ONLINE APPENDIX - Eliciting and Measuring Betrayal Aversion using the BDM mechanism

A.1 STUDY 2 STRUCTURE AND EXAMPLE QUESTIONS

(Introduction common to both treatments)

Please imagine that you are a participant in an experiment who has to read the following instructions. At the end we will ask you some questions about this text. Remember that the monetary amounts mentioned in this text do not apply to you; you will be entered in a prize draw if you answer all the questions.

(Instructions – see Appendix A.2)

Please answer the questions below. Click on the back button at the end of the page if you want to read again the instruction document.

Questions (treatment *CL*)

- 1. How difficult do you think the instructions are to understand? Rate on a scale from 0 to 10 where 0 corresponds to very difficult to understand and 10 corresponds to very easy to understand.
- 2. Suppose you were a participant and you filled in the table in the following way:

Number of participants in Group B choosing Left	You o	hoose
20 out of 20		Out
19 out of 20		Out
18 out of 20	In	Out
17 out of 20		Out
16 out of 20	ln	Out
15 out of 20	Ð	Out
14 out of 20		Out
13 out of 20	E	Out
12 out of 20	l	Out
11 out of 20	In	Out
10 out of 20		Out
9 out of 20	In	Out
8 out of 20	In	Out
7 out of 20	In	Out
6 out of 20	In	Out
5 out of 20	In	Out
4 out of 20	In	Out
3 out of 20	In	Out
2 out of 20	In	Out
l out of 20	In	Out
0 out of 20	In	Out

Suppose the experimenter then revealed that there are 14 participants in Group B choosing Left.

a. Would your payoff depend on your counterpart's choice? Yes/No

Suppose your counterpart chose Left:

- b. How many points would you get?
- c. How many points would your counterpart get?
- 3. Now suppose instead that you filled in the table in the following way:

Number of participants in Group B choosing Left	You o	hoose
20 out of 20		Out
19 out of 20	ln	Out
18 out of 20		Out
17 out of 20	In	Out
16 out of 20	Ē	Out
15 out of 20		Out
14 out of 20		Out
13 out of 20		Out
12 out of 20		Out
11 out of 20		Out
10 out of 20		Out
9 out of 20	In	Out
8 out of 20		Out
7 out of 20	In	Out
6 out of 20		Out
5 out of 20	In	Out
4 out of 20	In	Out
3 out of 20	In	Out
2 out of 20	In	Out
1 out of 20	In	Out
0 out of 20	In	Out

For this case suppose that the experimenter then revealed that there are 4 participants in Group B choosing Left.

a. Would your payoff depend on your counterpart's choice? Yes/No

Suppose your counterpart chose Right:

- b. How many points would you get?
- c. How many points would your counterpart get?

Questions (treatment OE)

Please answer the questions below. Click on the back button at the end of the page if you want to read again the instruction document.

- 1. How difficult do you think the instructions are to understand? Rate on a scale from 0 to 10 where 0 corresponds to very difficult to understand and 10 corresponds to very easy to understand.
- 2. Suppose you were a participant and your answer to the KEY QUESTION was 0.5.

Suppose the experimenter then informed you that the percentage of Persons Y who chose Option 1 was 70%.

a. Would your payoff depend on your Person Y's choice? Yes/No

Suppose your Person Y chose Option 1:

- b. How many points would you get? ____
- c. How many points would your counterpart get?
- 3. Now suppose instead that your answer to the KEY QUESTION was 0.3.

For this case suppose that the experimenter then informed you that the percentage of Persons Y who chose Option 1 was 20%.

a. Would your payoff depend on your Person Y's choice? Yes/No

Suppose your Person Y chose Option 2:

- b. How many points would you get? _____
- c. How many points would your counterpart get?

A.2 INSTRUCTIONS

Experimental instructions OE treatment

Welcome to research project C.1!

You are participating in a study in which you will earn some money. The amount will depend on the outcome of a game you will play. The amount of money which you earned with your decisions will paid to you in cash at the end of the experiment. We will not speak of Pounds during the experiment, but rather of points. At the end of the study, the total amount of points you earned will be converted to Pounds at the following rate:

1 point=£0.2

How the study is conducted. The study is conducted anonymously. Participants will be identified only by participation numbers. There is no communication among them. We will call individuals who are in the same role as you "Persons S". You are randomly paired with another person present in this room, call him/her "Person Y", whose identity you will never know. Neither your choice nor Y's choice will be known to other participants or to the researchers.

