

Information and the Bandit

The Good, the Bad and the Ugly

Online Appendix: Experimental Interface

— The *Bad-News* Environment with *Public* Information —

Johannes C. Hoelzemann Nicolas Klein

April 5, 2024

Instructions

General Information

Welcome. This is an experiment in the economics of decision-making. If you pay close attention to these instructions, you can earn a significant amount of money.

Following these instructions, you will be asked to make decisions in a number of choice problems. You will be paid according to your choices, so read these instructions carefully and think before you decide.

Your computer screen will display useful information. Please ensure that this information remains private. If you have any questions, or need assistance of any kind, you can always raise your hand and one of the experimenters will help you privately.

One of the choice problems ("games") you will face has been randomly selected, and you will be paid according to your choices in that problem. Which problem was selected will be revealed at the end of the experiment. To maximize your earnings you can expect to receive, you should treat each choice problem ("game") as if it is the only one that determines your payment.

How Groups are Organized

This experiment consists of twenty-five games in total. At the beginning of each game, you are randomly matched to another participant in the room. Pairs of participants are randomly re-matched for each game; whether you have played with a particular participant in the past does not affect your probability of facing that same participant again in any future game.

How the Game Works

Every game consists of three rounds; you will make a decision in each round. That means that you have to decide whether you want to play the “safe” (**SAFE**) or the “risky” (**RISKY**) option in each round. Your previous choices in no way constrain your subsequent ones.

When you choose the **SAFE** option, you will receive no earnings in the current round.

If you choose the **RISKY** option, you will always earn **\$2857**. In addition, you may, however, lose **\$20000**. The chance of this happening depends on whether your risky option is good or bad. Whether it is good or bad is determined by the computer at the start of each game.

With a 67.6% chance, your and the other participant's risky option will be **bad**;

with a 32.4% chance, your and the other participant's risky option will be **good**.

Note that your, and the other participant's, risky option will always be of the **same** type (either both are good or both are bad).

If your **RISKY** option is **bad**, you may **lose \$20000**. This will happen **with a 25% chance** in each round you use it. That is, with a 25% chance you lose \$17143, and with a 75% chance you gain \$2857. The probability that you incur this loss in a given round is constant over time, and does not depend on your previous earnings or choices, nor does it depend on the other participant's previous or current earnings or choices. It only depends on the type of the risky option (which is determined before the start of the game and which remains constant throughout the game) and your choice in the current round.

If your **RISKY** option is **good**, you will never incur a loss and will always **gain \$2857** in each round you use it.

At the end of each round, you and the other participant observe each other's choices and earnings in that round. Note that by observing the behavior of their **RISKY** option (provided they use it) you can learn something about your own **RISKY** option as well.

Your earnings for the game are the sum of the earnings you will have accumulated over the three rounds of the game.

Please Note

The parameters are chosen in such a way that, *if you knew* the **RISKY** option to be good, you would be best off by always choosing it. Yet, *if you knew* the **RISKY** option to be bad, you would be best off by always choosing the **SAFE** option. The other participant is solving the exact same problem as you and has read the exact same instructions.

The Following Graphics Illustrate How the Game Evolves

Example Round 1 of 3

You are in Game 1 of 25

You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.
Please make your choice by clicking on one of the two buttons.



SAFE **RISKY**

- In this example, you are in Round 1.
- You now need to choose between playing **SAFE** OR **RISKY**.

Example Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$2857

You are still matched with the **same** participant.
Please make your choice by clicking on one of the two buttons.





SAFE **RISKY**

- In this example, you are in Round 2, and therefore you get to see your own and the other participant's choices and earnings in Round 1.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have started playing safe (highlighted by the green frame), which does not yield a reward.
- The **right** column always shows the **other participant's** choices and earnings:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 1 and has not incurred a loss, thus earning \$2857.
- Finally, you now need to choose between playing **SAFE** or **RISKY**.

Example Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$2857
2	 \$2857	 \$2857-\$20000=-\$17143

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

- In this example, you are in Round 3, and therefore you get to see your own and the other participant's choices and earnings in Rounds 1 and 2.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played risky (highlighted by the red frame) in Round 2 and have not incurred a loss, thus earning \$2857.
- The **right** column always shows the **other participant's** choices and earnings:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 2, yielding \$2857, but has also incurred a loss of \$20000: 🤦







This means that **your and the other participant's** **RISKY** options are **bad**.
- Finally, you now need to choose between playing **SAFE** or **RISKY**.

