



# On the nature of pessimism in taking and giving games<sup>☆</sup>

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## ABSTRACT

I study allocations and beliefs about allocations in taking and giving games. The allocations are not significantly different between the two games, providing evidence on the isomorphism (equivalence) of taking and giving. In both games, the passive players are pessimistic about (underestimate) their allocations. However, the nature of the pessimism varies. In the taking game, takees underestimate the average allocation of takees and expect that their allocations will be lower than the average. In the giving game, recipients underestimate the average amount received, but do not expect allocations different from the average. The results therefore indicate that framing (taking versus giving) affects the reasons for which beliefs are biased. Third parties also underestimate the average allocations of takees and recipients, suggesting that takees' and recipients' biased expectations about average allocations are not attributable to having monetary stakes in the game. I also find that the effect of the decision-maker's gender on allocations varies by game, takees' beliefs are related to trust, and recipients' beliefs relate to knowing more people.

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## 1. Introduction

In Prospect Theory (Kahneman and Tversky, 1979), losses and gains are modeled differently, suggesting that an agent faced with two payoff equivalent allocation decisions might behave differently depending on whether the outcomes are framed as losses or gains. If those affected by the decisions expect this, they should believe that their allocations might depend on the framing. In contrast, if people have stable preferences over relative payoffs (Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999), the allocations should not vary. Beliefs should not be different either.

In this paper, I determine how beliefs relate to framing in two simple allocation games.<sup>1</sup> I conduct payoff equivalent taking and giving games in which I elicit the beliefs of takees and recipients. Specifically, I have them report their beliefs about their own allocations and about the average allocation of subjects

in their roles. Eliciting both beliefs allows me to identify the sources of optimism/pessimism (over/underestimating the allocations). In particular, I can determine the extent to which optimism/pessimism is attributable to subjects having inaccurate beliefs about the average allocation and/or expecting favorable/unfavorable outcomes relative to the average. I compare my findings from each game. I also elicit third party beliefs about the average allocation in each game in order to determine if any biases held by takees and recipients are shared by subjects without monetary stakes in the game.

The topic is important because biased beliefs about the allocation decisions of others have the potential to affect a wide variety of economic activities, including entrance into incomplete contracts such as agreements over the purchase and sale of assets, the provision of labor, and investment opportunities. If people are optimistic about the actions of others, they may be overly willing to initiate such transactions and fail to protect themselves by monitoring their business/trading partners. If they are pessimistic, they may too readily pass on welfare improving transactions. Identifying the sources of any optimism/pessimism promotes a better understanding of why beliefs are biased, and may be helpful in the development of corrective policy. Examining the topic using taking and giving games determines the role of framing, which one might expect to be important in light of the vast literature demonstrating how social preferences are sensitive to context (see Camerer, 2003 for a survey).

Contrary to research on the “optimism bias” from psychology (Lapsley and Hill, 2010; Weinstein, 1980; Weinstein, Marcus, and Moser, 2005), which is when people underestimate the likelihood

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<sup>1</sup> Some papers (example: Dreber et al., 2013) study framing by manipulating endowments and action spaces in payoff equivalent games AND changing the names of the games and the labeling of strategies. I only manipulate the endowments/action spaces while using neutral terminology throughout. As a result, my results are only attributable to the framing of endowments/actions and not to the game names/strategy labels.

of bad events (by overestimating the probability of a good state), I find pessimism in both games (subjects underestimate their allocations). However, the nature of the pessimism varies by game. In the taking game, takers underestimate the average allocation and expect that their allocations will be lower than the average. In the giving game, recipients underestimate the average, but do not expect allocations different from the average. The difference between games indicates that the framing of the allocation problem affects belief formation.

Third parties also underestimated the average allocations of takers and recipients. In fact, third party beliefs about the average allocations were not significantly different from those of takers and recipients, suggesting that takers and recipients were not trying to avoid disappointment when stating their beliefs. Rather, it appears that there was a general underestimation of the allocations of the passive players. The only way in which beliefs could be considered defensive (Norem and Cantor, 1986) is that takers' beliefs about their own allocations were significantly lower than the third party beliefs about the average allocation of takers. This finding parallels the result that takers expected allocations lower than what they thought the average would be.

While allocations in the two games are similar, the effect of the decision-maker's gender on allocations varies. There is no difference between men and women in the taking game, but in the giving game, women give more than men. This occurs because when the frame switches from taking to giving, men allocate their passive partners similar amounts. Women, in contrast, allocate larger amounts. As far as the determinants of beliefs, in the taking game, there is an important relationship between beliefs and trust: those who are more trusting are more likely to believe that their allocations will compare favorably to the average. In the giving game, beliefs are related to knowing more people. So even though framing does not affect allocations, it affects the sources of pessimism, and the determinants of allocations and beliefs.

