Should Lawyers Lie to Their Clients? Biased Expertise in Negotiations

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Abstract

I study pre-trial negotiation when a lawyer's expertise is relevant. A plaintiff suffers harm which can take one of two values. A defendant is informed about the value of the harm and proposes a settlement to the uninformed plaintiff. Before making the decision the plaintiff receives cheap-talk advice from her informed attorney. The attorney can be biased towards or against a trial. I show that a small bias against the trial does not change the outcome of the negotiation. A small bias towards the trial improves the outcome for the plaintiff when the value of the harm is low and does not change it when it is high. The bias may depend on the contract signed by the plaintiff and the attorney. When the costs of litigation for the plaintiff are high, and the value of the harm is likely to be high, a contingency fee contract is signed and the attorney is biased against the trial. Otherwise, an hourly fee contract is signed and the attorney is biased for the trial. Contracts resulting in no bias are feasible but never optimal.

(Keywords: cheap talk, negotiation, litigation, strategic delegation, strategic ignorance)

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1 Introduction

Lawyers' expertise is crucial for civil litigation. Individual litigants have too little knowledge and experience to evaluate their legal claims and need to rely on the advice of a lawyer at each step of the legal procedure. Although there is strong evidence that the majority of civil cases are settled out of court [Eisenberg and Lanvers, 2009] and the outcomes of settlement negotiation are influenced by the presence of lawyers [Kiser et al., 2008], little is known on how legal advice explicitly influences the negotiation process. The problem is made especially interesting by the fact that legal advice is difficult to contract on, it is not binding for the clients, and can come from a lawyer whose interests are not aligned with those of the client. Several natural questions arise in this framework. When the conflict of interest between the lawyer and the client influences the quality of legal advice? Can receiving biased advice be beneficial for the client? If the conflict of interest can be alleviated by a contract, will it be? And what optimal contracts are? In this article, I propose a model which addresses these questions.

I consider a situation in which a plaintiff (she) receives a settlement offer from the defendant (he). If the settlement offer is rejected by the plaintiff the case is resolved by a trial which can result in two outcomes. One outcome is better for the plaintiff and worst for the defendant than the other. The defendant can predict the outcome of the litigation but the plaintiff cannot. However, before taking the final decision the plaintiff receives cheap-talk advice from her attorney (he) on whether the settlement offer should be accepted. The incentives of the attorney and the plaintiff do not need to be aligned. In the first part of the article, I treat the conflict of interest as exogenous. The attorney may obtain a private benefit from rejecting the offer, that is, be biased towards a trial. The attorney may also bear a private cost of rejecting the offer, that is, be biased against the trial. I show that a moderate conflict of interest between the attorney and the plaintiff does not harm the plaintiff and can even benefit her. To be precise, when a lawyer is biased against the trial the negotiation outcome does not change compared to when he is unbiased, and when the lawyer is biased towards the trial the payoff of the plaintiff increases.

To get the intuition for this result consider the following example. Imagine an individual plaintiff suffered harm from a company (a defendant). The plaintiff sues the defendant to obtain the compensation. Suppose there are two possible outcomes of the case in court. With a 0.8 probability, the plaintiff (the patient) receives only compensatory damages of $\$1,000$, with a 0.2 probability she receives punitive damages in addition and her total payoff is $\$2,000$. The plaintiff does not know which damages will she receive in the court, but the defendant faced similar cases before and can predict the outcome. The trial is costly at $\$200$ for both the plaintiff and the defendant, and the defendant tries to achieve an out-of-court settlement by making a take-it-or-leave-it offer to the plaintiff. This setting is a simple example of signaling negotiation and one can quickly verify that in any pure strategies Perfect Bayesian Equilibrium the case is settled at $\$1,800$ if the liability value is high and it goes to court if it is low.

Now suppose instead that before taking the decision the plaintiff can consult with an attorney. For a moment assume that the attorney's interests are exactly aligned with those of the plaintiff and they always receive an identical payoff. Then the attorney always advises the plaintiff to settle the case when the offer at least compensates the trial payoff, and a new equilibrium arises. The defendant makes an offer of $\$800$ if the liability value is low, and $\$1,800$ if it is high. But now the plaintiff can rely on the advice of her attorney, and accept both offers if she is advised to do so. Interestingly, this equilibrium continues to exist even if the attorney is biased against the trial and incurs $\$100$ of private cost if the case is resolved by trial. Although, now the attorney is ready to recommend accepting even the offers of $\$700$ if the liability value is low and $\$1,700$ if it is high the plaintiff would never follow such advice. Accepting an offer of $\$700$ is always worse than going to trial, and a simple introspection is enough for the plaintiff to realize that an offer of $\$1,700$ will be made only when the liability value is high and then it should be rejected. As a result, the defendant keeps making offers of $\$800$ and $\$1,800$. An offer of $\$1,800$ is always better than going to a trial, and even the biased attorney recommends accepting $\$800$ only if the liability value is low. So the plaintiff can rely on legal advice and the case is always settled. However, when the attorney is biased towards the trial and receives, for example, a private benefit of $\$100$ for going to a trial the equilibrium changes. Now the attorney is not willing to recommend settlement only if the offer is $\$900$ at the low liability value and $\$1,900$ at the high liability value. As the plaintiff is always happy to accept any offer above $\$1,800$ the advice and the bias of the attorney play no when the liability value is role. However, the plaintiff is no longer able to recognize if any offer lower than $\$900$ should be accepted. As a result in any pure strategies Perfect Bayesian Equilibrium, she needs to reject all those offers. Still, the negotiation does not fail. Instead, at the equilibrium, the defendant chooses to increase the offer to $\$900$, the attorney recommends settling the case and the plaintiff follows the recommendation.

The second part of the article endogenizes the bias of the attorney and studies how it arises when the attorney and the plaintiff are allowed to decide on how to share the costs and benefits of the litigation by signing a linear contract. The central trade-off that the plaintiff faces is how to reward her attorney in case of trial. On one hand, a high reward makes the attorney biased towards the trial and results in increased offers when the liability value is low. On the other hand, the low reward makes the trial cheap for the plaintiff and increases the offers when the liability value is high. Depending on the characteristics of the case the optimal contract can come in the form of either a contingency or an hourly fee. Contingency fee contracts result in the attorney being biased against the trial but the plaintiff bearing low litigation cost. They are signed when the cost of litigation for the plaintiff's side is high and the plaintiff expects a good outcome in court. Contracts that exactly cover the costs of the attorney, which I interpret as hourly fee contracts result in the attorney being biased towards the trial but the plaintiff bearing high litigation cost. They are signed when the cost of the litigation is high for the defendant and the plaintiff expects a bad outcome in court. No-conflict fee contracts [Polinsky and Rubinfeld, 2003] eliminate the conflict of interest between the plaintiff and the attorney but are never optimal.

The results square well with the stylized facts on contracts signed in the market for legal services. My model predicts that both contingency fee and hourly fee contracts can be optimal. Although contingency fee contracts are more common in the US for individual plaintiffs, hourly fee contracts are also present. Moreover, my results align well with the idea that on average contingency fee contracts result in higher lawyer fees than hourly fee contracts. For example, Brickman [2003] shows that in auto accident cases contingency fee payments were 2.5 times larger than hourly fees. My model provides two rationales for why that can happen. First, contingency fee contracts tend to be signed for more costly cases. This prediction is in line with Fenn and Rickman [2015] who find that cases litigated under a contingency fee in England and Wales tend to be more complex. Second, unlike hourly fee contracts, contingency fee contracts may pay some information rents to the attorney while remaining optimal.

The remainder of the paper is organized as follows: in the two following subsections, I review the literature. In Section 2 I formally introduce the model, Section 3 is devoted to the analysis of the negotiation treating the bias as exogenous, in Section 4 I endogenize the bias by allowing for contracting and I derive the optimal contracts. Section 5 concludes. Unless otherwise stated, all the proofs are moved to Appendix.

Literature review

This article is located at an intersection of literature on lawyers as experts and the literature on pre-trial negotiations. More broadly, it connects the literature on cheap-talk communication with the literature on strategic behavior in bargaining.

Several previous articles study information transmission between lawyers and clients. Rubinfeld and Scotchmer [1993] study how attorneys can communicate the quality of the case through a proposed contract, Emons [2000] considers a setting in which the attorney advises the client on the amount of work necessary to develop the case. Dana Jr and Spier [1993] which studies the incentives of the attorney to advise their client on whether the case should be filed or dropped. Watts [1994] and Baumann and Friehe [2016] study the role of an attorney in the discovery process when a settlement out of court is possible. Finally, Fingleton and Raith [2005] study a buyer-seller setting, in which a principal delegates negotiation to a potentially better informed and career concerned agent. Unlike the previous contributions, I explicitly study legal advice as a form of cheap-talk communication. Moreover, in my setting, the relationship between the plaintiff and the attorney is strategic in that it influences the behavior of the defendant.

