the non-existence of settlement insurance (while trial insurance can be found on the market). Another aspect of the model may be of theoretical interest. The possibility of bankruptcy after a settlement agreement has various impacts on the symmetric Nash bargaining solution: the higher the agreed-upon amount, the greater the bankruptcy risk. Thus, the interests of the two parties are not always strictly opposed, as is the case in the bargaining model without bankruptcy.

A few papers have analyzed Bad Debt Loss Insurance (BDLI): Thakor (1982) proposes BDLI as a signal to overcome a lemon market problem. The insurer, as a third party between borrower and lender, may produce informative signals. Borrowers can thereby signal their default probability to lenders.[4] The then popular theory according to which the purchase of BDLI constitutes a valid signal to borrowers was, however, questioned by Hsueh/Li (1990). This stream of literature is, however, not concerned with the strategic effect of BDLI which was explained above and is the topic of our paper.

In section 2, we present a simple litigation model with perfect and complete information that consists of a settlement and a trial stage. Furthermore, we add the possibility of bankruptcy to both stages. In section 3, the trial stage is analyzed, with and without trial insurance. We derive the conditions under which the threat to sue is credible or not. Section 4 presents the analysis

[2] See also Velthoeven/van Wijck (2001).

[3] Kirstein/Rickman (2004) present a model which also allows the plaintiff to increase his threat points by a strategic move prior to settlement negotiations.

[4] This signaling effect has been empirically estimated by Kidwell/Sorensen/Wachowicz (1987).

of the settlement stage. Here we demonstrate the effect of bankruptcy and settlement insurance on the Nash bargaining solution. The final section draws conclusions.

2 Outline of the model

2.1 A simple model of bankruptcy

We consider a simple model in which a plaintiff (P) and a defendant (D) negotiate a settlement. If the parties fail to reach an agreement, the plaintiff may proceed to trial, in which case a judge decides the dispute with an exogenously given probability (denoted as β) in favor of the plaintiff.[5]

Thus, the dispute leads to one of four possible outcomes:

1. a settlement agreement,
2. the plaintiff drops the case,
3. the plaintiff prevails in court,
4. the plaintiff loses in court.

In two of these outcomes, the plaintiff receives a claim against the defendant: if the parties settle the case, or if the plaintiff prevails. In each of the four cases, the actual value of the defendant's assets is the realization of a random variable. This actual value may turn out to be smaller than the debt of the defendant (consisting of the plaintiff's claim plus the litigation cost to be borne by the defendant). In this case, the defendant has to declare bankruptcy.

Let $A \geq 0$ denote the realization of the random variable representing the value of the defendant's asset. We assume that this random variable has a distribution function $f(A)$. The (unconditional) expected value is denoted as X, with

$$X = \int_0^{+\infty} Af(A)dA$$

[5]For a model in which the probability of prevailing in court depends on the underlying behavior of the parties, see Kirstein/Schmidtchen (1997).

Let us furthermore denote as $\alpha(z)$ the probability that the actual value of the defendant's asset A is below a certain value $z > 0$:

$$\alpha(z) = \Pr(A < z) = \int_0^z f(A)dA$$

Later on, we have to distinguish two conditional expected values of the asset value. Let $\underline{X}(z)$ denote the conditional expected value of the asset, given that the asset value is smaller than z:

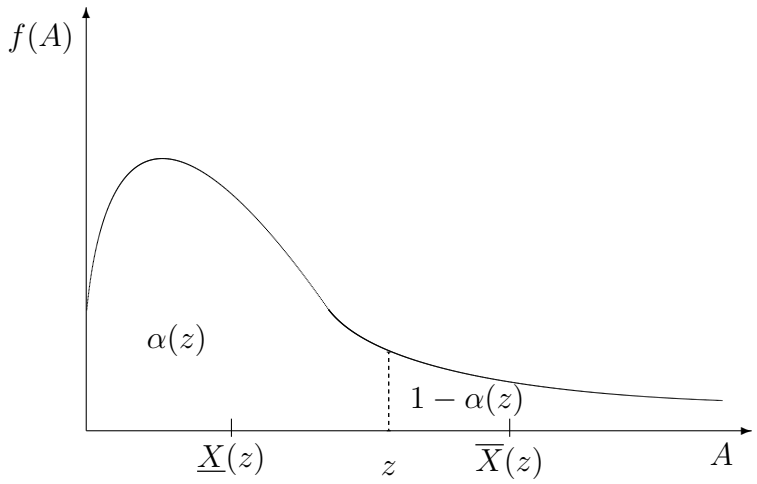
$$\underline{X}(z) = \frac{1}{a(z)} \int_0^z Af(A)dA.$$

