

The Determinants of Voting in Multilateral Bargaining Games

Online Appendix

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1 Extra Figures and Tables

Table OA-1 reports the probit estimates of a model in which vote (1:positive) is on the left-hand side and addition to Own Share, Proposer's share and whether the proposal involves a MWC we include dummies for each possible value of δ . We report estimates dividing the sample in three, depending on the subject's reported beliefs.

Table OA-1: Probit Regression of Determinants of Vote

	Belief $< \frac{1}{3}$		$\frac{1}{3} < \text{Belief} < \frac{2}{3}$		Belief $> \frac{2}{3}$	
	(1)		(2)		(3)	
Own Share	0.122***	(0.035)	0.055***	(0.012)	0.084***	(0.015)
Proposer's Share	-0.030*	(0.011)	-0.007	(0.017)	0.012	(0.015)
MWC	0.923	(0.687)	-0.108	(0.469)	-0.170	(0.317)
$\delta = 0.2$	-1.395	(1.139)	0.191	(0.524)	-0.105	(0.555)
$\delta = 0.4$	-0.505	(0.900)	-0.567	(0.366)	-0.480	(0.594)
$\delta = 0.6$	-1.745*	(0.799)	-0.562	(0.467)	-0.502	(0.514)
$\delta = 0.8$	-1.308	(0.811)	-0.665	(0.828)	-1.590*	(0.784)
$\delta = 1.0$	-1.804	(1.051)	-0.875	(0.662)	-1.403*	(0.660)
N	112		63		113	

Notes: Standard errors clustered (at the session level) in parentheses.

***1%, **5%, *10% significance.

Table OA-2: Votes classified correctly using CV or a T -norm as criteria (in %) Sample restricted to reported beliefs $< \frac{1}{3}$.

Criterion	$\delta = 0$	$\delta = 0.2$	$\delta = 0.4$	$\delta = 0.6$	$\delta = 0.8$	$\delta = 1$	Aggregate
$T = 5$	79.2	83.3	100	94.1	88.2	90.0	88.4
$T = 10$	83.3	83.3	100	94.1	94.1	90.0	90.2
$T = 15$	79.2	77.8	100	94.1	94.1	90.0	88.4
$T = 20$	75.0	88.9	87.5	100	100	95.0	90.2
$T = 25$	62.5	88.9	81.3	100	94.1	100	86.6
CV	83.3	83.3	100	100	88.2	95.0	91.1

Table OA-3: Votes classified correctly using CV or a T -norm as criteria (in %) Sample restricted to reported beliefs between $\frac{1}{3}$ and $\frac{2}{3}$.

Criterion	$\delta = 0$	$\delta = 0.2$	$\delta = 0.4$	$\delta = 0.6$	$\delta = 0.8$	$\delta = 1$	Aggregate
$T = 5$	100	90.0	75.0	72.7	66.7	54.5	74.6
$T = 10$	87.5	100	75.0	72.7	66.7	63.6	76.2
$T = 15$	87.5	100	75.0	72.7	66.7	72.3	77.8
$T = 20$	87.5	100	75.0	90.9	73.3	72.3	82.5
$T = 25$	87.5	70.0	75.0	72.7	66.7	81.8	74.6
CV	87.5	100	87.5	90.9	73.3	90.9	87.3

Table OA-4: Votes classified correctly using CV or a T -norm as criteria (in %) Sample restricted to reported beliefs $> \frac{2}{3}$.

Criterion	$\delta = 0$	$\delta = 0.2$	$\delta = 0.4$	$\delta = 0.6$	$\delta = 0.8$	$\delta = 1$	Aggregate
$T = 5$	62.5	90.0	83.3	85.0	50.0	64.7	74.3
$T = 10$	62.5	85.0	87.5	85.0	50.0	76.5	76.1
$T = 15$	62.5	75.0	87.5	90.0	56.3	76.5	76.1
$T = 20$	62.5	75.0	95.8	85.0	75.0	82.4	80.5
$T = 25$	50.0	70.0	75.0	80.0	87.5	94.1	76.1
CV	81.3	90.0	87.5	85.0	87.5	94.1	87.6

