

# Does Cheap Talk Matter in Pre-Trial Negotiation?

**Jeong-Yoo Kim\***

This paper examines the role of “cheap talk” in pre-trial negotiation and reconsiders the conventional wisdom that all cases will be settled without being litigated by virtue of voluntary transaction by legal parties who pursue economic efficiency. Two new aspects are considered that have been neglected in the literature on litigation under asymmetric information: bargaining costs and pre-play communication. If the preferences of the players are similar in the sense that bargaining costs are reasonably high enough to deter the defendant from triggering pre-trial negotiation, then costless communication can help to induce more settlement. Paradoxically, lower bargaining costs may harm social inefficiency. (*JEL* K41, C70)

## **I. Introduction**

Since Landes (1971) and Gould (1973), there has been a large body of literature about whether a dispute between two parties will be litigated or settled out of court. This issue has been analyzed more rigorously by means of the extensive form game since Shavell (1982). The conventional wisdom was that all the cases would be settled without being litigated by virtue of voluntary transaction by legal parties who pursue economic efficiency. This wisdom, however, posed the puzzle that some cases do actually go to trial. Starting from P'ng (1983), several authors have succeeded in showing that some cases may be settled and others litigated in equilibrium, by introducing informational asymmetry to incorporate into the model the widespread idea that incomplete information possessed by the parties might bottleneck efficiency and discourage mutually beneficial transactions.

In this paper, we will take into account two new aspects that may be

\*Korean Information Society Development Institute, 966-5, Taechi-Dong, Kangnam-ku, Seoul, Korea.

important, but have been neglected in the literature on pre-trial negotiation under asymmetric information. These new aspects are as follows:

First, the existing literature has not considered explicitly bargaining costs in pre-trial negotiation, so that the effect it may have on settlement behavior has been overlooked. In reality, however, once they are involved in the settlement procedure, the legal parties incur some bargaining costs. For instance, it was 7 years until the dispute between IBM and Fujitsu was settled. Bargaining costs incurred in such a case, including the legal fee to the hired lawyer, the cost of specifying terms of settlement, the opportunity cost of the time, the psychological cost of negotiating, etc. may be small relative to the litigation costs possibly incurred if the case goes to trial, but cannot be ignored. If bargaining costs are large relative to the amount that the defendant expects to offer during the negotiation, he may want to avoid the settlement procedure itself. This feature makes it imperative to consider the decision to negotiate not as an exogenous move, but an endogenous one. Bargaining costs may be even more important in another sense. They create new social inefficiency that comes from negotiation itself, rather than litigation. Both types of inefficiency will be treated in this paper.

Second, very little has been said about the role of communication in pre-trial bargaining<sup>1</sup>. Parties in a legal dispute often communicate and share information before reaching a settlement. It is hard to believe that such communication before pre-trial bargaining can have no influence on the outcome of the negotiation at all. In this paper, we will assert that costless communication (cheap talk) followed by serious pre-trial negotiation might have a real effect on the settlement outcome by effectively signalling private information of the informed party which it is mutually beneficial to know. Since Crawford and Sobel (1982) showed that cheap talk may not be so "cheap" if the parties have common interest in some degree, a series of works by Farrell and Gibbons (1988, 1989) have analyzed the role of cheap talk in a bargaining game where a seller and a buyer trade an indivisible good. This paper will

<sup>1</sup>There have been some informal discussions on the importance of communication in pre-trial negotiation. For example, Williams (1981) pointed out that the purpose of communicating information is to cause the other side to feel and believe that (1) the negotiator has extraordinary high expectations in this case, (2) the negotiator can credibly back up these expectations with the possibility that a high outcome might be achieved, (3) the other side will have to make substantial concessions if it is going to settle the case, and (4) its best interest will be served by making these concessions.

attempt to answer for how effective cheap talk can be in the context of litigation.

Most literature on litigation adopts a model in which the uninformed party moves first, so no signalling effect is inherent. For example, consider the model adopted in Che and Yi (1990). Since the uninformed party, the defendant, moves first, all relevant information he can rely on in deciding what to offer is his prior belief on the plaintiff's private information. If the defendant thinks that the plaintiff is slightly injured, he will offer a low settlement amount. Then, the plaintiff whose true type is very high i.e. severely injured, would rather initiate the litigation than accept the low offer. This would be a clearly inefficient outcome that is undesirable even to the defendant. Therefore, the plaintiff is tempted to send some kind of signal to the defendant in a credible way to reveal her true type. Then, the plaintiff and the defendant could achieve a mutually beneficial outcome.