Consequently, $\overline{X}(z)$ denotes the conditional expected value, given that $A > z$:

$$\overline{X}(z) = \frac{1}{1-\alpha(z)} \int_z^{+\infty} Af(A)dA.$$

Note that $X = \alpha(z)\underline{X}(z) + [1-\alpha(z)]\overline{X}(z)$. **Figure 1** visualizes our approach for an arbitrary distribution function $f(A)$.

Figure 1: Conditional expected values $\overline{X}, \underline{X}$ and probability α



2.2 A simple litigation and settlement game

Now we model a litigation and settlement game between two risk-neutral parties (thus they maximize their monetary income). The model assumes perfect and complete information (including the fact whether the plaintiff is insured or not), in order to keep the analysis tractable.

We use the British litigation cost allocation rule, according to which the losing party has to bear both sides' litigation costs. The whole analysis could just as well be carried out using the American cost allocation rule. However, in the case of the British rule, the bankruptcy risk of the defendant is higher as it also includes the defendant's litigation cost. Even though the British rule makes the loser pay, in case of a losing defendant's bankruptcy, the court would turn to the prevailing plaintiff to collect the litigation costs.[6]

We denote the sum of both parties' costs as C and the amount at stake as Y. To derive the settlement result, we use the symmetric Nash bargaining solution; the transfer payment is labeled S. We assume that bargaining is costless. **Figure 2** demonstrates the sequence of the interaction as well as the resulting payoffs.

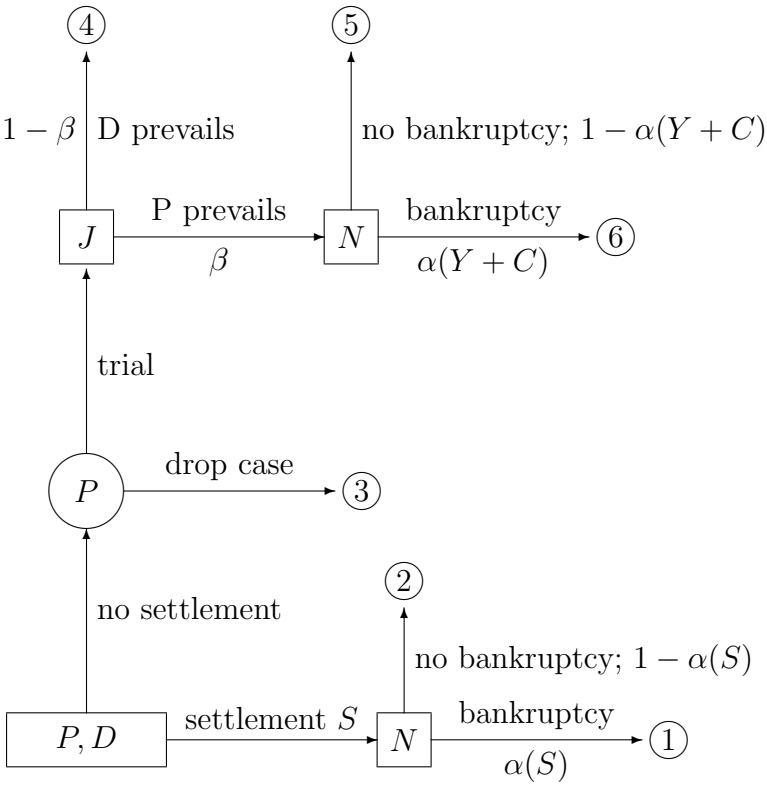
The game starts with settlement negotiations between P and D. If they agree upon a settlement result, nature draws the random value of D's asset. If this value exceeds the settlement result, which occurs with a probability of $1 - \alpha(S)$, then D pays the agreed-upon amount to P and the game ends (endnode 1). If the realization of the asset value is smaller than the agreed-upon payment - the probability of this event is $\alpha(S)$ - then an uninsured P claims this asset value and D is down to zero (endnode 2).[7] If, however, P is fully insured, then he receives the whole settlement payment (and the insurer may claim D's asset). Note that the probability of a bankruptcy depends on the agreed-upon settlement result, the amount of which may depend on whether P is insured or not.

