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When knowledge is not power: Asymmetric information, probabilistic deceit detection and threats in ultimatum bargaining

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ABSTRACT

We find that probabilistic deceit detection and cheap-talk threats enhance the fairness and honesty of a bargainer who possesses advantageous information and has the opportunity to be deceitful. In our ultimatum game, only proposers know the size of the pie. Proposers, therefore, have the option to understate the pie size and make their offer appear fairer than it really is. The separate and interactive effects of probabilistic deceit detection and cheap-talk threats have implications for how exchange can be facilitated by mechanisms that detect deceit and/or enable buyer communication in markets where sellers have informational advantages.

In markets with asymmetric information, buyers may be vulnerable to deceit and exploitation by information-advantaged sellers. As demonstrated by Akerlof (1970), exchange in these types of settings may fail to occur because buyers recognize that sellers stand to benefit at their expense through deception. But markets in which sellers possess asymmetric information are pervasive, as buyers and sellers in markets that are especially prone to information asymmetries rely on institutional mechanisms to enhance trust by either detecting dishonesty ex ante or punishing dishonesty ex post. These mechanisms themselves, however, are inevitably imperfect. For example, in an online market where sellers receive reputation scores, one potentially bad review that describes a seller's dishonest description of a product's quality may not be a severe enough sanction to outweigh the benefit acquired through the deceit; in an expert-service market where buyers can uncover seller overpricing by seeking a second opinion or by conducting independent research, one lost sale to a vigilant buyer might not outweigh the seller's expected gain from overstating the scope of the required service. In cases like these, while institutional mechanisms provide information-disadvantaged buyers partial protection from deceit, buyers cannot rule out the possibility that there remain incentives to be deceitful. Buyers, therefore, stand to benefit if they can credibly signal both the ability to detect deceit and the willingness to walk away from the transaction if deceit is detected. Sellers must consider the likelihood that their deception will be detected, and condition their behavior on the perceived probability of getting caught and the potential for detected deceit to endanger present or future exchanges.

This paper presents the results of an experiment that is motivated by the pervasiveness of markets in which the harmful effects of asymmetric information are mitigated by trust-enhancing institutional mechanisms. We use a modified ultimatum game to examine how bargainers with advantageous information respond to probabilistic deceit detection and cheap-talk threats from an information-disadvantaged counterpart. We study these two phenomena because of the prominent roles that they play in asymmetric bargaining situations in the field. A seller contemplating deceit cannot be certain that a buyer has not found, or will not find, alternative sources of information that could discover

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the truth. Buyers, despite lacking information, can voice their preferences and threaten to walk away if they detect deceit or dislike the particular terms offered by the seller. How, then, is a seller's tendency to exploit advantageous information affected by probabilistic deceit detection and buyers' ability to respond to detected deceit? To what extent do mechanisms that facilitate deceit detection and give buyers' the ability to communicate, ex ante, with potentially deceitful sellers level the playing field for buyers who lack information?

In the standard ultimatum game (Güth et al., 1982), a proposer is allocated an initial endowment and chooses how much of the "pie" to offer to a responder. The responder, knowing the offer and the size of the pie, then chooses whether to accept or reject the offer. Acceptance leads to the split proposed by the proposer, while rejection causes both players to earn nothing. A modified ultimatum-game experiment conducted by Besancenot et al. (2013) serves as a baseline for our analysis. In their experiment, proposers in an ultimatum game knew the size of the pie, but responders did not. Along with proposing a division of the pie, proposers had to send a non-verifiable message to the responder that indicated the size of the pie. Responders had to accept or reject the offer, knowing that the proposer had an incentive to understate the pie size and make the buyer think that she was receiving a higher share of the surplus than was actually the case. Under these conditions, Besancenot et al. (2013) find that deceit is pervasive: 88.5% of proposers lie about the pie size; on average, proposers under-report the pie size by 20.5%.

Our control treatment replicates Besancenot et al. (2013) by making the proposer's message indicating the pie size non-verifiable, thus ensuring that deception cannot be detected. Additional treatments, however, explore how proposers' decisions are affected by probabilistic revelation of the pie size and by the responders' ability to express their preferences through non-binding (cheap-talk) threats. To explore the effects of probabilistic pie-size revelation, we include treatments in which both proposers and responders know the probability that the actual pie size will be revealed; in a low-probability (high-probability) treatment, there is a 25 (75)% chance that the pie size will be revealed. To explore the effects of responders' threats, we include treatments in which, in addition to probabilistic deceit detection, responders make non-binding statements about (1) how they will respond to dishonesty if it is revealed (by stating whether they will reject or accept an offer in the case of a lie) and (2) how they will respond to a perceived unfair offer (by stating the minimum percentage of the pie that they will accept). Combining threats with probabilistic detection allows us to examine the interaction between probability and responder threats.

