

SUPPLEMENTAL ONLINE APPENDIX

Additional Tables

Round	Dictatorship (D)				Simple Majority (M)				Unanimity (U)			
	n	Avg	Mdn	SE	n	Avg	Mdn	SE	n	Avg	Mdn	SE
1	60	14.00	18.75	0.91	60	15.52	20.00	0.87	60	18.50	20.00	0.66
2	57	22.50	26.25	2.04	54	27.93	26.83	1.46	54	33.17	40.00	1.43
3	51	26.08	28.75	2.91	36	34.98	35.83	1.90	36	41.24	40.00	1.92
4	45	23.84	15.00	3.83	24	38.56	36.67	3.57	27	46.76	45.00	2.40
5	33	19.92	15.25	3.81	21	42.79	35.00	5.15	21	50.64	47.50	2.78
6	24	25.48	23.00	4.67	18	40.93	35.00	5.84	15	54.90	52.50	4.60
7	18	25.92	16.25	6.20	6	52.17	29.00	18.40	15	57.32	55.00	5.73
8	12	22.15	20.00	6.98	6	57.72	35.17	17.47	12	57.92	60.00	4.52
9	12	21.21	15.00	6.93	6	54.78	32.67	20.87	6	58.54	63.13	6.82
10	12	22.15	12.50	7.34	3	54.55	30.33	24.96	6	58.75	63.13	6.88

Table 9: Summary statistics of public good stocks per round, all treatments.

Round	D vs. U	M vs. U	D vs. M
1	0.0001	0.0037	0.0572
2	0.0000	0.0059	0.0165
3	0.0002	0.0272	0.0064
4	0.0000	0.0327	0.0033
5	0.0000	0.0976	0.0001
6	0.0001	0.0359	0.0233
7	0.0009	0.3994	0.1155
8	0.0008	0.4956	0.0613
9	0.0037	0.5661	0.0909
10	0.0059	0.5531	0.1850

Table 10: P-values of t-tests on the equality of public good stock averages.

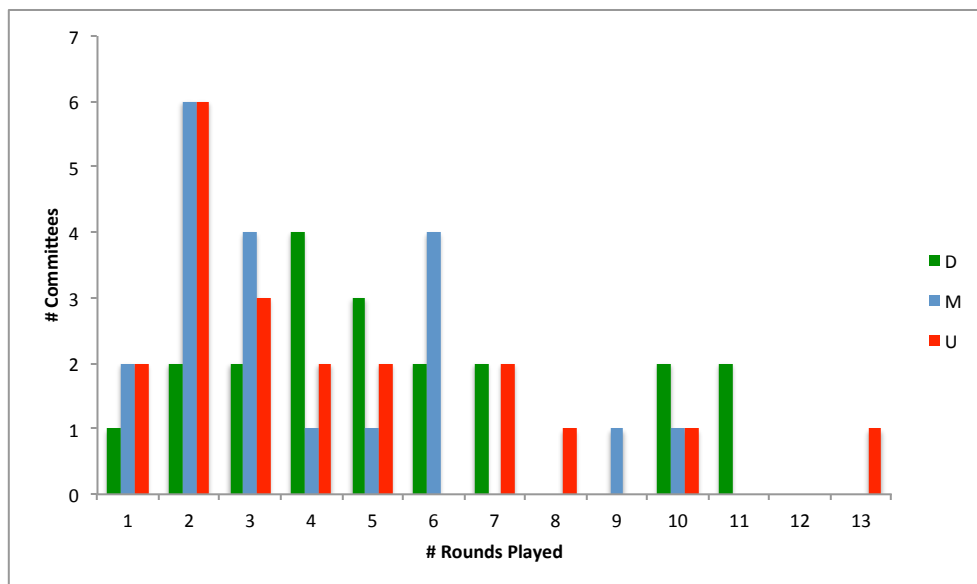


Figure 1: Distribution of realized matches' length, all treatments.

Final Round	#Matches			
	D	M	U	All
1	1	2	2	5
2	2	6	6	14
3	2	4	3	9
4	4	1	2	7
5	3	1	2	6
6	2	4	0	6
7	2	0	2	4
8	0	0	1	1
9	0	1	0	1
10	2	1	1	4
11	2	0	0	2
12	0	0	0	0
13	0	0	1	1

Table 11: Distribution of realized matches' length, all treatments.