Giving in dictator game experiments has been studied extensively since the work of Forsythe et al. (1994) and Hoffman et al. (1994). Camerer (2003) provides a good summary. However, many of the common papers neglect the role of context, which is discussed by Eckel and Grossman (1996). Early papers on taking tend to focus on how expanding the action space of dictators to include taking affects giving decisions, typically reporting that dictators give less when taking is also an option (Bardsley, 2008; List, 2007). More recently, Dreber et al. (2013) compare allocations in payoff equivalent taking and giving games, finding that allocations are invariant to the framing of the game. They elicit beliefs in one of their three studies, but report no significant optimism or pessimism in either game.

This paper contributes to the previous literature in a variety of ways. First, by replicating the findings of Dreber et al. (2013) that taking and giving frames lead to similar final allocations, I provide evidence on the isomorphism (equivalence) of taking and giving. Bardsley (2008), Korenok, Millner, and Razzolini (2014), and List (2007) all report that giving is not equivalent to not taking, but along with Dreber et al. (2013), I provide contrasting results.<sup>2</sup> Second, I build on Dreber et al. (2013) by finding pessimism in both games. I also determine the nature of the pessimism and show how

it differs between the two games.<sup>3</sup> Third, I contribute to the literature on altruism and gender by finding that the effect of gender depends on framing.<sup>4</sup> Fourth and finally, my results on how beliefs relate to social capital including trust and knowing more people add to the literature on social capital (Coleman, 1988; Glaeser et al., 2000; Putnam, 1995), which currently focuses mainly on how social capital affects pro-social behaviors rather than how it affects beliefs.

Replicating Dreber et al.'s (2013) results on the isomorphism of taking and giving provides additional insight on the external validity of giving in dictator games. In light of previous findings that final allocations depend on the action sets of dictators (Bardsley, 2008; Korenok, Millner, and Razzolini, 2014; List, 2007), some researchers (Ex. List, 2007) have criticized the validity of dictator game experiments on the grounds that preferences over allocations are not stable. My results provide evidence in favor of stability, which helps strengthen the case regarding the validity of dictator games (for further discussion on external validity, see Camerer, 2014).

Also on the topic of external validity, it is not immediately clear how well the finding of biased beliefs might generalize to non-lab environments. In the real world, some interactions are one-shot (giving money to a stranger on the street or having money taken from you in the event that you are robbed), but many situations involve repeated interaction, such as giving to the same charity every year. It is not obvious how well people correct their beliefs when engaged in repeated interaction. However, the literature on lab experiments suggests that biases in beliefs are often persistent, even with repetition and feedback (Fischbacher and Gächter, 2010; Gächter and Renner, 2010; Smith, 2013).<sup>5</sup>

## 2. Experimental design

The experiment was conducted in introductory microeconomics classes averaging over 70 students, promoting anonymity among subjects, and between the subjects and the experimenters. Subjects never provided their names to the experimenters.<sup>6</sup> All identification occurred using subject numbers, which were randomly determined based on the decision-making forms that subjects received. The goal was minimizing subjects' concerns about being observed. To further achieve this, the instructors never saw the decisions of individual subjects. During the administration of the experiment, the experimenters learned the decisions of individual subjects (identified by the subject numbers on the decision forms), but by the time the payments were distributed in numbered

<sup>3</sup> The pessimism results contrast the mild optimism about the contributions of others typically found in public good game experiments (Fischbacher and Gächter, 2010; Gächter and Renner, 2010; Smith, 2013).

<sup>4</sup> Previous papers on altruism and gender report varying results on gender differences (Andreoni and Vesterlund, 2001; Bolton and Katok, 1995; Cox and Deck, 2006; Eckel and Grossman, 1998). Eckel and Grossman (1998) find that women are more generous than men, while Bolton and Katok (1995) report no significant difference between genders. Cox and Deck (2006) find that women are more generous than men under certain conditions, such as when: (1) social distance is low, (2) the cost of generosity is low, and/or (3) there is no reciprocal motivation. In contrast, in the study of Andreoni and Vesterlund (2001), men are more generous than women when the cost of generosity is low. Men give less than women when the costs are high. Engel's (2011) meta-analysis reports that women give more than men.

<sup>5</sup> In Gächter and Renner (2010) the bias decreases over time, but remains significant even after ten periods.

<sup>6</sup> Subjects typically provide their names to experimenters when they sign informed consent forms. However, for this study, in order to preserve class time, the institutional review board (IRB) favored not having a paper based informed consent process. Instead, for the duration of the experiment, a slide was projected on an overhead screen explaining that the study was voluntary, IRB approved, and the slide also provided contact information for IRB representatives.

<sup>2</sup> My finding that allocations are invariant to the game also complements research on the equivalence of provision/appropriation behavior in payoff equivalent public good/common pool resource games (Andreoni, 1995; Brewer and Kramer, 1986; Cox et al., 2013; Cubitt, Drouvelis, and Gächter, 2011; Dufwenberg, Gächter, and Hennig-Schmidt, 2011; Sell and Son, 1997; Sonnemans, Schram, and Offerman, 1998).

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