At this point, we can ask ourselves the following question: If the informed party is given a chance to signal his true type, will the outcome become more efficient? There have been several papers (Salant 1984; Reinganum and Wilde 1986; P'ng 1987) that incorporate this signalling effect into the model, following Salant and Rest (1982) and P'ng (1983). Salant and Rest opened a channel for signalling by giving the plaintiff a chance to ask for a settlement amount first. The restrictions in the set of possible types and settlement amounts that their model possessed have been lifted by Reinganum and Wilde. In this paper, however, we will use as a signalling device costless communication before the legal parties play the actual pre-trial negotiation game, contrary to the conventional signalling models mentioned above. This signal through "cheap talk" should be distinguished from the one through the serious settlement offer<sup>2</sup> considered in the previous literature in the sense that it is not binding nor verifiable, whereas the settlement offer is binding because the offer is usually made in a written form<sup>3</sup> and once it is accepted and signed by the adversary, it is irrevocable.

<sup>2</sup>It has been a widely held belief that serious settlement offers have a signalling effect. Rule 408 of the Federal Rules of Evidence excluding evidentiary force of settlement offers—under rule 408, explicit settlement offers are inadmissible at trial to prove either liability or the amount of liability—reflects this belief by the legal profession.

<sup>3</sup>Like other contracts, settlement agreements consist of a valid offer and its acceptance. According to the Statute of Frauds, a written record is required for contractual transactions whose value exceeds a certain minimum.

In fact, there are several ways in which the informed party reveals his private information to the uninformed party. The informed party, say, the plaintiff, may simply show evidence or explain to the uninformed party, say, the defendant, arguments that he would be able to offer were the case to go to trial. However, sometimes it may take time or cost for the plaintiff to collect evidence. Even in that case, cheap talk, which is not binding nor verifiable, may work as another signalling device.

As we will see, the effectiveness of cheap talk in pre-trial negotiation relies critically on bargaining costs. If bargaining costs are too low or too high to affect the defendant's decision to negotiate, cheap talk won't matter at all. However, if bargaining costs are reasonably high enough to deter the defendant from triggering pre-trial negotiation, cheap talk can help, in the sense that it induces more settlements.

This paper is organized as follows: In section II, we set up the basic model and give a rationale for several assumptions adopted for the analysis. In section III, we analyze the litigation model with bargaining costs in the absence of cheap talk. We will show how the introduction of bargaining costs into the model can influence settlement behavior. This section will provide a benchmark case for later analysis. Section IV explores the role of cheap talk in the litigation model with bargaining costs. We will characterize two sequential equilibria (SE), one in which cheap talk is meaningless and the other in which cheap talk can be meaningful. We will prove the main theorem that if bargaining costs are reasonably high, cheap talk can matter in pre-trial negotiation. Finally, section V contains concluding remarks and directions for future research.

## II. Basic Model and Assumptions

We consider a pre-trial bargaining model where either the defendant or the plaintiff can exercise the outside option of not negotiating.

We assume that the risk-neutral defendant injured the risk-neutral plaintiff, but that he does not know the amount of damage inflicted,  $w$ . Also, we assume that the winning probability for the plaintiff at court,  $q$ , is fixed and common knowledge between the plaintiff and the defendant, and that the plaintiff has private information about  $w$ . But, for notational convenience, we will assume that the plaintiff has private information about  $x(=qw)^4$  and that  $x$  is either  $x_l$  or  $x_h$ . The prior proba-

