

Country 1 – Optimistic prior

INSTRUCTIONS

This is an experiment in economic decision making. Various research institutes have provided funds for this experiment and if you make good decisions you may be able to earn a considerable amount of money, which will be paid to you privately at the end of the experiment. We ask you not to communicate with each other from now on, as well as to turn off your mobile phones and any programs you have opened on your computers. If you have a question, please raise your hand.

The experiment consists of **30** independent and identical rounds. In this experiment you will be randomly **paired** with another person in the room in **every** round.

Your payoff for each round will depend on your choice, on the choice of the person you have been paired with, and on chance. At the end of the experiment, the computer will randomly select **three** of the rounds that you played and you will be privately paid the average of what you earned in those specific rounds. In addition, you will receive a participation fee of 5 dollars.

Decisions in each round

Each round of the experiment will consist of one decision stage in which you and your pair member will make a choice based upon the information you receive about an unknown state X, which can be either Low, Medium, or High, and that will determine the game that you and your pair member will play. In each round, the state X will be selected randomly in the following way:

- The state X will be **Low** with **17.5%** probability
- The state X will be **Medium** with **17.5%** probability
- The state X will be **High** with **65%** probability

The state will be the same for you and your pair member. The value of the state X in each round is independent of other rounds, so the above probabilities will determine the state in each of the 30 rounds, irrespective of the chosen states in previous rounds.

However, you and your pair member will not observe what state has been chosen. Instead, each one of you will observe a **signal** that will give you a hint as to what the state X is. A different signal will be drawn for you and your pair member, so keep in mind that

you might not get the same information. For this reason we will refer to these signals as private signals.

Private signals will be drawn in the following way, depending on what state X has been chosen:

- If the state X is **Low**:
 - You will observe the signal “**low**” **60%** of the times
 - You will observe the signal “**medium**” **20%** of the times
 - You will observe the signal “**high**” **20%** of the times
- If the state X is **Medium**:
 - You will observe the signal “**low**” **20%** of the times
 - You will observe the signal “**medium**” **60%** of the times
 - You will observe the signal “**high**” **20%** of the times
- If the state X is **High**:
 - You will observe the signal “**low**” **20%** of the times
 - You will observe the signal “**medium**” **20%** of the times
 - You will observe the signal “**high**” **60%** of the times

This means that, for each possible realization of the state X, 60% of the times you will observe the signal that gives you accurate information about it, and 20% of the times you will observe each of the other two signals.

Let's summarize what we have learnt so far. At the beginning of each round you will be paired with a new pair member. Once you have been randomly matched with a new person, the state X will be randomly selected, but you and your pair member will not observe it. Instead, you and your pair member will each receive a private signal, independently drawn according to the above probabilities. This means that you and your pair member will probably observe different signals.

On the basis of your signal you are going to make your decision. This decision

consists on choosing between two different alternatives: A or B. The payoffs to each of these alternative actions will depend on the state X that has been chosen and on the decision of your pair member in the following way:

Payoff to Choosing Alternative B

Taking action B yields a payoff of \$4 no matter what state X has been chosen and no matter what your pair member does, so if you decide for B, your total payoff for the round will be \$4.

Payoffs to Choosing Alternative A

If you decide for A, you can obtain a payoff of either \$0 or \$20, depending on the state X that has been chosen and on whether your pair member selects A or B.

Table 1 explains how the payoff of action A depends on the state X and on the action you and your pair member choose. The second column of Table 1 contains a small table that explains, for each state X, the payoff that you and your pair member will receive, depending on the actions you and your pair member choose. Your payoff is the first number in the cell, and your pair member's payoff is the number after the comma. All the numbers are in dollar amounts.

Table 1: Payoffs

If the state X is:	Payoffs		
Low	Your choice	Other's choice	
		A	B
		A	0, 0
	B	4, 0	4, 4
Medium	Your choice	Other's choice	
		A	B
		A	20, 20
	B	4, 0	4, 4
High	Your choice	Other's choice	
		A	B
		A	20, 20
	B	4, 20	4, 4

Let's look at these payoffs more closely:

- If you choose A and the state X is Low, then you will receive \$0 no matter what your pair member chooses.
- If the state X is Medium, then the payoff of action A is equal to \$20 **if both you and your pair member decide for A**. In this case, we say that action A is **successful**.
- If the state X is Medium and **only you choose A** (your pair member chooses B), then action A is **not successful** and you will receive \$0.
- Finally, if X is High, then if you choose A you will receive \$20 regardless of what your pair member chooses.