Example Game Outcome

The game is over.

As a result, your earnings are \$2857.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$2857
2	 \$2857	 \$2857-\$20000=-\$17143
3	 \$0	 \$0

[Next](#)

- In this example, the game is over, and therefore you get to see your own and the other participant's choices and earnings in all rounds.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played safe (highlighted by the green frame) in Round 1, which does not yield a reward. In Round 2 you have played risky (highlighted by the red frame), which has yielded a reward of \$2857; and in Round 3 you have played safe (highlighted by the green frame), which does not yield a reward. Thus, your earnings in this game are \$2857.
- The **right** column always shows the **other participant's** choices and earnings:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 1, which has yielded a reward of \$2857. In Round 2 they have played risky (highlighted by the red frame) and incurred a loss of \$17143; and in Round 3 they have played safe (highlighted by the green frame), which does not yield a reward. Thus, the other participant's loss in this game is \$14286.

Payment

In the experiment you will be making decisions that will earn you \$ ("Dollars"). At the end of the experiment, the \$ you have earned will be converted into Euros at an exchange rate of \$ 10000 = € 1, and paid out in cash. This amount will be added to your participation payment of € 10.

Before the actual experiment starts, you will be asked to answer some questions. You must answer these correctly in order to proceed to the next question.

After completing the experiment, the computer will reveal which of the twenty-five games was randomly selected to determine your payment. You will be paid according to the choices you made in that particular game and you will be paid your earnings in cash. This protocol of determining payments suggests that you should choose in each game as if it is the only game that determines your payment.

Frequently Asked Question

Is this some kind of psychology experiment with an agenda you haven't told us? Answer. No. It is an economics experiment. If we do anything deceptive or don't pay you cash as described, then you can complain to the University of Vienna Research Ethics Board and we will be in serious trouble. These instructions are meant to clarify how you earn money, and our interest is in seeing how people make decisions.

Next

This button will be activated after 300 seconds. Please take your time to read through the instructions.



You have successfully finished reading the instructions.

The quiz, consisting of 13 questions in total, follows.

Next

Quiz Time!

Q1. The computer has randomly selected one of the games to determine your payment.

A Correct

B Incorrect

Quiz Time!

Q2. In each game (not round) you will be randomly matched with another participant in this session and stay together for that game.

A Correct

B Incorrect

Quiz Time!

Q3. In all games, the **RISKY** option is always **bad** and always leads to a loss of \$20000 each time it is used.

A Correct

B Incorrect

Quiz Time!

Q4. If the **RISKY** option is **bad**, then it leads to a loss of \$20000 with a chance of 25%.

A Correct

B Incorrect


Quiz Time!

Q5. If you knew the **RISKY** option to be **bad**, you would be best off by always choosing the **SAFE** option

A Correct

B Incorrect

Quiz Time!

Q6. If you experienced a loss of \$20000  in an earlier round, you would be best off by always choosing the _____ .

A **SAFE** option

B **RISKY** option

Quiz Time!

Q7. A **bad** **RISKY** option always leads to a loss of \$20000 each time you use it.

A Correct

B Incorrect

Quiz Time!

Q8. A **good** **RISKY** option leads to a loss of \$20000 with a 25% chance.

A Correct

B Incorrect

Quiz Time!

Q9. If the other participant has suffered a loss of \$20000 , this means that your **RISKY** option is **bad**.

A Correct

B Incorrect

Quiz Time!

Q10. If you have experienced a loss of \$20000 , this means that your **RISKY** option is **bad**.

A Correct

B Incorrect

Quiz Time!

Q11. If you choose the **SAFE** option in a given round, then you can never learn anything about your and the other participant's **RISKY** option in that round.

A Correct

B Incorrect

Quiz Time!

Q12. If both you and the other participant choose the **SAFE** option in a given round, then you cannot learn anything new about your and the other participant's **RISKY** option in that round.

A Correct

B Incorrect

Quiz Time!

Q13. The more you have observed you and/or the other participant using the **RISKY** option without experiencing a loss of \$20000, the more inclined you should be to choose the **RISKY** option in the future.

A Correct

B Incorrect



You have successfully finished the quiz.

The experiment follows. When you are ready please click "Next" to start the experiment.

Next

Round 1 of 3

You are in Game 1 of 25

You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.



SAFE

RISKY

Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$2857	 \$2857-\$20000=-\$17143

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.





