ONLINE SUPPLEMENTARY MATERIAL TO THE PAPER:

Experimental (re)analysis of the house-money effect in a public goods game
By

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Abstract to Online Supplementary Material (OSM)
This Online Supplementary Material contains Appendices A-C. Online Appendix A contains the contracts and experimental instructions for the first and second sessions. Online Appendix B contains additional analysis, including power analysis of t tests, summary statistics from additional tasks and questionnaires, selection of subjects (signing the contracts and returning for 2nd Sessions), kernel density estimates and non-extreme contributors, regression analysis without additional controls, regression analysis using only Advance subjects who spent some of the advance cash payment, and extreme behavior analysis based on quartiles. Online Appendix C contains the design and results from the preliminary study used to determine the sample size required to have sufficient power to detect effect sizes observed in related literature.

Appendix A. Contracts, Experimental Instructions, Elicitation Tasks, and Questionnaires

A1. Instructions and contracts for the first session

A1.1 House Treatment
1. You have the opportunity to participate in an economics experiment.
2. If you decide to participate, you should sign the contract below committing to show up on Monday, April 29th, at 3:30pm.
3. If you decide to participate, the decisions you make in the experiment and the results associated with them will remain confidential and anonymous.

Below is the contract to be signed if you decide to participate. Please read the contract carefully and sign it.

<div align="center">

CONTRACT

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I, _____ (printed full name), identified with the ID card of Appalachian State University, agree to attend an economics experiment on _____(day of week), _____(month and date), at _____(time) in Peacock Hall room #3021. I understand that I am guaranteed at least $5 for participating in both today's session and the second session of the experiment.

Signature_____

A1.2 Advance treatment

1. You have the opportunity to participate in an economics experiment. For the experiment, you will receive $12.50 today. You will need to bring $12.50 with you to the second session of the experiment. You can earn more or less than this amount depending on the decisions you make during the second session of the experiment. At no point can you lose more than $12.50 that we provide.
2. You do not need to bring back the same bills and coins to the second session.
3. If you decide to participate, you should sign the contract below committing to show up on _____(day of week), _____(month and date), at _____(time).
4. If you decide to participate, the decisions you make in the experiment and the results associated with them will remain confidential and anonymous.

Below is the contract to be signed if you decide to participate. Please read the contract carefully and sign it.

CONTRACT

I, _____ (printed full name), identified with the ID card of Appalachian State University, agree to voluntarily participate in the experiment and certify that I received the $12.50 on _____(current day of week), _____(month and date) _____(year).

Further, I agree to attend an economics experiment on _____(day of week), _____(month and date), at _____(time) in Peacock Hall room #3021. I understand that in the second session of this experiment I can earn more than $12.50 or lose some amount of the $12.50 that I have received today. However, I am guaranteed to make at least $5 for participating in both today's session and the second session of the experiment. In case I lose some of the $12.50 during the second session of the experiment, I agree to reimburse the money I lose at the conclusion of that session.

Signature: _____

A2. Instructions, Elicitation Tasks, & Questionnaires for the second session - House & Advance Treatments

A2.1 Public Goods Game Instructions

Note: the only difference in the instructions between the House and Advance treatments is an additional second paragraph in the Experiment Overview section in Advance. This paragraph is in square brackets.

Experiment Overview

This is an experiment in the economics of strategic decision-making. In this experiment you will make a series of choices, each of which may earn you money. The amount of money you earn will depend on the decisions you make and on the decisions of others. If you listen carefully and make good decisions, you could earn a considerable amount of money that will be paid to you in cash at the end of the experiment.

[Advance: If your earnings from the experiment are greater than $12.50, then you will receive the difference at the conclusion of the session. If your earnings from the experiment are less than $12.50, you will need to pay the experimenter the difference between $12.50 and your earnings. For instance, if you earn $14, at the conclusion of the session you will be paid $1.50. In contrast, if you earn $11, at the conclusion of the session you will need to pay the experimenter $1.50. You will always be able to avoid losing money with certainty through your own decisions.]

Ground Rules

Please make all decisions independently; do not communicate with others (in the room or outside the room) in any way during the experiment. This means no talking, no cell phone usage, no texting, no internet chatting, etc. Please do not attempt to use any software other than the experiment software provided. Failure to comply with these rules will lead to dismissal from the experiment.

Instructions
During the experiment, participants earn tokens. All participants will be paid based on the number of tokens they earn. Each token is worth 1.25 cents, or $1 for every 80 tokens.

The experiment consists of 20 rounds. At the start of the first round, you will be randomly and anonymously matched into groups of 3. You will remain in the same group of 3 for all 20 rounds of the experiment.

Each of you will have a private account, and the three of you together will have a group account. In each round you will choose how to allocate tokens between your private account and the group account. Each other number of your group will be faced with the same choice.[1] At the start of each round, you will have 50 tokens in your private account. The group account starts with a balance of 0 tokens. You may move any number of tokens between 0 and 50 from your private account to the group account.

For each token you move to the group account, 1 token will come out of your private account, but 1.5 tokens will go into the group account. Thus, each token you move to the group account gets multiplied by 1.5. At the end of each round, you get the tokens remaining in your private account plus 1/3 of the tokens in the group account. Similarly, each other member of your group will get the tokens remaining in their own private account plus 1/3 of the tokens in the group account. Thus, the tokens moved to the group account by all 3 of you are multiplied by 1.5 at the end of the round and are divided equally among the 3 members of your group (including yourself).

In other words, for each token moved from a private account to the group account (by you or any other member of your group), the amount you and every member of your group get from the group account at the end of the round is increased by 0.5 tokens each. To clarify, consider the following examples.

Example 1: Suppose you and each of the other 2 members of your group move 12 tokens each to the group account, for a total of 36 tokens. This number would be multiplied by 1.5, for a balance of 54 tokens in the group account at the end of the round. You would get the 38 tokens remaining in your private account plus a 1/3 share of the tokens in the group account (18 tokens). Thus, your total earnings for the round would be 56 tokens. Similarly, the other 2 members of your group would get 56 tokens each

Example 2: Suppose you move 40 tokens to the group account, and the other 2 members of your group move 6 tokens each to the group account, for a total of 52 tokens. This number would be multiplied by 1.5, for a balance of 78 tokens in the group account at the end of the round. You would get the 10 tokens remaining in your private account plus a 1/3 share of the balance of tokens in the group account (26 tokens). Thus, your total earnings for the round would be 36 tokens. Each of the other 2 members of your group would get the 44 tokens remaining in each of

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[1] The highlighted "number" in this sentence is a typo and should have read "member". This typo appeared in the original instructions used in the experiment. We thank the editor for pointing this out.

their private accounts plus 26 tokens each from the group account. Thus, the other 2 members of your group would get 70 tokens each.