More generally, the article is related to the literature on cheap-talk games following [Crawford and Sobel, 1982]. My setting differs from the original article in three relevant ways. First, the incentives of the expert can be endogenously determined by a contract. This extension was previously explored by, for example, Krishna and Morgan [2008] and Malenko and Tsoy [2019]. Second, in my setting, the cheap-talk message is not the only source of information for the plaintiff who can also learn about the state of the world from the offer she receives from the informed defendant. Although facing multiple experts is common in the literature on cheap-talk games [Ambrus and Takahashi, 2008, Battaglini, 2002, Krishna and Morgan, 2001, Li et al., 2016, Wolinsky, 2002], to my best knowledge a situation in which one message is cheap-talk (attorney's advice) but the other is payoff-relevant (defendant's offer) has not been considered. Finally, I apply the cheap-talk game in a bargaining setting. In this setting the attorney's bias influences not only the decision taken by the plaintiff but also the offer that she receives. To my knowledge, the only article that considers the effect of biased advice on the behavior of a third party is Levit [2017] who studies how the anticipation of biased advice from a board of directors to shareholders can improve the takeover offer made by an investor. Unlike in a typical cheap-talk setting, in my model not only the magnitude of the attorney's bias but also its direction is relevant. Moreover, the plaintiff may benefit from her attorney's bias.

In Law and Economics there is a large literature on pre-trial negotiation in an asymmetric information setting (see Spier 2005 for an overview of the classical models). I follow Reinganum and Wilde [1986] in that I model the negotiation as a signaling game in which an informed party makes an offer to the uninformed party. Several previous articles study how the financing of litigation affects pre-trial negotiation. For example, [Bebchuk and Guzman, 1996, Gravelle and Waterson, 1993] study the role of contracts with the attorney. Daughety and Reinganum [2014] consider third party financing and Spier and Prescott [2019] analyse both third party financing and agreements between litigants. Choi and Spier [2018] studies litigation against companies when the plaintiff can have a financial position in the defendant. Although, in line with the existing literature, in my model, the contract between the attorney and the plaintiff has a direct financial effect of determining the plaintiff's payoff under trial, more importantly, it determines how the information will be revealed during the negotiation. Second, there exists a stream of literature that studies the allocation of settlement authority. The idea that a principal can benefit by strategically delegating some decision to an agent who has different incentives was formally developed by Vickers [1985], it was then applied in the pre-trial negotiation setting by among others Choi [2003], Gravelle and Waterson [1993], Hay [1997], Jones [1989]. The standard rationale for assuming the settlement authority can be allocated to the attorney is that the plaintiffs typically have little information about the possible outcome of the case and typically follows the attorney's advice. I relax this assumption and model the legal advice explicitly. I show that the legal advice does replicate delegation only when the liability value is low. This is true even if at the equilibrium the plaintiff seems to always follow the attorney's advice, as for some offers the advice is simply irrelevant. In this sense, my article does not study a trade-off between communication and delegation [Dessein, 2002] and is closer to the literature studying the role of commitment in strategic delegation [Katz, 1991]. The central difference is that I allow for the parties to commit to a contract that they are signing but I relax the assumption that the principal (plaintiff) is committed to following the decision of the agent (attorney).

2 Model

I model the litigation as a sequential game of incomplete information between three risk-neutral players: the plaintiff (she), the attorney (he), and the defendant (he). The plaintiff holds a case against the defendant. The timing of the litigation game is presented in Figure 1.

At the beginning of the game nature selects the liability value $v \in \{v^L, v^H\}$, $0 \leq v^L < v^H$. I will denote the difference between potential liability values by $\Delta v \equiv v^H - v^L$. The realization of the liability value is known to the defendant and the attorney but not to the plaintiff who holds a prior belief μ that $v = v^H$. The expected liability value is denoted by $v^e \equiv \mu v^H + (1-\mu) v^L$. The uncertainty about the liability values can

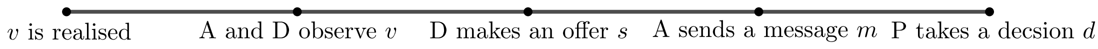

Figure 1: Timing of the litigation game

be interpreted in several ways. First, it may stem from the court having the discretion in awarding different damages to the plaintiff for the same harm, for example, awarding only compensatory damage or both compensatory and punitive damage. Second, it can be interpreted as uncertainty about the strength of evidence, and the likelihood of prevailing in court. If there is strong evidence (for example, because the defendant indeed is liable for the harm) the plaintiff is likely to prevail in the court, on the other hand, if the evidence is weak (for example, because the defendant is not liable) the plaintiff is likely to lose the trail.

Before the case is brought to court the parties engage in pre-trial negotiations. First, the defendant makes a settlement offer $s \in \mathbb{R}$ to the plaintiff.[1] Second, the attorney observes the offer made by the defendant and sends a cheap-talk message $m \in \mathcal{M}$ to the plaintiff. I assume that $\#\mathcal{M} \geq 3$. Finally, the plaintiff observes the offer and the message and makes a decision $d \in \{0, 1\}$ on whether to go to court ($d = 0$) or settle ($d = 1$).

If the case is settled the defendant transfers the settlement offer to the plaintiff. Otherwise, the case is resolved by trial. The trial is costly for both sides: the plaintiff pays a cost of $c^P \geq 0$ and the defendant a cost of $c^D \geq 0$ for going to court. Hence, the payoff of the plaintiff is given by:

$$u^P(s, v, d) = (1 - d)(v - c^P) + ds, \tag{1}$$

and the payoff of the defendant is given by:

$$u^D(s, v, d) = -(1 - d)(v + c^D) - ds. \tag{2}$$

Finally, the attorney's payoff is determined by the payoff of his client. However, the attorney receives a private benefit of $B \in \mathbb{R}$ for going to court. That is, the attorney can be biased towards ($B > 0$) or against ($B < 0$) going to court. Hence, the expected payoff of the attorney is given by:

$$u^A(s, v, d) = u^P(s, v, d) + (1 - d)B. \tag{3}$$

For the following section, I treat B as exogenous. It can be thought of as a lawyer being, on one hand, intrinsically motivated and trying to achieve the best payoff for her client, and, on the other hand, receiving some additional payoff (for example, in the form of building a reputation) or some payoff reduction (for example, in the form of cost of time spent in court) for going to court. Similar to the example, the bias can also stem directly from the payment scheme of the attorney. If the attorney expects a high reward for representing the plaintiff in court the bias is positive. On the contrary, when

[1] Note that, for simplicity, I allow for the offers to be negative.

the attorney is poorly rewarded for the trial representation the bias is negative. I discuss this possibility in more detail in Section 4 by allowing B to result from a contract signed between the plaintiff and the attorney.

The model assumes that the party with a weak bargaining position (here, the plaintiff) is also the party that does not have information about the realized state of the world. Although it is possible that the defendant or both sides are uninformed about the state of the world and are relying on the expertise of their attorneys, ultimately, the presented setting is the most interesting one. It follows from the fact that the party with a strong bargaining position cannot further improve it through the information structure, and as such, it always benefits from receiving more precise information. Moreover, this assumption is realistic. In a typical civil suit, the plaintiff is an individual, but a defendant is either a private company or a public institution [Cohen and Smith, 2004]. As such, the defendant likely has both a better bargaining position and more experience with similar cases, hence, better information. Indeed, the plaintiffs tend to make more mistakes while assessing the liability value than the defendants [Kiser et al., 2008].

I use a standard solution concept of Perfect Bayesian Equilibria (PBE). In my setting, a PBE is constituted by a four-tuple of the beliefs of the plaintiff, and the strategies of the plaintiff, the defendant, and the attorney. At the equilibrium the defendant makes an offer that maximizes his expected payoff given the strategies of the attorney and the plaintiff; at each offer, the attorney sends a message that maximizes his expected payoff given the strategy of the plaintiff; and at each offer and message pair the plaintiff takes a decision that maximizes her expected payoff given her beliefs at this pair. Finally, the beliefs of the plaintiff need to follow the Bayes' rule whenever possible. I focus on the PBE in pure strategies.

My model of litigation merges features of signaling bargaining [Reinganum and Wilde, 1986] and a cheap-talk game [Crawford and Sobel, 1982] and as such generates plenty of PBE. This is due to two phenomena. First, PBE does not place any restrictions on the out-of-equilibrium beliefs of the plaintiff. Second, as in any cheap-talk game "babbling" is always an equilibrium. That is, no information transmission between the plaintiff and the attorney at any set of offers can be supported as a part of some PBE. Both phenomena allow me to construct equilibria in which some offers are arbitrarily eliminated from ever being made. To limit this problem I focus on the equilibria in which the attorney can at least always communicate his preferences to the plaintiff. That is, there exists a message which is commonly understood as: "The attorney will be better off if this offer is accepted." I refer to these PBE as communicative. I denote the posterior probability that the plaintiff assigns to $v = v^H$ once the offer and the message are observed by $\mu(s, m)$. Formally, communicative PBE can be defined as follows.

Definition 1. *A PBE is called **communicative** if there exists $m_1 \in \mathcal{M}$ such that if for some offer s $u^A(v^H, s, d = 1) < u^A(v^H, s, d = 0)$ and $u^A(v^L, s, d = 1) > u^A(v^L, s, d = 0)$ then $\mu(s, m_1) = 0$.*

Henceforth, I refer to communicative PBE simply as equilibria. All communicative equilibria satisfy the commonly used Intuitive Criterion [Cho and Kreps, 1987].

3 Exogenous Bias

In this section, I describe how the outcome of the negotiation varies with the bias of the attorney. I show that when the attorney's bias is sufficiently small in absolute terms there exists a unique equilibrium of the game in which the defendant's offer varies with the liability value, but the case is always settled. Moreover, if the bias is within this range the plaintiff's payoff is weakly increasing in the bias.