SAFE

RISKY

Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$2857	 $\$2857 - \$20000 = -\$17143$
Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
2	 \$2857	 \$0

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE







RISKY

Game Outcome

The game is over.

As a result, your earnings are \$5714.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$2857	 $\$2857 - \$20000 = -\$17143$
2	 \$2857	 \$0
3	 \$0	 \$0

Next



You have successfully finished the main part of the experiment.

A brief questionnaire follows.

Your answers will be kept confidential and will not affect your earnings for today's experiment.

Please state your age:

Please state your gender:

Please state your degree and field of study:

Please briefly explain, in your own words, the rules of today's experiment:

Please briefly describe how you reached your decisions in this experiment:

Please briefly describe how, in your opinion, other participants reached their decisions in this experiment:

Next

Thank you for participating in this experiment!

Your Earnings

The randomly selected game for payment is **Game #21**. Your total earnings are therefore **\$5714**.

This corresponds to **€0.57**.

In total, you earned **€10.57** in this experiment. This includes your participation payment of €10 for taking part in this experiment.

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Your computer screen will display useful information. Please ensure that this information remains private. If you have any questions, or need assistance of any kind, you can always raise your hand and one of the experimenters will help you privately.

One of the choice problems ("games") you will face has been randomly selected, and you will be paid according to your choices in that problem. Which problem was selected will be revealed at the end of the experiment. To maximize your earnings you can expect to receive, you should treat each choice problem ("game") as if it is the only one that determines your payment.

How Groups are Organized

This experiment consists of twenty-five games in total. At the beginning of each game, you are randomly matched to another participant in the room. Pairs of participants are randomly re-matched for each game; whether you have played with a particular participant in the past does not affect your probability of facing that same participant again in any future game.

How the Game Works

Every game consists of three rounds; you will make a decision in each round. That means that you have to decide whether you want to play the “safe” (**SAFE**) or the “risky” (**RISKY**) option in each round. Your previous choices in no way constrain your subsequent ones.

When you choose the **SAFE** option, you will receive no earnings in the current round.

If you choose the **RISKY** option, you will always earn **\$2857**. In addition, you may, however, lose **\$20000**. The chance of this happening depends on whether your risky option is good or bad. Whether it is good or bad is determined by the computer at the start of each game.

With a 67.6% chance, your and the other participant's risky option will be **bad**;
with a 32.4% chance, your and the other participant's risky option will be **good**.

Note that your, and the other participant's, risky option will always be of the **same** type (either both are good or both are bad).

If your **RISKY** option is **bad**, you may **lose \$20000**. This will happen **with a 25% chance** in each round you use it. That is, with a 25% chance you lose \$17143, and with a 75% chance you gain \$2857. The probability that you incur this loss in a given round is constant over time, and does not depend on your previous earnings or choices, nor does it depend on the other participant's previous or current earnings or choices. It only depends on the type of the risky option (which is determined before the start of the game and which remains constant throughout the game) and your choice in the current round.

If your **RISKY** option is **good**, you will never incur a loss and will always **gain \$2857** in each round you use it.

At the end of each round, you observe only if the other participant incurred a loss of **\$20000** from their **RISKY** option as well as your own choice and earnings.

Your earnings for the game are the sum of the earnings you will have accumulated over the three rounds of the game.

Please Note

The parameters are chosen in such a way that, *if you knew* the **RISKY** option to be good, you would be best off by always choosing it. Yet, *if you knew* the **RISKY** option to be bad, you would be best off by always choosing the **SAFE** option. The other participant is solving the exact same problem as you and has read the exact same instructions.

The Following Graphics Illustrate How the Game Evolves

Example Round 1 of 3

You are in Game 1 of 25

You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.

SAFE **RISKY**

- In this example, you are in Round 1.
- You now need to choose between playing **SAFE** or **RISKY**.

Example Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$?

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE





RISKY

- In this example, you are in Round 2, and therefore you get to see your own choices and earnings in Round 1 and whether or not the other participant has incurred a loss of \$20000.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have started playing safe (highlighted by the green frame), which does not yield a reward.
- The **right** column always shows whether or not the **other participant** has incurred a loss of \$20000:
 - In this example, the other participant has played either safe or risky (highlighted by the grey frame) in Round 1 and has not incurred a loss. So, their earnings in Round 1 are either \$0 if they chose the safe option or \$2857 if they chose the risky option.
- Finally, you now need to choose between playing **SAFE** or **RISKY**.