Note that you must make your choice without knowing the choices of the other members of your group. Similarly, the other members of your group must take their choices without knowing anyone else's choice. At the end of each round, you will see the number of tokens that were moved to the group account by each individual member of your group. You will also see your own earnings in tokens for the round.

Remember that you will remain with the same group of 3 for all rounds in the experiment. At the end of the experiment, you will be paid for the total number of tokens you earned in all 20 rounds.

Are there any questions before we begin the experiment?

A2.2 Questionnaires and Elicitation Tasks

Note: the only differences in the questionnaires and elicitation tasks between the House and Advance treatments are three additional questions in the post-experiment spending questionnaire in Advance. These questions are in square brackets.

<div align="center">Risk Preference Elicitation</div>

Thank you for participating in the experiment. Now we would like you to make a few more decisions.

You will be asked to choose between two options, "Option A" and "Option B", in 10 different decisions. Each Option will be a lottery, which has some chance of winning one money prize, and another chance of paying another money prize. These chance outcomes are determined randomly by the computer.

For example, if Option A is "$2.00 (40% chance) or $1.60 (60% chance)" this means that if you choose Option A, you will have a 40% chance to get $2.00, and a 60% chance to get $1.60. For each of the 10 decisions, choose either Option A or Option B. Your choices can be different for different decisions, but you can only choose one option for each decision.

Only 1 of these 10 decisions will be paid. Which of the decisions is paid will be determined randomly by the computer. Your decisions in this part of the experiment will not affect your payment for the other parts of the experiment.

Decision	Option A	Option B
1	$2.00 (10% chance) or $1.60 (90% chance)	$3.85 (10% chance) or $0.10 (90% chance)
2	$2.00 (20% chance) or $1.60 (80% chance)	$3.85 (20% chance) or $0.10 (80% chance)
3	$2.00 (30% chance) or $1.60 (70% chance)	$3.85 (30% chance) or $0.10 (70% chance)
4	$2.00 (40% chance) or $1.60 (60% chance)	$3.85 (40% chance) or $0.10 (60% chance)
5	$2.00 (50% chance) or $1.60 (50% chance)	$3.85 (50% chance) or $0.10 (50% chance)
6	$2.00 (60% chance) or $1.60 (40% chance)	$3.85 (60% chance) or $0.10 (40% chance)
7	$2.00 (70% chance) or $1.60 (30% chance)	$3.85 (70% chance) or $0.10 (30% chance)
8	$2.00 (80% chance) or $1.60 (20% chance)	$3.85 (80% chance) or $0.10 (20% chance)
9	$2.00 (90% chance) or $1.60 (10% chance)	$3.85 (90% chance) or $0.10 (10% chance)
10	$2.00 (100% chance)	$3.85 (100% chance)

<div align="center">Loss Aversion Preference Elicitation</div>

Now we would like you to make a few more decisions.

You will be asked to choose between two options, "Option A" and "Option B", in 10 different decisions. Option A will be a lottery, which has some chance of winning one money prize, and

another chance of losing another money prize. These chance outcomes are determined randomly by the computer.

For example, if Option A is "-$2.00 (40% chance) or $1.60 (60% chance)" this means that if you choose Option A, you will have a 40% chance to lose $2.00, and a 60% chance to get $1.60. Option B is a sure outcome of $0.

For each of the 10 decisions, choose either Option A or Option B. Your choices can be different for different decisions, but you can only choose one option for each decision.

Only 1 of these 10 decisions will be paid. Which of the decisions is paid will be determined randomly by the computer. Your decisions in this part of the experiment will not affect your payment for the other parts of the experiment.

Decision	Option A	Option B
1	-$2.00 (10% chance) or $1.60 (90% chance)	$0 (100% chance)
2	-$2.00 (20% chance) or $1.60 (80% chance)	$0 (100% chance)
3	-$2.00 (30% chance) or $1.60 (70% chance)	$0 (100% chance)
4	-$2.00 (40% chance) or $1.60 (60% chance)	$0 (100% chance)
5	-$2.00 (50% chance) or $1.60 (50% chance)	$0 (100% chance)
6	-$2.00 (60% chance) or $1.60 (40% chance)	$0 (100% chance)
7	-$2.00 (70% chance) or $1.60 (30% chance)	$0 (100% chance)
8	-$2.00 (80% chance) or $1.60 (20% chance)	$0 (100% chance)
9	-$2.00 (90% chance) or $1.60 (10% chance)	$0 (100% chance)
10	-$2.00 (100% chance)	$0 (100% chance)

Post-Experiment Spending Questionnaire
[House Treatment]
1. How much cash do you currently have in your possession?
2. To your best estimate, which of the following best describes your family's combined household income? "K" represents a thousand dollars. ("$0-$25K"; "$25K-$50K"; "$50-$75K"; "$75K-$100K"; "$100K-$125K"; "$125K-$150K"; "$150K+")
3. What percentage of your small purchases, $50 or less, are made with cash (rather than with a credit/debit/App card)? For instance, when you purchase fast food, you can use cash or card.

[Advance Treatment]
[1. How much cash do you currently have in your possession (including the $12.50 you received from the experimenters prior to today)?
2. Of the original $12.50 cash you received from the experimenters prior to today, how much of that specific cash do you have left? For instance, if you spent $5.25 on a sandwich, then you would

have $7.25 left ($12.50 - $5.25) and would have needed to replace the $5.25 before you came to the session today.

3. If you have all of the original $12.50 cash left, why did you not spend it before today? (Possible multiple-choice options: Felt obligated to bring all of the original cash to the session; Do not typically make purchases with cash; Other-please describe below.)

4. Did you make any additional or more expensive purchases in the last 3 weeks because you received the additional $12.50?