First, consider a scenario in which the bias the attorney's bias is large in absolute terms and there is no possibility of the plaintiff and the attorney communicating. Then the litigation game becomes a standard signaling bargaining. There may exist a separating equilibrium in which the case is settled when the liability value is high but not when it is low. Alternatively, there may exist multiple pooling equilibria in which the case is always settled at some offer independent from the liability value realization. This result is stated in more detail in Proposition 1.

Proposition 1. *A separating equilibrium with a trial exists if and only if* $c^P + c^D \leq \Delta v$ *and either* $B \geq c^P + c^D$ *or -*$B \geq \Delta v$*. In any such equilibrium.* $s(v^H) = v^H - c^P$ *and* $s(v^L) \leq v^L - c^P$*, the offer* $s(v^H)$ *is always accepted by the plaintiff, and the offer* $s(v^L)$ *is always rejected by the plaintiff. A pooling equilibrium exists if and only if* $c^P + c^D \geq \mu\Delta v$ *and either* $B \geq \mu\Delta v$ *or* $-B \geq \Delta v$*. In any such equilibrium* $s(v^H) = s(v^L) \geq v^e - c^P$*. The offer is always accepted by the plaintiff.*

Second, consider the opposite extreme and suppose the interests of the plaintiff and the attorney are perfectly aligned. Intuitively, the litigation game essentially becomes a simple ultimatum bargaining, and an offer $s(v) = v - c^P$ is always made and accepted. Indeed, the plaintiff needs to accept any offer above $v^H - c^P$, as she cannot obtain a better payoff in court. Similarly, the plaintiff rejects any offer below $v^L - c^P$, as she is guaranteed to obtain a better payoff in court. Finally, for the in-between offers, the plaintiff has to rely on the advice of the attorney. However, as the attorney is unbiased, in a communicative equilibrium he always advises in the best interest of the client. As a result, the defendant always makes an offer that makes the plaintiff indifferent between a settlement and trial conditional on the state of the world: $s(v) = v - c^P$, and on the equilibrium path such an offer is always accepted. This intuition extends to situations in which the attorney has a small negative bias. The plaintiff does not need the right to advise of the attorney at all the offers but only at an offer $s = v^L - c^P$. As long as the advice of the attorney is useful at $v^L - c^P$ the defendant with a low liability value will not make any other offer, and the defendant with a high liability value will be deterred from making a low offer as well. Even if the attorney wants to avoid a trial more than the plaintiff, he may still prefer to litigate the case than to accept a low offer at a high liability value. Hence, his advice remains useful at the offer $v^L - c^P$ and the negotiation looks like a simple ultimatum bargaining even when the attorney is biased against the trial ($B < 0$) but the bias is not excessive. I call this equilibrium an **informative equilibrium**. The result is summarized in Proposition 2.

Proposition 2. *An informative equilibrium in which the defendant makes an offer* $s(v) = v - c^P$*, and the case is always settled on the equilibrium path exists if and only if* $-B \in [0, \Delta v]$.

However, the equilibrium described in Proposition 2 cannot exist if the attorney is biased towards trial ($B > 0$). As the attorney prefers trial to settlement whenever the plaintiff is indifferent if an offer $s = v^L - c^P$ is made, the attorney always advises her client to reject it. Hence, the plaintiff can no longer rely on the advice of her attorney at this offer. However, it does not mean that the settlement is no longer possible. As long as the attorney's bias is not too large, there are still offers at which the plaintiff can follow her attorney's recommendation. In particular, an offer that makes the attorney indifferent between the trial and the settlement ($s = v^L - c^P + B$) is an offer at which the attorney's message is informative for the plaintiff. As a result, instead of risking a trial, when the liability value is low the defendant can increase the offer to $s = v^L - c^P + B$, ensuring a positive recommendation of the attorney and a settlement. I call such an equilibrium **misinformative**. Conditions for the existence of a misinformative equilibrium are provided in Proposition 3

Proposition 3. *A misinformative equilibrium exists if and only if* $B \in [0, \min\{\Delta v, c^P + c^D\}]$. *In any scuh equilibrium the defendant makes offers:* $s(v^L) = v^L - c^P + B$ *and* $s(v^H) = v^H - c^P$*, and the case is always settled on the equilibrium path.*

Intuitively, Propositions 1–3 present a complete description of the equilibria of the litigation game (see Proposition 6 in the Appendix A.) As a result, if the attorney's bias is not too large in absolute terms the equilibrium is essentially unique and it is possible to derive comparative statics. Surprisingly, the bias of the attorney is not harmful to the plaintiff. A small bias towards the trial improves the plaintiff's payoff.

Corollary 1. *If* $B < c^P + c^D$, $B < \mu\Delta v$ *and* $-B < \Delta v$ *then there exists an essentially unique equilibrium. Moreover, the payoff of the plaintiff is constant in* B *on* $(-(v^H - v^L), 0]$ *and is increasing in* B *on* $(0, \min\{\mu\Delta v, c^P + c^D\})$.

To better understand Corollary 1 observe that unless the offer is sufficiently large ($s < v^H - c^P$) it practically needs to be approved by both the plaintiff and the attorney. Without a recommendation of the attorney, the plaintiff cannot distinguish whether the offer is worth accepting or not. But if an offer is too small, the plaintiff will reject it anyway. As a result, even if the attorney is negatively biased the defendant cannot decrease the offer below what compensates the plaintiff for her worst-case scenario trial payoff. On the contrary, when the attorney is positively biased the defendant needs to increase the offer to make it acceptable not only for the plaintiff but also for the attorney.

Note that Corollary 1 presumes that the bias of the attorney and the cost of the trial for the plaintiff are in some sense independent and completely summarize the payoffs of the players. In reality, both of these assumptions may be violated. For example, it is natural to expect that high values of the bias are associated with high costs, as the attorneys who are well paid for the trial generate high trial costs for the plaintiff. Moreover, even though the trial seems cheap for the plaintiff during the negotiation, e.g., because the attorney bears the majority of the trial costs, it can still be costly ex-ante because the attorney needs to be compensated for his expected cost in the form of an upfront payment. I address these concerns in the subsequent section.

4 Endogenous Bias

So far I have treated the bias of the attorney as some exogenous characteristic. In this section, I allow for the bias to be determined by the contract between the plaintiff and the attorney. First, I formalize the contracting process between the plaintiff and the attorney. Then, I derive the optimal contracts in two cases: when the initial cost of litigation is low and when it is high.

I will model the contracting between the plaintiff and the attorney as follows. Before the negotiation begins, the plaintiff can approach the attorney and offer him a linear contract:

$$\kappa \equiv (\alpha_n, \beta_n, \alpha_t, \beta_t). \tag{4}$$

Where α_n and β_n represent the basic payment from the plaintiff to the attorney in the form of a fixed transfer and a fraction of obtained compensation respectively, and α_t and β_t represent the premia paid to the attorney if the case is resolved by trial. In line with commonly used regulation, I will assume that the transfers cannot come from the attorney to the plaintiff, that is, $\kappa \in \mathbb{R}^4_+$.[2]

To simplify the information structure, I assume that at the moment when the contract is proposed neither the plaintiff nor the attorney observes the liability value and the agents share a common prior μ that the liability value is high. If the attorney decides to reject the contract the case is dropped and all players receive a payoff of 0. If the attorney accepts the contract, he pays some initial cost of investing the case denoted by c^I and learns the true liability value. Then, the negotiation begins. Analogously to Sections 2 and 3 the informed defendant makes a settlement offer, the attorney observes the offer and sends a message, and the plaintiff, after observing the message and the offer, decides whether to accept the settlement. Additionally, when the settlement offer is rejected, the attorney represents the plaintiff in court and incurs a cost of c^T for the trial representation. For simplicity, I assume that the plaintiff does not incur any cost of the trial (apart from the trial premium promised to her attorney).

Hence, if the contract is accepted, the plaintiff's payoff is given by:

$$u^P(v, s, d, \kappa) = d(1-\beta_n)s + (1-d)\big((1-\beta_n-\beta_t)v - \alpha_t\big) - \alpha_n, \tag{5}$$

and the the attorney's payoff by:

$$u^A(v, s, d, \kappa) = d\beta_n s + (1-d)\big((\beta_n+\beta_t)v + \alpha_t - c^T\big) + \alpha_n - c^I. \tag{6}$$

To connect the contract choice with the analysis of the negotiation, I derive the attorney's bias and the plaintiff's cost of trial as a function of a contract signed:

$$B(\kappa) = \frac{\alpha_t + \beta_t v}{1-\beta_n} - \frac{c^T - \alpha_t - \beta_t v}{\beta_n} \tag{7}$$

$$c^P(\kappa) = \frac{\alpha_t + \beta_t v}{1-\beta_n}. \tag{8}$$

[2]In the Online Appendix B I show that relaxing limited liability is enough for the plaintiff to obtain the whole bargaining surplus.

In this setting, it is better not to interpret the plaintiff's cost of trial literally, but rather as an amount of money that the plaintiff is willing to give up from the true liability value to ensure settlement. Similarly, the attorney's bias is a difference between the amount of money the plaintiff and the attorney are willing to give up from the true liability value to achieve a settlement.

Note that the continuation game, at least for some contracts, may exhibit equilibrium multiplicity, and the optimal contract choice may depend on which equilibrium the agents expect to play if a given contract is signed. To limit this problem for the remainder of the section I will focus on cases in which the liability values in different states of the world are sufficiently differentiated compared to the costs.

Assumption 1. $\mu \Delta v > c^T + c^D$.