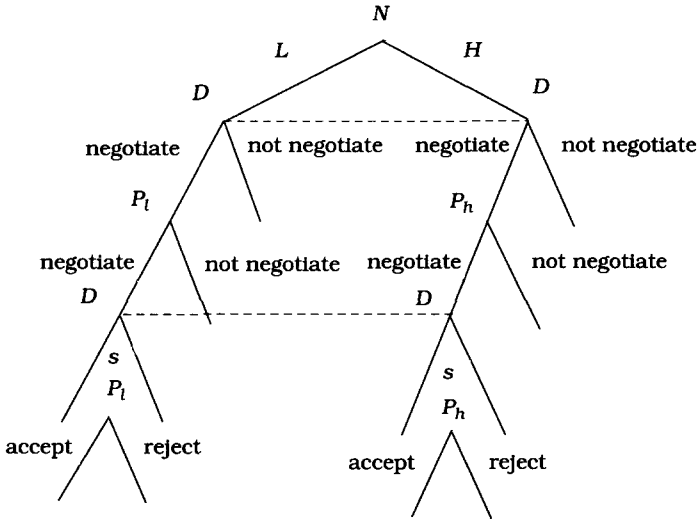


FIGURE 1

bility that  $x=x_h$ , denoted by  $\pi$ , is assumed to be common knowledge. The settlement negotiation incurs costs  $c$  to the legal parties.<sup>5</sup> If a trial does occur, the litigation costs of the plaintiff and the defendant will be  $c_p$  and  $c_d$ , respectively.

Let the defendant be denoted by  $D$  and the plaintiff (with private information  $x_l, x_h$  respectively) by  $P$  ( $P_l, P_h$  respectively) from now on. Then, the extensive form game goes as follows: First,  $D$  decides whether to negotiate with the plaintiff or not. If he decides to negotiate,  $P$  then decides to negotiate with  $D$  or not. Once both of them decide to negotiate with each other, they enter serious negotiation procedure. First,  $D$  will make a settlement offer to  $P$  on a take-it-or-leave-it basis.  $P$ , then, decides whether to accept the offer. If she rejects, the case will be litigated.

To simplify the analysis, we make the following assumptions.

**Assumption 1**  $x_l - c_p > 0$

<sup>4</sup>It does not matter where uncertainty about  $x$  comes from. In fact, we may take the model where the plaintiff has a better estimate of his winning probability  $q$ .

<sup>5</sup>For convenience, we assume that the negotiation incurs same costs both to the defendant and the plaintiff.

**TABLE 1**  
PAYOFFS OF THE PLAINTIFF

	I	II	III	IV
$P_h$	$s_h - c$	$s_l - c$	$x_h - c_p - c$	$x_h - c_p$
$P_l$	$s_h - c$	$s_l - c$	$x_l - c_p - c$	$x_l - c_p$

where outcome I is to accept  $s_h$   
 outcome II is to accept  $s_l$   
 outcome III is to go to trial after negotiation  
 outcome IV is to go to trial without negotiation

**Assumption 2**  $x_h - x_l > c_p + c_d$

**Assumption 3**  $c_p, c_d > c$

Assumption 1 implies that both types of  $P$  have an incentive to resort to the court system if she cannot settle with  $D$  in a satisfactory way.

Also, it will be assumed that the settlement offer can be either  $s_l$  or  $s_h$ .

**Assumption 4**  $x_l - c_p < s_l < x_l + c_d, x_h - c_p < s_h < x_h + c_p$

Assumption 4 implies that in equilibrium,  $s_h$  is accepted by either type of  $P$  and  $s_l$  is accepted only by  $P_l$

Before we analyze this model, it will be worthwhile to think of the implication of this assumption for the plaintiff's decision rule. In this model, there are four outcomes possible from the plaintiff's point of view. Table 1 illustrates the payoffs of the plaintiff corresponding to each possible outcome.

$P$ 's preference over these four possible outcomes depends on the magnitude of  $c$ . In particular, in the case that  $c < \min \{s_l - x_l + c_p, s_h - x_h + c_p\}$ ,  $P_h$ 's preference ordering would be outcome I, IV, III, II in descending order and  $P_l$  would be outcome I, II, IV, III, where outcome I is to accept  $s_h$ , outcome II is to accept  $s_l$ , outcome III is to go to trial after negotiation and outcome IV is to go to court directly without negotiation. That is, even if to settle with  $s_h$  is the most preferred outcome by both  $P_l$  and  $P_h$ ,  $P_h$  should worry about ultimately ending up with being offered  $s_l$ . Notice that  $P_h$  prefers to litigate without negotiation rather than accept  $s_l$ , whereas  $P_l$  prefers to accept  $s_l$  rather than to directly go to court. This difference in preferences will enable the defendant to sort the low type plaintiff out.