When the parties fail to settle, then P has to decide whether to bring the case to court or not. If he drops the case, the game ends without any transfer payment between the parties, and without litigation costs (endnode 3). If P proceeds to court, the judge (denoted as J) decides the case. If he decides

[6] To keep matters simple, we do not distinguish between court fees and attorneys' fees. To be more precise: in case of the defendant's bankruptcy, a prevailing plaintiff only has to pay his own litigation costs and the court fees, but not the fees of the defendant's attorney.

[7] This implies that P is the only creditor. If multiple creditors hold claims against D, then the creditors would receive only a fraction of the asset value, net of the costs involved. Taking this into account would, however, only strengthen our argument.

Figure 2: Sequence of interactions



in favor of D, which occurs with probability $1-\beta$, then the game ends. In this case, no transfer payment is due, but now P has to bear both sides litigation costs (endnode 4). In case the plaintiff prevails (probability β), then the asset value is choosen randomly (the node is labeled N) and whether the judgement drives the defendant into bankruptcy. This happens with probability $\alpha(Y+C)$. With $1-\alpha(Y+C)$, the defendant survives and is able to pay his debts. The bankruptcy probability is independent of P's insurance status. To economize on notation, we denote $\alpha(Y+C)$ as α. The probability of prevailing in court (β) is assumed to be independent of the players' behavior.

In case of a bankruptcy, an uninsured P only receives the defendant's asset and has to bear the litigation costs (endnode 6). If he is fully or partial insured, then he receives the amount at stake from the insurer. Finally, if no bankruptcy occurs, P receives the amount at stake (endnode 5).

Table 1 comprises the payoff vectors for the case of an uninsured plaintiff,

Table 1: Payoffs in game without insurance

endnode	probability	P's payoff	D's payoff
1	$\alpha(S)$	$\underline{X}(S)$	0
2	$1-\alpha(S)$	S	$\overline{X}(S)-S$
3	-	0	X
4	$1-\beta$	$-C$	X
5	$\beta[1-\alpha(Y+C)]$	Y	$\overline{X}(Y+C)-(Y+C)$
6	$\beta\alpha(Y+C)$	$\underline{X}(Y+C)-C$	0

Table 2: Modified payoffs with insurance

endnode	probability	P's payoff	D's payoff
1	$\alpha(S)$	S	0
6	$\beta\alpha(Y+C)$	Y	0

while the subsequent table 2 presents the modifications if the plaintiff has settlement (line 1) or trial insurance (line 6).

3 Trial insurance

In this section we evaluate the decision situation of P when he makes his choice between dropping the case and pursuing it towards trial. Obviously, the probability of prevailing plays a crucial role when facing this decision. We derive the threshold values of this probability for an insured and an uninsured plaintiff. Furthermore, we derive the expected value of a trial for both types of plaintiffs as well as for the defendant.

3.1 Trial value without insurance: $j = n$

If the plaintiff does not have a trial insurance, then his expected payoff from proceeding to trial accrues to

$$T_n^P = \alpha(Y+C)\cdot\beta\cdot Y + \beta\cdot[1-\alpha(Y+C)]\cdot[\underline{X}(Y+C)-C] - (1-\beta)C$$
$$= \beta[\alpha(Y+C)\cdot(Y+C) + (1-\alpha(Y+C))\cdot\underline{X}(Y+C)] - C \quad (1)$$

T_n^P denotes the expected value of a trial for an uninsured plaintiff (indicated by n for no insurance, and P for plaintiff). If P prevails (with probability β) in court, he cannot expect to receive the amount at stake with certainty. If the defendant goes bankrupt, the probability of which is $\alpha(Y+C)$, P only collects the defendant's asset and still has to pay both parties' litigation costs C. The conditional expected value of the defendant's asset is $\underline{X}(Y+C)$. If D does not go bankrupt, which happens with a probability of $1-\alpha(Y+C)$, then P receives the amount at stake Y and benefits from cost shifting.