What the study is about. The study seeks to understand how people decide. You are confronted with two alternatives, A and B. A gives you a payoff for sure and Person Y takes no action. B gives you an outcome that depends on Person Y's behaviour. Person Y chooses between options 1 and 2.

Payoff table

Result of your decision	Nature of choice	Your earnings	Earnings to Person
			Y
А	Certainty	10	10
В	Person Y chooses		
	1	15	15
	2	8	22

The payoff table read as follows:

If you end up choosing A, you and Person Y will each get 10 points.

If you end up choosing B and Person Y chooses 1, you and Person Y will each get 15 points. If you end up choosing B and Person Y chooses 2, you will get 8 points and Person Y will get 22 points.

[First Movers – TG]

KEY QUESTION: How large would the probability p of being paired with a Person Y who chose Option 1 minimally have to be for you to pick Alternative B over Alternative A? (like any probability it must lie between 0 and 1).

YOUR ANSWER: I choose B if p is at least

Note: You do not know what the actual value of p is. Your choice does not influence the value of p. It is determined by the fraction of Persons Y choosing Option 1. With YOUR ANSWER you indicate how large the fraction of Persons Y who choose 1 has to be before you pick B over A.

Conduct of the study C.1

1. While you answer the KEY QUESTION, each of the individuals playing Persons Y has to answer the following question:

"Which option, 1 or 2, do you choose in case B?"

After you and your Person Y have decided, we will collect the answer forms. Please fold them so that nobody can see YOUR ANSWER.

- 2. We will then calculate the percentage of Persons Y who chose Option 1 and inform everyone of it. This gives you p*, the probability of being paired with a Person Y who chose Option 1.
- 3. If p* is greater than or equal to your required value of p (from YOUR ANSWER above), we will follow your instructions. Your earnings will be determined by your Person Y's choice.
 - a. If your Person Y chose 1, you and your Person Y will get 15 points each.
 - b. If your Person Y chose 2, you will get 8 points and your Person Y will get 22 points.
- 4. If p* is less than your required value of p (from YOUR ANSWER above), we will follow your instructions: you and your Person Y will get Certainty A, namely 10 points each.

Completion of Study

Before we conduct the study we ask you to complete a pre-study questionnaire. We will start the study once everyone has correctly filled out this questionnaire.

Welcome to research project C.2!

[Second movers – TG]

You are participating in a study in which you will earn some money. The amount will depend on the outcome of a game you will play. The amount of money which you earned with your decisions will be paid to you in cash at the end of the experiment. We will not speak of Pounds during the experiment, but rather of points. At the end of the study, the total amount of points you earned will be converted to Pounds at the following rate:

1 point=£0.2

How the study is conducted. The study is conducted anonymously. Participants will be identified only by participation numbers. There is no communication among the participants. We will call you and participants who are in the same role as you "Persons Y". You are randomly paired with another person present in this room, call him/her "Person S", whose identity you will never know. Neither your choice nor S's choice will be known to other participants or to the researchers.

What the study is about. The study seeks to understand how people decide. Person S is confronted with two alternatives, A and B. A gives you and Person S a payoff for sure. You do not take any action. If Person S's decision results in B, you have to choose one of two options, 1 or 2.

Payoff table

Result of Person S'	Nature of choice	Your earnings	Earnings to Person S
decision			
A	Certainty	10	10
В	You choose		
	1	15	15
	2	22	8

The payoff table read as follows:

If Person S' decision results in A, you and Person S will each get 10 points.

If Person S' decision results in B and you choose 1, you and Person S will each get 15 points.

If Person S' decision results in B and you choose 2, you will get 22 points and Person S will get 8 points.

KEY QUESTION: Which option, 1 or 2, do you choose in case B?

YOUR ANSWER: I choose_____

After you have answered this question we will collect your answer form.

Completion of Study

Before we conduct the study we ask you to complete a pre-study questionnaire. We will start the study once everyone has correctly filled out this questionnaire.

Welcome to research project B.1!