5. To your best estimate, which of the following best describes your family's combined household income? "K" represents a thousand dollars. ("$0-$25K"; "$25K-$50K"; "$50-$75K"; "$75K-$100K"; "$100K-$125K"; "$125K-$150K"; "$150K+")

6. What percentage of your small purchases, $50 or less, are made with cash (rather than with a credit/debit/App card)? For instance, when you purchase fast food, you can use cash or card.]

Experience, Major, Religion, Race, and Politics Related Questions

Not counting this one, how many economics experiments have you previously participated in (best guess if not sure)?

What is your major?

What is your race?

What religion (if any) do you identify with?

On a scale from 0-5, 0 being no religious practice and 5 being frequent religions practice, rate your level of religious practice.

In politics today, do you consider yourself a Republican, Democrat, or Independent?

Within your political identification in politics today, on a scale from 0-5, 0 being no political activity and 5 being frequent political activity, rate the level of your political intensity.

In politics today, do you consider yourself conservative, moderate, or liberal?

Within your political orientation in politics today, on a scale from 0-5, 0 being very conservative and 5 being very liberal, rate the level of your political ideology.

COVID Related Questions

How many of your courses in the Fall '20 and Spring '21 semesters were either completely in-person or hybrid with at least a few in-person meetings?

Answer the next questions using a 1-5 Scale, where 1 is "completely disagree" and 5 is "completely agree".

I am concerned about my health and am taking action to prevent COVID-19.

I am concerned about risks to others' health and am taking action to prevent COVID-19.

I followed the rules for sheltering in place.

I have chosen not to visit friends and family.

I practice social distancing to limit the risks of COVID-19.

I wear a mask to limit the risks of COVID-19.

Appendix B. Additional analysis
**B.1 Power analysis of t tests**
The data from the pilot sessions reported in Appendix C was used to determine what sample sizes were needed to find significant effect sizes. Based on the pilot data, it appeared there may have been significant differences in extreme behavior between treatments, but the sample sizes were not large enough to detect it at the 5% level (n=12 independent groups in House and n=11 independent groups in Advance). The proportions of complete free-riders and full contributors were higher in House than in Advance. For each group, we took the average proportions of extreme behavior across all rounds. The average (standard deviations) proportions of complete free-riders for House and Advance were 21.81% (18.42%) vs. 11.82% (11.53%), respectively. The average (standard deviations) proportions of full contributors for House and Advance were 13.89% (18.66%) vs. 6.67% (7.75%), respectively.

Using these mean proportions from the House treatment and the standard deviations of extreme behavior proportions in both House and Advance treatments from the pilot sessions, Figure B.1 reports sample sizes needed to detect effect sizes in the Advance treatment at the 5% significance level with 80% probability. Panel A reports the power analysis for complete free-riders and Panel B reports the power analysis for full contributors. In both cases, the sample size required to find an effect size of 13% is between 18-21 independent groups per treatment.

An effect size of 13% in the average proportion of complete free-riding was found to be significant in Cox and Stoddard (2015) when comparing public goods treatments similar to those examined in this paper, Partners-Take-Individual (PTI) and Partners-Give-Individual (PGI). Both of these treatments examined linear public goods games with partners matching and individual-level feedback. PGI used the same instructions as House, except the MPCR in PGI was 0.75 and the MPCR in House is 0.5. PTI used similar instructions as PGI, except there was a payoff-equivalent endowment that started in the group account. Rather than contributing to the group account up to a certain endowment, in PTI, group members could take resources from the group account up to a certain amount that was equivalent to a group member's endowment in PGI. The average proportion of complete free riders in PTI was 21.63% with a standard deviation of 22.58%, n=15 independent groups; The average proportion of complete free riders in PGI was 8.67% with a standard deviation of 12.37%, n=10 independent groups.[2] The 13% effect size comes from the difference in average proportion of free riders between PTI and PGI, 21.63% - 8.67%. Notice that the sample sizes needed to detect a 13% effect size suggested by our power analysis are larger than the sample sizes in Cox and Stoddard (2015).

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[2] The standard deviations of complete free-riding were not reported in Cox and Stoddard (2015). They were found using the original dataset from the study.

Figure B.1 Sample size per treatment by effect size of t tests comparing proportions of extreme behavior (Detect significant effect size at 5% level with 80% probability)

| (a) | (b) |

Proportion of Free Riders

Proportion of Full Contributors
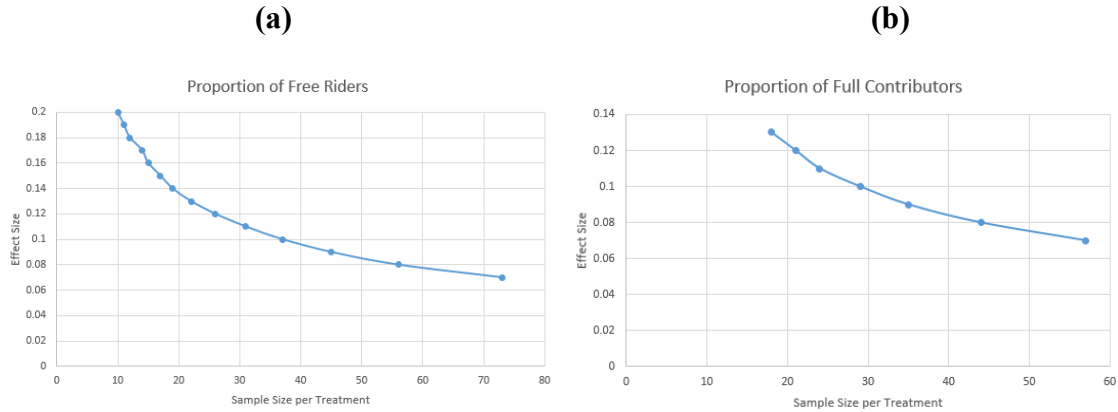
Based on this power analysis, we conducted a new experiment with the target sample size. We gathered 19 independent groups in House and 20 independent groups in Advance. There were multiple (at least 3) first sessions in each treatment. We conducted 3 second sessions in House and 5 second sessions in Advance. There were more second sessions in Advance because more first sessions had low registration. Table B.1 outlines the timing of decisions, treatments, sessions, and number of subjects.