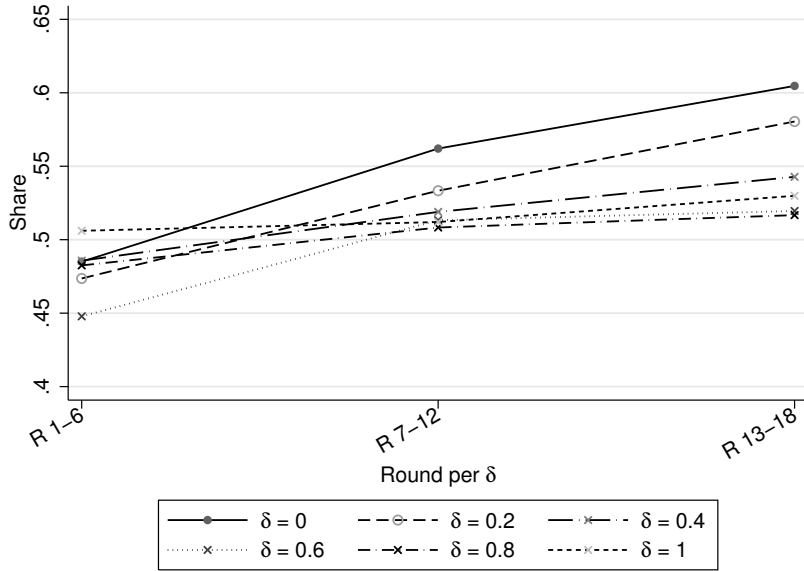


Figure OA-1: Proposer's Share Over Rounds (Excluding Computer)

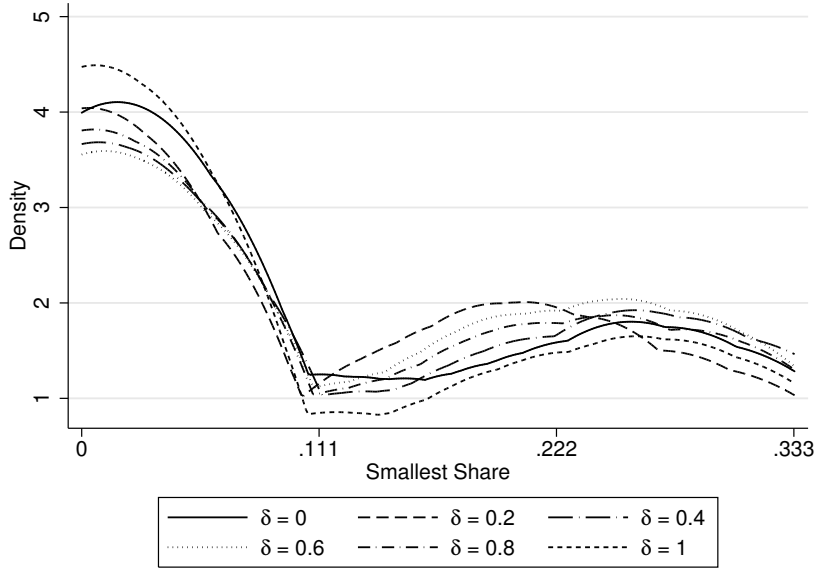


Figure OA-2: Kernel Density Estimates of Smallest Share Offered

2 Instructions

Welcome. You are about to participate in an experiment on decision making and you will be paid for your participation with cash vouchers, privately at the end of the session. You will receive \$15 for showing up on time, plus you will receive your earnings from choices made in the session. The money you earn will depend on your decisions, the decisions of others and chance. Do not talk to or attempt to communicate with other participants during the session. Please make sure to turn off phones, mp3 players and pagers now. The session will begin with a brief instructional period, during which you will be informed of the main features of the task and you will be shown how to use the computer.

Basic Steps

1. In this experiment you will act as voters that distribute funds between yourself and 2 other voters in a series of rounds. In each round you will have to decide how to divide an initial budget of \$30 among three (3) voters.
2. At the beginning of a round each voter will submit a proposal as to how to split the budget between the three voters. Allocations to each voter must be between \$0 and \$30. Once the three voters have submitted their proposals, one will be selected randomly. Every proposal has an equal chance of being selected. The chosen proposal will be referred to as the “proposed allocation”. The voter whose proposal has been chosen will be referred to as the “proposer”.
3. After a proposal has been randomly selected there is a 50% probability that the “proposer” is replaced by a computer, which will make its own predetermined allocation.
4. If you are the “proposer” and you are replaced by the computer you will remain idle while the others vote. You will be active again after the other participants vote.
5. In short, there is a 50% chance that the proposed allocation will come from one of you and a 50% chance it will be determined by the computer.
6. The “proposed allocation” will be posted on your computer screens specifying how the budget is distributed. You will not be informed as to whether the “proposed allocation” was submitted by a voter or the computer.
7. Next you will vote to either accept or reject the division currently proposed. Two positive votes (out of three) are needed for the proposal to pass. The computer always votes in favor of its own proposal when it replaces the “proposer”.
8. If the “proposed allocation” is defeated (gets less than two votes), there will be a call for new proposals and the process repeats itself in a new stage. However, each time there is disagreement the budget shrinks. The amount that is lost each time a proposal is defeated can be 100%, 80%, 60%, 40%, 20% or 0%. Each value will be

used once in each block of 6 rounds and the order in which each value is selected will be determined randomly. The value selected will be clearly specified in your screens prior to making proposals or voting. So, for example, if 20% is selected for the round and the proposed allocation to split \$30 in the first stage is rejected, then only \$24 will be available to distribute in stage 2. If the proposal to split \$24 in stage 2 is rejected, then only \$19.2 will be available to distribute in stage 3 and so on.