You are participating in a study in which you will earn some money. The amount will depend on the outcome of a game you will play. The amount of money which you earned with your decisions will be paid to you in cash at the end of the experiment. We will not speak of Pounds during the experiment, but rather of points. At the end of the study, the total amount of points you earned will be converted to Pounds at the following rate:

1 point=£0.2

How the study is conducted. The study is conducted anonymously. Participants will be identified only by participation numbers. There is no communication among them. We will call individuals who are in the same role as you "Persons S". You are randomly paired with another person present in this room, call him/her "Person X", whose identity you will never know. Neither your choice nor Y's choice will be known to other participants or to the researchers.

What the study is about. The study seeks to understand how people decide. You are confronted with two alternatives, A and B. A gives you and Person X a payoff of 10 points for sure. B gives you and Person X an outcome that depends on a lottery. The lottery can produce Options 1 or Option 2.

Payoff table

Result of your decision	Nature of choice	Your earnings	Earnings to Person X
А	Certainty	10	10
В	Lottery produces 1	15	15
	2	8	22

The payoff table read as follows:

If you end up choosing A, you and Person X will each get 10 points.

If you end up choosing B and the lottery produces 1, you and Person X will each get 15 points. If you end up choosing B and the lottery produces 2, you will get 8 points and Person X will get 22 points.

KEY QUESTION: How large would the probability p of the lottery producing Option 1 minimally have to be for you to pick Alternative B over Alternative A? (like any probability, it must lie between 0 and 1).

YOUR ANSWER: I choose B if p is at least_____

[First movers – RDG]

Note: You do not know what the actual value of p is. Your choice does not influence the value of p. The value of p was determined before the start of this experiment. It is in a sealed envelope. With YOUR ANSWER you indicate how large p has to be before you pick B over A.

Conduct of the study B.1

- 1. While you answer the KEY QUESTION, we will post the envelope containing the value of p on the blackboard. After you have decided, we will collect the answer forms. Please fold them so that nobody can see YOUR ANSWER.
- 2. We will then open the sealed envelope and inform everyone of the value of p for this experiment. This gives you p*, the probability of receiving Option 1.
- 3. If p* is greater than or equal to your required value of p (from YOUR ANSWER above), we will follow your instructions: Your earnings will be determined by the outcome of the lottery.

We will create and then conduct the lottery. We will put green and blue balls into a urn. Out of all balls in the urn, the percentage of green balls will be the same as p*. The remaining balls will be blue. We will then randomly pull a ball from the urn.

- a. If the ball is green, you and your Person X will get 15 points each.
- b. If the ball is blue, you will get 8 points and your Person X will get 22 points.
- 4. If p* is less than your required value of p (from YOUR ANSWER above), we will follow your instructions: You and your Person X will get Certainty A, namely 10 points each.

Completion of Study

Before we conduct the study we ask you to complete a pre-study questionnaire. We will start the study once everyone has correctly filled out this questionnaire.

Welcome to research project B.2!

[Recipients – RDG]

You are participating in a study in which you will earn some money. The amount will depend on the outcome of a game you will play. The amount of money which you earned with your decisions will be paid to you in cash at the end of the experiment. We will not speak of Pounds during the experiment, but rather of points. At the end of the study, the total amount of points you earned will be converted to Pounds at the following rate:

1 point=£0.2

How the study is conducted. The study is conducted anonymously. Participants will be identified only by participation numbers. There is no communication among them. You are

randomly paired with another person present in this room, call him/her Person S, whose identity you will never know. S's choice will not be known to other participants or to the researchers. *What the study is about.* The study seeks to understand how people decide. Person S has to choose one of two alternatives, A or B. A gives you and Person S a payoff of 10 points for sure. B gives you and Person S a chance outcome: The probability p is the likelihood that you and Person S will get 15 points each; with probability 1-p you will get 22 points and Person S will get 8 points.

Payoff table

Result of Person S decision	Nature of choice	Your earnings	Earnings to Person S
А	Certainty	10	10
В	Lottery produces 1	15	15
	2	22	8

The payoff table reads as follows:

If Person S chooses A, you and Person S will each get 10 points.

If Person S chooses B and the lottery produces 1, you and Person S will each get 15 points.