Example Round 3 of 3


You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$?
2	 \$2857	 $\$2857 - \$20000 = -\$17143$

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.


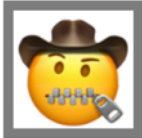




- In this example, you are in Round 3, and therefore you get to see your own choices and earnings in Rounds 1 and 2, and whether or not the other participant has incurred a loss of \$20000.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played risky (highlighted by the red frame) in Round 2 and have not incurred a loss, thus earning \$2857.
- The **right** column always shows whether or not the **other participant** has incurred a loss of \$20000:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 2, yielding \$2857, but has also incurred a loss of \$20000: . This means that **your and the other participant's** options are bad.
- Finally, you now need to choose between playing or .

Example Game Outcome

The game is over.

As a result, your earnings are \$2857.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$?
2	 \$2857	 \$2857-\$20000=-\$17143
3	 \$0	 \$?

[Next](#)

- In this example, the game is over, and therefore you get to see your own choices and earnings in all rounds, and whether or not the other participant has incurred losses of \$20000.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played safe (highlighted by the green frame) in Round 1, which does not yield a reward. In Round 2 you have played risky (highlighted by the red frame), which has yielded earnings of \$2857; and in Round 3 you have played safe (highlighted by the green frame), yielding no reward. Thus, your earnings in this game are \$2857.
- The **right** column always shows whether or not the **other participant** has incurred a loss of \$20000:
 - In this example, the other participant has played either safe or risky (highlighted by the grey frame) in Round 1 with no loss but potentially with earnings of \$2857; and risky in Round 2 and incurred a loss of \$17143. In Round 3, they have played either safe or risky (highlighted by the grey frame) with no loss but potentially with earnings of \$2857.

Payment

In the experiment you will be making decisions that will earn you \$ ("Dollars"). At the end of the experiment, the \$ you have earned will be converted into Euros at an exchange rate of \$ 10000 = € 1, and paid out in cash. This amount will be added to your participation payment of € 10.

Before the actual experiment starts, you will be asked to answer some questions. You must answer these correctly in order to proceed to the next question.

After completing the experiment, the computer will reveal which of the twenty-five games was randomly selected to determine your payment. You will be paid according to the choices you made in that particular game and you will be paid your earnings in cash. This protocol of determining payments suggests that you should choose in each game as if it is the only game that determines your payment.

Frequently Asked Question

Is this some kind of psychology experiment with an agenda you haven't told us? Answer. No. It is an economics experiment. If we do anything deceptive or don't pay you cash as described, then you can complain to the University of Vienna Research Ethics Board and we will be in serious trouble. These instructions are meant to clarify how you earn money, and our interest is in seeing how people make decisions.

Next

This button will be activated after 405 seconds. Please take your time to read through the instructions.



You have successfully finished reading the instructions.

The quiz, consisting of 13 questions in total, follows.

Next

Quiz Time!

Q1. The computer has randomly selected one of the games to determine your payment.

A Correct

B Incorrect

Quiz Time!

Q2. In each game (not round) you will be randomly matched with another participant in this session and stay together for that game.

A Correct

B Incorrect

Quiz Time!

Q3. In all games, the **RISKY** option is always **bad** and always leads to a loss of \$20000 each time it is used.

A Correct

B Incorrect

Quiz Time!

Q4. If the **RISKY** option is **bad**, then it leads to a loss of \$20000 with a chance of 25%.

A Correct

B Incorrect


Quiz Time!

Q5. If you knew the **RISKY** option to be **bad**, you would be best off by always choosing the **SAFE** option

A Correct

B Incorrect

Quiz Time!

Q6. If you experienced a loss of \$20000  in an earlier round, you would be best off by always choosing the _____ .

A SAFE option

B RISKY option

Quiz Time!

Q7. A **bad** RISKY option always leads to a loss of \$20000 each time you use it.

A Correct

B Incorrect


Quiz Time!

Q8. A **good** RISKY option leads to a loss of \$20000 with a 25% chance.

A Correct

B Incorrect

Quiz Time!

Q9. If the other participant has suffered a loss of \$20000 , this means that your RISKY option is **bad**.

A Correct

B Incorrect

Quiz Time!

Q10. If you have experienced a loss of \$20000 , this means that your RISKY option is **bad**.

A Correct

B Incorrect

Quiz Time!

Q11. If you choose the **SAFE** option in a given round, then you can never learn anything about your and the other participant's **RISKY** option in that round.