Not to proceed to court yields a sure outcome of zero for both parties. The risk-neutral, uninsured P will thus decide to go to court if $T_n^P \geq 0$. This is equivalent to

$$\beta \geq \frac{C}{\alpha(Y+C)\cdot(Y+C) + [1-\alpha(Y+C)]\cdot\underline{X}(Y+C)} := \tilde{\beta}_n \qquad (2)$$

The denominator of the right-hand side of the above inequality is positive. We define the right-hand side as $\tilde{\beta}_n$, which represents the threshold value for an uninsured plaintiff. If the actual probability of prevailing in court, β, is smaller than this threshold value, then P will certainly drop the case. This is the condition for the trial to have positive expected value (PEV) in the eyes of the plaintiff.

3.2 Trial value with insurance: $j = t$

If P has trial insurance, he can disregard D's bankruptcy risk when making his decision whether to proceed to trial or not. This is the classical "trial vs. settlement" decision situation.[8] The expected trial value thus is

$$T_t^P = \beta Y - (1-\beta)C,$$

and P will proceed to trial if

[8] For an overview see for example Cooter/Rubinfeld (1989).

$$\beta \geq \frac{C}{Y+C} := \tilde{\beta}_t.$$

3.3 Comparison of the results

In this section we compare the results of the two previous sections. The first observation is $\tilde{\beta}_t < \tilde{\beta}_n$, as the denominator of $\tilde{\beta}_n$ is smaller than that of $\tilde{\beta}_t$:

$$Y + C > \alpha(Y + C) \cdot (Y + C) + [1 - \alpha(Y + C)] \cdot \underline{X}(Y + C).$$

Recall that $\underline{(Y + C)} < Y + C$ and $\alpha \in [0, 1]$. Hence, the above expression is always true. With respect to the exogenous parameter β, we therefore have to distinguish three cases in our analysis:

- $\beta > \tilde{\beta}_n$: The case has PEV with and without trial insurance.
- $\tilde{\beta}_n > \beta > \tilde{\beta}_t$: The case has PEV only if P has trial insurance, while the expected value is negative (NEV) if P is uninsured.
- $\beta < \tilde{\beta}_t$: Even with trial insurance, the case has NEV.

The second observation is, for the same reason, $T_t^P > T_n^P$. If P proceeds to trial, then his expected payoff is higher if he is insured.

3.4 Expected trial value for D

Finally, we evaluate the expected value of a trial for D. Note that this expected value is independent of whether the plaintiff has trial insurance or not. If P proceeds to court then D expects T^D with

$$T^D = \beta \cdot \alpha(Y + C) \cdot [\overline{X}(Y + C) - (Y + C)] + (1 - \beta)X.$$

If D prevails (with a probability of $1 - \beta$), then he enjoys the unconditional expected value of the asset, X. If his opponent prevails in court, but D goes bankrupt, then his payoff is zero. In the third case, D retains the conditional expected value $\overline{X}$, but has to pay $Y + C$ to the plaintiff.

4 Settlement insurance

In this section, we apply the symmetric Nash bargaining solution[9] and demonstrate two results:

1. the Pareto frontier of the bargaining problem does not necessarily have a negative slope;
2. a settlement insurance can decrease the settlement result.

4.1 Pareto frontier with positive slope

The first result implies that the interests of the two players are not necessarily opposed. In a zero-sum bargaining situation, the gain of player 1 is the loss of player 2. Here, an increased settlement result increases the probability of the defendant's bankruptcy.

The symmetric Nash bargaining solution is denoted as $\hat{S}_{ij}$, with

$$\hat{S}_{ij} = \arg\max \ [\pi_{ij} - T_j^P][\delta - T^D].$$

π_{ij} denotes the bargaining result for the plaintiff, where $i \in \{n; s\}$ indicates his settlement insurance status: $i = s$ means that P is insured, while $i = n$ stands for not having settlement insurance. $j \in \{n; t\}$ denotes the trial insurance status of P, where $j = t$ means that P is insured, while $j = n$ means no trial insurance. δ is the defendant's settlement payoff. T_j^P and T^D represent the two parties' respective outside options, as derived in the previous section. Recall that T^D is unaffected by P's insurance status. T^P is only influenced by whether P has trial insurance or not, but unaffected by his settlement insurance status. The defendant's payoffs are independent of P's insurance decisions.[10]

The first-order condition for a maximum is:

$$\frac{\partial \pi_{ij}}{\partial S_{ij}}[\delta - T^D] + \frac{\partial \delta}{\partial S_{ij}}[\pi_{ij} - T_j^P] \stackrel{!}{=} 0.$$

[9] For an introduction to the derivation of settlement results, see Cooter/Rubinfeld (1989).