If Person S chooses B and the lottery produces 2, you will get 22 points and Person S will get 8 points.

Note: Neither you nor Person S know what the actual value of p is. The value of p was determined before the start of this experiment. It is in a sealed envelope.

You do not take any action but wait until Persons S will have made their decisions.

Conduct of the study B.2

- While you are waiting, Persons S answer the following question: "How large would p have to be for you to pick B over A?" After all Persons S have answered this question, we will collect their answer forms.
- 2. After the second experiment, we will then open the envelope and inform everyone on the value of p for this experiment. Call it p*.
- 3. If p* is greater than or equal to the value of p required by your Person S, you and Person S will get Lottery B.

We will create and then conduct the lottery. We will put green and blue balls into a urn. Out of all balls in the urn, the percentage of green balls will be the same as p*. The remaining balls will be blue. We will then randomly pull a ball from the urn:

- a. If the ball is green, you and your Person S will get 15 points each.
- b. If the ball is blue, you will get 22 points and your Person S will get 8 points.

4. If p* is less than the value of p required by your Person S, you and Person S will get Certainty A, namely 10 points for sure.

Completion of Study

Before we conduct the study we ask you to complete a pre-study questionnaire. We will start the study once everyone has correctly filled out this questionnaire.

Experimental instructions CL treatment

Welcome to research project CGQ.1!

[First movers – TG]

You are participating in a study in which you will earn some money. The amount you earn will depend on the outcome of a game you will play. It will be paid to you in cash at the end of today's session. However, during the session, we will speak of points, rather than Pounds. At the end, the points you earn will be converted to Pounds at the following rate:

1 point=£0.20

The decision situation

We first introduce you to the basic decision situation. You are randomly matched with another participant: your counterpart. You are confronted with two alternatives, **In** or **Out**. If you play **Out**, you and your counterpart get 10 points each. If you play **In**, the outcome depends on your counterpart's decision.

Your counterpart chooses between **Left** or **Right**. If he/she plays **Left**, you and your counterpart get 15 points each. If instead, he/she plays **Right**, you get 8 points and your counterpart gets 22 points.



The experiment

The experiment is based on the decision situation just described to you.

In this experiment there are 40 participants in total, divided into two groups: Group A and Group B. You belong to Group A, which is composed of 20 participants. Every participant in Group A has to decide between **In** and **Out**. Your counterpart belongs to Group B, which is also composed of 20 subjects. Every participant in Group B has to decide between **Left** and **Right**. In this experiment, we ask you to take your decisions considering not only the possible action of your counterpart but also the possible actions of all participants in Group B. In particular, we ask you to take a separate decision between **In** and **Out for each possible value of the number of participants in Group B who choose Left**.

We ask you to take your decisions by filling in a table that will be distributed later but which will look similar to the one below.

Number of participants in Group B choosing Left	You choose	
20 out of 20	In	Out
19 out of 20	In	Out
18 out of 20	In	Out
2 out of 20	In	Out
1 out of 20	In	Out
0 out of 20	In	Out

The first column indicates the possible values of the number of participants in Group B who choose **Left.** The second column indicates your choice. In EACH row of the table, you have to circle either **In** or **Out**. Your choice will determine your action in the event that the actual

number of participants in Group B choosing **Left** is the number given at the start of the row.

For example, if you circle **In** in the second row, it means that you would choose **In** for the case where 19 out of 20 participants in Group B choose **Left**.

We imagine that, if all 20 participants in Group B play Left, you will probably want to play **In**, since this would give you and your counterpart 15 points each, instead of just 10 points each. However, there may be some rows where the number of participants in Group B playing Left is low enough for you to prefer to select **Out** in them. If you do feel this way, you would choose **In** in the top row and perhaps some more rows, and **Out** in some lower rows. Thus, you would switch from **In** to **Out** at some point in the table. We emphasise, however, that it is entirely up to you what to choose in each row.

(While you are circling either **In** or **Out** in each row of the table, all the participants in Group B have to answer the following question:

"Which option, Left or Right, do you choose in case your counterpart chooses In?"

After all participants have made their choices, we will collect the response sheets. We will then count the number of participants in Group B who chose Left. This will indicate the row of the table you completed that determines your action and so is relevant for your earnings. Thus, all the decisions you take in the table are potentially important because you don't yet know what the actual number of participants in Group B choosing Left will be.