A Correct

B Incorrect

Quiz Time!

Q12. If you choose the **SAFE** option in a given round, then you cannot learn anything new about your and the other participant's **RISKY** option in that round unless the other participant experiences a loss of \$20000 from choosing their **RISKY** option.

A Correct

B Incorrect

Quiz Time!

Q13. The more you have used the **RISKY** option without experiencing a loss of \$20000, the more inclined you should be to choose the **RISKY** option in the future unless the other participant has experienced a loss of \$20000 from choosing their **RISKY** option.

A Correct

B Incorrect



You have successfully finished the quiz.

The experiment follows. When you are ready please click "Next" to start the experiment.

Next

Round 1 of 3

You are in Game 1 of 25



You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.



SAFE

RISKY

Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$2857	 \$2857-\$20000=-\$17143

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.




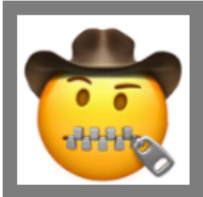
SAFE

RISKY

Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$2857	 $\$2857 - \$20000 = -\$17143$
Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
2	 \$0	 \$?

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE




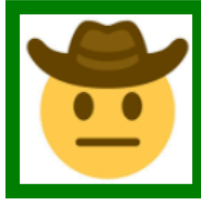


RISKY

Game Outcome

The game is over.

As a result, your earnings are \$5714.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$2857	 $\$2857 - \$20000 = -\$17143$
2	 \$2857	 \$0
3	 \$0	 \$0

Next



You have successfully finished the main part of the experiment.

A brief questionnaire follows.

Your answers will be kept confidential and will not affect your earnings for today's experiment.

Please state your age:

Please state your gender:

Please state your degree and field of study:

Please briefly explain, in your own words, the rules of today's experiment:

Please briefly describe how you reached your decisions in this experiment:

Please briefly describe how, in your opinion, other participants reached their decisions in this experiment:

Next

Thank you for participating in this experiment!

Your Earnings

The randomly selected game for payment is **Game #21**. Your total earnings are therefore **\$2857**.

This corresponds to **€0.29**.

In total, you earned **€10.29** in this experiment. This includes your participation payment of €10 for taking part in this experiment.

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How the Game Works

Every game consists of three rounds; you will make a decision in each round. That means that you have to decide whether you want to play the “safe” (**SAFE**) or the “risky” (**RISKY**) option in each round. Your previous choices in no way constrain your subsequent ones.

When you choose the **SAFE** option, you will receive no earnings in the current round.

If, however, you choose the **RISKY** option, you will incur a **cost of \$25**. The reward you may get depends on whether your risky option is good or bad. Whether it is good or bad is determined by the computer at the start of each game.

With a 75% chance, your and the other participant's risky option will be **good**;

with a 25% chance, your and the other participant's risky option will be **bad**.

Note that your, and the other participant's, risky option will always be of the **same** type (either both are good or both are bad).

If your **RISKY** option is **good**, it may give you a reward of **\$100**. It will do so **with a 50% chance** in each round you use it. That is, with a 50% chance you gain \$75, and with a 50% chance you lose \$25. The probability that you get your reward in a given round is constant over time, and does not depend on your previous earnings or choices, nor does it depend on the other participant's previous or current earnings or choices. It only depends on the type of the risky option (which is determined before the start of the game and which remains constant throughout the game) and your choice in the current round.

If your **RISKY** option is **bad**, it will never give you any reward.

At the end of each round, you and the other participant observe each other's choices and earnings in that round. Note that by observing the behavior of their **RISKY** option (provided they use it) you can learn something about your own

RISKY option as well.

Your earnings for the game are the sum of the earnings you will have accumulated over the three rounds of the game.

Please Note

The parameters are chosen in such a way that, *if you knew* the **RISKY** option to be good, you would be best off by always choosing it. Yet, *if you knew* the **RISKY** option to be bad, you would be best off by always choosing the **SAFE** option. The other participant is solving the exact same problem as you and has read the exact same instructions.

The Following Graphics Illustrate How the Game Evolves

Example Round 1 of 3

You are in Game 1 of 25

You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.



SAFE **RISKY**

- In this example, you are in Round 1.
- You now need to choose between playing **SAFE** or **RISKY**.

Example Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 -\$25





You are still matched with the **same** participant.
Please make your choice by clicking on one of the two buttons.