Assumption 1 guarantees that contracts that could generate pooling equilibrium are relatively unattractive and eliminate the main source of equilibrium multiplicity. It is also natural in my setting. If the range of possible liability values is small, the role of legal advice is negligible.

Observe, that unlike in Section 3, $B(\kappa)$ and $c^P(\kappa)$ are allowed to vary with the liability value. Detailed analysis of this case is presented in the Online Appendix A. For an analysis of the optimal contract, it suffices to say that β_t can always be set to 0 and the $c^P(\kappa)$ and $B(\kappa)$ are constant. This result is summarized in Lemma 1

Lemma 1. *Take any contract κ s.t. $\beta_t > 0$, then there exists a contract κ' s.t. $\beta'_t = 0$ and the expected payoff of both the plaintiff and the attorney is weakly larger under κ' than under κ.*

The basic intuition behind Lemma 1 can be drawn from Section 3. Setting $\beta_t > 0$ is especially efficient at increasing the bias when the liability value is high. However, a quick look at Proposition 3 reveals that the plaintiff benefits from a higher attorney's bias when the liability value is low, not when it is high. As such, α_t is a better tool for increasing the bias of the attorney.

Finally, before studying the optimal contracts under asymmetric information, as a benchmark, it is useful to establish what kind of contracts would be optimal under symmetric information. Under symmetric information, the negotiation is a simple ultimatum bargaining and the attorney's advice is unimportant. However, hiring an attorney can still be useful as a strategic tool. To be precise, the plaintiff can hire an attorney under some contract κ which promises no reward for the trial representation ($\alpha_t = \beta_t = 0$), and only covers the attorney's initial costs. As a result, the plaintiff bears no costs of trial, $c^P(\kappa) = 0$ and the defendant makes an offer that is equal to the liability value. The expected payoff of the plaintiff at the optimal contract is then $\mu v^e - c^I$. There are multiple optimal contracts, however, a particularly useful benchmark is a flat contingency fee contract which I will denote by κ^{FC}:

$$\kappa^{FC} \equiv (0, 0, \frac{c^I}{v^e}, 0). \tag{9}$$

A flat contingency fee contract offers to the attorney a share of the obtained compensation, and the share is such that in expectation the attorney payment is equal to his initial cost.

After establishing the complete information benchmark, I move to the analysis of the optimal contract under asymmetric information. It is useful to split the analysis into two cases: large and small initial costs. First, I study a simpler scenario of large initial costs. Second, I move to a more complex scenario of a small initial cost.

Large initial cost

I start the analysis of optimal contracts by considering a scenario in which $c^I \geq c^T \frac{v^e}{\Delta v} \equiv \bar{c}^I$. What is characteristic of this situation is that the plaintiff can incentivize the attorney to give the right advice essentially for free. To be precise, if a contract κ^{FC} is signed $-B(\kappa^{FC}) \leq \Delta v$ and the resulting equilibrium is informative. In other words, contract κ^{FC} results in exactly the same payoff for the plaintiff under symmetric and asymmetric information.

Indeed, for some parameters κ^{FC} remains an optimal contract under asymmetric information. However, it is not always so. It is because under asymmetric information the plaintiff can strategically use the advice of the attorney. In particular, she can promise her attorney a large reward for a trial representation to make the attorney biased for the trial. As a result, the negotiation follows a misinformative equilibrium and the defendant needs to increase the settlement offer to make it acceptable not only to the plaintiff but also to the attorney. Hence the payoff of the plaintiff increases. Interestingly, an optimal contract that implements this strategy looks like an hourly fee contract, and I will denote it by

$$\kappa^H \equiv (c^I, c^T, 0, 0). \tag{10}$$

This contract does not include any share payments. It covers the exact initial costs of litigation in the form of a basic fixed payment and covers the exact costs of the trial in the form of a fixed trial premium. Under this contract $c^P(\kappa^H) = c^T$, but $B(\kappa^H)$ cannot be so easily determined. I cannot use equation (7) to determine the bias, as it would require dividing 0 by 0. This is because under contract κ^H the attorney is indifferent between any outcome of the negotiation. However, one can think about a contract κ^H as a limit of sequence contracts, such that for each element of the sequence the preferences of the attorney are strict and the payoff of the plaintiff is increasing as a sequence progresses. That way, I can pin down the attorney's bias at κ^H to $B(\kappa^H) = c^T + c^D$. Proposition 4 establishes when is it optimal to sign a flat contingency fee contract and when it is optimal to sign an hourly fee contract.

Proposition 4. *If Assumption 1 is satisfied, $c^I \geq \bar{c}^I$ and the plaintiff chooses to litigate, then the contract κ^{FC} is optimal if $\frac{c^D}{c^T} < \frac{\mu}{1-\mu}$ and the contract κ^H is optimal otherwise.*

Under high initial costs, the plaintiff faces a simple trade-off. On one hand, she would like to keep $c^P(\kappa)$ low as it improves her bargaining position by improving her disagreement payoff. On the other hand, she would like to keep $B(\kappa)$ high, as it improves her bargaining position through effectively delegating the negotiation when $v = v^L$. However, increasing the bias of the attorney requires promising him a trial premium which in turn increases the plaintiff's trial costs. Ultimately, increasing the trial premium pays off if the liability value is low, but comes at a cost if the liability value is high. Hence, the plaintiff proposes a contract κ^H when she believes that the liability value is likely to be low, and κ^{FC} when she believes that the liability value is likely to be high. Moreover, increasing the trial premium pays more when the trial is costly for the defendant and costs more when it is costly for the attorney. Hence, κ^H is chosen when the costs are relatively low for the plaintiff's side, and κ^{FC} when they are relatively low for the defendant.

Corollary 2. *If $\frac{c^D}{c^T} > \frac{\mu}{1-\mu}$ the payoff of the plaintiff is strictly higher under asymmetric than under complete information.*

Corollary 2 stresses the central implication of Proposition 5 – if the plaintiff has access to biased expertise she may be better off under asymmetric than under complete information. It happens because the lack of information gives the plaintiff credibility to follow her attorney's advice and strategically exploit the differences in their incentives. In a sense, the lack of information enables the plaintiff to partially replicate strategic delegation.

Small initial cost

When the initial cost of litigation is small ($c^I \leq \bar{c}^I$), the choice of the contract is more nuanced. The choice between an hourly-fee contract which strategically utilizes information, and a contingency-fee contract that provides information while keeping the trial cheap for the plaintiff is still relevant. However, finding the optimal contingency fee contract is no longer trivial. Moreover, it can happen that providing any sort of incentive for the attorney is not worth the cost, and the plaintiff is better off accepting some probability of going to trial.

Observe that under a simple flat contingency fee contract κ^{FC} the bias of the attorney is too negative and the attorney does not provide any useful advice. If the plaintiff wants the negotiation to follow the informative equilibrium she needs to move the bias of the attorney to $B = -\Delta v$. There are two ways in which she can achieve this goal. First, she can simply increase the shared payment for the attorney β_n. Second, she can increase the trial premium α_t. At the optimum, both effects can be present. As the trial premium can be potentially positive, I call the optimal contract a bifurcated contingency fee contract:

$$\kappa^{BC} \equiv (0, \beta_n^{BC}, (1 - \beta_n^{BC})(c^T - \beta_n^{BC}\Delta v), 0), \tag{11}$$

for,

$$\beta_n^{BC} \equiv \begin{cases} \frac{c^T}{\Delta v} & \text{if } \Delta v \geq v^e + c^T, \\ \frac{1}{2}(1 - \frac{v^e - c^T}{\Delta v}) & \text{if } \Delta v \in (\sqrt{(v^e - c^T)^2 + 4c^I}, v^e + c^T) \\ \frac{1}{2\Delta v}(\sqrt{(v^e - c^T)^2 + 4c^I} - (v^e - c^T)) & \text{if } \Delta v \leq \sqrt{(v^e - c^T)^2 + 4c^I}. \end{cases} \tag{12}$$

Importantly, the plaintiff's payoff under κ^{BC} is below $v^e - c^I$, that is, the optimal payoff under complete information is no longer obtained under a contingency fee contract. In other words, the information has a cost for the plaintiff. It can be a direct cost of increased payments for the attorney, but it can also be an indirect cost of receiving smaller settlement offers from the defendant.

The fact that information no longer comes for free has two important consequences. First, an hourly fee contract κ^H becomes even more attractive to the plaintiff. Second, a plaintiff may decide to sign a contract that results in a separating equilibrium with a trial. There is a simple intuition behind this result. Under a well-designed contract resulting in a trial, the plaintiff needs to pay the cost of the trial only when the liability value is low and the trial actually happens. Conversely, the costs of providing the attorney enough incentives for the trial to be avoided are paid independently of the realized liability value. To better understand this effect result consider a simple fixed fee contract:

$$\kappa^F \equiv (c^I + (1-\mu)c^T, 0, 0, 0). \tag{13}$$

Observe that $c^P(\kappa^F) = 0$, that is, the plaintiff does not bear any cost of going to trial, but rather compensates for any potential attorney's cost upfront. As a result, if μ is very large, and consequently the probability that a case is litigated under a separating equilibrium with a trial is low, the plaintiff is better off under κ^F than under both κ^{BF} and κ^H.

Proposition 5 summarizes the results and Figure 2 depicts the optimal contract choice.