Table B.1. Outline of experimental design

Treatment	Subjects @ 1st Sessions	Signed Contract	Advance Payments @ 1st Sessions	Subjects (Groups) @ 2nd Sessions	Weeks between matched 1st & 2nd sessions
House	75	70	No	57 (19)	3
Advance	78	72	Yes	60 (20)	3

References
Cox, C., and Stoddard, B. (2015). "Framing and Feedback in Social Dilemmas with Partners and Strangers", *Games*, 6, 394-412.

B.2 Summary Statistics from Additional Tasks and Questionnaires

Table B.2. First Session Summary Statistics of Controls and Demographics

Variables	House Mean (St Dev)	Advance Mean (St Dev)
Loss Aversion (Out of 10) -larger # implies more loss aversion	3.73 (1.95)	3.41 (1.86)
Risk Preferences (Out of 10) -larger # implies higher risk aversion	5.60 (1.64)	5.78 (1.74)
Male	41.79% (49.69%)	34.69% (48.09%)
Other Econ Experiments	2.19 (2.60)	1.67 (1.65)
HH Income	$97,857 ($45,393)	$107,653 ($52,093)
Cash in Pocket	$71.96 ($157.08)	$71.43 ($200.43)
Cash in Pocket Drop if >$210	$31.42 ($41.90)	$31.91 ($41.90)
% Small Purchases (<$50) with Cash	18.90% (20.55%)	17.45% (21.04%)
Business Majors	34.29% (47.81%)	38.76% (49.23%)
White	74.29% (44.02%)	77.55% (42.16%)
Believers	57.14% (49.84%)	65.31% (48.09%)
Democrats	42.86% (49.84%)	40.82% (49.66%)
Liberals	52.86% (50.28%)	48.98% (50.51%)
# In-Person/Hybrid Class During Covid	2.53 (2.10)	2.22 (1.96)
Concern for Own Health & Prevention (0-5)	3.86 (1.32)	3.94 (1.14)
Concern for Others' Health & Prevention (0-5)	4.37 (1.04)	4.43 (0.94)
Rules to Shelter in Place (0-5)	3.96 (1.28)	4.27 (0.86)
Don't Visit Friends & Family (0-5)	2.93 (1.31)	2.71 (1.12)
Practice Social Distance (0-5)	4.07 (1.21)	4.18 (0.97)
Wear Masks (0-5)	4.54 (1.06)	4.78 (0.69)

70 subjects in House and 49 subjects in Advance. Transgender subjects are excluded from gender dummy. Subjects who participated in one of the second Advance sessions that crashed are not included. zTree crashed while subjects in the second session of the Advance treatment were entering this data, and it was not saved. Because we cannot match the controls and demographics from the first session to the second session for the subjects for whom the session crashed, we want to make Tables B.2 & B.3 more comparable.

Table B.3. Second Session Summary Statistics of Controls and Demographics

Variables	House Mean (St Dev)	Advance Mean (St Dev)
Loss Aversion (Out of 10) -larger # implies more loss aversion	3.35 (2.07)	2.33 (1.51)
Risk Preferences (Out of 10) -larger # implies higher risk aversion	6.25 (1.66)	6.43 (1.65)
Male	40.74% (49.60%)	34.15% (40.01%)
Other Econ Experiments	3.89 (2.97)	4.14 (2.27)
Cash Left (Out of $12.50)	---	$12.23 ($14.73)
Spend Any Advance Cash (Yes/No)	---	30.95% (46.79%)
Cash Left if Spent Any (Out of $12.50)	---	$4.44 ($5.51)
Cash Spent if Spent Any (Out of $12.50)	---	$8.06 ($5.51)
Additional Expenses (Yes/No)	---	9.52% (29.71%)
HH Income	$100,000 ($40,089)	$111,310 ($52,441)
Cash in Pocket	$36.02 ($71.02)	$46.27 ($97.33)
Cash in Pocket Drop if >$1000	$27.73 ($33.93)	$34.59 ($61.97)
% Small Purchases (<$50) with Cash	18.40% (18.92%)	19.69% (24.45%)
Business Majors	36.84% (48.67%)	42.86% (50.09%)
White	85.96% (35.04%)	87.80% (33.13%)
Believers	64.91% (48.15%)	57.14% (50.09%)
Democrats	47.37% (50.37%)	50.00% (50.61%)
Liberals	52.63% (50.37%)	52.38% (50.55%)
# In-Person/Hybrid Class During Covid	2.39 (1.99)	2.19 (2.17)
Concern for Own Health & Prevention (0-5)	3.86 (1.34)	3.90 (1.16)
Concern for Others' Health & Prevention (0-5)	4.33 (1.11)	4.31 (1.05)
Rules to Shelter in Place (0-5)	3.79 (1.36)	3.88 (1.11)
Don't Visit Friends & Family (0-5)	2.95 (1.23)	2.57 (1.13)
Practice Social Distance (0-5)	4.00 (1.22)	4.05 (1.13)
Wear Masks (0-5)	4.46 (1.12)	4.60 (0.89)

57 subjects in House and 42 subjects in Advance. Transgender subjects are excluded from gender dummy.

B.3 Selection of Subjects (Signing the Contracts and Returning for 2nd Sessions)

When subjects were recruited, they were told they would participate in two sessions. The dates and times of both sessions were provided in recruiting emails sent via ORSEE. Subjects were never told there were different treatments. They were only told about the specific treatment they registered for.

The contracts signed at the first sessions of House differed from Advance. For instance, the contract for first sessions in Advance told subjects they would be paid $12.50 and that they could lose some of it during the second sessions (see Appendix A.2 for the complete contracts). Because the contracts were different, the willingness to sign the contract may differ across treatments. However, we do not find a big difference in willingness to sign the contract across treatments (House - 70/75; Advance - 72/78). Nearly all of the subjects signed the contract. When asked to provide a reason for why subjects did not sign the contract, 10 out of 11 wrote that they had scheduling conflicts 3 weeks later. The 11th subject was in a House first session and did not provide a reason.

There also may be a self-selection in what type of subjects return for the second sessions. In addition to the different contracts subjects signed, preferences and characteristics may also have an impact on whether subjects return for second sessions. Although, over 80% of subjects returned for second sessions (House - 57/70; Advance - 60/72). Table B.4 reports logit regression models where the dependent variable is the probability of returning for the second session. Independent variables include decisions from risk and loss aversion tasks, as well as demographic, political, religious, income, and COVID questionnaires. The primary result from the regression models is that there are no strong predictors of which type of subjects return for second sessions, including what treatment they were assigned. The more loss averse a subject is, the weakly less likely they were to return for a second session. White subjects (about 75% of sample) and democrats (about 41%) were weakly more likely to return for second sessions. Finally, the more likely a subject was to not visit family and friends during the pandemic, the weakly less likely they were to return for a second session.