### III. The Litigation Game without Cheap Talk

In this section, we will solve the litigation game without cheap talk that was described in section II. As our solution concept, Kreps and Wilson's sequential equilibrium (SE) is adopted.

We use backward induction to solve for each party's optimal decision rule. Given that  $D$  has made a settlement offer  $s$ ,  $P$  will accept the settlement offer  $s$  if and only if  $x - c_p \leq s$ , i.e.,  $x \leq s + c_p$ . Therefore, by Assumption 4,  $s_h$  is accepted by both types of plaintiff, whereas  $s_l$  is accepted only by  $P_l$ . Taking  $P$ 's optimal decision rule into account,  $D$  will choose  $s_h$  if and only if

$$s_h \leq (1 - \pi)s_l + \pi(x_h + c_d),$$

$$\text{or, } \pi \geq \frac{s_h - s_l}{x_h + c_d - s_l} \equiv \pi^*$$

Given this  $D$ 's optimal decision rule,  $P_i$  will decide to negotiate if and only if  $V^i(\pi; c) \geq V_0^i$ ,  $i = l, h$  where

$$V^l(\pi; c) = \begin{cases} s_h - c & \text{if } \pi \geq \pi^* \\ s_l - c & \text{if } \pi < \pi^* \end{cases}$$

$$V^h(\pi; c) = \begin{cases} s_h - c & \text{if } \pi \geq \pi^* \\ x_h - c_p - c & \text{if } \pi < \pi^* \end{cases}$$

$$V_0^l = x_l - c_p$$

$$V_0^h = x_h - c_p$$

i.e.,  $V^i$  is the expected gain that  $P_i$  can get if she negotiates with  $D$  and  $V_0^i$  is the expected gain that  $P_i$  can get if she takes the outside option of not negotiating. Now, define  $W_l(\pi; c)$ ,  $W_h(\pi; c)$  and  $W_0(\pi)$  as follows;

$$W_l(\pi; c) = (1 - \pi)s_l + \pi(x_h + c_d) + c$$

$$W_h(\pi; c) = s_h + c$$

$$W_0(\pi) = E(x) + c_d = (1 - \pi)x_l + \pi x_h + c_d$$

i.e.,  $W_l(\pi; c)$  is  $D$ 's expected loss given his prior belief  $\pi$  and his bargaining costs  $c$  when he makes a settlement offer  $s_l$  and  $W_0(\pi)$  is  $D$ 's expected loss given his prior belief  $\pi$  when he takes the outside option of not negotiating. Then, given that both types of the plaintiff choose to negotiate,  $D$  will decide whether to negotiate by comparing  $W_0(\pi)$  with

the minimum of  $W_l(\pi; c)$  and  $W_h(\pi; c)$ . It is easy to observe that for all  $\pi$ , there exists  $c^*(\pi) \geq 0$  such that  $W_0(\pi) = \min\{W_l(\pi; c^*), W_h(\pi; c^*)\}$ .

In discussions below, we will restrict our attention to the case that  $c$  is very small i.e.,  $c < \min\{s_l - x_l + c_p, s_h - x_h + c_p\}$ ,<sup>6</sup> so that the plaintiff always decides to negotiate with  $D$ . Then, we can summarize the discussion so far with Theorem 1.

### **Theorem 1**

The following pair of strategies constitute a unique SE: (1) CASE A: Suppose  $c \leq c^*$ .<sup>7</sup> (i) If  $\pi \leq \pi^*$ ,  $D$  makes a settlement offer  $s_l$  and it is accepted only by  $P_l$ . (ii) If  $\pi \geq \pi^*$ ,  $D$  makes a settlement offer  $s_h$  and it is accepted by both types of  $P$ . (2) CASE B: Suppose  $c > c^*$ .  $D$  will not undertake serious pre-trial negotiation.

The intuition is clear. If bargaining costs are too high,  $D$  would prefer to be litigated without negotiating rather than bear heavy bargaining costs in addition to the settlement offer.