9. The proposer is never replaced by a computer after Stage 1, so if the “proposed allocation” is defeated and the process moves to Stage 2 or later the proposals to be voted on will always be submitted by a member of your group, not the computer. That is, all proposals after Stage 1 will be submitted by a member of your group, not the computer.
10. At the end of each stage you will get feedback on how each participant voted on the “proposed allocation”. However, if you were replaced by the computer you will not learn the offer that the computer submitted in your place or how each participant voted.
11. To summarize, the process in each round will work as follows: Step 1: Everyone submits a proposal to split the current budget. This involves a proposal on how to split \$30. Step 2: One proposal will be selected at random. All proposals are equally likely to be selected. The voter whose proposal was chosen is referred to as the “proposer”. Step 3: The first time proposals are submitted within a given round (Stage 1), there is a 50% chance that the “proposer” will be replaced by a computer. Step 4 Then you will have to vote. If the “proposed allocation” receives two positive votes (out of three) it passes. If the computer replaces “the proposer”, the computer always votes in support of the proposal. Step 5: If the proposal is rejected, go back to step 1 and a new stage within the same round begins. The only difference is that the amount of money to be distributed will shrink by a pre-specified percentage which is fixed for the entire round and from this point onward, in this round, all proposals will be made by a member of your group, not the computer.
12. There will be a total of 18 rounds. At the end of the experiment one of the 18 rounds will be randomly selected and the corresponding budget will be distributed according to the proposal that passed in that round. Your individual payment for that round will be equal to the allocation given to you according to the proposal accepted in that round. If you were the proposer and the accepted proposal was submitted by the computer your payoff will be equal to the amount that the computer allocated to you.
13. In each round you will be assigned to one group of three voters. Assignments to voting groups will vary randomly from round to round, but you will remain with the same group throughout each round. In other words, for all stages within the same round

you will be interacting with the same voters, but whenever a new round begins all groups will be reassigned. Are there any questions?

Dry Run: Script To be read by the experimenter. Statements in capital letters not to be read. See slides at the end of this document.

1. PROJECT SLIDE 1. START THE DRY RUN. We will now conduct a practice round that will not count for money.
2. There are two panes. The pane to your left presents some General Information, namely the Round number, the proposal Stage number and information on the amount to distribute. The Round number is 1, since this is the first time that \$30 will be allocated among the three voters. The Stage number is one, since this is the first time that proposals on how to split the \$30 will be submitted. In the particular example displayed in this screenshot each time a proposal is defeated the amount to distribute will shrink by 20% and this would translate to distributing \$24. During this practice round the percentage lost in case the proposal is defeated is 20%, but remember that this number may be different in each round. Finally, the left side of your screens displays a history box with information on previous decisions. Since the projected example is for the first Round and first Proposal Stage there is no previous history.
3. Look at this part of the screen under the 'Enter your proposal for this stage' title. Here you will have to distribute \$30 among the 3 voters. Now you can enter your proposed division and confirm it. Allocations to each voter must be between \$0 and \$30. They must be rounded to the nearest penny. And they must add up to \$30. Simply type in the number, do not enter a dollar sign. Finally note that you must click the 'this is my selected proposal' button for you allocation to be recorded. You can change your allocation prior to this, but not after you have confirmed it.
4. PROJECT SLIDE 2. If you were chosen to be the proposer in Stage 1 there is a 50% probability that you are replaced by a computer. If you were not replaced by a computer or if you were not chosen to be the proposer this is similar to your second screen. Please wait for my instructions before entering any information. As you can see in this example the selected proposal involves payments X for you, and Y, Z for the other voters. I am using letters, but when you play these will be dollar amounts. Remember this is the proposal that was selected in your group. It may not be your proposal. If it is not your proposal it means you were not selected to be the proposer for this round. Since this is the first stage of the round the proposal may have been submitted by a computer. The first question asks you to reply who you think submitted the proposal. Now, please answer this question as you like. Remember this is a dry run just to get you used with the software.
5. Now please reject this proposal. (Again, remember, this is just a dry run to get you used to seeing the screen layouts. When we play for cash it is strictly up to you to decide what to do.) Remember you must always click the 'submit your decision' button for your vote to be recorded. F. PROJECT SLIDE 3. If you were replaced by

a computer this is what your second screen looks like. You can click on the button when you are ready to continue. You will have to wait until other members of your group vote on the proposal submitted by the computer.