Notice that your final payoff in each round depends on the state X that is chosen initially and on the decision of you and your pair member.

Notice as well that for High and Low states your payoff does not depend on the choice of your pair member.

A round is terminated once you and your pair member have made your decisions about choosing A or B. Remember that there are 30 rounds in the experiment.

Information after each round

After each round you will be informed about:

- Your signal,
- Your choice of action,
- The true value of the state X,
- Whether A was successful or not,
- Your individual payoff for the round.

After a round is over, you will proceed to the next round and face the same decision. Remember that you will be matched with a new pair member every round. Note

that the states X are randomly and independently determined from round to round, so a High or Low state in one period does not imply anything about the likely value of X for the next period.

Payoffs

When you reach the end of the experiment, three of the rounds that you have played will be randomly selected and you will get paid in dollars the average of the payoffs you obtained in those rounds. In particular, the first paying round will be randomly selected from the first 10 rounds you play, the second paying round will be randomly selected from the second 10 rounds you play, and the third paying round will be randomly selected from the third 10 rounds you play. The average of the dollars you obtained in those particular rounds will be paid to you at the end of the experiment. You will also receive a show up fee of 5 dollars.

Remember

Your final payoff in each round depends on the state X , on your own decisions, and on the decisions of the person you were matched with in that round.

The payoff you will receive in dollars at the end of the experiment will be randomly selected by the computer and will correspond to the average of the payoffs you will obtain in three of the rounds you play, so every round can determine your final payoff.

Summary of probabilities and payoffs

Probabilities of the state X:

State X:	Probability
Low	17.5%
Medium	17.5%
High	65%

Probabilities of private signals, for each state X:

		State X		
		Low	Medium	High
Signal	low	60%	20%	20%
	medium	20%	60%	20%
	high	20%	20%	60%

Payoffs, depending on the state X:

If the state X is:	Payoffs			
Low	Your choice	Other's choice		
			A	B
		A	0, 0	0, 4
		B	4, 0	4, 4
Medium	Your choice	Other's choice		
			A	B
		A	20, 20	0, 4
		B	4, 0	4, 4
High	Your choice	Other's choice		
			A	B
		A	20, 20	20, 4
		B	4, 20	4, 4

Country 2 – Optimistic prior, $s=3/4$, $\alpha=3/4$

INSTRUCTIONS

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The experiment consists of **30** independent and identical rounds. In this experiment you will be randomly **paired** with another person in the room in **every** round.

Your payoff for each round will depend on your choice, on the choice of the person you have been paired with, and on chance. At the end of the experiment, the computer will randomly select **three** of the rounds that you played and you will be privately paid the average of what you earned in those specific rounds. In addition, you will receive a participation fee of 5 dollars.

Decisions in each round

Each round of the experiment will consist of one decision stage in which you and your pair member will make a choice based upon the information you receive about an unknown state X, which can be either Low, Medium, or High, and that will determine the game that you and your pair member will play.

However, a few things in today's experiment, including the way in which the state X is chosen, will be determined by observations from a previous experiment that other students like yourself played a few days ago. We will first understand the game that was played in the previous experiment and then explain how it is connected to the experiment you are about to participate in today.

The previous experiment

24 undergraduates like yourself played the following game a few days ago:

The students played the game for 30 identical rounds. In each round, they were randomly matched with a different person in the room and they had to make a choice based on the information they received about an unknown state Y, which was either Low, Medium, or High. In each round, the state Y was selected randomly in the following way:

- The state Y was **Low** with **17.5%** probability
- The state Y was **Medium** with **17.5%** probability
- The state Y was **High** with **65%** probability

The state Y was always the same for both pair members. Each pair member had to choose whether to take action A or B, and the payoff for each of these actions depended

on the state Y in the following way:

Table 1: Payoffs in the previous experiment

If the state Y was:	Payoffs		
Low	Pair member 1	Pair member 2	
			A B
		A	0, 0 0, 4
		B	4, 0 4, 4
Medium	Pair member 1	Pair member 2	
			A B
		A	20, 20 0, 4
		B	4, 0 4, 4
High	Pair member 1	Pair member 2	
			A B
		A	20, 20 20, 4
		B	4, 20 4, 4

In each table the payoff of pair member 1 is the first number in the cell and the payoff of pair member 2 is the number after the comma.