This outcome is far from efficient. In particular, if  $c > c^*$ ,  $D$  never negotiates with  $P$ , which makes both of them bear excessive litigation costs that could be avoided if  $P$  is actually slightly damaged and  $D$ 's information is more accurate. Based on this idea, we may suspect that if the low type plaintiff has any channel to signal that her injury is not so severe, it could lower the  $D$ 's settlement offer that could be made in equilibrium if negotiation occurs, and with this lowered settlement offer, a mutually beneficial outcome could be induced, where  $D$  does make a settlement offer and  $P$  accepts it.

In the next section, we will allow costless communication before serious pre-trial negotiation as one way of signalling and see whether the above intuition is true or not.

## **IV. The Litigation Game with Cheap Talk**

In this section, we consider a model of pre-trial negotiation following cheap talk. If serious pre-trial negotiation follows costless communica-

<sup>6</sup>If this is not the case, whether  $P$  decides to negotiate or not may signal her private information. By restricting our attention to the above case, we can preclude this signalling effect from our discussion and focus only on how costless communication signals private information in the next section.

<sup>7</sup>We assume that indifference in  $D$ 's payoff is resolved in favor of negotiation.



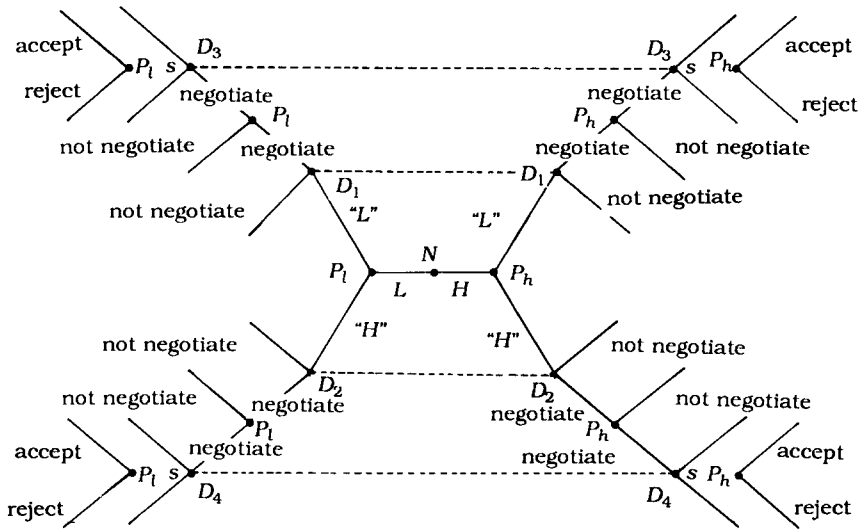


FIGURE 2

tion,  $P$  will be eager to send a signal during informal communication, so as to be placed in an advantageous position by influencing  $D$ 's belief on her type. At this moment, I want to emphasize that cheap talk does not directly affect payoffs. It works only through affecting the other player's beliefs.

For convenience, we will restrict  $P$ 's possible cheap talk language to either "low( $L$ )" or "high( $H$ )". Our model of pre-trial negotiation allowing cheap talk can be summarized as in the following extensive form game tree. Notice that the final payoffs do not depend on the  $P$ 's announcement of "L" or "H".

Before we develop the cheap talk equilibrium, it will be useful the explicit functional form for  $c^*(\pi)$ , which can be done through straightforward algebra.

**Proposition 1**

- (i) If  $\pi \geq \pi^*$ ,  $c^*(\pi) = (1 - \pi)x_l + \pi x_h + c_d - s_h$
- (ii) If  $\pi \leq \pi^*$ ,  $c^*(\pi) = (1 - \pi)(x_l + c_d - s_l)$

**Corollary 1**  $c^*$  exhibits the following properties; [Property 1]  $c^*$  is continuous in  $\pi$ . [Property 2]  $dc^*/d\pi < 0$  iff  $\pi < \pi^*$

The intuition for Property 2 is as follows:  $c^*$  is, by definition, the dif-

ference between  $D$ 's expected loss when he does not negotiate and when he does (excluding the negotiation cost). If  $\pi \geq \pi^*$ , his settlement offer will be  $s_h$  which is always accepted. So, an increase in  $\pi$  will cause an increase only in his expected loss of trial when he does not negotiate. However, if  $\pi \leq \pi^*$ ,  $s_l$  will be offered which is accepted by  $x_l$  and rejected by  $x_h$ . Then, the difference comes only from when the plaintiff is of low type. Since trial (the outcome when  $D$  does not negotiate) causes the defendant more harm than settlement (the outcome when  $D$  negotiates) does ( $x_l + c_d \geq s_l$ ) if the plaintiff is of low type, and these losses are irrespective of the magnitude of  $\pi$ , the difference between  $D$ 's losses from not negotiating and from negotiating will be decreased in the expected term, as the probability that  $P$  is of low type gets smaller i.e., as  $\pi \rightarrow \pi^*$ .