- In this example, you are in Round 2, and therefore you get to see your own and the other participant's choices and earnings in Round 1.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have started playing safe (highlighted by the green frame), which does not yield a reward.
- The **right** column always shows the **other participant's** choices and earnings:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 1, which has yielded no reward and has come at a cost of \$25.
- Finally, you now need to choose between playing or .

Example Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 -\$25
2	 -\$25	 $\$100 - \$25 = \$75$

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE

RISKY

- In this example, you are in Round 3, and therefore you get to see your own and the other participant's choices and earnings in Rounds 1 and 2.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played risky (highlighted by the red frame) in Round 2, which has not yielded a reward and has come at a cost of \$25.
- The **right** column always shows the **other participant's** choices and earnings:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 2, which has yielded a reward of \$100 minus the cost of \$25: 🎉







This means that **your and the other participant's** **RISKY** options are **good**.
- Finally, you now need to choose between playing **SAFE** or **RISKY**.

Example Game Outcome

The game is over.

As a result, your earnings are \$50.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 -\$25
2	 -\$25	 $\$100 - \$25 = \$75$
3	 $\$100 - \$25 = \$75$	 $\$100 - \$25 = \$75$

[Next](#)

- In this example, the game is over, and therefore you get to see your own and the other participant's choices and earnings in all rounds.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played safe (highlighted by the green frame) in Round 1 and risky (highlighted by the red frame) in the next two rounds, which has yielded a reward of \$100 minus the cost of \$50. Thus, your earnings in this game are \$50.
- The **right** column always shows the **other participant's** choices and earnings:
 - In this example, the other participant has played risky (highlighted by red frame) in all rounds, which has yielded a reward of \$200 minus the cost of \$75. Thus, their earnings in this game are \$125.

Payment

In the experiment you will be making decisions that will earn you \$ ("Dollars"). At the end of the experiment, the \$ you have earned will be converted into Euros at an exchange rate of \$ 15 = € 1, and paid out in cash. This amount will be added to your participation payment of € 10.

Before the actual experiment starts, you will be asked to answer some questions. You must answer these correctly in order to proceed to the next question.

After completing the experiment, the computer will reveal which of the twenty-five games was randomly selected to determine your payment. You will be paid according to the choices you made in that particular game and you will be paid your earnings in cash. This protocol of determining payments suggests that you should choose in each game as if it is the only game that determines your payment.

Frequently Asked Question

Is this some kind of psychology experiment with an agenda you haven't told us? Answer. No. It is an economics experiment. If we do anything deceptive or don't pay you cash as described, then you can complain to the University of Vienna Research Ethics Board and we will be in serious trouble. These instructions are meant to clarify how you earn money, and our interest is in seeing how people make decisions.

Next

This button will be activated after 302 seconds. Please take your time to read through the instructions.



You have successfully finished reading the instructions.

The quiz, consisting of 13 questions in total, follows.

Next

Quiz Time!

Q1. The computer has randomly selected one of the games to determine your payment.

A Correct

B Incorrect

Quiz Time!

Q2. In each game (not round) you will be randomly matched with another participant in this session and stay together for that game.

A Correct

B Incorrect

Quiz Time!

Q3. In all games, the **RISKY** option is always **good and always pays the benefit of \$100 minus the costs of \$25 = \$75**.

A Correct

B Incorrect

Quiz Time!

Q4. If the **RISKY** option is **good**, then it pays the reward of \$100 with a chance of 50%.

A Correct

B Incorrect


Quiz Time!

Q5. If you knew the **RISKY** option to be **bad**, you would be best off by always choosing the **SAFE** option

A Correct

B Incorrect

Quiz Time!

Q6. If you received a reward of \$100  in an earlier round, you would be best off by always choosing the _____.

A **SAFE** option

B **RISKY** option

Quiz Time!

Q7. A **good** **RISKY** option always returns a reward of \$100 each time you use it.

A Correct

B Incorrect

Quiz Time!

Q8. A **bad** **RISKY** option returns a reward of \$100 with a 50% chance.

A Correct

B Incorrect

Quiz Time!

Q9. If the other participant has received a reward of \$100 , this means that your **RISKY** option is **good**.

A Correct

B Incorrect

Quiz Time!

Q10. If you have received a reward of \$100 , this means that your **RISKY** option is **good**.

A Correct

B Incorrect

Quiz Time!

Q11. If you choose the **SAFE** option in a given round, then you can never learn anything about your and the other participant's **RISKY** option in that round.