Two examples should make this clear.

EXAMPLE 1: Suppose 19 out of 20 participants in Group B choose Left. Then, we will determine your action by selecting your decision in the second row of the table you completed. Suppose further that, in that row, you circled In. Then, In would be the decision of yours relevant to your earnings. At that point, there would be two possible cases: either your counterpart is one of the 19 participants in Group B who chose Left or he/she is the one who chose **Right**. In the former case, you and your counterpart get 15 points. In the latter case, you get 8 points and your counterpart gets 22 points.

EXAMPLE 2: Suppose 1 out of 20 participants in Group B choose Left and suppose further that in the corresponding row you circled **Out**. Then, **Out** will be the decision you took that is relevant for your earnings. In this case, you and your counterpart each get 10 points, regardless of whether your counterpart chose Left or **Right**.

Before you take your decisions, we ask you to complete a pre-study questionnaire to help us check that you understand the determination of your income. We will distribute the response sheets for the experiment once everyone has correctly filled out their questionnaire.

Welcome to research project CGQ.2!

You are participating in a study in which you will earn some money. The amount you earn will depend on the outcome of a game you will play. It will be paid to you in cash at the end of today's session. However, during the session, we will speak of points, rather than Pounds. At the end, the points you earn will be converted to Pounds at the following rate:

1 point=£0.20

The decision situation

We first introduce you to the basic decision situation. You are randomly matched with another participant: your counterpart. He/she is confronted with two alternatives, **In** or **Out**. If he/she plays **Out** you and your counterpart get 10 points each. If he/she plays **In**, the outcome depends on your decision. You choose between **Left** or **Right**. If you choose **Left** you and your

[Second movers – TG]

s correctly filled out their question

counterpart get 15 points each. If, instead, you choose **Right** you get 22 points and your counterpart gets 8 points.



In this experiment, we ask you to answer the following question on a separate response sheet that we will distribute later: which option, Left or Right, do you choose in case your counterpart chooses In?

Before you take your decisions, we ask you to complete a pre-study questionnaire to help us check that you understand the determination of your income. We will distribute the response sheets for the experiment once everyone has correctly filled out their questionnaire.

Welcome to research project CGQ.3!

You are participating in a study in which you will earn some money. The amount you earn will depend on the outcome of a game you will play. It will be paid to you in cash at the end of today's session. However, during the session, we will speak of points, rather than Pounds. At the end, the points you earn will be converted to Pounds at the following rate:

1 point=£0.20

The decision situation

We first introduce you to the basic decision situation. You are randomly matched with another participant: your counterpart. You are confronted with two alternatives, **In** or **Out**. If you play **Out**, you and your counterpart get 10 points each. If you play **In**, the outcome depends on a random lottery. The lottery can produce **Yellow** or **Green**. If the lottery produces **Yellow** you

[First movers – RDG]

and your counterpart get 15 points each. If, instead, the lottery produces Green you get 8 points and your counterpart gets 22 points.



The lottery will be conducted at the end of the experiment. We will draw one ball from an urn containing a total of 20 coloured balls, each of which may be either yellow of green. If one yellow ball is drawn the lottery produces **Yellow**. If one green ball is drawn the lottery produces **Green**. The number of yellow balls (and consequently green balls) in the urn has been predetermined before the experiment. You will know the actual number of yellow balls in the urn for this session only after you take your decisions.

The experiment

The experiment is based on the decision situation just described to you.

In this experiment, we ask you to take your decisions considering all the possible values of the number of yellow balls in the urn. In particular, we ask you to take separate decision between **In** and **Out for each possible value of the number of yellow balls in the urn**.

We ask you to take your decisions by filling in a table that will be distributed later but which will look similar to the one below.

Number of Yellow balls in the urn	You choose	
20 out of 20	In	Out
19 out of 20	In	Out
18 out of 20	In	Out
	-	
2 out of 20	In	Out
1 out of 20	In	Out
0 out of 20	In	Out

The first column indicates the possible values of the number of yellow balls in the urn. The second column indicates your choice. In EACH row of the table, you have to circle either **In** or **Out**. Your choice will determine your action in the event that the actual number of yellow balls in the urn is the number given at the start of the row.