To account for the attrition under mild assumptions, and to provide some further evidence on the precision of the estimates in Model 4 in Table 2 of the main text, Lee Bounds estimates are reported (Lee, 2009; Tauchmann, 2014). Model 4 is used in order to use data from all 117 subjects who returned for second sessions. Nonrandom sample selection may render estimated treatment effects biased even if assignment of treatment is purely random. Lee (2009) proposes an estimator for treatment-effect bounds that limit the possible range of the treatment effect. In this approach, the lower and upper bound correspond to extreme assumptions about the missing information that are consistent with the observed data. The upper- and lower-bound Lee estimates of the treatment effect are still insignificant (Advance treatment dummy, -2.831 & -1.662, respectively; p-value > 0.45 for both bounds). See footnote #4 in the main text.

Table B.4. Logit regression of probability of returning for second session

Coefficients	Model 1	Model 2
advanced_d	-0.508	-0.876
	(0.490)	(0.563)
loss_averse	-0.203*	-0.234*
	(0.123)	(0.139)
risk_averse	0.0686	0.106
	(0.158)	(0.170)
male_d	-0.123	-0.504
	(0.520)	(0.721)
econexperiments	0.146	0.271
	(0.142)	(0.186)
covid_classes	0.00674	-0.0637
	(0.122)	(0.137)
white_d	1.130**	0.918
	(0.515)	(0.618)
democrat_d	1.026*	1.327*
	(0.549)	(0.679)
hh_income	---	0.00770
		(0.00624)
Cash_Wallet	---	-0.000604
		(0.00155)
bus_maj_d	---	0.119
		(0.691)
believer_d	---	0.890
		(0.613)
liberal_d	---	0.203
		(0.693)
prevent_action	---	-0.198
		(0.331)
others_health	---	0.567
		(0.495)
shelter_rules	---	-0.0691
		(0.380)
not_visit	---	-0.564*
		(0.301)
social_dist	---	0.109
		(0.415)
wear_mask	---	-0.159
		(0.487)
Constant	0.451	-0.188
	(1.327)	(2.117)
Observations	116	116

Standard errors in parentheses Excluded treatment: House. Regressions drop observations from those who did not sign the contract in first sessions, 6 groups from the crashed Advance second session, and transgender subjects. $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

B.4 Kernel density estimates and non-extreme contributors

Figure B.2 shows the kernel density estimates of the probability density functions and histograms of the distribution of individual contributions, pooled over all rounds (1,140 House observations and 1,182 Advance observations). The distributions appear to be similar for the two treatments. However, the percentages of observations at contributions of 0 (minimum) are higher in Advance (approximately 12% and 16%, respectively).

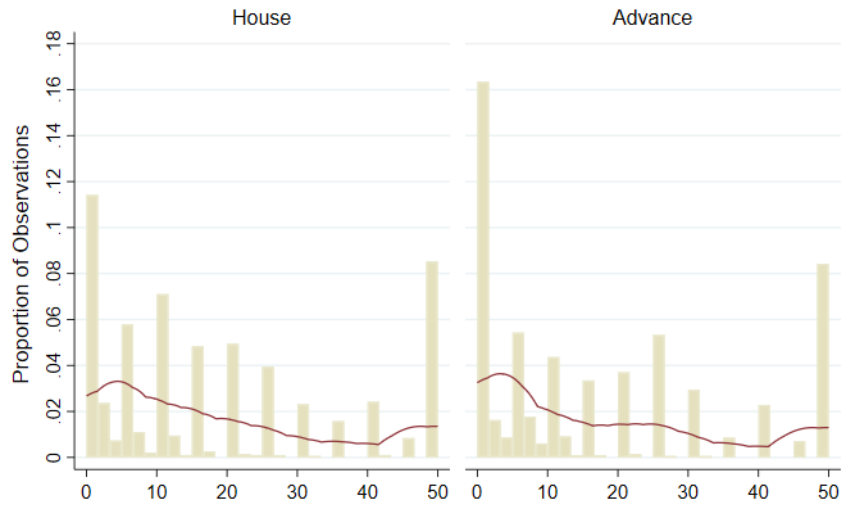**Figure B.2. Kernel density estimates and histograms of individual contributions (all rounds)**

Figure B.3 displays a time trend of the average contribution of non-extreme contributors (i.e., 0 < contribution < 50) over all 20 rounds of the experiment. It appears house money had no clear effect on non-extreme positive contributions.

Figure B.3: Time trend of average contribution of non-extreme contributors
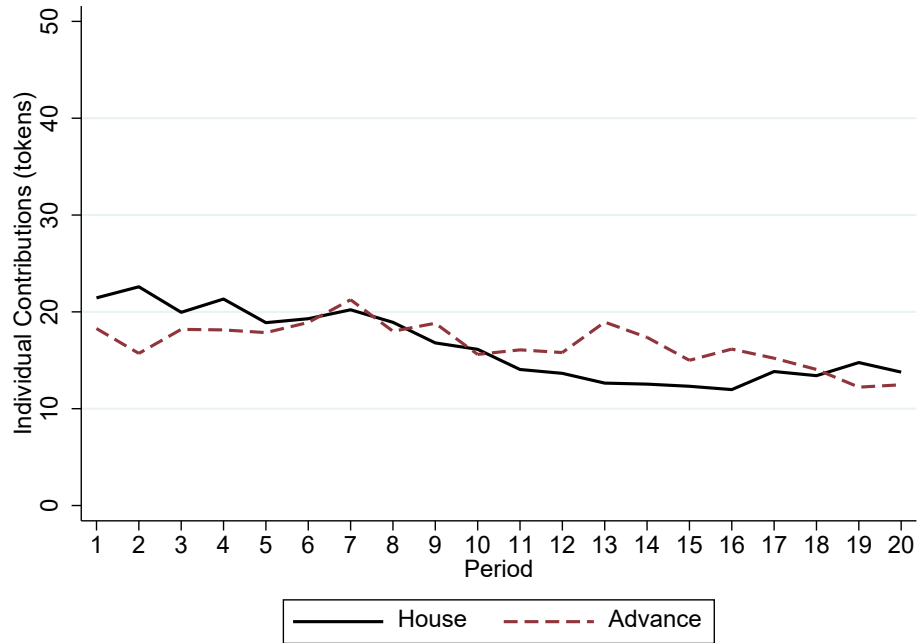
B.5 Regression analysis using only Advance subjects who spent some of the advance cash payment

In the Advance treatment, 13 of the 42 subjects who completed the questionnaire reported spending at least some of the advance cash payment. The regression analysis that follows reproduces the models in Tables 2 & 3 in the main paper, but only uses Advance data from these 13 subjects. The results reported in this Appendix are consistent with those reported in the main paper.