A Correct

B Incorrect

Quiz Time!

Q12. If both you and the other participant choose the **SAFE** option in a given round, then you cannot learn anything new about your and the other participant's **RISKY** option in that round.

A Correct

B Incorrect

Quiz Time!

Q13. The more you have observed you and/or the other participant using the **RISKY** option without receiving a reward of \$100, the less inclined you should be to choose the **RISKY** option in the future.

A Correct

B Incorrect



You have successfully finished the quiz.

The experiment follows. When you are ready please click "Next" to start the experiment.

Next

Round 1 of 3

You are in Game 1 of 25

You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.



SAFE

RISKY

Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 -\$25	 -\$25

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.



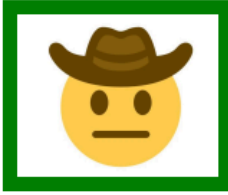
SAFE

RISKY

Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 -\$25	 -\$25
2	 $\$100 - \$25 = \$75$	 \$0

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE




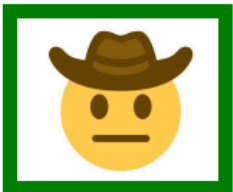


RISKY

Game Outcome

The game is over.

As a result, your earnings are \$125.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 -\$25	 -\$25
2	 $\$100 - \$25 = \$75$	 \$0
3	 $\$100 - \$25 = \$75$	 -\$25

Next



You have successfully finished the main part of the experiment.

A brief questionnaire follows.

Your answers will be kept confidential and will not affect your earnings for today's experiment.

Please state your age:

Please state your gender:

Please state your degree and field of study:

Please briefly explain, in your own words, the rules of today's experiment:

Please briefly describe how you reached your decisions in this experiment:

Please briefly describe how, in your opinion, other participants reached their decisions in this experiment:

Next

Thank you for participating in this experiment!

Your Earnings

The randomly selected game for payment is **Game #9**. Your total earnings are therefore **\$125**.

This corresponds to **€8.33**.

In total, you earned **€18.33** in this experiment. This includes your participation payment of €10 for taking part in this experiment.

Information and the Bandit

The Good, the Bad and the Ugly

Online Appendix: Experimental Interface

— The *Good-News* Environment with *Private* Information

Johannes C. Hoelzemann Nicolas Klein

April 5, 2024

Instructions

General Information

Welcome. This is an experiment in the economics of decision-making. If you pay close attention to these instructions, you can earn a significant amount of money.

Following these instructions, you will be asked to make decisions in a number of choice problems. You will be paid according to your choices, so read these instructions carefully and think before you decide.

Your computer screen will display useful information. Please ensure that this information remains private. If you have any questions, or need assistance of any kind, you can always raise your hand and one of the experimenters will help you privately.

One of the choice problems ("games") you will face has been randomly selected, and you will be paid according to your choices in that problem. Which problem was selected will be revealed at the end of the experiment. To maximize your earnings you can expect to receive, you should treat each choice problem ("game") as if it is the only one that determines your payment.

How Groups are Organized

This experiment consists of twenty-five games in total. At the beginning of each game, you are randomly matched to another participant in the room. Pairs of participants are randomly re-matched for each game; whether you have played with a particular participant in the past does not affect your probability of facing that same participant again in any future game.

How the Game Works

Every game consists of three rounds; you will make a decision in each round. That means that you have to decide whether you want to play the “safe” (**SAFE**) or the “risky” (**RISKY**) option in each round. Your previous choices in no way constrain your subsequent ones.

When you choose the **SAFE** option, you will receive no earnings in the current round.

If, however, you choose the **RISKY** option, you will incur a **cost of \$25**. The reward you may get depends on whether your risky option is good or bad. Whether it is good or bad is determined by the computer at the start of each game.

With a 75% chance, your and the other participant's risky option will be **good**;

with a 25% chance, your and the other participant's risky option will be **bad**.

Note that your, and the other participant's, risky option will always be of the **same** type (either both are good or both are bad).

If your **RISKY** option is **good**, it may give you a reward of **\$100**. It will do so **with a 50% chance** in each round you use it. That is, with a 50% chance you gain \$75, and with a 50% chance you lose \$25. The probability that you get your reward in a given round is constant over time, and does not depend on your previous earnings or choices, nor does it depend on the other participant's previous or current earnings or choices. It only depends on the type of the risky option (which is determined before the start of the game and which remains constant throughout the game) and your choice in the current round.

If your **RISKY** option is **bad**, it will never give you any reward.