As you can see from Table 1, taking action **B** always yielded a payoff of **\$4**, no matter what state Y was and no matter what action the other pair member took.

Action **A** yielded a payoff of **\$0** if the state was **Low** and a payoff of **\$20** if the state was **High**, no matter what the other player chose. When the state was **Medium**, however, action **A** yielded a payoff of **\$20** if the other pair member **also chose action A**, and **\$0** if the other pair member **chose action B**.

However, the previous students did not observe the state Y that was chosen. Instead, each one of them observed a different **private signal** that gave them a hint as to what Y was. These signals were drawn in the following way, depending on what state Y was chosen:

- If the state Y was **Low**:
 - Each person observed the signal “**low**” **60%** of the times
 - Each person observed the signal “**medium**” **20%** of the times
 - Each person observed the signal “**high**” **20%** of the times
- If the state Y was **Medium**:
 - Each person observed the signal “**low**” **20%** of the times
 - Each person observed the signal “**medium**” **60%** of the times
 - Each person observed the signal “**high**” **20%** of the times
- If the state Y was **High**:

- Each person observed the signal “**low**” **20%** of the times
- Each person observed the signal “**medium**” **20%** of the times
- Each person observed the signal “**high**” **60%** of the times

So 60% of the times each person observed the signal that gave them accurate information about the state Y, and 20% of the times they observed each of the other two signals.

On the basis of their signal each person made their decision of choosing A or B according to the payoffs in Table 1. Once both pair members made their decisions they observed their payoffs and moved on to the next round where they were paired with a different person and a new state Y was selected according to the above probabilities.

The experiment you will play today

The experiment you are about to participate in is very similar to the previous experiment. A state called **X** will be randomly selected for you, which can be either Low, Medium, or High, and you will have to choose between actions A and B whose payoffs are similar to the ones faced by the previous students and will depend on the state X that is chosen today for you. However, the probabilities for each state X and the information you receive about X are slightly different from the ones observed in the previous experiment.

How the state X is chosen in this experiment

The probability of each state X today will depend on what state Y was chosen for the previous experiment in the following way:

- If the state Y in the previous experiment was **Low**:
 - The state **X** today will be **Low** with **75%** probability
 - The state **X** today will be **Medium** with **12.5%** probability
 - The state **X** today will be **High** with **12.5%** probability
- If the state Y in the previous experiment was **Medium**:
 - The state **X** today will be **Low** with **12.5%** probability
 - The state **X** today will be **Medium** with **75%** probability
 - The state **X** today will be **High** with **12.5%** probability
- If the state Y in the previous experiment was **High**:
 - The state **X** today will be **Low** with **12.5%** probability
 - The state **X** today will be **Medium** with **12.5%** probability
 - The state **X** today will be **High** with **75%** probability

This information is summarized in the following table:

Table 2: Probability of state X, given state Y

		State Y		
		Low	Medium	High
State X	Low	75%	12.5%	12.5%
	Medium	12.5%	75%	12.5%
	High	12.5%	12.5%	75%

So 75% of the times the state X will be the same as the state Y that was chosen in the previous experiment, and 12.5% of the times the state X will be either of the other two possible states.