Experiment Instructions and Sample Screenshot

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This is an experiment in committee decision making. The experiment will take place over a sequence of 10 matches. We begin the match by dividing you into THREE committees of five members each. Each of you is assigned to exactly one of these committees. In each match your committee will make budget decisions by simple majority over a sequence of several rounds.

$$A1 + A2 + A3 + A4 + A5 + P = 80$$

[SHOW SLIDE]

In each round your committee has a budget of 80 francs. Your committee must decide how to divide this budget into six categories, in integer amounts: The first five categories are the private allocations and they always have to be greater than or equal to 0. The sixth category is for investment in a project and it can be either positive, zero, or negative. If your committee's budget decision is $(A1, A2, A3, A4, A5, P)$, then $A1$ francs go directly to member 1's earnings, $A2$ to member 2, and $A3$ to member 3 and so on. The project investment produces earnings for all committee members in the following way.

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The project earnings in a round depend on the size of the project at the end of that round. Specifically, each committee member earns an amount in francs proportional to the square root of the size of the project at the end of the round (precisely equal to $4 \cdot \sqrt{\text{project size}}$). During the experiment, there will be a graph on the screen that shows exactly how project earnings will depend on project size. For example, if the size of the project at the end

of the round equals 9, then each member earns exactly $4\sqrt{9}$ or 12 additional francs in that round. If the size is equal to 25, each member earns exactly $4\sqrt{25}$ or 20 additional francs in that round. In your display, earnings are always rounded to two decimal places. So, for example if the project size at the end of a round equals 5, each member earns 8.94 francs from the project in that round.

The second important fact about the project is that it is durable. That is, project investment in a round increases or decreases the size not just for that round, but also for all future rounds. The size of your committees project starts at 0 in the first round of the match. At the end of the first round it is equal to your committees project investment decision in that round. This amount gets carried over to the second round. Whenever the size of the project is greater than 0, you can propose a negative project investment. However, in this case, the proposed negative investment cannot exceed the size of the project at the beginning of the round (in other words, the project size at the end of the round can never be negative). At the end of the second round, the size of the project is equal to the combined amount invested in rounds 1 and 2, and so forth. So, every round the project investment changes the size of the project for the current and all future rounds of that match.

The total number of rounds in a match will depend on the rolling of a fair 8-sided die. When the first round ends, we roll it to decide whether to move on to the second round. If the die comes up a 1 or a 2 we do not go on to round 2, and the match is over. Otherwise, we continue to the next round. We continue to more rounds, until a 1 or a 2 is rolled at the end of a round and the match ends. At the end of each round your earnings for that round are computed by adding the project earnings to your private allocation. For example, if your private allocation is 2 and the end-of-round project size is 9, then your earnings for that round equal $2 + 4\sqrt{9} = 2 + 4 \cdot 3 = 14$. Your earnings for the match equal the sum of the earnings in all rounds of that match.

After the first match ends, we move to match 2. In this new match, you are reshuffled randomly into three new committees of five members each. The project size in your new committee again starts out at 0. The match then proceeds the same way as match 1. After match 10, the experiment is over. Your total earnings for the experiment are the sum of your earnings over all rounds and all matches.

We will now go through one practice match very slowly. During the practice match, please do not hit any keys until I tell you, and when you are prompted by the computer to enter information, please wait for me to tell you exactly what to enter. You are not paid for this practice match.

[AUTHENTICATE CLIENTS]

Please double click on the icon on your desktop that says BP2. When the computer prompts you for your name, type your First and Last name. Then click SUBMIT and wait for further instructions. You now see the first screen of the experiment on your computer. It should look similar to this screen.

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At the top left of the screen, you see your subject ID. You have been assigned by the computer to a committee of five subjects, and assigned a committee member number: 1, 2, 3, 4 or 5. This committee assignment and your member number stays the same for all rounds of this match, but will change across matches. It is very important that you take careful note of your committee member number. Notice that the initial size of the project in your committee is 0.

Your committee decides on a budget for this round by the following voting procedure. First, every member is asked to type in a provisional budget proposal, consisting of six integers, A1, A2, A3, A4, A5 and P, which add up to 80. A1, A2, A3, A4, and A5 have to be greater than or equal to 0, while P has to be greater than or equal to (size of the project at the beginning of the round).

As a visual aid, there is a graph on the left that shows exactly how project earnings will depend on project size. The current size of the project is marked with a large dot. If your committee decides to invest nothing this period, then this will be the size that determines your project earnings at the end of the round. You can use your mouse to move the cursor along the curve to figure out what your earnings will be for different levels of investment. Also, if you type in a budget amount in the Project box, the computer will compute and display the corresponding project earnings for you just below the box. Take a minute to practice using your cursor to move along the curve, and typing in different possible investment levels for the Project. But do not hit the confirm button yet.