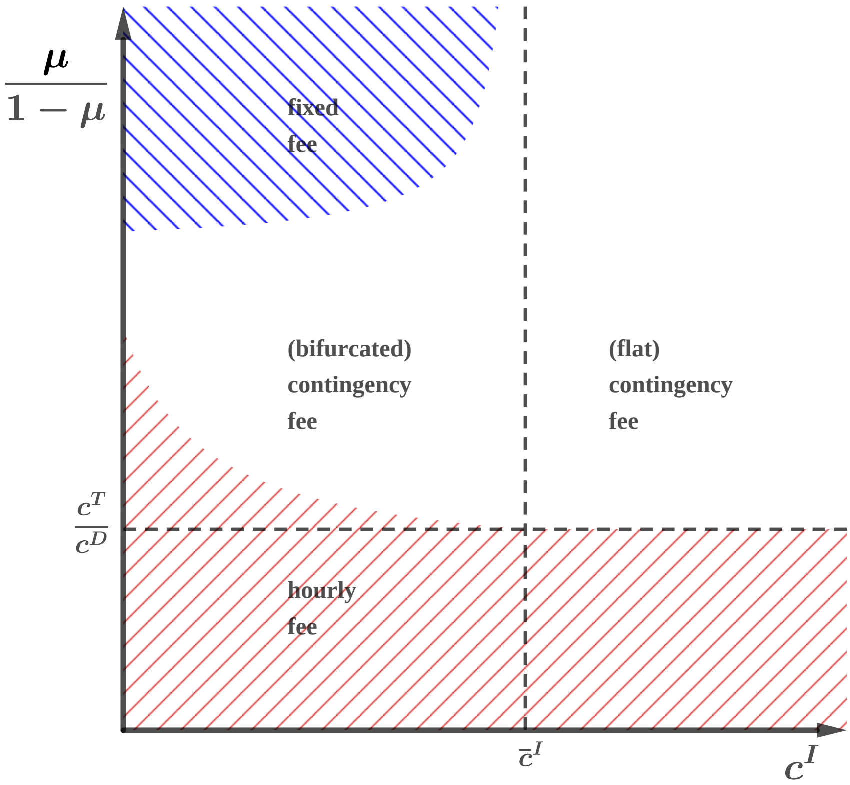

Figure 2: Contract choice

Proposition 5. *If Assumption 1 is satisfied, $c^I < \bar{c}^I$ and the plaintiff chooses to litigate then the following holds. If $\frac{\mu}{1-\mu}$ is sufficiently small an hourly fee contract κ^H is optimal. If $\frac{\mu}{1-\mu}$ is sufficiently large a fixed fee contract κ^F is optimal. Otherwise, a bifurcated contingency fee contract κ^{BF} is optimal.*

Note that all contracts mentioned in Propositions 4 and 5 result in some bias of the attorney. It is not because the contracts which result in no attorney's bias are not feasible. Indeed, any no conflict fee contract [Polinsky and Rubinfeld, 2003] such that $\alpha_t = (1 - \beta_n)c^T$ makes the attorney unbiased. However, it simultaneously makes litigation very costly for the plaintiff by setting $c^P(\kappa) = c^T$ and results in the plaintiff receiving low settlement offers. This makes the contracts resulting in no bias unattractive. I summarize this result in Corollary 3.

Corollary 3. *The contracts such that $B(\kappa) = 0$ are feasible but are never optimal.*

In the legal literature, there is a long-standing debate on whether hourly-fee contracts or contingency fee contracts are universally better for the plaintiffs. And whether the use of some contracts should be limited by the regulators (see Kritzer 2002 and Brickman 2003 for a fragment of this debate). A typical argument against using contingency fee contracts is that, on average, they result in higher fees paid by the plaintiff compared to hourly fee contracts. This stylized fact is in line with my model, even though the contingency fee contracts remain optimal for some parameters of the model. It follows from the fact that contingency fee contracts tend to be signed for cases in which the initial costs of litigation are high and the attorney needs to be paid more to agree to sign the contract. I formalize this result in Corollary 4.

Corollary 4. *If some contingency fee contract is optimal for given parameters of the model then a contingency fee contract will remain optimal if c^I increases. If $\frac{\mu}{1-\mu} \geq \frac{c^D}{c^T}$ there exists c^I high enough for which the contingency fee contract is optimal.*

The result of Corollary 4 is made even stronger by the fact that under an hourly fee contract the realized attorney fee is always equal to the initial cost of litigation, while under the contingency fee contract it may be higher, as some information rents may be paid to the attorney.

Finally, so far I have abstracted from the question of whether the plaintiff should litigate or rather drop the case. Naturally, as long as the expected value of the case is positive, that is, $v^e \geq c^T + c^I$ litigation is optimal. However, in my setting, the case can be litigated even if it has a negative expected value. There are two reasons for that. First, under contingency-fee and fixed-fee contracts the plaintiff never fully bears the cost of the trial. Second, under an hourly fee contract, the plaintiff can capture the whole bargaining surplus from the negotiation if the liability value is low. I summarize this result in Remark 1.

Remark 1. *If $c^I \leq c^D$ or $v^e \geq \max\{\bar{c}^I, c^I\}$ the case is litigated.*

5 Conclusion

Legal advice is crucial for achieving out-of-court settlements. I study how a biased attorney can influence the outcome of the pre-trial negotiation. I show that when the attorney is biased towards a trial the bias can benefit the plaintiff. I use this observation to derive optimal contracts and show that hourly fee contracts are optimal when the initial costs of litigation or the expected liability value are small, and contingency fee contracts are optimal otherwise. Strategic contracting has the potential of explaining the variation in observed contracts on the market for legal services. The results of the model can be also applied to other settings of negotiation with expertise: e.g., international negotiation when diplomats are advising politicians or acquisition of companies when the investors are advised by investment bankers.

References

Attila Ambrus and Satoru Takahashi. Multi-sender cheap talk with restricted state spaces. *Theoretical Economics*, 2008.

Marco Battaglini. Multiple referrals and multidimensional cheap talk. *Econometrica*, 70(4):1379–1401, 2002.

Florian Baumann and Tim Friehe. Contingent fees with legal discovery. *American Law and Economics Review*, 18(1):155–175, 2016.

Lucian Bebchuk and Andrew Guzman. How would you like to pay for that– The strategic effects of fee arrangements on settlement terms. *Harvard Negotiation Law Review*, 1:53–64, 1996.

Lester Brickman. Effective hourly rates of contingency-fee lawyers: Competing data and non-competitive fees. *Wash. ULQ*, 81:653, 2003.

In-Koo Cho and David Kreps. Signaling games and stable equilibria. *The Quarterly Journal of Economics*, 102:179–221, 1987.

Albert Choi. Allocating settlement authority under a contingent-fee arrangement. *The Journal of Legal Studies*, 32:585–610, 2003.

Albert Choi and Kathryn Spier. Taking a financial position in your opponent in litigation. *American Economic Review*, 108:3626–50, 2018.

Thomas Cohen and Steven Smith. Civil trial cases and verdicts in large counties, 2001. *Bureau of Justice Statistics Bulletin*, 2004.

Vincent Crawford and Joel Sobel. Strategic information transmission. *Econometrica*, 50:1431–1451, 1982.

James Dana Jr and Kathryn Spier. Expertise and contingent fees: The role of asymmetric information in attorney compensation. *Journal of Law, Economics, and Organization*, 9:349, 1993.

Andrew Daughety and Jennifer Reinganum. The effect of third-party funding of plaintiffs on settlement. *American Economic Review*, 104:2552–66, 2014.

Wouter Dessein. Authority and communication in organizations. *The Review of Economic Studies*, 69(4):811–838, 2002.

Theodore Eisenberg and Charlotte Lanvers. What is the settlement rate and why should we care? *Journal of Empirical Legal Studies*, 6(1):111–146, 2009.

Winand Emons. Expertise, contingent fees, and insufficient attorney effort. *International Review of Law and Economics*, 20:21–33, 2000.

Paul Fenn and Neil and Rickman. Legal fees and delay in settlement. *Working Paper*, 2015.

John Fingleton and Michael Raith. Career concerns of bargainers. *Journal of Law, Economics, and Organization*, 21:179–204, 2005.

Hugh Gravelle and Michael Waterson. No win, no fee: some economics of contingent legal fees. *The Economic Journal*, 103(420):1205–1220, 1993.

Bruce Hay. Optimal contingent fees in a world of settlement. *The Journal of Legal Studies*, 26:259–278, 1997.

Stephen Jones. Have your lawyer call my lawyer: Bilateral delegation in bargaining situations. *Journal of Economic Behavior and Organization*, 11:159–174, 1989.

Michael Katz. Game-playing agents: Unobservable contracts as precommitments. *The RAND Journal of Economics*, 22:307–328, 1991.

Randall L Kiser, Martin A Asher, and Blakeley B McShane. Let's not make a deal: An empirical study of decision making in unsuccessful settlement negotiations. *Journal of Empirical Legal Studies*, 5(3):551–591, 2008.

Vijay Krishna and John Morgan. A model of expertise. *The Quarterly Journal of Economics*, 116:747–775, 2001.

Vijay Krishna and John Morgan. Contracting for information under imperfect commitment. *The RAND Journal of Economics*, 39:905–925, 2008.

Herbert M Kritzer. Seven dogged myths concerning contingency fees. *Wash. ULQ*, 80: 739, 2002.

Doron Levit. Advising shareholders in takeovers. *Journal of Financial Economics*, 126:614–634, 2017.