6. PROJECT SLIDE 4. If you were not replaced by a computer this screen shows the feedback you get in cases when the proposal does not pass. First, you can see how much money the proposal allocated to each member of your group. Again, I am using letters, but you will see dollar amounts. Next to each amount and between parentheses you can learn who accepted (voted Y) or rejected the proposal (voted N). Finally, you can see the total number of votes in favor of that proposal.
7. PROJECT SLIDE 5. If you were replaced by a computer this screen shows the feedback that you get if the proposal does not pass. You can see the total number of votes in favor of a proposal.
8. PROJECT SLIDE 6. The process now starts over again since the proposal was rejected. Since the allocation was voted down in Stage #1, the process will move to 'Proposal Stage #2' of Round 1, as indicated in the General Information pane. The amount of money available to be split in this round has shrunk by 20% to \$24, and if the proposal in the current stage is defeated the amount will shrink again by 20% to \$19 next stage.
9. At this point the History Box will show you the information of Past Proposals, namely what occurred in 'Proposal Stage #1' of Round 1. The first column of the history box lets you know the Round corresponding to the 'Proposed Allocation'. The second column lets you know the 'Proposal Stage' that corresponds to the 'Proposed Allocation'. The next 3 columns let you know the distribution implied by the 'Proposed Allocation'. Between parentheses you can learn how that member voted. "(Y)" means that the member voted in favor and "(N)" that he/she voted against. Finally, the last column gives you aggregate information: the total number of positive votes.
10. If you were replaced by a computer the history box will not display the 'Proposed Allocation for that round', a line of dashes will appear in the corresponding place instead.
11. Please enter new proposals now. Remember, they must add up to \$24 now (the computer will remind you if they do not add up).
12. PROJECT SLIDE 7. From Stage 2 onwards a computer cannot replace the proposer so the proposed allocation will always come from one of the three members of the group and you will only have to vote on whether to accept or reject it. Now please accept this proposal. (Remember, this is just a dry run to get you used to seeing the screen layouts. When we play for cash it is strictly up to you to decide what to do.)

13. PROJECT SLIDE 8. This is similar to the feedback screen after voting in Stage 1, with the exception that you are now in stage 2 and the proposal was accepted, so that the proposed allocation is binding.
14. After a few seconds, a new round will start. The voters in this new round can, and likely will differ, from those in the previous round, since the voters in each group are randomly determined prior to each round. J. You are not to reveal your (potential) earnings, nor are you to speak to any other subject while the experiment is in progress. This is important to the validity of the study and will not be tolerated.
15. Finally note that we have ____ people in the room that are divided into ____ groups of three at the beginning of each round. Further, the software is setup so that we cannot move onto a new round until all the groups have passed an proposal that allocates the \$30. This means that it will be quite normal to wait between rounds while the other groups finish up. We have to wait for all the groups to finish before we can go on since we rematch everyone in the room following each round.

Are there any questions? We will now play for money!

Additional task [Distributed to subjects and read aloud before Round 7 begins]

In the remaining rounds the main task of the experiment will still be the same and you will make most of your money today from the main task. In addition to the main task from now on in all rounds of the experiment there will be an additional task. This task will allow you to make extra money. 1. You can make up to \$5 when you answer how likely you think it is that the proposal comes from a computer. The compensation will be determined as follows:

1. Upon seeing the “Proposed Allocation” you will first tell us how likely you think it is to come from a computer. You can pick any number between 0 and 100. For example, if you pick 30, it means that you think the “Proposed Allocation” is 30% likely to come from a computer. If you pick 74, it means that you think the “Proposed Allocation” to be 74% likely to come from a computer and so on.
 - (a) Second, the computer will draw a random number from 0 to 100.
 - (b) If the random number is equal or smaller than the number you submitted, then you will receive \$5 if the proposal indeed comes from a computer. For example, say that the random number is 23 and that you think the proposal to be 65% likely to come from a computer. Because the number you submitted (65) is higher than the random number (23), then you will receive \$5 if the proposal comes from a computer and \$0 otherwise.
 - (c) If the random number is higher than the number you submitted, then you will win the \$5 with the probability determined by the random number. In other words,

in that case, the chance that you win \$5 is equal to the random number. For example, say that you think the proposal is 75% likely to come from a computer and the random number picked by the computer is 83. Because the number you submitted (75) is lower than the random number (83), you will win the \$5 prize with probability 83%.

