

What could possibly go wrong? Predictable misallocation in simple debt repayment experiments

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1. Introduction

People seem to not repay debts in an interest minimizing way

- Recent studies show this for credit cards (Amar et al., 2011; Gathergood et al., 2019; Ponce et al., 2017), even accounting for minimum payments etc.

Why is that interesting?

- Surprisingly easy problem, so especially puzzling, due to dominant solution: Completely repay the card with the highest interest rate first, then the second highest, and so on.
- Relevant for policy, since one might want to help people make better decisions.

3. Experiment #1: Predicting misallocation

General setup

- Subjects have two credit cards and one checking account with money to repay debts.
- Credit cards charge interest after repayment, such that debt is minimized by repaying all money from the checking account on the high interest rate credit card.
- 15 independent decision scenarios varying in balances, interest rates and income.
- Seven predicted patterns of misallocation, each with a “fallacy scenario” where the fallacy is possible/likely, compared to a custom “control scenario” where the fallacy is impossible/unlikely.
- Subjects decide between five repayment options (All on one of the cards, 1:2 or 2:1 split, and 1:1 split). In a fallacy scenario, one non-optimal option is implied by the fallacy.
- Data:** 335 participants on Amazon’s crowd-sourcing platform MTurk, within design.

Analyses

H1.1: Subjects choose the fallacy implicated option more often in the fallacy scenario than in its control scenario.

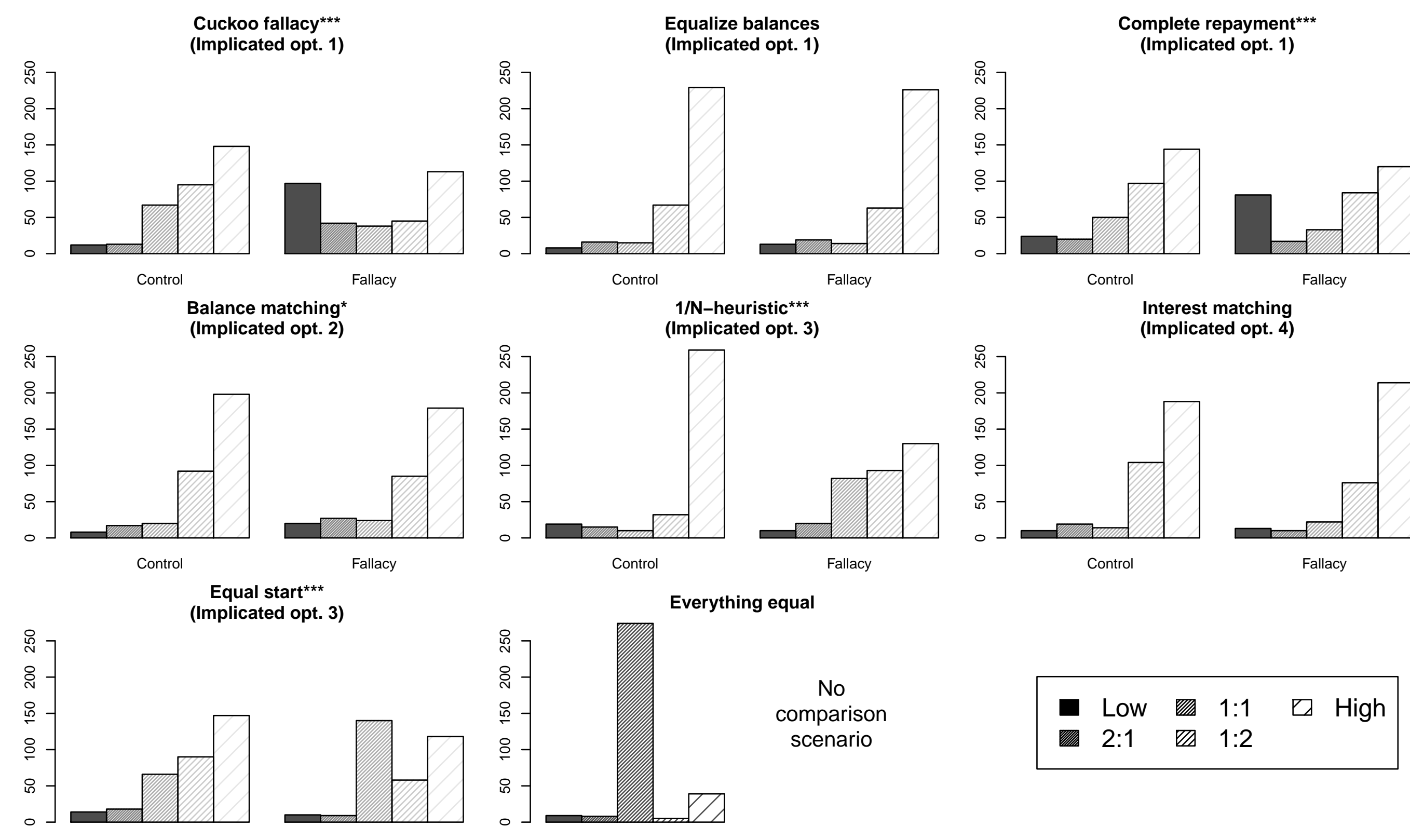
H1.2: Subjects choose the optimal option less often in the fallacy scenario than in its control scenario.