At this time, go ahead and type in any provisional proposal you wish and hit the confirm button. You are not paid for this practice match so it does not matter what you enter.

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After everyone in your committee has submitted a provisional budget proposal, your screen should now look similar to this one. The computer has randomly selected one of the provisional budget proposals submitted by the members of your committee to be the Round One Proposed Budget in your committee. In the top-right of your screen you are shown this proposed budget as well as which committee member made this proposal.

A vote is now taken between the Proposed Budget and an alternative, called the Backup Budget, which has zero investment in the project. The backup budget is always (16,16,16,16,16,0)

in every round for every committee. On your screen you can see a table listing the proposed budget and the backup budget, and how the allocation is distributed under each. The decision between budgets is made by majority rule. Therefore the proposed budget passes if and only if it receives two votes. Otherwise, it fails, and the backup budget is implemented. To vote to accept the Proposed Budget, click on the yes button; to reject it, click on the no button. Please go ahead and vote now.

The two budgets are displayed in a table, and the budget that was implemented this round is highlighted in green. Below the table are displayed your earnings for the round, given the outcome. In this example, the provisional budget passed, and my earnings for the round were x . Note that these numbers are totally random and they are not suggestive of what we expect to occur during the experiment. This marks the end of the round. The table with columns in the bottom of your screen is the History panel and summarizes all of this important information.

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We now roll an eight-sided die to decide whether to move on to round 2. If the die comes up a 1 or a 2, we do not go on to round 2, and the match is over. If the die comes up 3 through 8, we continue to a second round of the match. [Roll die and do second round unless it comes up a 1 or 2. Next say the die roll was X, so we will continue to the next round. If X=(1 or 2) say if this was a real match, there would be no second round. That would be the end of the match. However, we want to go through one more practice round to make sure you are familiar with the computer interface.]

[SHOW SLIDE]

In this second round, you keep the same committee member number as in the first round, and the members of your committee all stay the same. Notice that the project investment from round 1 carries over, so the round 2 beginning project size equals the project size at the end of round 1. In this second round please follow the same instructions of the first round. You can go ahead now.

Since this is a practice match, we will not roll a die after the second round, and the practice match will end. During the paid matches, each match will continue until the die comes up a 1 or a 2.

[SHOW SUMMARY SLIDE]

Now we are ready for the comprehension quiz. Everyone must answer all the questions correctly before we go to the paid matches. The quiz has three pages. You must answer all the questions on Page 1 of the quiz to proceed to Page 2, and you must answer all the questions on Page 2 of the quiz to proceed to Page 3. If you answer any of the questions on a page incorrectly, you will be asked to try again. Please raise your hand if you have any questions during the quiz, and we will come to your desk and answer your question in private.

SAMPLE COMPREHENSION QUIZ

Q: For a budget proposal, what do A_1 , A_2 , A_3 , A_4 , A_5 , and P have to add up to?

- A. 20
- B. 30
- C. 70
- D. 80

Q: Your Provisional Budget Proposal will always be selected as the Proposed Budget.

- A. True
- B. False. It will be the Proposed Budget only when you are chosen randomly by the computer to be the Proposer, which will happen about $1/5$ of the time.

Q: There are two rounds in each match.

- A. True
- B. False. There are ten rounds in each match.
- C. False. The number of rounds in each match depends on the roll of the die.

Q: The level of the project at the beginning of the round is 10. What is the maximum that you can allocate to private allocations ($A_1+A_2+A_3+A_4+A_5$) in your Budget Proposal? Remember that if the project size is greater than 0 you can propose a negative P and that $A_1+A_2+A_3+A_4+A_5+P$ has always to be equal to 80.

- A. 10
- B. 80
- C. 90

Q: The Backup Budget is the same in every round of a match.

- A. True, it is always (16,16,16,16,16: 0).
- B. False, it changes each round.

Q: Your committee member number stays the same throughout the experiment.

- A. True
- B. False. Your committee member number stays the same in every round of a match, but may be reassigned for new matches.

Q: How many members are there in your committee?

