



Monetary incentives versus class credit: Evidence from a large classroom trust experiment



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HIGHLIGHTS

- We report a binary trust experiment incentivized with either cash or class credit.
- Second mover choices are elicited using the strategy method.
- This trust game is played by two auditorium classes with different incentives.
- We find no differences in behavior on average.
- Some second movers play closer to game theoretic prediction if incentivized with credit.

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ABSTRACT

This paper reports an experimental investigation of a trust game using either cash or class credit as incentives to participants. We recruit from two auditorium classes. In one class, each token has cash value; in the other, each token is worth extra-credit points added to the students' overall average at the end of the semester. The results indicate that using extra-credit points to motivate participants generates qualitatively similar data on average as participants incentivized with cash. We do find a difference in behavior with second movers who expect a low grade, but those incentivized with class credit are closer to the game theoretic prediction.

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1. Introduction

Economists have a long history of incentivizing experiments in order to induce participants to take tasks seriously. Because offering class credit is a lower cost incentive than cash payment, determining if participants in experiments make different choices when incentivized with extra-credit points is important to researchers and teachers who use classroom exercises as a pedagogical tool. Researchers have used a variety of games to explore potential differences in behavior with different incentives with mixed results. Isaac et al. (1994) find similar contribution levels in public good experiments with these two incentives. Komai

and Grossman (2006) also find similar results between treatments in a three-person investment game. Kruse and Thompson (2001) however find significantly different distributions of the willingness to pay for a risk-mitigating investment when incentivizing the experiment with cash versus class points. A survey by Camerer and Hogarth (1999) compares monetary incentives to non-monetary incentives, normally class participation though not necessarily extra-credit. The authors conclude monetized incentives matter if effort affects performance, such as with memory recall tasks.¹ More generally, non-monetary incentives in economic experiments, such as intrinsic motivation or curiosity of participants, have been studied by Duersch et al. (2009) and Vinogradov and Shadrina (2013), but with mixed results.

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¹ Ariely et al. (2009) find that high monetary stakes can lower performance relative to lower monetary stakes (i.e. "choking").

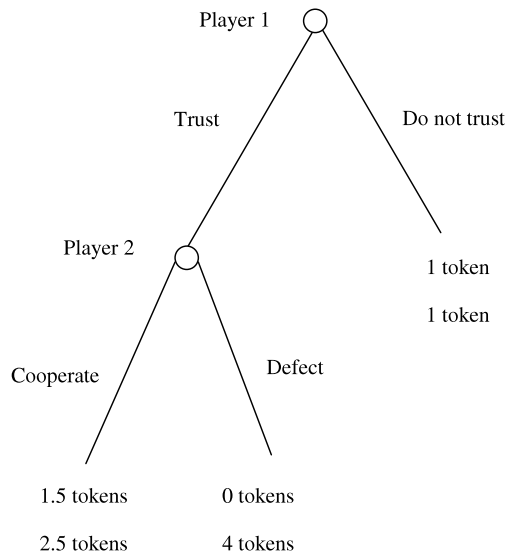


Fig. 1. The trust game. The top number at the end of a branch is the first mover's payoff; the bottom number is the second mover's payoff. In the class credit treatment, each token equaled one extra-credit point added to the final grade. In the cash payment treatment, each token equaled \$10 USD.

This paper extends the literature along two dimensions. First, we employ a variation of the trust game (Berg et al., 1995) to examine behavior incentivized with cash payment or extra-credit points added to the final grade at the end of the semester. The trust game is a kind of task that Camerer and Hogarth (1999) suggest will not be significantly affected by the incentive. We test this hypothesis. Second, a novel feature of our experiment is that sessions were run during the class time of two large auditorium classes²: one incentivized with cash payments, the other with extra-credit points. Conducting the experiment in auditorium classes allowed for a large number of participants who may not have otherwise participated outside of class time.³ On average, we do not find a significant difference in either trusting behavior (first mover choices) or trustworthiness (second mover behavior) between treatments. We also find that second movers who expect a grade of C+ or lower play closer to game-theoretic prediction when incentivized with class points than with cash. Together, these results provide further evidence that extra credit can substitute for small monetary incentives in certain types of experiments.

2. Experimental design

Three hundred four subjects participated in the binary trust experiment illustrated by Fig. 1. Subjects were recruited from two auditorium sections of economics principles classes at Mississippi State University not taught by the experimenters. The experiment was conducted during class time. Students were previously notified of the date of the experiment. Students in one class were told that they would participate in a decision making experiment for extra credit added to their final grade; students in another class were told that they would receive a cash payment for participating. No student had participated in a previous trust or fairness experiment at this university.

² Cleave et al. (2013) also conducts a trust experiment with an auditorium class, but they do so to investigate selection bias in economic experiments.

³ For a recent example of conducting experiments during class time, see Grossman (2013).

Of the many versions of the trust game, our design is closest to that of Cox and Deck (2006). At the beginning of class, the following information was given to participants. Each person was randomly assigned a color and identification number. The color indicated player type: red for the first decision maker and blue for the second decision maker. Each participant was randomly matched with one other participant to determine outcomes. All participants were given one token at the start of the experiment. The number of tokens at the end of the experiment determined either extra credit points or cash earned. Those playing for extra-credit were told each token earned would equal one point added to their overall grade at the end of the semester. Those playing for cash payment were told each token earned would equal \$10 USD.

All participants were told those in the red group would make the first decision. A participant in the red group could either keep her token or pass it to her randomly assigned partner. If the first mover did not pass her token, then the experiment ends and each participant finishes the experiment with one token. If the token is passed, then the experimenter triples this amount so that the second mover would have four tokens in total. We use the strategy method to elicit choices of the second movers (see for example Eckel and Petrie, 2011). Those in the blue group do not know the choice their partner made. If a second mover has four tokens, he can pass tokens to his partner. If a second mover did not have four tokens, then his choice is not used to determine earnings because both players end the game with one token each.

Neutral language was used in the experiment.⁴ Participants were told if there were an odd number of participants, then the students who could not be uniquely matched with one other player would randomly draw from the entire pool of other player types to determine their earnings. We emphasize that if a participant was matched with one other, and also chosen to determine earnings for the odd participant, only the first such pairing determines earnings—a student would not receive two earnings if they were matched with two other students due to an odd number of participants. In the class credit treatment, three of the second decision makers left the experiment, leaving us with 88 first decision makers and 85 second decision makers. We therefore used this procedure to determine earnings for 3 of the first decision makers. In the cash earnings treatment, we had an even number of participants.

After these instructions were read to the entire class, envelopes were distributed to participants. The envelopes indicated the player type (red or blue) and identification number. The envelopes also contained an informed consent document, which was read to the class, and we also gave students an opportunity to leave at this time if they did not want to participate. After the informed consent documents were signed, the blue group was escorted from class so the red group could make their decision. The red group was seated so at least one empty seat separated each participant. Once the blue group exited the classroom, specific instructions were given to the red group, very similar to what was explained to the entire class. These participants were given a decision sheet. Each participant used the decision sheet to indicate if she wanted to pass her token to her partner. Decision sheets were collected upon completion.

The red group was escorted from the classroom while the blue group entered. The two groups used different doorways, so they did not interact during this time. Once the blue group was seated, specific instructions were read. The blue group was told they will not know what their partner in the red group chose. If their partner did not pass the token, then both participants end the experiment with one token. If their partner did pass the token, then the blue player had four tokens, and the decision sheet distributed would

⁴ Full instructions and materials are available from the authors upon request.

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