For example, if you circle **In** in the second row, it means that you would choose **In** for the case where where the number of yellow balls in the urn is 19 out of 20.

We imagine that, if all 20 balls in the urn are yellow, you will probably want to play **In**, since this would give you and your counterpart 15 points each, instead of just 10 points each. However, there may be some rows where the number of yellow balls in the urn is low enough for you to prefer to select **Out** in them. If you do feel this way, you would choose **In** in the top row and perhaps some more rows, and **Out** in some lower rows. Thus, you would switch from **In** to **Out** at some point in the table. We emphasise, however, that it is entirely up to you what to choose in each row.

(While you are circling either **In** or **Out** in each row of the table, all the participants in Group B have to answer the following question:

"Which option, Left or Right, do you choose in case your counterpart chooses In?"

After all participants have made their choices, we will collect the response sheets. We will reveal the number of yellow balls in the urn for this experiment. This will indicate the row of the table you completed that determines your action and so is relevant for your earnings. Thus, all the decisions you take in the table are potentially important because you don't yet know what the actual number of yellow balls in the urn will be.

Two examples should make this clear.

EXAMPLE 1: Suppose there are 19 out of 20 yellow balls in the urn. Then, we will determine your action by selecting your decision in the second row of the table you completed. Suppose further that, in that row, you circled **In**. Then, **In** would be the decision of yours relevant to your earnings. At that point, there would be two possible cases: either we draw one yellow ball from the urn or we draw the green one. In the former case, you and your counterpart get 15 points. In the latter case, you get 8 points and your counterpart gets 22 points.

EXAMPLE 2: Suppose there are 1 out of 20 yellow balls in the urn and suppose further that in the corresponding row you circled **Out**. Then, **Out** will be the decision you took that is relevant for your earnings. In this case, you and your counterpart each get 10 points, regardless of whether we draw a yellow or a green ball from the urn.

Before you take your decisions, we ask you to complete a pre-study questionnaire to help us check that you understand the determination of your income. We will distribute the response sheets for the experiment once everyone has correctly filled out their questionnaire.

Welcome to research project CGQ.4!

You are participating in a study in which you will earn some money. The amount you earn will depend on the outcome of a game you will play. It will be paid to you in cash at the end of today's session. However, during the session, we will speak of points, rather than Pounds. At the end, the points you earn will be converted to Pounds at the following rate:

1 point=£0.20

The decision situation

We first introduce you to the basic decision situation. You are randomly matched with another participant: your counterpart. He/she is confronted with two alternatives, **In** or **Out**. If he/she plays **Out** you and your counterpart get 10 points each. If he/she plays **In**, the outcome depends on a random lottery. The lottery can produce **Yellow** or **Green**. If the lottery produces **Yellow** you and your counterpart get 15 points each. If, instead, the lottery produces **Green** you get 22 points and your counterpart gets 8 points.

[Recipients – RDG]



The lottery will be conducted at the end of the experiment. We will pick a ball from an urn containing a total of 20 coloured balls, which can be either yellow or green. If one yellow ball is drawn the lottery produces **Yellow**. If one green ball is drawn the lottery produces **Green**. The number of yellow balls (and consequently green balls) in the urn has been pre-determined before the experiment.

Before your counterpart takes his/her decision, we ask you to complete a pre-study questionnaire to help us check that you understand the determination of your income.

A.3 ELICITATION TABLE IN THE CL TREATMENT

Number of participants in Group B choosing Left [Number of vellow balls in the urn]	You cl	hoose
20 out of 20	In	Out
10 out of 20	III	Out
19 out of 20	In	Out
18 out of 20	ln	Out
17 out of 20	In	Out
16 out of 20	In	Out
15 out of 20	In	Out
14 out of 20	In	Out
13 out of 20	In	Out
12 out of 20	In	Out
11 out of 20	In	Out
10 out of 20	In	Out
9 out of 20	In	Out
8 out of 20	In	Out
7 out of 20	In	Out
6 out of 20	In	Out
5 out of 20	In	Out
4 out of 20	In	Out
3 out of 20	In	Out
2 out of 20	In	Out
1 out of 20	In	Out
0 out of 20	In	Out

19