Zhuozheng Li, Heikki Rantakari, and Huanxing Yang. Competitive cheap talk. *Games and Economic Behavior*, 96:65–89, 2016.

Andrey Malenko and Anton Tsoy. Selling to advised buyers. *American Economic Review*, 109:1323–48, 2019.

A Mitchell Polinsky and Daniel L Rubinfeld. Aligning the interests of lawyers and clients. *American Law and Economics Review*, 5(1):165–188, 2003.

Jennifer Reinganum and Louis Wilde. Settlement, litigation, and the allocation of litigation costs. *The RAND Journal of Economics*, 17:557–566, 1986.

Daniel Rubinfeld and Suzanne Scotchmer. Contingent fees for attorneys: An economic analysis. *The RAND Journal of Economics*, 24:343–356, 1993.

Kathryn Spier. Litigation. Handbook of law and economics, 2005.

Kathryn Spier and J.J. Prescott. Contracting on litigation. *The RAND Journal of Economics*, 50:391–417, 2019.

John Vickers. Delegation and the theory of the firm. *The Economic Journal*, 95:138–147, 1985.

Alison Watts. Bargaining through an expert attorney. *Journal of Law, Economics, and Organization*, pages 168–186, 1994.

Asher Wolinsky. Eliciting information from multiple experts. *Games and Economic Behavior*, 41(1):141–160, 2002.

A Proofs

Proof of Proposition 1
Proposition 1 is proven in Lemmas 2 – 5

Lemma 2. *If $c^P + c^D \leq \Delta v$ and either $B \geq c^P + c^D$ or $-B \geq \Delta v$ there exists a separating equilibrium, in which $s(v^H) = v^H - c^P$ and $s(v^L) \leq v^L - c^P$ and the offer $s(v^H)$ is accepted but the offer $s(v^L)$ is rejected.*

Proof. The proof is constructive. Take any candidate equilibrium that satisfies the following conditions"

(i) the strategy of the defendant is $s(v^H) = v^H - c^P$, $s(v^L) \leq v^L - c^P$,

(ii) the strategy of the attorney is $m(s, v) = m_1$ for all $s \in [v^L - c^P, v^H - c^P]$ such that $s > v - c^P + B$, and some m_2 otherwise,

(iii) the beliefs of the plaintiff satisfy $\mu(s(v^L), m) = 0$, $\mu(s(v^H), m) = 1$ for all m, $\mu(s, m_1) = 0$ for all s s.t. $s > v^L - c^P + B$ and $s \leq v^H - c^P + B$, and $\mu(s, m) = 1$ otherwise.

(iv) the strategy of the plaintiff is to accept any offer $s \geq s(v^H)$ and reject any lower offer independently of the message received.

Observe that the proposed candidate equilibrium is a PBE.
The defendant with a high liability value does not have a profitable deviation, as any $s > s(v^H)$ would be accepted and would yield a lower payoff, and any $s < s(v^H)$ would be rejected which would yield a lower payoff.
The defendant with a low liability value does not have a profitable deviation, as any offer $s < s(v^H)$ would be rejected and yield the same payoff, and any offer $s > s(v^H)$ would yield a payoff of at most $-v^H + c^P$ which, using $\Delta v \leq c^P + c^D$, is weakly lower than currently obtained $-v^L - c^D$.
The attorney cannot have a profitable deviation as the plaintiff does not condition her decision on the received message.
The plaintiff does not have profitable deviation given her beliefs. Observe that, for $s < v^L - c^P \geq s(v^L)$ it is her dominant strategy to reject the offer and for $s \geq v^H - c^P$ it is her dominant strategy to accept the offer. Moreover, for using either $B \geq c^P + c^D$ or $-B \geq \Delta v$ for all $s \in (v^L - c^P, v^H - c^P)$ $m(s, v^L) = m(s, v^H)$, hence, $\mu(s, m) = 1$ for all m, and it is the plaintiff's best response to reject the offer.
The plaintiff's beliefs satisfy $\mu(s(v^L), m) = 0$ and $\mu(s(v^H), m) = 1$, hence, they are consistent.
Finally, for all s s.t. $s > v^L - c^P + B$ and $s < v^H - c^P + B$ $\mu(s, m_1) = 0$. Hence, the proposed PBE is communicative. □

Lemma 3. *A separating equilibrium with a trial in which $s(v^H) = v^H - c^P$ and $s(v^L) \leq v^L - c^P$ and the offer $s(v^H)$ is accepted but the offer $s(v^L)$ is rejected exists only if $c^P + c^D \leq \Delta v$ and either $B \geq c^P + c^D$ or $-B \geq \Delta v$*

Proof. First, suppose $c^P + c^D > \Delta v$. Then the payoff for the defendant with a low liability value in the described equilibrium is $-v^L - c^D$. The payoff from making an offer $s(v^H)$ is $-v^H + c^P > v^L - c^D$, hence, there exists a profitable deviation for the defendant.

Second, suppose $B < c^P + c^D$ and $B \geq 0$, then, although the described equilibrium is a PBE, it is not communicative. Observe that then $v^L - c^P + B < v^L + c^D$. Hence, there exists some offer $s \in (v^L - c^P + B, v^L + c^D)$. At any such offer, the attorney prefers the settlement to the trial if and only if $v = v^L$. As a result, the beliefs of the plaintiff need to satisfy $\mu(s, m_1) = 0$ and the plaintiff would accept the offer upon observing m_1. Consequently, the attorney needs to send m_1 (or some other message that ensures the acceptance of the plaintiff) at s whenever $v = v^L$. As $s < v^L + c^D$ the defendant has a profitable deviation of making an offer s rather than the offer $s(v^L)$.

Finally, the case in which $-B < \Delta v$ follows the paragraph above. It is enough to spot that $v^H - c^P + B > v^L - c^P$ to conclude that, although the described equilibrium is a PBE, it is not communicative. □

Lemma 4. *If $c^P + c^D \geq \mu\Delta v$ and either $B \geq \mu\Delta v$ or $-B \geq \Delta v$ there exist pooling equilibria in which $s(v^H) = s(v^L) \geq v^e - c^P$. The offer is always accepted by the plaintiff.*

Proof. The proof is constructive. Take any candidate equilibrium that satisfies the following conditions:

(i) the strategy of the defendant is $s(v^H) = s(v^L) \equiv s^*$, where s^* satisfies:

  (a) $s^* \geq \mu v^e - c^P$,

  (b) $s^* \leq v^L + c^D$,

  (c) $s^* \leq v^H - c^P$,

  (d) if $B \geq 0$ then $s^* \leq v^L - c^P + B$.

(ii) the strategy of the attorney is $m(s, v) = m_1$ for all $s \in [v^L - c^P, v^H - c^P]$ such that $s > v - c^P + B$, and some m_2 otherwise,

(iii) the beliefs of the plaintiff satisfy $\mu(s^*, m) = \mu$, all m, $\mu(s, m_1) = 0$ for all s s.t. $s > v^L - c^P + B$ and $s \leq v^H - c^P + B$, and $\mu(s, m) = 1$ otherwise,

(iv) the strategy of the plaintiff is $d(s, m) = 1$ if $s = s^*$, $s > v^H - c^P$, or $m = m_1$, $s > v^L - c^P$, and $s \in (v^L - c^P + B, v^H - c^P + B)$.

First, observe that due to made assumptions there exists s^* that simultaneously satisfies (a)–(d). It is enough to verify that (a) can be simultaneously satisfied with each of (b)–(d). (a) and (b) can be simultaneously satisfied using $c^P + c^D \geq \mu\Delta v$, (a) and (c) using $v^H > v^L$, (a) and (d) using $B \geq \mu\Delta v$.

Second, observe that the proposed equilibrium is a PBE. The defendant does not have a profitable deviation, as any offer below s^* would be rejected. The attorney does not have a profitable deviation, as the plaintiff either does not condition her decision on the message received or takes a decision which is preferred by the attorney. The plaintiff

does not have a profitable deviation, as accepting any $s > v^H - c^P$ and rejecting any $s \leq v^L - c^P$ is a dominant strategy, and offers $s \in (v^L - c^P, v^H - c^P]$ are accepted only if $s \geq \mu(s,m)v^H + (1-\mu(s,m))v^L - c^P$. The beliefs of the plaintiff are consistent as $\mu(s^*, m) = \mu$.
Finally, observe that the proposed equilibrium is communicative, as $\mu(s, m_1) = 1$ for all $s \in (v^L - c^P + B, v^H - c^P + B)$. □

Lemma 5. *Pooling equilibria in which $s(v^H) = s(v^L) \geq v^e - c^P$, and the offer is always accepted by the plaintiff exist only if $c^P + c^D \geq \mu\Delta v$ and either $B \geq \mu\Delta v$ or $-B \geq \Delta v$.*

Proof. If $c^P + c^D < \mu\Delta v$, then when $v = v^L$ the defendant has a profitable deviation of making some offer s that is necessarily rejected.
If $B > 0$ and $B < \mu\Delta v$ proposed equilibria are still PBE, but are not communicative. To be precise, there exists some offer s s.t. $s > v^L - c^P + B$ and $s < v^e - c^P$. Hence, $\mu(s, m_1) = 0$ and $d(s, m_1) = 1$. As a result, if the offer s is made and $v = v^L$ the attorney sends a message m_1 (or some other message triggering acceptance). As $s < v^e - c^P$ if $v = v^L$ the defendant has a profitable deviation of making an offer s.
If $B > 0$ and $-B < \Delta v$ argument analogous to the one in the paragraph above holds. It is enough to observe that there exists an offer $s \in (v^L - c^P, v^e - c^P)$ that the attorney prefers to accept if $v = v^L$ but to reject if $v = v^H$. □

Proof of Proposition 2
Proposition 2 is proved in Lemmas 6 and 7.

