



Costly voluntary disclosure in a screening game



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ABSTRACT

We conduct an experimental analysis of pretrial bargaining, while allowing for the costly voluntary disclosure of private information in a screening game. In this game, the theoretical prediction is that costly voluntary disclosures will not occur. This hinges on the prediction that the person making the offer will extract all the joint surplus of settlement from the player making the costly disclosure. If fairness considerations prevent this from occurring, then we may observe costly disclosures when none are predicted to occur. Our chief finding is that plaintiffs with a strong case reveal their private information 42% of the time, when the theoretical prediction is that they should do so 0% of the time. Fairness considerations appear to be important in explaining the deviation from theory. For a plaintiff with a strong case, the return to revealing private information is approximately zero, while theory predicts that this return should be negative.

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1. Introduction

Asymmetric information can lead to costly trials as the equilibrium outcome of a bargaining game. Institutions which facilitate the transfer of information between the plaintiff and defendant have the potential to reduce the incidence of these disputes. One such institution is the voluntary disclosure of private information. While it might appear that individuals with favorable information would have an incentive to reveal it, the theoretical literature on pretrial bargaining predicts that the information structure of the game determines whether or not costly disclosures will be made. In particular, costly voluntary disclosures may be made when the informed party makes the final offer prior to trial (i.e., in the signaling model), but are predicted never to occur when the uninformed party makes this offer (i.e., in the screening model). We conduct an experimental analysis of pretrial bargaining, while allowing for the costly disclosure of private information in a screening game. In this game, the theoretical prediction is that costly voluntary disclosures will not occur.

This theoretical prediction is derived assuming the player making the offer can extract the entire surplus from settlement.

However, we know from the literature on bargaining and ultimatum games that fairness can play an important role in bilateral negotiations, e.g., the player with the power to make a take-it-or-leave-it offer is typically unable to extract all of the surplus from settlement¹. There is also a literature on reciprocity which suggests that a player undertaking a costly revelation of private information to the benefit of her bargaining partner may be rewarded via a more generous offer than is predicted by the standard theory². To the extent that fairness behaviors are exhibited in our game, costly voluntary disclosures might occur despite the predictions of the standard theory. If these disclosures occur, this has the potential to reduce the incidence of disputes and increase social surplus. Our experiment sheds important light on this question.

Our model of litigation is a simplified version of [Bebchuk's \(1984\)](#) screening model in which an uninformed plaintiff makes an offer to an informed defendant. [Shavell \(1989\)](#) analyzes costless

¹ The ultimatum game literature is quite large. An incomplete list includes [Forsythe et al. \(1994\)](#), [Slonim and Roth \(1998\)](#), [Falk et al. \(2003\)](#), [Schmitt \(2004\)](#) and [Andreoni and Blanchard \(2006\)](#); for a recent survey see [Güth and Kocher \(2014\)](#). Also see the discussion of fairness in [Smith and Wilson \(2014\)](#).

² There is an extensive literature showing that experimental subjects often engage in acts of reciprocity, e.g., if player *A* undertakes a costly action to raise player *B*'s payoff, player *B* will often respond by taking a costly action to raise *A*'s payoff. Among others, see [Berg et al. \(1995\)](#), [Cox \(2012\)](#) and [Charness and Shmidov \(2014\)](#). Also see the theoretical contribution of [Cox et al. \(2008\)](#).

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and credible voluntary disclosure in the screening model and finds that it leads to a 100% rate of settlement, but Sobel (1989) shows that this result is not robust in the sense that even small costs of disclosure will prevent its occurrence³. This occurs because the party making the offer extracts the entire surplus of settlement, leaving the party receiving the offer with the same payoff she would receive in the event of a dispute minus her disclosure cost. Thus, costly disclosure must make this party worse off. This result hinges on an assumption, that the person making the offer can extract the entire surplus from settlement, which is questionable from a behavioral standpoint. In experimental analysis of litigation settings, fairness appears to play a significant but much smaller role than in the typical ultimatum game setting, e.g., the typical offer in the litigation game contains positive surplus which is 25% or less of the total surplus from settlement⁴. Here, the cost of revealing private information is 1/6 of the joint surplus from settlement. If plaintiffs with a strong case are able to obtain more than 1/6 of the joint surplus, they will have a positive incentive to reveal their private information, even though this is not predicted by the standard theory. Additionally, in our experiment disputes are predicted to occur absent disclosure, so a plaintiff with a strong case who reveals her private information is taking a costly action which could save her bargaining partner the cost of a dispute. Thus, the players might look on the costly revelation of private information as a form of reciprocal gift exchange whereby the defendant rewards the plaintiff's behavior by offering at least as much surplus as is required to compensate for the plaintiff's disclosure fee. The standard theory predicts the defendant will use the revealed information to avoid the cost of trial, while still attempting to extract the entire joint surplus from settlement. Of course, it is not clear a priori whether or not we will observe a sufficient degree of fairness behaviors to overturn the theoretical prediction that under this information structure, the strong plaintiff will not engage in a costly disclosure of private information⁵. This underscores the value of an experiment addressing this question.