Table B.5. Regressions of individual contributions, but only including those subjects in Advance who spent > 0

	All Rounds	First round
	(8)	(9)
Advance dummy	3.334	6.120
	(3.795)	(5.916)
Lag others' contribution	0.149***	---
	(0.019)	
Round	-0.555***	---
	(0.062)	
Adjusted pocket money	-0.004	0.011
	(0.015)	(0.022)
Male	4.487**	9.582**
	(2.098)	(4.029)
Risk aversion	-0.390	0.379
	(0.702)	(1.312)
Loss aversion	0.423	0.806
	(0.529)	(1.070)
Household income	-0.003	-0.026
	(0.026)	(0.049)
Constant	17.68***	17.22
	(6.352)	(11.12)
Observations	1,254	66

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Models (8) and (9) do not include the 18 individuals in the crashed session from Advance and 4 transgender subjects.

Table B.6. Logit regressions of proportions of complete free riders and full contributors, but only including those subjects in Advance who spent > 0

Odds ratios	Free-riders (10)	Full contributions (11)
Advance dummy	1.487	3.170
	(0.896)	(3.301)
Lag others' contribution	0.978***	1.045***
	(0.006)	(0.009)
Round	1.092***	0.933**
	(0.020)	(0.028)
Adjusted pocket money	1.000	0.996
	(0.020)	(0.008)
Male	0.948	4.866*
	(0.0.370)	(4.721)
Risk aversion	0.960	0.648*
	(0.124)	(0.157)
Loss aversion	0.873	0.756
	(0.076)	(0.148)
Household income	1.000	1.000
	(0.003)	(0.009)
Constant	0.234	0.125
	(0.254)	(0.322)
Observations	1,254	1,254

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Models (10) and (11) do not include the 18 individuals in the crashed session from Advance and 4 transgender subjects.

B.6 Extreme behavior analysis based on quartiles

Tables B.7 and B.8 report the mean (standard deviation) proportions of extreme behavior by quartiles. We then ran separate logit regressions using data from these quartiles. We do not find significant treatment differences in any of the quartiles, except in the 4th (75%-100%] quartile of complete free-riding. There is a higher proportion of complete free-riding in Advance than in House in the 4th quartile of groups. Table B.9 reports the logit models for the 4th quartile.

Table B.7. Proportions of complete free-riding by quartiles of groups

Quartile	House Mean (St Dev)	Advance Mean (St Dev)
1st (0%-25%]	4.00% (0.91%)	3.82% (4.01%)
2nd (25%-50%]	10.67% (3.84%)	14.67% (2.17%)
3rd (50%-75%]	23.33% (6.01%)	23.21% (7.10%)
4th (75%-100%]	34.58% (2.50%)	56.77% (18.65%)

Table B.8. Proportions of full contributors by quartiles of groups

Quartile	House Mean (St Dev)	Advance Mean (St Dev)
1st (0%-25%]	0.00% (0.00%)	0.00% (0.00%)
2nd (25%-50%]	2.67% (0.91%)	1.67% (1.67%)
3rd (50%-75%]	8.00% (4.15%)	9.81% (7.28%)
4th (75%-100%]	54.17% (40.52%)	44.30% (20.99%)

Table B.9. (4th Quartile) Logit regressions of proportions of complete free riders and full contributors

Odds ratios	Free-riders (12)	Full contributions (13)
Advance dummy	3.186***	0.936
	(1.209)	(1.703)
Lag others' contribution	0.984	1.054***
	(0.005)	(0.014)
Round	1.145***	0.823
	(0.044)	(0.138)
Constant	0.139***	0.006***
	(0.088)	(0.008)
Observations	491	491

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Models (12)-(13) include the 4 highest free-riding groups in House and the 5 highest free-riding groups in Advance.

Appendix C. Preliminary study

The experiment reported in the main text was born out of co-author Nick Baily's student thesis. Here, we summarize the preliminary experiment and its results.

C1. Design

The preliminary study used essentially the same design as the experiment reported in the paper. In particular, the main game was a three-player public goods game where each group member received an endowment of 50 tokens, the MPCR was 0.5, and the game was repeated for 20 rounds using partner matching. The same two treatments – *House* and *Advance* – were used in the earlier study. In both treatments, participants were invited to two sessions three weeks apart. In the first, they were paid a show-up fee of $5 and were invited to sign a contract agreeing to return for a second session three weeks later. Those who signed the contract in *Advance* were paid an additional $12.50, and were asked to bring $12.50 (not necessarily the same) when they returned. The first session took approximately 10 minutes.

When they returned for the second session, participants played the public goods game for 20 rounds. Participants were paid their earnings from all 20 rounds. In *House*, participants received their earnings from all 20 rounds. In *Advance*, participants received their earnings in excess of $12.50. If they earned less than $12.50 in the public goods game, they were asked to pay the difference to the experimenters. In both treatments, participants did not receive a separate show-up fee for the second session. The second session lasted approximately 45 minutes. Subjects in the *House* (*Advance*) treatment earned an average of $14.99 ($2.64) in the second session.

As in the main experiment reported in the paper, in the second session, participants were asked how much cash they had with them. Following the suggestion of Cardenas et al. (2014), participants in *Advance* were also asked the following questions. (1) How much of the original $12.50 advanced cash payment have you spent? and (2) If you have not spent any of the advance payment, why not? However, unlike in the main experiment, participants did not engage in risk- and loss-aversion tasks at either session, and were not asked any of the additional questions (such as household income, or if they made additional purchases due to the advance payment).