Lemma 6. *If $-B \in [0, \Delta v]$ there exists an informative equilibrium, in which, the defendant makes an offer $s(v) = v - c^P$, and the case is always settled on the equilibrium path.*

Proof. Take any candidate equilibrium satisfying the following conditions:

(i) the strategy of the defendant is $s(v) = v - c^P$,

(ii) the strategy of the attorney is $m(s, v) = m_1$ for all $s \in [v^L - c^P, v^H - c^P]$ such that $s > v - c^P + B$, and some m_2 otherwise,

(iii) the beliefs of the plaintiff satisfy $\mu(s, m_1) = 0$ for all s s.t. $s > v^L - c^P + B$ and $s \leq v^H - c^P + B$, and $\mu(s, m) = 1$ otherwise.

(iv) the strategy of the plaintiff is to accept any offer $s \geq s(v^H)$, reject any $s < s(v^L)$ independently of the offer received, and accept an offer $s \in [s(v^L), s(v^H))$ if and only if $m = m_1$.

First, observe that the candidate equilibrium is a PBE. The defendant does not have a profitable deviation, as making any lower offer would result in a trial. The attorney's message is taken into account only for $s \in [v^L - c^P, v^H - c^P)$. Moreover, for these offers, the plaintiff settles the case whenever the attorney prefers settlement to a trial. Hence, the attorney has no profitable deviation. As $\mu(s^L, m_1) = 0$ and $\mu(v^H - c^P, m) = 1$ the beliefs of the plaintiff are consistent. Finally, the plaintiff's beliefs take only two

values $\mu(s,m)=0$, or $\mu(s,m)=1$. The plaintiff always accepts any offer $s \geq v^H - c^P$, accepts any offer $s \in [v^L - c^P, v^H - c^P)$ only if $\mu(s,m)=0$, and always rejects any lower offer. Hence, there is no profitable deviation for the plaintiff.
Second, observe that the candidate equilibrium is communicative, as for all $s \in (v^L - c^P + B, v^H - c^P + B)$ $\mu(s, m_1) = 0$. □

Lemma 7. *An informative equilibrium, in which the defendant makes an offer $s(v) = v - c^P$, and the case is always settled on the equilibrium path exists only if $-B \in [0, \Delta v]$.*

Proof. First, assume $B > 0$. By contradiction, assume that there exists some equilibrium, in which the offer $s = v^L - c^P$ is ever accepted, and the defendant always makes an offer $s(v) = v - c^P$. It can be accepted only if there exists m s.t. $d(v^L - c^P, m) = 1$. If this is true for any messages $m \in \mathcal{M}$, then the defendant has a profitable deviation of always making the offer s. Otherwise, the attorney has a profitable deviation of always sending some message m' s.t. $d(v^L - c^P, m') = 0$.
Second, assume $-B > \Delta v$. Similarly, by contradiction, assume that there exists some equilibrium in which the offer $s = v^L - c^P$ is ever accepted. Hence, there exists a message m s.t. $d(v^L - c^P, m) = 1$. Moreover, if $s = v^L - c^P$ then it is a unique best response of the attorney to send some message m s.t. $d(v^L - c^P, m) = 1$, independently of the state of the world. Hence, the defendant has a profitable deviation of always making an offer $v^L - c^P$. □

Proof of Proposition 3
Proposition 3 is proved in Lemmas 8 and 9.

Lemma 8. *If $B \in [0, \min\{c^P + c^D, \Delta v\})$ then there exists a misinformative equilibrium in which the defendant makes offers $s(v^L) = v^L - c^P + B$, $s(v^H) = v^H - c^P$ and the case is always settled on an equilibrium path.*

Proof. Take any candidate equilibrium which satisfies the following conditions:

(i) the defendant's strategy is $s(v^L) = v^L - c^P + B$ and $s(v^H) = v^H - c^P$,

(ii) the attorney sends a message m_1 if and only if $s \in [v^L - c^P + B, v^H - c^P + B]$ and $v = v^H$, and sends some message m_2 otherwise,

(iii) the plaintiff's beliefs are $\mu(s,m) = 0$ if $s \in [v^L - c^P + B, v^H - c^P + B]$ and $m = m_1$, and $\mu(s,m) = 1$ otherwise,

(iv) the plaintiff's strategy is $d(s,m) = 1$ for any m if $s \geq v^H - c^P$, and $d(s,m) = 1$ for $m = m_1$ if $s \in [v^L - c^P + B, v^H - c^P)$.

First, observe that the candidate equilibrium is a PBE. As any lower offer would result in a trial, there is no profitable deviation for the defendant. The attorney's message is consequential only if $s \in [v^L - c^P + B, v^H - c^P)$, and then the case is settled whenever the attorney prefers it to be settled. Hence, there is no profitable deviation for the attorney. The beliefs of the plaintiff are $\mu(v^H - c^P, m) = 1$ and $\mu(v^L - c^P + B, m_1) = 0$, hence, they are consistent. Finally, the plaintiff's beliefs take only two

values: $\mu(s,m) = 0$ or $\mu(s,m) = 1$. If $\mu(s,m) = 0$, the plaintiff accepts any offer $s > v^L - c^P$ and rejects any smaller offer. Similarly, if $\mu(s,m) = 1$, the plaintiff accepts any offer $s \geq v^H - c^P$ and rejects any other offer. Hence, there is no profitable deviation for the plaintiff.
Second, observe that the candidate equilibrium is communicative. The set of offers for which the attorney is better off under a settlement if $v = v^L$ but better off under a trial if $v = v^H$ is given by: $[v^L - c^P + B, v^H - c^P + B,]$, the beliefs of the plaintiff under a message m_1 for those offers satisfy $\mu(m_1) = 0$. ☐

Lemma 9. *A misinformative equilibrium in which the defendant makes offers $s(v^L) = v^L - c^P + B$, $s(v^H) = v^H - c^P$ and the case is always settled on an equilibrium path exists only if $B \in [0, \min\{c^P + c^D, \Delta v\}]$.*

Proof. First, suppose $B < 0$, then $v^L - c^P + B < v^L - c^P$ and it is a unique best response of the plaintiff to reject an offer $v^L - c^P + B$.
Second, suppose $B > \Delta v$, then $v^L - c^P + B > v^H - c^P$. Hence, when $v = v^L$ the defendant has a profitable deviation of making some offer $s \in (v^H - c^P, v^L - c^P + B)$, as such an offer must always be accepted by the plaintiff.
Finally, suppose $B > c^P + c^D$, then $v^L - c^P + B > v^L + c^D$. Hence, when $v = v^L$ the defendant has a profitable deviation of making some offer $s < v^L - c^P$ and facing a trial. ☐

Proposition 6. *Propositions 1-3 present a complete description of the equilibria of the game.*

Proof. Observe that any pooling equilibrium not described in Propositions 1 needs to result in a trial. No such equilibrium can exist, as a defendant with a high liability value has a profitable deviation of making an offer $v^H - c^P + \varepsilon$ which is always accepted by the plaintiff.
There are two ways in which a separating equilibrium can differ from those described in Propositions 1–3. First, when the liability value is high the defendant may not make an offer $v^H - c^P$. No such equilibrium can exist. If $s(v^H) < v^H - c^P$ in any separating equilibrium the offer $s(v^H)$ needs to be rejected, and the defendant has a profitable deviation of making an offer $v^H - c^P + \varepsilon$. If $s(v^H) > v^H - c^P$ making any offer $s \in (v^H - c^P, s(v^H))$ is a profitable deviation for the defendant when the liability value is high. Second, when the liability value is low the defendant may not make an offer $v^L - c^P + \min\{0, B\}$ but may still avoid a trial. However, if $s(v^L) < v^H + \min\{0, B\}$ and the case was settled either the attorney has a profitable deviation of changing a message so that the case results in a trial or the defendant with a high liability value has a profitable deviation of making an offer $s(v^L)$.
Finally, no equilibrium in which $s(v^L) > v^L + \min\{0, B\}$ is made and accepted can be communicative, as in any communicative equilibrium an offer $s \in (v^L + \min\{0, B\}, s(v^L))$ would be preferred to be accepted by the attorney if $v = v^L$ and rejected if $v = v^H$. Hence, the attorney could send a message m_1 if s was made and $v = v^L$ and after receiving the message m_1 the plaintiff would accept the offer. As a result, the defendant has a profitable deviation when the liability value is low. ☐

Proof of Proposition 4
Proposition 4 is proved in Lemmas 10–13.