There is an extensive experimental literature in law and economics, but the work on litigation and arbitration has most often been in a setting where both parties to the dispute have the same information regarding the expected value of the suit at trial⁶. An exception to this is work testing the Priest and Klein (1984) model (e.g., Stanley and Coursey, 1990) in which both parties have private information⁷. Another exception is Pecorino and Van Boening (2004), who test a screening model in which the plaintiff can costlessly reveal her type⁸. Under the standard theory, their plaintiff would be technically indifferent between revealing and not

revealing her private information. They find that 80% of plaintiffs with a strong case reveal their private information. In the later rounds of their experiment, plaintiffs who reveal their private information experience a 52-percentage point decline in their dispute rate relative to a baseline under which voluntary disclosures cannot occur.

We find that 42% of plaintiffs with a strong case reveal their private information, while only 16% of plaintiffs with a weak case do the same. Theory predicts that 0% of both types will reveal their information. In line with the theory, plaintiffs with a weak case experience a negative return when they engage in a costly voluntary disclosure. This is consistent with their low rate of voluntary disclosure. By contrast, plaintiffs with a strong case approximately breakeven when they make a costly voluntary disclosure. This occurs because, contrary to the theory, the player in the role of the defendant cannot extract the entire joint surplus of settlement from the strong plaintiff via his offer. This demonstrates how fairness can be important in explaining the failure of a theoretical prediction of a model in which such concerns are absent. It is noteworthy that fairness plays an important role in explaining the occurrence of voluntary disclosure when it is not predicted to occur, even though the surplus contained in the typical settlement offer is well below that found in a standard ultimatum game.

Our design embeds an ultimatum game in a setting which reflects a stylized model of pretrial bargaining (see Pecorino and Van Boening, 2010)⁹. This embedded ultimatum game is also present in the theory we are attempting to test. If fairness concerns are manifested in this game, then an important theoretical prediction from the law and economics literature may be overturned. We recognize that there are alternative ways in which ideas about fairness can manifest themselves which are not captured in our setting. In particular, in the literature on self-serving bias, participants are put into the role of the defendant and plaintiff and then given the facts of a case to evaluate (see Babcock and Loewenstein, 1997; Babcock and Furgeson, 2013). These experiments are a departure from most of the literature in which experiments are context free, and they have shown that subjects will tend to interpret facts in a manner which is favorable toward the role they have been assigned. Thus, the plaintiff will tend to assign a higher value to the lawsuit than the defendant and this behavior can lead to disputes. It is not clear how these self-serving biases would affect the incentive to engage in a costly disclosure of private information¹⁰. On the other hand, it is quite clear how the type of fairness manifested in an ultimatum game could affect these incentives. As our experiment contains an embedded ultimatum game, we follow the vast majority of the experimental literature by conducting our experiment without context specific language such as plaintiff, defendant and judgment at trial. Such context is essential in the experiments on self-serving bias, but we believe it would merely be a confounding influence given the nature of the problem we are addressing here.

2. Theory and predictions

We will first present the theory and then in Section 2.2, we will summarize our predictions.

³ If the costs of revealing private information are sufficiently small, voluntary disclosures will be made in the signaling game (Farmer and Pecorino, 2005). The signaling game is due to Reinganum and Wilde (1986). For surveys of the litigation literature, see Spier (2007) and Daughety and Reinganum (2012).

⁴ Pecorino and Van Boening (2014) find that for a litigation screening game only 20–25% of the joint surplus from settlement is contained in the typical offer, and they estimate that a cost-minimizing offer would contain about 13% of the joint surplus. Pecorino and Van Boening (2010) analyze a litigation model with symmetric information and find that the median offer only contains 8% of the joint surplus from settlement. In the typical ultimatum game, 40–45% of the joint surplus from settlement is contained in the average offer; see, e.g., Slonim and Roth (1998).

⁵ Fairness considerations will not overturn the theoretical conclusion that weak plaintiffs should remain silent. See Section 2 below.

⁶ For surveys of the experimental literature on law and economics see Camerer and Talley (2007) and Croson (2009). For a survey of the literature on arbitration see Kuhn (2009).

⁷ Most of the experiments of Inglis et al. (2005) are conducted with symmetric information, but in one of their treatments both parties have private information.

⁸ Their experiment is closely related to ours, but because it is costless to reveal private information, they do not provide a setting in which the players can engage in the reciprocal gift-exchange discussed above. In addition to costly disclosure, another important difference between our experiment and theirs is the determination of the outcome at trial for each plaintiff type. Their outcome at trial is described by a

uniform distribution, while ours is described by a degenerate distribution. Thus relative to their setting, we have considerably simplified the decision-making environment for the subjects.

⁹ Other authors have also utilized this bargaining structure in litigation experiments. These include Babcock and Landeo (2004) and Cardella and Kitchens (2014).

¹⁰ Generally speaking, the experiments on self-serving bias do not feature an informational asymmetry as done here. The essence of the experiment is that subjects are presented the same information, but interpret that information differently.

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