[10] Compare tables 1 and 2.

The slope of the Pareto frontier in a diagram that shows D's payoff on the vertical and P's on the horizontal axis is given by

$$\frac{d\delta}{d\pi_{ij}} = \frac{\partial\delta/\partial S_{ij}}{\partial\pi_{ij}/\partial S_{ij}} = \frac{\delta'}{\pi'_{ij}} \tag{4}$$

It is clear that each point on the Pareto frontier represents one specific value of the settlement result S. E.g., if the parties agree that the plaintiff should receive the whole "cake", this outcome would be represented by the intercept of the Pareto frontier with the horizontal axis. If the parties share the "cake", this is represented by an interior point, and if D receives the whole agreement rent, this would be represented by the intercept with the vertical axis.

Focusing on the decision to buy settlement insurance or not, we have to distinguish the following bargaining payoffs for the two parties:

1. if P has purchased settlement insurance: $\pi_{sj} = S_{sj}$,
2. if P is uninsured: $\pi_{nj} = \alpha(S_{nj})\underline{X}(S_{nj}) + [1 - \alpha(S_{nj})]S_{nj}$,
3. and for D: $\delta = [1 - \alpha(S_{ij})][\overline{X}(S_{ij}) - S_{ij}]$

The third expression yields $\delta' = -\alpha_S[\overline{X} - S] + (1-\alpha)[\overline{X}_S - 1]$. This is always negative, due to $\overline{X} > S$ and $\overline{X}_S < 1$.

The first expression, π_{nj}, implies $\pi'_{sj} = 1$, which is positive. Thus, if P is uninsured, then the slope of the Pareto frontier, as derived in equation (4), is negative.

Now we turn to an insured plaintiff. For the Pareto frontier to be positive, the derivative of π_{sj} with respect to S must be negative. This derivative is $\alpha_S(\underline{X} - S) + \alpha(\underline{X}_S - 1) + 1$. This derivative has an ambiguous sign; it is negative if

$$\alpha_S(S - \underline{X}) > 1 - \alpha + \alpha\underline{X}_S.$$

Since the right-hand side of this inequality is positive, parameter constellations may exist which fulfill this condition. This proves our first result: the slope of the Pareto frontier can, unlike in settlement problems without bankruptcy and BDLI, be positive.

4.2 Settlement insurance may decrease settlement

The second result points to a remarkable difference between trial and settlement BDLI. While trial insurance increases the settlement result, settlement insurance may have just the opposite effect. In the following, we derive the conditions under which this surprising result is possible.

In the case $i = n$ (P does not have settlement insurance), the bargaining solution $\hat{S}_{nj}$ fulfills the first-order condition for a maximum of the Nash product

$$\frac{d\pi_{nj}(S_{nj})}{dS_{nj}}[\delta(S_{nj}) - T^D] + \frac{d\delta(S_{nj})}{dS_{nj}}[\pi_{nj}(S_{nj}) - T_j^P] \stackrel{!}{=} 0 \tag{5}$$

In the other case $i = s$ (P holds a settlement insurance), the bargaining solution $\hat{S}_{sj}$ satisfies

$$\frac{d\pi_{sj}(S_{sj})}{dS_{sj}}(\delta_{sj}(S_{sj}) - T^D) + \frac{d\delta_{ij}(S_{sj})}{dS_{sj}}(\pi_{sj}(S_{sj}) - T_j^P) \stackrel{!}{=} 0 \tag{6}$$

We want to derive the conditions under which $\hat{S}_{sj} < \hat{S}_{nj}$ is true. If this holds, then the derivative in equation (6) must have a negative sign at $\hat{S}_{nj}$:[11]