A total of 36 subjects (12 groups) participated in the *House* treatment and 33 subjects (11 groups) participated in the *Advance* treatment.

C2. Results

C2.1 Perception of money as own money

Subjects report holding, on average, $14 (st dev = 24.56) in cash at the second session in the House treatment and $28.70 (st dev = 23.33) in the Advance treatment.[3] Similar to Cárdenas et al. (2014), we find that subjects in Advance had more cash than those in House (ranksum z = -3.931; p = 0.0001).[4] Subjects in the Advance treatment reported spending $2.68 or 21.44% of the original advanced cash payment. This amount is significantly greater than zero (signed rank z = -3.148; p

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[3] One subject in the House treatment reported holding $3,000 cash. We suspect this is incorrect and drop this observation.

[4] However, adding $12.50 to each observation in House, subjects' cash in the Advance treatment is not significantly different from subjects' cash plus $12.50 in House (ranksum test z = -0.901; p = 0.3676).

= 0.0016). This provides direct evidence that the average subject who received cash three weeks in advance felt that the cash was his/her own.[5] However, only 10 of the 33 subjects (30%) reported spending any of the advanced $12.50. Subjects who spent at least some of the advanced cash reported spending $8.85 on average.[6]

C2.2 Contributions in the public goods game

Figure C1 displays the average individual contributions in the House (control) and Advance treatments over all 20 rounds of the experiment. The Figure shows that there are no large differences in average group contributions between the two treatments in the first round or over all rounds, suggesting the lack of a house-money effect in our experiment. Table C1 presents average individual contributions in the first round and averaged over all 20 rounds along with ranksum and t-tests for treatment differences. The differences between treatments are not close to being statistically significant in the first round, or over all rounds.

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[5] To further clarify this point, subjects in Advance actually had more pocket money even AFTER adjusting for advanced payment ($28.70 vs. $26.50). If Cárdenas et al. (2014) had had similar money-in-pocket data, they would have reasoned their protocol did not work. However, by asking subjects how much of the advanced payment cash they spent, as suggested by Cárdenas et al., we get a direct measure of how much each subject spent, which shows that the protocol worked to some extent.

[6] The third question in our spending questionnaire asked subjects to give their reasons for *not* spending any of the advance payment. Seventeen of the 23 subjects who did not spend any of the advance payment responded that they felt obligated to bring the original cash to the session or that they felt like it was not their money until after the second session.

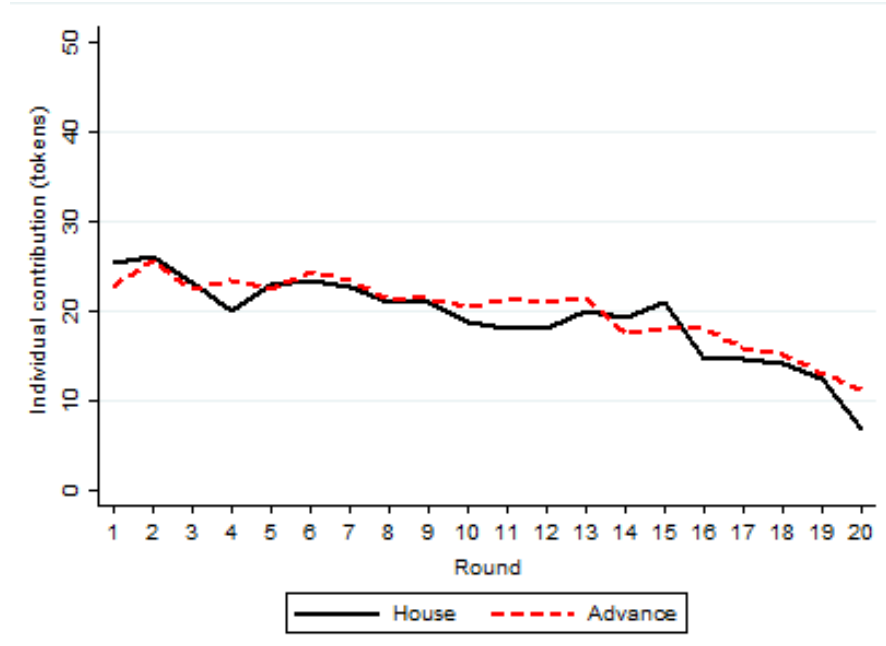**Figure C1. Average individual contribution to the public good over time**

Table C1. Summary statistics of individual contributions

	Round 1		All 20 rounds	
	Obs.	Mean	Obs.	Mean
House	36	25.47	12	19.19
		(16.54)		(9.81)
Advance	33	22.76	11	20.05
		(13.40)		(7.05)
Ranksum test	z = 0.285	p = 0.7754	z = -0.492	p = 0.6225
t-test	t = 0.752	p = 0.4549	t = -0.242	p = 0.8116

Figures in parentheses are standard deviations. An independent observation in round 1 is a subject. An independent observation across all rounds is a group.

Model 1 in Table C2 reports an individual-level mixed effects panel regression using data from all rounds, and controls for the dependence between an individual's contribution across rounds and within his/her group (i.e., random effects at the individual and group levels). The dependent variable is a subject's individual contribution in a round. Similar independent variables are chosen as in Cárdenas et al. (2014) – an Advance treatment dummy, a time trend, male dummy variable, and one-round lagged total contribution of the two other group members, adjusted money-in-pocket, and interaction terms.[7] Common to public goods studies, significant coefficients in Model

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[7] The adjusted pocket-money variable adds the advance payment amount ($12.50) to each subject's response in the House treatment. Recall one subject from House was dropped because he/she reported $3,000 pocket.

1 are Lag Others Contribution and Round (see, for example, Chaudhuri, 2011). However, there is no evidence of a house-money effect across all rounds.