To solve this game, we resort to SE again as our solution concept. Unlike in the model without cheap talk, SE will turn out to be very powerful in this signalling model, because it can eliminate many unreasonable outcomes that are supported as an equilibrium by incredible beliefs.

First, as in every cheap talk game, there is an equilibrium where cheap talk is uncommunicative; in the cheap talk stage,  $P$  announces anything, either "L" or "H", or randomizes uninformatively and then, without  $D$ 's modifying his belief after he observed the announcement, the equilibrium outcome of the game without cheap talk is played. Formally speaking,

### **Theorem 2**

The following set of strategies and belief constitute a SE; (1)  $P_i$  announces either "L" or "H" for any  $i = l, h$ . (2) At  $D_1$  and  $D_2$ ,  $D$  does not change his belief and enters into negotiation (if  $c \leq c^*$ ) or take the outside option of not negotiating (if  $c > c^*$ ). (3) At  $D_3$  and  $D_4$ ,  $D$  makes a settlement offer  $s_l$  if  $\pi \leq \pi^*$  or  $s_h$  if  $\pi \geq \pi^*$ . (4)  $P_l$  accepts any offer and  $P_h$  accepts  $s_h$  only.

**Proof:** obvious.

What is interesting in this model, however, is that there can be another equilibrium where cheap talk conveys some useful information. The intuition behind this is as follows:

For cheap talk to be meaningful, it is necessary for there to exist a separating equilibrium where the low type announces one that the high type cannot mimic and the high type announces another that the low

type cannot. If  $c$  is very low, the low type has an incentive to mimic the high type. One of the important roles of the  $D$ 's outside option, then, is to frustrate the low type's incentive to mimic the high type, but actually it will not work in this case. This is because if  $c$  is very low, exercising the outside option is not in  $D$ 's best interest. Therefore, the threat for  $D$  to take the outside option is incredible. This makes it impossible to frustrate the low type's incentive to mimic the high type. Therefore, cheap talk is meaningless. However, if  $c$  is reasonably high, cheap talk can matter. In this case,  $D$ 's threat not to negotiate does work. His outside option, the threat not to negotiate if "H" is announced, can be credibly exercised in equilibrium. Then, the high type has an incentive to avoid costly litigation by mimicking the low type, but the low type can succeed in revealing herself by announcing "L", frustrating the high type's incentive to mimic her. The high type would rather prefer to announce "H", because it is costly for the high type to receive only a small amount of the settlement offer by announcing "L". But, if  $c$  is too high, this incentive of the low type to be distinguished from the other vanishes because  $D$  will never negotiate with  $P$  even if he can be pretty sure that the  $P$  that he is facing with is  $P_l$ . In this case,  $P_l$  has no way to induce  $D$  to make a settlement offer, which nullifies cheap talk.

Now, the communicative equilibrium is characterized in the following theorem. We will focus only on the pure strategy equilibria.

**Theorem 3**

(1) CASE A: Suppose  $x_h - x_l \geq s_h - s_l$ . Then, there is no communicative equilibrium.<sup>8</sup> (2) CASE B: Suppose  $x_h - x_l < s_h - s_l$ . Then, there exists a communicative equilibrium, iff  $c$  satisfies  $c^*(1) < c \leq c^*(0)$ . (i)  $P_l$  announces "L" and  $P_h$  announces "H". (ii) At  $D_1$ ,  $D$  updates his belief to  $\bar{\pi} = 0$  and enters into negotiation. At  $D_2$ ,  $D$  updates his belief to  $\bar{\pi} = 1$  and takes the outside option of not negotiating. (iii) At  $D_3$ ,  $D$  makes a