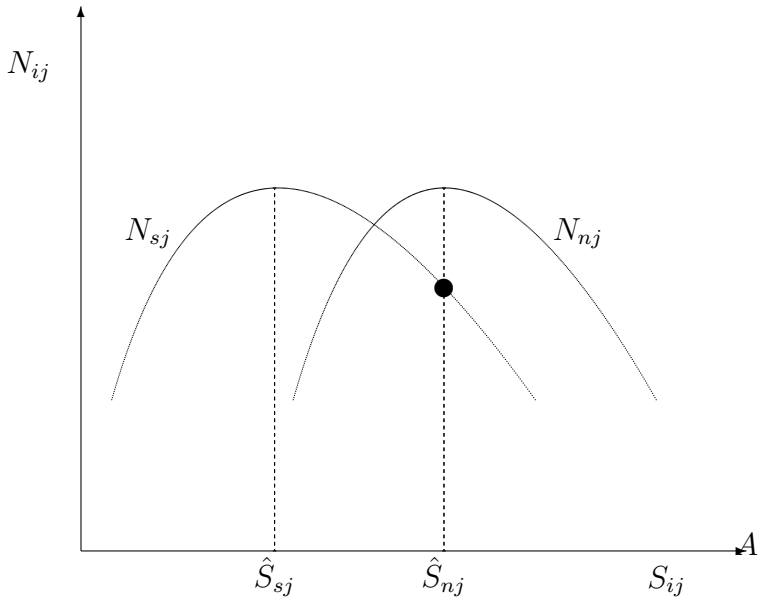
$$\begin{aligned} &\delta(S_{nj}) - T^D + \delta'(S_{nj})[S_{nj} - T_j^P] < 0 \\ \Leftrightarrow\ &T_j^P \delta'(S_{nj}) > \delta(S_{nj}) - T^D + \delta'(S_{nj})S_{nj} \end{aligned} \tag{7}$$

Recall that $\pi_{sj}(S_{sj}) = S_{sj}$, hence $\pi'_{sj} = 1$. Figure 3 visualizes the case in which condition (7) is satisfied. It maps the respective values of the Nash products N_{ij} for an insured and an uninsured plaintiff. Obviously, in this case the settlement result with insurance ($\hat{S}_{sj}$) is smaller than without ($\hat{S}_{sj}$), as the Nash products are concave. The bargaining result ($\hat{S}_{ij}$) maximizes the respective Nash product. Then it becomes clear that the slope of the Nash product for the insured plaintiff must be negative at the position of the bargaining result with the uninsured plaintiff. The value of the Nash product at this position is indicated by the black dot in figure 3. Hence, we have to find the conditions under which the derivative of N_{sj} at the position $\hat{S}_{nj}$ is negative in order to know the conditions for $\hat{S}_{sj} < \hat{S}_{nj}$.

$\hat{S}_{nj}$ fulfills equation (5), which implies

[11] We owe the idea for this proof to Anja Olbrich.

Figure 3: Nash products for plaintiff with and without settlement insurance



$$T_j^P \delta'(\hat{S}_{nj}) = \pi'_{nj}(\hat{S}_{nj})[\delta(\hat{S}_{nj}) - T^D] + \delta'(\hat{S}_{nj})\pi_{nj}(\hat{S}_{nj})$$

Substitution of this expression into (7) yields

$$\pi'_{nj}(\hat{S}_{nj})[\delta(\hat{S}_{nj}) - T^D] + \delta'(\hat{S}_{nj})\pi_{nj}(\hat{S}_{nj}) > \pi'_{sj}(\hat{S}_{nj})[\delta(S_{nj}) - T^D] + \delta'(\hat{S}_{nj})\pi_{sj}(\hat{S}_{nj})$$

which is equivalent to

$$[\pi'_{sj}(\hat{S}_{nj}) - \pi'_{nj}(\hat{S}_{nj})][\delta(\hat{S}_{nj}) - T^D] < -\delta'(\hat{S}_{nj})[\pi_{sj}(\hat{S}_{nj}) - \pi_{nj}(\hat{S}_{nj})] \qquad (8)$$

If condition (8) is satisfied, then the settlement result with insurance is lower than the result without insurance: $\hat{S}_{sj} < \hat{S}_{nj}$. The left-hand side of condition (8) is always positive. The condition, therefore, cannot be fulfilled should δ' be positive (in this case, the interests of the bargaining parties are not strictly opposed, see result 1).