Table C2. Regressions of individual contributions

Coefficients	Model 1 All Rounds	Model 2 Round 1
Lag Others Contrib	0.19***	---
	(0.02)	
Advance Dummy	1.38	5.34
	(2.49)	(6.09)
Adj Pocket Money	0.01	0.18*
	(0.03)	(0.10)
Advance*Adj Pocket Money	-0.03	-0.32**
	(0.06)	(0.16)
Male Dummy	-1.87	-0.36
	(3.38)	(5.07)
Advance*Male	0.56	3.61
	(3.94)	(7.46)
Round	-0.45***	---
	(0.09)	
Constant	16.54***	20.22***
	(2.67)	(4.26)
Observations	1,292	68

Figures in parentheses are standard errors, robust in Models 1 and 2. *** significant at 1%; ** significant at 5%; * significant at 10%

The repeated nature of the game may overwhelm any house-money effect that existed prior to interacting within groups. To examine this possibility, Model 2 reports an OLS regressions using round 1 data. The only significant coefficients are adjusted pocket money and its treatment interaction ($p = 0.096$ & $p = 0.051$, respectively). In House, more pocket money weakly increases contribution in round one, while in Advance more pocket money decreases contribution. Similar to the primary finding in Cárdenas et al. (2014) with one-shot decisions, this is suggestive of a weak house-money effect. This effect is not strong, though, and disappears as the game progresses.[8]

Figure C2(a) displays a time trend of the average proportion of complete free riders (those who contribute zero) in a group over all 20 rounds of the experiment while Figure C2(b) presents comparable information on the proportion of full contributors (those who contribute the entire endowment of 50 tokens). The proportions of complete free-riders and full contributors were higher in the House treatment than in the Advance treatment for nearly all rounds (average

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[8] The treatment effect is still not significant (linear combination of Advance Dummy + Advance*Adj Pocket Money + Advance*Male Dummy, coef. = 7.934 & p = 0.328). Also, the overall effect of pocket money is not significant (linear combination of Adj Pocket Money + Advance*Adj Pocket Money, coef. = -0.14 & p = 0.250).

proportions across all rounds: 21.81% vs. 11.82% and 13.89% vs. 6.67%, respectively). The differences in proportions between treatments are not significant for complete free riders (Ranskum, p = 0.1558; t, p = 0.1382) or for full contributors (Ranksum, p = 0.4008; t, p = 0.2468).

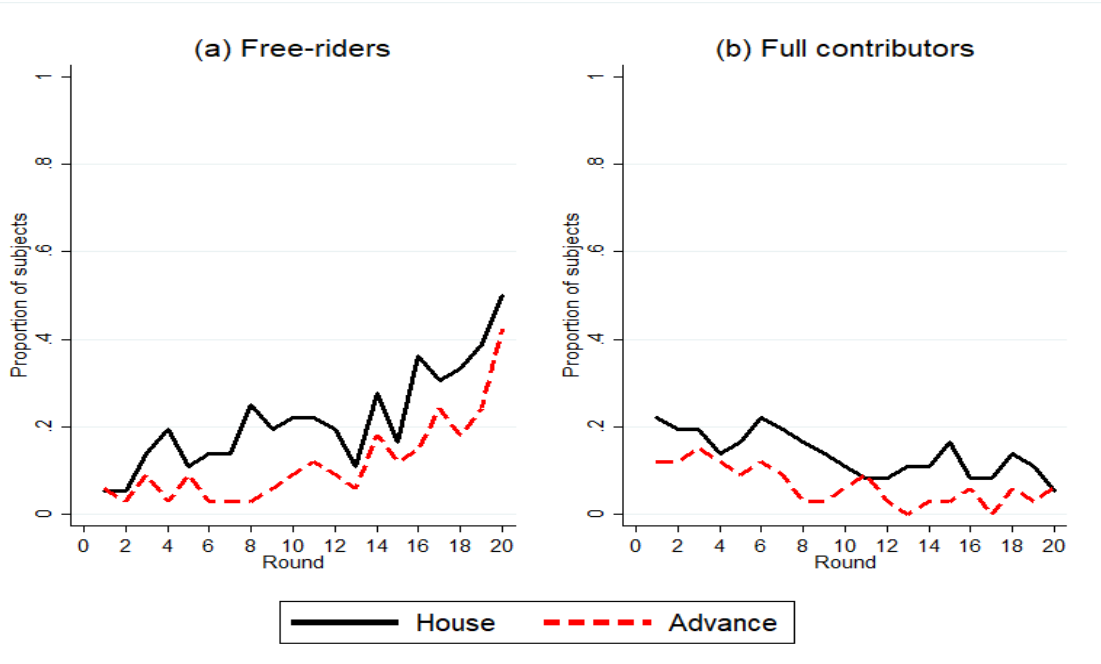**Figure C2. Proportion of complete free riders and full contributors over time**

Table C3 presents Logit panel regressions of the likelihood of observing these behaviors. The dependent variable in Model 3 (4) is whether a subject was a complete free rider (full contributor) in a round. The independent variables are the same as in Model 1 of Table 2. Logit regressions estimate odds ratios. An odds ratio less (greater) than one indicates that variable decreases (increases) the likelihood of observing a complete free rider or full contributor.

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Table C3. Logit regressions of proportions of complete free riders and full contributors

Odds Ratios	Model 3 Free Riders	Model 4 Full Cont
Lag Other Contrib	0.97***	1.03***
	(0.01)	(0.01)
Advance Dummy	0.44	0.40
	(0.27)	(0.37)
Spent Cash Dummy	2.06	1.40
	(1.39)	(1.46)
Adj Pocket Money	1.00	0.98*
	(0.01)	(0.01)
Advance*Adj Pocket Money	0.99	1.01
	(0.02)	(0.03)
Male Dummy	3.46*	3.70
	(2.50)	(4.00)
Advance*Male	0.97	0.57
	(1.05)	(0.72)
Round	1.13***	0.93**
	(0.03)	(0.03)
Constant	0.08***	0.02***
	(0.04)	(0.01)
Observations	1,292	1,292

Figures in parentheses are standard errors clustered at the group level. Random effects are at the individual level. *** significant at 1%; ** significant at 5%; * significant at 10%

In line with the non-parametric test, the treatment difference in the share of complete free riders, which is inconsistent with a house-money effect, is insignificant in Model 3 that includes lagged contributions of others. Model 4 does not find differences between treatments. Also, Model 4 reports that increases in pocket money in House weakly lowered the likelihood of being a full contributor, inconsistent with a house-money effect. Thus, there does not appear to be evidence of a house-money effect in proportions of extreme behavior.[9]

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[9] Additional specifications of logit regressions of complete free riders and full contributors were considered that included an interaction between period and Advance treatment. The interaction terms are not significant in these specifications and the other coefficients are consistent with those reported in Table C3.