<sup>8</sup>If we allow mixed strategies, there exist other communicative equilibria. Consider the following strategies and beliefs; (i)  $P_h$  announces "H" with probability 1 and  $P_l$  announces "L" with probability  $1 - \alpha$ . (ii) After observing the message "H",  $D$  updates his posterior belief to  $\bar{\pi} = \frac{\pi}{\pi + (-\pi)\alpha}$  and after observing "L",  $D$  updates his belief to  $\bar{\pi} = 0$ . (iii) After observing "H",  $D$  takes the outside option with probability  $\beta$ . If he negotiates with  $P$ , he offers  $s_h$ , which is accepted by both types of  $P$ . If he observes the message "L", he negotiates with  $P$  and offers  $s_l$ , which is accepted only by  $P_l$ . It is not difficult to see that the above strategies and beliefs constitute a SE if

$$0 \leq \alpha = \frac{\pi(x_h + c_d - s_h - c)}{1 - \pi(s_h - x_l - c_s + c)} \leq 1, \quad \beta = \frac{s_h - s_l}{s_h - x_l + c_s - c} \quad \text{and} \quad c > \frac{(x_h + c_d - s_h)(x_l + c_d - s_l)}{x_s + c_s - c}$$

settlement offer  $s_i$ . At  $D_4$ ,  $D$  makes a settlement offer  $s_h$ . (iv)  $P_i$  accepts  $s_h$ ,  $i = l, h$  and only  $P_l$  accepts  $s_l$ .

*Proof:* (1) CASE A: Suppose that there is a communicative equilibrium. The only way to separate plaintiffs is that if  $P$  announces "H",  $D$  takes the outside option. For, if  $D$  makes a high offer after observing "H", a low type is willing to mimic a high type by announcing "H". Suppose  $P_l$  announces "L", while  $P_h$  announces "H". After observing "L",  $D$  will update his belief to  $\bar{\pi} = 0$ . For a communicative equilibrium to exist, it is necessary that  $c^*(1) < c \leq c^*(0)$  so that only after  $D$  observed "L", will  $D$  undertake negotiation. However,  $c^*(1) - c^*(0) = x_h + c_d - s_h - (x_l + c_d - s_l) \geq 0$ , if  $x_h - x_l \geq s_h - s_l$ . (2) CASE B: If  $x_h - x_l < s_h - s_l$ ,  $c^*(1) < c^*(0)$ . For a communicative equilibrium to exist,  $D$ 's posterior belief after observing "L" or "H" should be such that  $\bar{\pi} = 0$  or  $\bar{\pi} = 1$  respectively. If  $c^*(1) < c \leq c^*(0)$ , only after  $D$  observed "L", will  $D$  undertake negotiation. Given this decision rule of  $D$ ,  $P$ 's incentive constraint is easily checked.  $P_l$  would prefer to announce "L" to induce  $D$  to enter into negotiation because  $s_l - c > x_l - c_p$ , while  $P_h$  would prefer to announce "H" and to go to court directly because  $x_h - c_p > s_l - c$  from Assumption 2 and 4.

*Q.E.D.*

### **Remark**

In this analysis, the simplest cheap talk language, announcing either "L" or "H" was used to reach a more efficient outcome. We may wonder whether more complicated form of language would help achieve even more efficient outcome. But this is not the case. Since there are only two types in this model, only two messages can be used in any pure strategy equilibrium. Therefore, any message space with at least two messages would given the same set of pure strategy equilibrium outcomes.

Form now on, we will focus on the communicative equilibrium, if it exists. We can justify this criterion of equilibrium selection by Harsanyi and Selten (1988)'s suggestion that only equilibria that are not Pareto-inferior to other equilibria are likely to be observed.