- A. 1
- B. 2
- C. 5
- D. 4

Q: *The ending project size in round 2 of a match is carried over and becomes the beginning project size in round 3 of that match.*

- A. True
- B. False. Only 75 percent of the project size is carried over to the next round.
- C. False

Q: *You are reshuffled into a different committee for each round.*

- A. True
- B. False. You are in the same committee for all rounds of a match.

Q: *The committee decision is always the Proposed Budget.*

- A. True
- B. False. The committee decision is the Proposed Budget or the Backup Budget depending on whether everyone votes in favor of the Proposed Budget or not.

Q: *Suppose the beginning project size is 9, the Proposed Budget in your committee is (5,11,15,10,12:27), and the Proposed Budget receives three votes. What are your earnings for that period if you are committee member 1?*

- A. 0
- B. 17
- C. 29
- D. 27
- E. 5
- F. 24
- G. Not enough information to answer.

Q: *Suppose the beginning project size is 9, the Proposed Budget in your committee is (5,11,15,10,12:27), and the Proposed Budget receives five votes. What are your earnings for that period if you are committee member 1?*

- A. 0
- B. 17
- C. 29
- D. 27
- E. 5
- F. 24
- G. Not enough information to answer.

Subject Id: 1

Match 1, Round 1

You are committee member 4.
 The current project size is 0.0.
 Please make your provisional budget proposal.
 The Backup Budget is [16,16,16,16 : 0].
 Your allocation is shown below in red.

Please make your Provisional Budget Proposal consisting of six integers, A1, A2, A3, A4, A5, and P, which add up to 80. The private allocations (A1, A2, A3, A4, and A5) have to be greater than or equal to 0, while the project investment (P) has to be greater than or equal to -0.0

Value of Project Size

Value

Project Size

Current Size

25.0, 26.0

A1 A2 A3 A4 A5 Total 0

Project Investment (P)

Submit

If your proposal passes, the new project size will be $0.0 + P$.

Switch to Full View

Match 1
Practice Match

Round 1

Beginning-of-round Project Size 0.0

Your Member # A.4

Your Provisional Budget Proposal

Proposed Budget

Proposer

Vote Totals

Vote Outcome

End-of-round Project Size

Payoff

Your History

Figure 2: U Treatment, Sample Screen for Proposal Stage

Subject Id: 1

Match 1, Round 1

You are committee member 4.
 The current project size is 0.0.
 The proposer for this round was committee member 4.
 The Proposed Budget is [18;17;16;11;3 : 15], displayed below.
 Your allocation under each budget is shown in red.

A	1	2	3	4	5	Project Investment (P)
Proposed Budget	18	17	16	11	3	15
Backup Budget	16	16	16	16	16	0

Please click the button below corresponding to your vote for the Proposed Budget or the Backup Budget.
 A YES vote is for the Proposed Budget. A NO vote is for the Backup Budget.

If everyone votes Yes the Proposed Budget passes and the new project size will be 15.0.
 If at least one committee member votes No the Proposed Budget fails and the project size will be 0.0.

Your History

Round	Beginning-of-round Project Size	Your Member #	Your Provisional Budget Proposal	Proposed Budget	Proposer	Vote Totals	Vote Outcome	End-of-round Project Size	Payoff
1	0.0	A 4	[18;17;16;11;3 : 15]	[18;17;16;11;3 : 15]	A 4				

Match 1
Practice Match

Switch to Full View

Figure 3: U Treatment, Sample Screen for Voting Stage

Subject Id: 1

Match 1, Round 1

You are committee member 4.
 The votes were (Yes, Yes, Yes, Yes, Yes)
 The Proposed Budget passed.
 The end-of-round project size is $0.0 + 15.0 = 15.0$

A 1 A 2 A 3 A 4 A 5 Project Investment (P)

Proposed Budget 18 17 16 11 3 15

Backup Budget 16 16 16 16 0

Your earnings for this round: $11.0 + 4 * (0.0 + 15.0)^{1/2} = 26.49$

If the match continues another round, then the project size at the beginning of the next round will be 15.0.

Value

Project Size

Match 1

Practice Match

Switch to Full View

Your History

Round	Beginning-of round Project Size	Your Member #	Your Professional Budget Proposal	Proposed Budget	Proposer	Vote Totals	Vote Outcome	End-of-round Project Size	Payout
1	0.0	A 4	[18,17,16,11,3 : 15]	[18,17,16,11,3 : 15]	A 4	{Yes, Yes, Yes, Yes, Yes}	[18,17,16,11,3 : 15]	15.0	26.49

Figure 4: U Treatment, Sample Screen for Voting Outcome