Lemma 10. *If Assumption 1 holds and $c^I \geq \bar{c}$, no contract resulting in a separating equilibrium with a trial can be optimal.*

Proof. The total payoff of the plaintiff and the attorney, and hence, the payoff of the plaintiff, under any contract resulting in a separating equilibrium, is bounded from above by $\mu v^H + (1-\mu)(v^L - c^T) - c^I = v^e - (1-\mu)c^T - c^I$. The payoff of the plaintiff under a contract κ^{FC} is $v^e - c^I$. Hence, κ^{FC} yields a better payoff to the plaintiff than any contract resulting in a separating equilibrium with a trial. □

Lemma 11. *If Assumption 1 holds and $c^I \geq \bar{c}^I$ no contract resulting in a pooling equilibrium can be optimal.*

Proof. The total payoff of the plaintiff and the attorney, and hence, the payoff of the plaintiff, under any contract resulting in a pooling equilibrium is bounded from above by $v^L + c^D - c^I$. Take some contract $\kappa(\varepsilon) = (c^I, (1-\varepsilon)\varepsilon(c^D - \varepsilon) + (1-\varepsilon)c^T, \varepsilon, 0)$. Observe that as the ε goes to 0, the $B(\kappa(\varepsilon))$ approaches c^D, and $c^P(\varepsilon)$ approaches c^T. Using Assumption 1 for ε small enough the negotiation follows a misinformative equilibrium. The payoff of the plaintiff approaches $\mu(v^H - c^T) + (1-\mu)(v^L + c^D) - c^I$. Using Assumption 1 again, $v^H - c^T > v^L + c^D$. Hence, for ε small enough contract $\kappa(\varepsilon)$ yields a better payoff for the plaintiff than any contract resulting in a pooling equilibrium. □

Lemma 12. *If Assumption 1 holds and $c^I \geq \bar{c}^I$, then a contract κ^{FC} yields the highest payoff to the plaintiff among the contracts resulting in an informative equilibrium.*

Proof. The total payoff of the plaintiff and the attorney under a separating equilibrium without a trial is given by $v^e - c^P(\kappa) - c^I \leq v^e - c^I$ which is the payoff of the plaintiff under a contract κ^{FC}. □

Lemma 13. *If Assumption 1 holds and $c^I \geq \bar{c}^I$, and there exists a contract resulting in a misinformative equilibrium which is preferred by the plaintiff to dropping the case, then contract κ^H is optimal among contracts resulting in a misinformative equilibrium. Moreover, then $B(\kappa^H) = c^T + c^D$.*

Proof. Using Assumption 1 for the contract to result in a misinformative equilibrium it needs to be that $B(\kappa) \in (0, c^P(\kappa) + c^D]$. First, observe that any candidate optimal contract with $B(\kappa) \in (0, c^P(\kappa) + c^D]$ is characterized by $c^P(\kappa) \geq c^T$. Start with a case of $\beta_n \in (0,1)$. Then, using $B(\kappa) > 0$ and equation (7), we get: $\alpha_t > (1-\beta_n)c^T$. Then, using (8) observe that $c^P(\kappa) > c^T$. No contract such that $\beta_n \geq 1$ can be optimal, as it would result in at most a payoff of 0 for the plaintiff, and dropping the case would be preferred. If $\beta_n = 0$ and $\alpha_t \neq c^T$, then $B(\kappa)$ goes either to $+\infty$ or $-\infty$. If $\alpha_t = c^T$ and $\beta_n = 0$, then $c^P(\kappa) = c^T$.
Second, observe that the payoff of the plaintiff under the contract s.t. $B(\kappa) > 0$ is bounded from above by: $\mu(v^H - c^T) + (1-\mu)(v^H + c^D) - c^I$.
Third, observe that no contract with $B(\kappa) > 0$ which yields a payoff for the plaintiff lower than the upper bound can be optimal. Suppose, it is, and take any such a contract

$\kappa = (\alpha_n, \alpha_t, \beta_n, 0)$ and take a contract $\kappa(\varepsilon) = (c^I, (1-\varepsilon)\varepsilon(c^D - \varepsilon) + (1-\varepsilon)c^T, \varepsilon, 0)$. Observe that the payoff of the plaintiff under contract $\kappa(\varepsilon)$ for ε sufficiently small is given by: $(1-\varepsilon)(\mu(v^H - \frac{c^T}{1-\varepsilon}) + (1-\mu)(v^L + c^D - \varepsilon)) - c^I$. The payoff is decreasing in ε and converging to $\mu(v^H - c^T) + (1-\mu)(v^H + c^D) - c^I$ as ε goes to 0. Moreover $B(\kappa(\varepsilon))$ converges to c^D as ε goes to 0. Finally $\kappa(\varepsilon)$ converges to κ^H as ε goes to 0. □

The remainder of the proof follows directly from a comparison of the payoff of the plaintiff under a contract κ^{FC} and κ^H.

Proof of Proposition 5

Proposition 5 is proved in Lemmas 14–16.

Lemma 14. *If Assumption 1 holds, and $c^I < \bar{c}^I$ then κ^H is a contract that yields the highest payoff for the plaintiff among contracts resulting in misinformative equilibrium. Moreover, it yields a higher payoff for the plaintiff than any contract resulting in a pooling equilibrium.*

Proof of Lemma 14 follows directly from a proof of Lemmas 10 and 11.

Lemma 15. *If Assumption 1 holds, and $c^I < \bar{c}^I$ then κ^F is a contract that yields the highest payoff for the plaintiff among contracts resulting in a separating equilibrium with a trial.*

Proof. Observe that the total payoff for the plaintiff and the attorney under any separating equilibrium with a trial is given by $\mu(v^H - c^P(\kappa)) + (1-\mu)(v^L - c^T) - c^I \leq \mu(v^H) + (1-\mu)(v^L - c^T) - c^I$ which is the payoff for the plaintiff under κ^F. □

Lemma 16. *If Assumptions 1 holds, $c^I < \bar{c}^I$, and there exists a contract resulting in an informative equilibrium which is preferred to dropping the case then κ^{BC} is the optimal contract among those resulting in an informative equilibrium*

Proof. While choosing a contract the plaintiff faces the following optimization problem:

$$\max_{\alpha_n, \beta_n} (1-\beta_n)(v^e - \frac{\alpha_t}{1-\beta_n}) - \alpha_n \tag{14}$$

s.t.

$$\beta_n(v^e - \frac{\alpha_t}{1-\beta_n}) + \alpha_n \geq c^I, \tag{15}$$

$$\frac{c^T - \alpha_t}{\beta_n} - \frac{\alpha_t}{1-\beta_n} \leq \Delta v, \tag{16}$$

$$\frac{c^T - \alpha_t}{\beta_n} - \frac{\alpha_t}{1-\beta_n} \geq 0, \tag{17}$$

$$\alpha_n, \beta_n, \alpha_t \geq 0. \tag{18}$$

$$\tag{19}$$

First, observe that $\beta_n > 0$, otherwise (15) and (16) cannot be simultaneously satisfied. Moreover $\beta_n < 1$, otherwise, the plaintiff earns at most 0 and dropping the case is preferred.

Second, observe that (16) is always binding. Suppose it is not and $\alpha_t > 0$, then the plaintiff can benefit by reducing α_t, as his objective function is decreasing in α_t and the LHS of constraint (15) is decreasing in α_t. Now suppose (16) is binding $\alpha_t = 0$. Then, using $c^I < \bar{c}^I$ (15) is not binding, and the objective function can be increased by decreasing β_n without violation of (15). As (16) is binding (17) is always satisfied. Using (16), I obtain $\alpha_t^* = (1-\beta_n)(c^T - \beta_n \Delta v)$ and substitute it in the problem.

I simplify the problem and obtain:

$$\min_{\beta_n,\alpha_n} \beta_n(v^e - (c^T - \beta_n\Delta v)) + \alpha_n - \beta_n \Delta v \tag{20}$$

s.t.

$$\beta_n(v^e - (c^T - \beta_n\Delta v)) + \alpha_n \geq c^I, \tag{21}$$

$$\beta_n \leq \frac{c^T}{\Delta v}, \tag{22}$$

$$\alpha_n \geq 0. \tag{23}$$

I can now argue that (23) needs to be binding. First, suppose that (22) is binding. Then, using $c_I < \bar{c}^I$ (21) is satisfied at $\alpha_n = 0$. As the objective function is decreasing in α_n, $\alpha_n = 0$ at the candidate optimum. Second, suppose that (22) is satisfied with strict inequality. Then I can increase β_n and decrease α_n s.t. the value of $\beta_n(v^e - (c^T - \beta_n\Delta v)) + \alpha_n$ remains constant. If the change β_n is sufficiently small (22) and (23) remain satisfied, (21) remains satisfied by construction and the objective function decreases by construction. Hence, the optimization problem can be stated as a one variable problem with two constraints.

$$\min_{\beta_n} \beta_n(v^e - (c^T - \beta_n\Delta v)) - \beta_n \Delta v \tag{24}$$

s.t.

$$\beta_n \geq \frac{1}{2\Delta v}(\sqrt{(v^e - c^T)^2 + 4c^I} - (v^e - c^T)), \tag{25}$$

$$\beta_n \leq \frac{c^T}{\Delta v} \quad . \tag{26}$$

A simple inspection shows that if $c^I < c^T \frac{v^e}{\Delta v}$ the problem always has a solution, given by:

$$\beta_n^* = \begin{cases} \frac{c^T}{\Delta v} & \text{if } \Delta v \geq v^e + c^T, \\ \frac{1}{2}(1 - \frac{v^e - c^T}{\Delta v}) & \text{if } \Delta v \in (\sqrt{(v^e - c^T)^2 + 4c^I}, v^e + c^T) \\ \frac{1}{2\Delta v}(\sqrt{(v^e - c^T)^2 + 4c^I} - (v^e - c^T) & \text{if } \Delta v \leq \sqrt{(v^e - c^T)^2 + 4c^I}. \end{cases} \tag{27}$$

Hence κ^{BC} is indeed an optimal contract.

□