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Deterministic versus probabilistic consequences of trust and trustworthiness: An experimental investigation

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ABSTRACT

There is overwhelming evidence of reciprocal behavior, driven by intentions. However, the role of consequences is less clear cut. Experimentally manipulating how efficient trust and reciprocity can be in deterministic and uncertain environments allows us to study how payoff consequences of trust and trustworthiness affect reciprocity. According to the results for our modified Investment Game, trustees reward trust more when trust is more efficient but do not adjust rewards when the efficiency of rewarding is varied. Furthermore, higher deterministic benefits result in higher levels of reciprocity for all trust levels, whereas an uncertain environment diminishes reciprocity.

1. Introduction

Trust and reciprocity—in the form of trustworthiness—are main constituents of social capital and have been observed to improve the efficiency of economic systems (Arrow, 1974) and large organizations (LaPorta, Lopez-deSilanes, Shleifer, & Vishny, 1997). According to Coleman (1990), a trust relationship involves at least two parties, a trustor and a trustee, and is characterized by four main aspects: (i) trust opens up new opportunities for the trustee; (ii) when the trustee rewards trust, the trustor is better off than when not trusting; (iii) when the trustor invests in trust, the trustor's resources are accessible to the trustee at no cost; (iv) there is a time lag between the choices of the trustor and the trustee (sequentiality).

In this paper, we inquire about trust and reciprocity in a novel interaction setting that deviates from two aspects of Coleman's description. With reference to aspect (i), trust benefits the trustee but does not affect her opportunity set. In this way,

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we overcome the usual endogenous restrictions imposed on reciprocity. With reference to aspect (iv), we simply ask the trustee to condition her choices upon choices of the trustor. Strategically, what is crucial in a trust relationship is who can condition on the other's choices. Moreover, in contrast to previous experimental studies of trust, we investigate behavior when consequences of trust and reciprocity are either fully deterministic or governed by chance.

Although trust and reciprocity are distinct, they are closely related as the inclination of trustees to reciprocate depends on how they perceive the trusting behavior of the trustor. The standard economic approach does not distinguish decisions involving trust from decisions under risk (Williamson, 1993). In this framework, the trustor would invest in trust only when its expected gains are positive. Trust is thus rationalizable when the likelihood of rewarding is sufficiently high. However, one has to distinguish the strategic aspect of trust from mere stochastic risk. Eckel and Wilson (2004) and Houser, Schunk, and Winter (2010), for example, identify no significant correlation between choices involving risk and those involving trust. An fMRI study (McCabe, Houser, Ryan, Smith, & Trouard, 2001) suggests that the part of the brain involved when individuals mutually interact with each other in trust situations differs from the part involved when individuals face a risky choice task. Additionally, trust is positively influenced by a neuropeptide called oxytocin, whereas risk taking is not (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005).

However, there is evidence that willingness to take risks impacts on trust behavior in a social setting. Specifically, Bohnet and Zeckhauser (2004) and Bohnet, Greig, Herrman, and Zeckhauser (2008) suggest that in trust situations involving social interaction, individuals are less willing to take risks relative to equivalent situations where chance determines the outcome. They experimentally test this hypothesis, which they term betrayal aversion, and robustly support it across different societies and cultures. In particular, when another person rather than nature determines the outcome, trustors demand a higher risk premium to compensate for the costs resulting from a breach of trust.

Trust and reciprocity have been investigated in experimental settings adopting interaction schemes based on a sequential Prisoners' Dilemma. Within the class of games with richer action spaces, the Investment Game (Berg, Dickhaut, & McCabe, 1995) has attracted a great deal of attention and several replications and variations can be found in the experimental economics literature (for a meta-analysis, see Johnson & Mislin, 2011).[1] In the Investment Game (hereafter IG), the trustor chooses how much of a fixed endowment (usually a sum of money) to send to the trustee. This "investment in trust" is then multiplied by a positive factor, usually set equal to three, and forwarded to the trustee who decides how much of the received amount to send to the trustor.

The standard rational choice prediction for this game is that the trustee returns nothing to the trustor and that the trustor, anticipating this, does not send anything in the first place. Contrary to this prediction, Berg et al. (1995) find that trustors send positive amounts, i.e., on average about half of their endowment, and that trustees return on average slightly less than what is invested by the trustors. Additional studies have replicated this result and a robust finding in trust experiments is that trustees reciprocate even when this is costly to them.

Pillutla, Malhotra, and Murnighan (2003) observe that both the magnitude and frequency of reciprocating is higher when trustors take large risks resulting in high benefits for trustees relative to small risks that result in low benefits. This finding is contrary to incremental models of the trust process (e.g., Rempel, Holmes, & Zanna, 1985) suggesting that trustors should gradually build trust by initially taking small risks. However, whether the trustees' decision to reciprocate is due to the size of their benefit as opposed to the level of risk taken by trustors is ambiguous. In experimentally disentangling this confound, Malhotra (2004) finds that trust is more likely when the risk of trusting is low, whereas it does not depend on the level of benefit accruing to the trustee. Reciprocity on the other hand is more likely when the accrued benefit is high, but does not depend on the level of risk for the trustor.

Among the IG experiments, the most relevant for our study are those varying the efficiency factor or multiplier. When reciprocity is measured as the proportion of investment returned to the trustor, a higher multiplier decreases the overall level of reciprocity (for a review of results, see Johnson & Mislin, 2011). In our modified IG, both amounts, the one sent by the trustor and the reward of the trustee, are multiplied by efficiency factors. We experimentally manipulate both multipliers along two dimensions: the multipliers can be *high* or *low* and *deterministic* or *probabilistic*. In the deterministic condition, multipliers are known by participants before choosing, while in the probabilistic condition participants only know that they are high or low, with equal probability. Varying multipliers captures different productivity levels of a given input and allows us to explore how consequences affect trust and reciprocity behavior. In our setting, the choice sets of trustors and trustees remain the same across experimental conditions whereas multipliers differ from one condition to the other. Our design renders the IG more symmetric since trustors and trustees have the same action space and their choice sets are independent.

In our view, such an experimental design can serve two purposes. First, we examine the robustness of trust and reciprocity. So far, it is not clear from previous experimental studies whether their qualitative findings will remain valid in more complex trust experiments. Our participants make several choices confronting them with competing concerns like aversion to mistrust, efficiency seeking and reciprocity inclinations, possibly triggered by preserving a self-image of trustworthiness. Second, we assess how various motives influence behavior in such an experimental setup. In more complex environments, the cognitively more demanding task might influence behavior, e.g., by crowding out or weakening other-regarding

[1] Another form of sequential prisoner's dilemma and a commonly used device to measure reciprocity is the so-called gift exchange game (Fehr, Kirchler, Weichbold, & Gächter, 1998) designed to mimic actual gift exchange in labor markets.