The lesson of the Theorem 3 is that if for cheap talk to be effective in transmitting private information, bargaining costs should be high enough to deter the high type from mimicking the low type and at once should not be high enough to give  $D$  the incentive to negotiate with the low type. Also, the theorem says that if cheap talk is followed by serious pre-trial negotiation, the equilibrium outcome will be more efficient

**TABLE 2**  
SUMMARY OF THE OUTCOME

Assume  $c^*(1) < c^*(0)$

	No cheap talk	Cheap talk
$c > c^*(\pi)$	Go to trial without negotiation	$x_l$ accepts $s_l$ but $x_h$ goes to trial without negotiation iff $c^*(1) < c \leq c^*(0)$
$c \leq c^*(\pi)$ and $\pi \leq \pi^*$	After negotiation, $x_l$ accepts $s_l$ and $x_h$ goes to trial	$x_l$ accepts $s_l$ but $x_h$ goes to trial without negotiation iff $c^*(1) < c \leq c^*(0)$
$c \leq c^*(\pi)$ and $\pi \geq \pi^*$	After negotiation, $x_l$ and $x_h$ accept $s_h$	No communicative equilibrium

and the degree of improvement will be very sensitive to the  $D$ 's prior belief on the plaintiff's private information and the magnitude of the bargaining costs. Suppose that the separation condition,  $c^*(1) < c \leq c^*(0)$  is satisfied. If  $c > c^*(\pi)$ ,  $P_l$  can extract the amount of a settlement offer  $s_l$  by revealing herself through cheap talk, which was not possible without cheap talk. If  $c \leq c^*(\pi)$  but  $\pi \leq \pi^*$ ,  $P_h$  would rather go to trial directly without negotiation. Notice that in either case, the plaintiff can signal her type effectively through cheap talk and help achieve an efficient outcome. In the former case, the low type plaintiff can successfully settle down rather than go to throat-cutting trial and in the latter case, the high type plaintiff can save negotiation costs by discouraging  $D$ 's intent to settle. The above argument is summarized in Table 2. This theorem has an interesting policy implication for negotiation costs. High bargaining costs have been discouraged from the efficiency perspective, but Theorem 3 tells us that it may not be the case. Assuming that  $\pi \leq \pi^*$  and  $x_h - x_l < s_h - s_l$ , compare the two cases,  $c \leq c^*(1)$  and  $c^*(1) < c \leq c^*(\pi)$ . In either case, the outcome is the same except that in the former case,  $D$  undertakes negotiation and actually incurs bargaining costs even after he observed the signal "H" in the anticipation that the  $P$  he is facing will be the low type mimicking the high type. This is quite paradoxical. Lower bargaining costs ( $c \leq c^*(1)$ ) harm social efficiency! This paradox comes from the fact that high bargaining costs might deter wasteful negotiation procedure and save bargaining costs themselves.

## V. Conclusion

In this paper, we have showed that costless communication can matter to achieve the efficient outcome in pre-trial negotiation. By allowing cheap talk before pre-trial negotiation, we have partially retrieved the outcome that we had when there were no bargaining costs, where  $P_l$  always settles with  $D$ , while  $P_h$  does only when  $\pi \geq \pi^*$ . In other words, cheap talk could help recover the efficient outcome that might be distorted by bargaining costs.

The paper adds to the existing literature in several respects. First, one of the crucial weaknesses in the existing models was that all the language between the legal parties were binding. However, in the real situation, countless unbinding offers and counteroffers are exchanged and they cannot be made light of in the sense that they can affect the real outcome by changing the other's belief, even if they are costless. Second, our result exhibits more realistic configurations. We can support three types of equilibrium behavior where the parties reach a settlement, fail to reach a settlement and go to trial, or do not undertake serious negotiation and directly resort to the court system. Furthermore, the realistic feature that a settlement is reached after many rounds of communication is reflected in our equilibrium.

Nevertheless, our analysis is restricted in several other respects. First, the effectiveness of cheap talk depends critically on the bargaining costs. But, we suspect that cheap talk could matter in many situations where bargaining costs are negligible. This topic has been taken up in a subsequent paper (Kim 1992). A second lacuna is in the assumption there are only two types of plaintiff. However, it will not be difficult to see that if there are more than 2 types of plaintiff, we cannot get a fully separating equilibrium.<sup>9</sup> So the extension of this model into the model with more than 2 types does not add to any interesting feature.

<sup>9</sup>This can be briefly explained as follows; In any separating equilibrium, two different offers cannot be accepted, because, in that case, the low type will always have the incentive to mimic the high type to be offered a higher settlement amount. Therefore, only one settlement offer can be accepted and this should come from the lowest type because no other type will have the incentive to mimic him. Then, the other types are pooled to go to court directly.

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