2. What should you do when submitting an answer to the question: How likely do you think the “Proposed Allocation is to come from a computer? The best you can do is to say exactly how likely you think it is for the proposal to come from a computer. In order to maximize your chances of winning the \$5 you should always submit exactly what you believe.

You will face this additional task in the first stage of each one of the remaining rounds. At the end of the experiment one of the remaining rounds will be randomly chosen. We will add to your payoffs what you earned in this task for the randomly chosen round. Thus you should treat each of the remaining rounds as the round you will be paid off on.

Slide 1: General Information

Remaining time [sec]: 11

General Information

Round Number 1

Stage Number 1

Total Amount to Distribute 30

Each time the proposal is rejected the Total Amount to Distribute shrinks by 20%

So, if there is a next stage, the Total Amount to be distributed will be 24

Required Positive votes for proposal to pass 2

Allocations in Previous Rounds and Stages

Enter your Proposal for this Stage

YOU	<input type="text"/>
Another Voter	<input type="text"/>
Another Voter	<input type="text"/>

This is my selected proposal

Slide 2: Voting (if not replaced by a computer)

Remaining time [sec]: 0

General Information

Round Number 1

Stage Number 1

Total Amount to Distribute 30

Each time the proposal is rejected the Total Amount to Distribute shrinks by 20%

So, if there is a next stage, the Total Amount to be distributed will be 24

Required Positive votes for proposal to pass 2

Allocations in Previous Rounds and Stages

The Proposed Allocation implies...

YOU	X
Another Voter	Y
Another Voter	Z

If the proposal is rejected, the amount to be distributed next stage is... 24

Who submitted the selected proposal?

- You or Another Voter
The Computer

Do you accept or reject the proposed division?

- Accept
Reject

Submit Your Decisions

Slide 3: Proposer replaced by a Computer

Remaining time [sec]: 0

In this stage you have been replaced by a computer that will make a proposal for you.

In case this round determines your payoff you will learn the offer the computer has made at the end of the game.

[Click Here to Continue](#)

Slide 4: Feedback on the result of the election if not replaced by a computer

The proposal did not get a majority of votes. A new proposal stage will start in short.

Voter	Proposed Allocation (Vote: Y= Yes, N= No)
YOU	X (N)
Another Voter	Z(N)
Another Voter	W(N)
Positive Votes	0

Slide 5: Feedback on the result of the election if replaced by a computer

You were replaced by the computer. The proposal failed to get the necessary 2 votes.

The proposal to be voted on in the next stage will definitely come from a member of your group, including yourself.

You will not learn the proposed distribution of payoffs for the stage just voted on

Affirmative votes

Slide 6: History Box

Remaining time [sec]: 44

General Information

Round Number 1

Stage Number 2

Total Amount to Distribute 24

Each time the proposal is rejected the Total Amount to Distribute shrinks by 20%

So, if there is a next stage, the Total Amount to be distributed will be 19

Required Positive votes for proposal to pass 2

Allocations in Previous Rounds and Stages

Round Number	Stage Number	YOU	Another Voter	Another Voter	Positive Votes
1	1	X (N)	Z (N)	W (N)	0

Current Proposal Stage Information

The proposal in the previous stage failed to get the necessary 2 votes.
Please make a new proposal.

YOU	<input type="text"/>
Another Voter	<input type="text"/>
Another Voter	<input type="text"/>

This is my selected proposal

Slide 7: Voting from Stage 2 onwards

Remaining time [sec]: 16

General Information

Round Number 1

Stage Number 2

Total Amount to Distribute 24

Each time the proposal is rejected the Total Amount to Distribute shrinks by 20%

So, if there is a next stage, the Total Amount to be distributed will be 19

Required Positive votes for proposal to pass 2

Allocations in Previous Rounds and Stages

Round Number	Stage Number	YOU	Another Voter	Another Voter	Positive Votes
1	1	X (N)	W (N)	Z (Y)	0

The Proposed Allocation implies...

YOU	M
Another Voter	V
Another Voter	S

If the proposal is rejected, the amount to be distributed next stage is... 19

Do you accept or reject the proposed division?

Accept
Reject

Submit Your Decisions

Slide 8: Feedback

The proposal passed. Your payoff for this round is M

Voter	Proposed Allocation (Vote: Y= Yes, N= No)
YOU	M (Y)
Another Voter	v (Y)
Another Voter	s (Y)
Affirmative Votes	3 out of 3