Thus, we have derived an important relation between the two results to be demonstrated in this section: if result 1 holds, result 2 cannot be fulfilled - the bargaining outcome is greater if the plaintiff is insured.

However, with a negative value of δ', the difference in brackets on the right-hand side only needs to be "large enough" in order to fulfill condition (8). The exact condition for "large enough" is

$$\hat{S}_{nj} - \pi_{nj}(\hat{S}_{nj}) > \frac{[1 - \pi'_{nj}(\hat{S}_{nj})][\delta(\hat{S}_{nj}) - T^D]}{-\delta'(\hat{S}_{nj})} \tag{9}$$

where the right-hand side is positive. Condition (9) is hard to interpret, but our goal was only to prove the second result: conditions exist under which the purchase of settlement insurance decreases the settlement result. This is the case when condition (9) is fulfilled. Then, a settlement insurance is no "strategic insurance"; there exists no mutual gain for the insurer and the insured if both are risk-neutral.

5 Conclusion

We have added two amendments to a simple model of settlement and trial (with complete and perfect information): the possibility of bankruptcy, and the option to buy bad debt loss insurance to cover the bankruptcy risk after both settlement and trial. The amended model allows us to show that **trial insurance** has two effects and therefore is a "strategic insurance":

- In a case where the trial has a positive expected value for the plaintiff even without insurance, the purchase of trial insurance increases the settlement result which the prospective litigants agree upon.
- If the case has a negative expected value without insurance, then the threat to sue is not credible and no settlement occurs. Purchasing trial insurance may then induce a positive expected value and, thereby, make the trial threat credible.

Note that the insurer will not have to make any payment at all, as the case is settled in both of the above cases. Thus, a cooperation rent between insurer and plaintiff exists which is based only on the exploitation effect of trial insurance during settlement negotiations. A third case exists in which the expected trial value is negative even when the plaintiff is insured. In this case, it makes no sense at all to purchase trial insurance.

The analysis of **settlement insurance** leads to rather different results. The possibility of bankruptcy decreases the expected value of a settlement agreement. Thus, the uninsured plaintiff would demand a higher share of the bargaining rent than in negotiations without a bankruptcy risk. Settlement

insurance, however, may have the opposite effect. We have derived the condition under which a plaintiff with settlement insurance is satisfied even with a lower bargaining result than without settlement insurance. In such a case, there is no mutual benefit for the insurer and the risk-neutral plaintiff. Settlement insurance might still generate a benefit when plaintiffs are risk averse, but it can certainly not be qualified as a strategic insurance.

Moreover, constellations exist under which the interests of the plaintiff and the defendant (concerning an increase in the settlement award) are not perfectly opposed. Thus, the impact of insurance on bargaining situations deserves future research.

References

Cooter, Robert D./Rubinfeld, Daniel L. 1989: Economic Analysis of Legal Disputes and Their Resolution; in: Journal of Economic Literature 27 (3), 1067-1097.

Grisham, John 1996: The Rainmaker; New York.

Hsueh, L. Paul/Li, Y. Angela 1990: The Effectiveness of Debt Insurance As a Valid Signal of Bond Quality; in: Journal of Risk and Insurance 57, 691-700.

Kidwell, David S./Sorensen, Eric H./Wachowicz, John M. 1987: Estimating the Signaling Benefits of Debt Insurance: The Case of Municipal Bonds; in: Journal of Financial and Quantitative Analysis 22(3), 299.

Kirstein, Roland 2000: Risk-Neutrality and Strategic Insurance; in: The Geneva Papers on Risk and Insurance. Issues and Practice 25 (2), 262-272.

Kirstein, Roland/Rickman, Neil 2004: "Third Party Contingency" Contracts in Settlement and Litigation; in: Journal of Institutional and Theoretical Economics 160 (4), 555-575.

Kirstein, Roland/Schmidtchen, Dieter 1997: Judicial Detection Skill and Contractual Compliance; in: International Review of Law and Economics 17 (4), 509-520.

van Velthoeven, Ben/van Wijck, Peter 2001: Legal Cost Insurance and Social Welfare; in: Economics Letters 72(3), 387-396.