Our experiment extends the existing literature that looks at ultimatum-game behavior under conditions of asymmetric information. We study how behavior changes when responders can communicate their desires and proposers know that deceit will be detected probabilistically. The results of the experiment show that, when the probability of detecting deception is low (25%), deception and offers to responders are only affected if responders can threaten proposers with non-binding cheap talk. Thus, when it is unlikely (but possible) that a proposer's deceit regarding the size of the pie will be detected, enabling responder threats decreases the degree of deceit and increases the percentage of the pie that is sent to information-disadvantaged responders. When the probability of detecting deception is high (75%), deception is almost fully eliminated and offers increase. When responders also have the ability to threaten proposers under conditions with a high probability of deceit detection, the amounts sent to responders increase further despite the threats having no additional effect on the degree of proposer deception. Moreover, considering responder behavior, offers are more likely to be accepted when responders learn that proposers have honestly reported the size of the pie.

Combined, the results point to both probabilistic deceit detection and responder threats as important factors that affect both the fairness of offers and the degree of deception in bargaining contexts with asymmetric information. Taken collectively, the results imply that a small probability of deceit detection can go a long way if it is accompanied by a mechanism that empowers information-disadvantaged bargainers to make non-binding threats. Moreover, the results also show that threats influence proposers' behavior mainly by affecting decisions regarding how much to give. Probabilistic deceit detection, in contrast, mainly influences proposers' behavior by affecting decisions regarding how much to lie.

1. Ultimatum games with asymmetric information, deceit and/or threats

Attributed to Güth et al. (1982), the ultimatum game has been used to study strategy and fairness concerns in a simplified bargaining context. Despite the simple prediction, which follows from assumptions of self-interest and profit-maximization, that responders will accept all positive offers and that proposers will, therefore, offer the smallest possible amount, average offers are typically in the range of 35–40% of the pie (Henrich et al., 2005; Oosterbeek et al., 2004). Moreover, offers of less than 30% of the pie are often rejected (Chaudhuri, 2008). Extending the results from the standard ultimatum game, later experiments have used the game as a vehicle to understand how strategy and concerns for fairness are shaped by information asymmetries. Modifications of the standard ultimatum game create a situation in which only proposers know the pie size and provide evidence that bargainers take advantage of information asymmetries in the game (Boles et al., 2000; Güth and Huck, 1997; Güth et al., 1996; Huck, 1999; Kagel et al., 1996; Mitzkewitz and Nagel, 1993; Rapoport and Sundali, 1996; Schmitt, 2004).

Other modifications of the ultimatum game allow explicit deception through communicated messages. Consistent with the broader literature on deception and lying in economic games (Gneezy, 2005; Irlenbusch and Ter Meer, 2013; Lundquist et al., 2009), these experiments show that deceptive messages are often used in ultimatum games when they are available (Boles et al., 2000; Croson et al., 2003; Koning et al., 2011; Kriss et al., 2013). As described above, Besancenot et al. (2013) gave proposers the ability to send a potentially deceptive, and non-verifiable, message to the responder regarding the size of the pie. They found that 88.5% of proposers lied about how much money they received and that proposers, on average, chose to understate their pie size by 20.5%. Veselý (2014), using a similar design, found that 96% of proposers deceived responders in at least one round, and 43% acted dishonestly in three consecutive rounds.

Given these examinations of proposer deceit under conditions where messages to responders are non-verifiable, it is a natural extension to also examine how proposers' behavior with respect to both deceit and the equitableness of their offers changes when messages about pie size become probabilistically verifiable. Anbarci et al. (2015) study probabilistic deceit detection in a modified ultimatum game that they call the taxicab game. Rather than requiring proposers to report the pie size to responders, proposers in this game sent a message that pertains to the offer itself. Like a taxi driver quoting a price at the start of the trip that may not end up being the actual price, proposers in the taxicab game send a message about the size of the offer, which may deviate from the actual offer. Responders in a baseline treatment choose whether to accept or reject the message before learning the actual offer, thereby allowing proposers to induce responders' acceptance by