You will **not** know what state Y was chosen in the previous experiment. All the information you will have about it is the original probabilities with which state Y could be chosen (the same that the students that participated in that experiment knew), which are summarized in the following table:

Table 3: Probability of state Y in the previous experiment

State Y:	Probability
Low	17.5%
Medium	17.5%
High	65%

You and your pair member will also observe a signal about the actions that one of the pairs of students in the previous experiment chose. This signal will be **the same for you and your pair member** and will be of the following form:

- If **0 chose action A and 2 chose action B**:
 - You will observe “**0 chose action A, 2 chose action B**” 75% of the times
 - You will observe “**1 chose action A, 1 chose action B**” 12.5% of the times
 - You will observe “**2 chose action A, 0 chose action B**” 12.5% of the times
- If **1 chose action A and 1 chose action B**:
 - You will observe “**0 chose action A, 2 chose action B**” 12.5% of the times
 - You will observe “**1 chose action A, 1 chose action B**” 75% of the times
 - You will observe “**2 chose action A, 0 chose action B**” 12.5% of the times
- If **2 chose action A and 0 chose action B**:
 - You will observe “**0 chose action A, 2 chose action B**” 12.5% of the times
 - You will observe “**1 chose action A, 1 chose action B**” 12.5% of the times

- You will observe “**2 chose action A, 0 chose action B**” **75%** of the times

So 75% of the times you will observe the real actions that the students in the other experiment chose, and 12.5% of the times you will observe either of the two inaccurate statements.

Since you and your pair member will observe the same signal that we just explained, we will refer to it as a **public signal about behavior in the previous experiment**. Remember that 24 students participated in the previous experiment which lasted 30 rounds. They were randomly matched with a new person in each round, as you will be. In each round, you will observe a public signal about the behavior of a **different** pair from the previous experiment. The pair whose behavior you and your pair member observe will be **randomly** chosen from round to round, so in each round you will observe information about the behavior of a different pair.

Note that the public signal about the behavior of students in the previous experiment will give you some information about the type of signals that they observed, which might give you a better idea of the state Y that was chosen in the previous experiment. However, remember that the state Y that was chosen in the previous experiment will **not** determine **your** payoff today. Your payoff today will be determined by the state **X** that is chosen **today** for you. What state Y was chosen in the other experiment matters to you **only** because it determines the probability with which **X** is chosen for you today, according to Table 2 above.

Therefore, state X is the one that will matter for your payoff and will be determined according to what state Y was chosen in the previous experiment and on the probabilities in Table 2. However, you will **not** observe state X. Besides the information that we have described so far, you and your pair member will also receive each a **private signal** about the state X that is drawn for each one of you. We call these “private” because a different signal will be drawn for you and your pair member so you will probably not observe the same information. Each of the private signals will be chosen in the following way:

- If the state X is **Low**:
 - Each person will observe the signal “**low**” **60%** of the times
 - Each person will observe the signal “**medium**” **20%** of the times
 - Each person will observe the signal “**high**” **20%** of the times
- If the state X is **Medium**:
 - Each person will observe the signal “**low**” **20%** of the times
 - Each person will observe the signal “**medium**” **60%** of the times
 - Each person will observe the signal “**high**” **20%** of the times
- If the state X is **High**:
 - Each person will observe the signal “**low**” **20%** of the times
 - Each person will observe the signal “**medium**” **20%** of the times
 - Each person will observe the signal “**high**” **60%** of the times

This means that, for each possible realization of the state X, 60% of the times you will observe the signal that gives you accurate information about it, and 20% of the times you will observe each of the other two signals.

On the basis of your signal you are going to make your decision. This decision consists on choosing between A or B. The payoffs to each of these alternative actions will depend on the state X that has been chosen and on the decision of your pair member in the following way:

Payoff to Choosing Alternative B

Taking action B yields a payoff of \$4 no matter what state X has been chosen and no matter what your pair member does, so if you decide for B, your total payoff for the round will be \$4.

Payoffs to Choosing Alternative A

If you decide for A, you can obtain a payoff of either \$0 or \$20, depending on the state X that has been chosen and on whether your pair member selects A or B.

The following table explains how the payoff of action A depends on the state X and on the action you and your pair member choose. Your payoff is the first number in the cell, and your pair member's payoff is the number after the comma. All the numbers are in dollar amounts.