Two sets of seven independent OLS regressions, each comparing a control to its fallacy scenario. Two different dependent variables:

Set 1 for H1.1: *fallacy option dummy*, =1 if subject chooses fallacy-implicated option.

Set 2 for H1.2: *optimal option dummy*, =1 if subject chooses optimal option.

Results



The figure shows the absolute number of choices in all scenarios. Control and fallacy scenarios are reported in pairs. The differences hypothesized in H1.1 and H1.2 are significant in the five pairs marked with stars¹.

¹ *p<0.1; **p<0.05; ***p<0.01

2. Research questions

- Can we predict the level of misallocation assuming people use different heuristics?
- Can we decrease the level of misallocation using framing?

4. Experiment #2: Decreasing misallocation

General setup

- Setup of two credit cards and one checking account for income just as in experiment # 1, but now ten dependent rounds, where earlier decisions influence later rounds.
- Cards start with \$2200 debt, roundly income is \$250. Interest rates are 5% and 3%.
- Subjects can allocate money freely over credit card accounts or the checking account.
- Heuristic we try to fight: People repay the card that accumulates more new debts, which leads to a fallacy (“Cuckoo Fallacy”) if this is the low interest card.
- 3 treatments:**
Control treatment (“Basic”): Balances and interest are equally salient information.
Sludge treatment (“ShowNewDebts”): Show the absolute interest payments one has to pay after each round
Nudge treatment (“ShowSavedMoney”): Show sum of debt, how much can be saved through current payment, and explain interest rates more intuitively.
- Data:** 414 participants on Amazon’s crowd-sourcing platform MTurk.

Analyses

H2.1: The mean misallocation in the Nudge is lower than in the control treatment.