Table 4: Today's payoffs

If the state X is:	Payoffs		
Low	Your choice	Other's choice	
		A	B
		A	0, 0
		B	4, 0
Medium	Your choice	Other's choice	
		A	B
		A	20, 20
		B	4, 0
High	Your choice	Other's choice	
		A	B
		A	20, 20
		B	4, 20

Let's look at these payoffs more closely:

- If you choose A and the state X is Low, then you will receive \$0 no matter what your pair member chooses.
- If the state X is Medium, then the payoff of action A is equal to \$20 **if both you**

and your pair member decide for A. In this case, we say that action **A** is **successful**.

- If the state X is Medium and **only you choose A** (your pair member chooses B), then action A is **not successful** and you will receive \$0.
- Finally, if X is High, then if you choose A you will receive \$20 regardless of what your pair member chooses.

Notice that your final payoff in each round depends on the state X that is chosen initially and on the decision of you and your pair member.

Notice as well that for High and Low states your payoff does not depend on the choice of your pair member.

A round is terminated once you and your pair member have made your decisions about choosing A or B. Remember that there are 30 rounds in the experiment.

Information after each round

After each round you will be informed about:

- The public signal that you and your pair member observed about the actions of students in the previous experiment,
- The true actions of students in the previous experiment,
- Your own private signal about the state X ,
- The true value of the state X ,
- Your choice of action,
- Whether action A was successful or not,
- Your individual payoff for the round.

After a round is over, you will proceed to the next round and face the same decision. Remember that you will be matched with a new pair member every round and that in each round you will observe information about a different set of people from the previous experiment. Note that the states X are randomly and independently determined from round to round, so a High or Low state in one period does not imply anything about the likely value of X for the next period.

Payoffs

When you reach the end of the experiment, three of the rounds that you have played will be randomly selected and you will get paid in dollars the average of the payoffs you obtained in those rounds. In particular, the first paying round will be randomly selected from the first 10 rounds you play, the second paying round will be randomly selected from the second 10 rounds you play, and the third paying round will be randomly selected from the third 10 rounds you play. The average of the dollars you obtained in those particular rounds will be paid to you at the end of the experiment. You will also receive a show up fee of 5 dollars.

Remember

Your final payoff in each round depends on the state X , on your own decisions,

and on the decisions of the person you were matched with in that round.

The payoff you will receive in dollars at the end of the experiment will be randomly selected by the computer and will correspond to the average of the payoffs you will obtain in three of the rounds you play, so every round can determine your final payoff.

Summary of probabilities and payoffs

The previous experiment

Probabilities of the state Y:

State Y:	Probability
Low	17.5%
Medium	17.5%
High	65%

Probabilities of private signals of the other students, for each state Y:

		State Y		
		Low	Medium	High
Signal	low	60%	20%	20%
	medium	20%	60%	20%
	high	20%	20%	60%

Payoffs of the other's students:

If the state Y was:	Payoffs		
Low	Pair member 1	Pair member 2	
			A B
		A	0, 0 0, 4
		B	4, 0 4, 4
Medium	Pair member 1	Pair member 2	
			A B
		A	20, 20 0, 4
		B	4, 0 4, 4
High	Pair member 1	Pair member 2	
			A B
		A	20, 20 20, 4
		B	4, 20 4, 4

Today's experiment

Probability of the state X, given the state Y in the previous experiment:

		State Y		
State X		Low	Medium	High
	Low	75%	12.5%	12.5%
	Medium	12.5%	75%	12.5%
	High	12.5%	12.5%	75%

Probabilities of the public signal about the behavior in the previous experiment:

		True actions		
Signal		0 chose A, 2 chose B	1 chose A, 1 chose B	2 chose A, 0 chose B
	0 chose A, 2 chose B	75%	12.5%	12.5%
	1 chose A, 1 chose B	12.5%	75%	12.5%
	2 chose A, 0 chose B	12.5%	12.5%	75%

Probabilities for your private signal:

		State X		
Signal		Low	Medium	High
	low	60%	20%	20%
	medium	20%	60%	20%
	high	20%	20%	60%

Your payoffs:

If the state X is:	Payoffs		
Low	Other's choice		
	Your choice	A	B
		0, 0	0, 4
		4, 0	4, 4
Medium	Other's choice		
	Your choice	A	B
		20, 20	0, 4
		4, 0	4, 4
High	Other's choice		
	Your choice	A	B
		20, 20	20, 4
		4, 20	4, 4