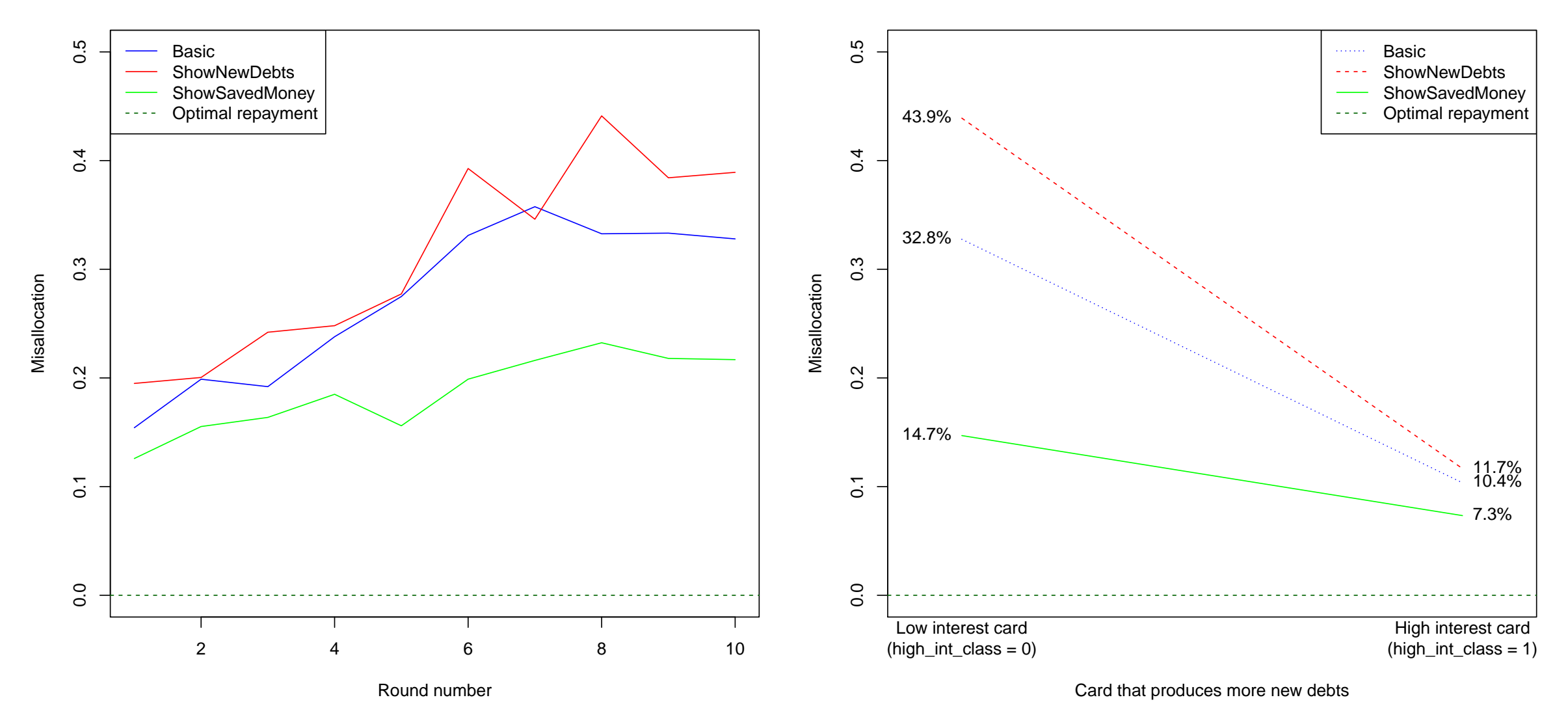
H2.2: The mean misallocation in the Sludge is higher than in the control treatment.

Divide rounds via variable *high_int_class* (=1 if the expensive rate card produces more new debt, =0 otherwise, i.e. Cuckoo fallacy possible).

Dependent variable: Misallocation (Share of the money that was NOT transferred to the high interest rate card)

OLS regression of misallocation on treatment, variable *high_int_class* and further controls.

Results



Strong evidence for ShowSavedMoney (H2.1, main effect and interaction between treatment and *high_int_class* significant) and weak evidence for ShowNewDebts (H2.2., main effect not consistently significant and no interaction), thus evidence for framing effects.

5. Conclusion

- We find severe deviations from optimal repayment in both experiments.
- Misallocation occurs systematically, different situations trigger different fallacies.
- Framing can steer misallocation, moreover it can help to avoid sub-optimal repayment.

6. References & Further Information

References

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- Gathergood, J., N. Mahoney, N. Stewart, and J. Weber (2019). How do individuals repay their debt? the balance-matching heuristic. *American Economic Review* 109(3), 844–875.
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