At the end of each round, you observe only if the other participant received a reward of **\$100** from their **RISKY** option as well as your own choice and earnings.

Your earnings for the game are the sum of the earnings you will have accumulated over the three rounds of the game.

Please Note

The parameters are chosen in such a way that, *if you knew* the **RISKY** option to be good, you would be best off by always choosing it. Yet, *if you knew* the **RISKY** option to be bad, you would be best off by always choosing the **SAFE** option. The other participant is solving the exact same problem as you and has read the exact same instructions.

The Following Graphics Illustrate How the Game Evolves

Example Round 1 of 3

You are in Game 1 of 25

You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.



SAFE **RISKY**

- In this example, you are in Round 1.
- You now need to choose between playing **SAFE** or **RISKY**.

Example Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$?

You are still matched with the **same** participant.





Please make your choice by clicking on one of the two buttons.

- In this example, you are in Round 2, and therefore you get to see your own choices and earnings in Round 1 and whether or not the other participant has received a reward of \$100.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have started playing safe (highlighted by the green frame), which does not yield a reward.
- The **right** column always shows whether or not the **other participant** has received a reward of \$100:
 - In this example, the other participant has played either safe or risky (highlighted by the grey frame) in Round 1, which has not yielded a reward. So, their earnings in Round 1 are either \$0 if they chose the safe option or -\$25 if they chose the risky option.
- Finally, you now need to choose between playing or .

Example Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$?
2	 -\$25	 \$100 - \$25 = \$75

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE
RISKY

- In this example, you are in Round 3, and therefore you get to see your own choices and earnings in Rounds 2 and 3, and whether or not the other participant has received a reward of \$100.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played risky (highlighted by the red frame) in Round 2, which has yielded no reward and has come at a cost of \$25.
- The **right** column always shows whether or not the **other participant** has received a reward of \$100:
 - In this example, the other participant has played risky (highlighted by the red frame) in Round 2, which has yielded a reward of \$100 minus the cost of \$25: 🎉







This means that **you and the other participant's** RISKY options are **good**.
- Finally, you now need to choose between playing SAFE or RISKY.

Example Game Outcome

The game is over.

As a result, your earnings are \$50.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 \$0	 \$?
2	 -\$25	 $\$100 - \$25 = \$75$
3	 $\$100 - \$25 = \$75$	 $\$100 - \$25 = \$75$

[Next](#)

- In this example, the game is over and therefore you get to see your own choices and earnings in all rounds, and whether or not the other participant received rewards of \$100.
- The **left** column always shows **your** choices and earnings:
 - In this example, you have played safe (highlighted by the green frame) in Round 1 and risky (highlighted by the red frame) in the next two rounds, which has yielded a reward of \$100 minus the cost of \$50. Thus, your earnings in this game are \$50.
- The **right** column always shows whether or not the **other participant** has received a reward of \$100:
 - In this example, the other participant has played either safe or risky (highlighted by the grey frame) in Round 1 with no reward but potentially at some cost; and risky in the next two rounds, which has yielded a reward of \$200 minus the cost of \$50.

Payment

In the experiment you will be making decisions that will earn you \$ ("Dollars"). At the end of the experiment, the \$ you have earned will be converted into Euros at an exchange rate of \$ 15 = € 1, and paid out in cash. This amount will be added to your participation payment of € 10.

Before the actual experiment starts, you will be asked to answer some questions. You must answer these correctly in order to proceed to the next question.

After completing the experiment, the computer will reveal which of the twenty-five games was randomly selected to determine your payment. You will be paid according to the choices you made in that particular game and you will be paid your earnings in cash. This protocol of determining payments suggests that you should choose in each game as if it is the only game that determines your payment.

Frequently Asked Question

Is this some kind of psychology experiment with an agenda you haven't told us? Answer. No. It is an economics experiment. If we do anything deceptive or don't pay you cash as described, then you can complain to the University of Vienna Research Ethics Board and we will be in serious trouble. These instructions are meant to clarify how you earn money, and our interest is in seeing how people make decisions.

Next

This button will be activated after 300 seconds. Please take your time to read through the instructions.



You have successfully finished reading the instructions.

The quiz, consisting of 13 questions in total, follows.

Next

Quiz Time!

Q1. The computer has randomly selected one of the games to determine your payment.

A Correct

B Incorrect

Quiz Time!

Q2. In each game (not round) you will be randomly matched with another participant in this session and stay together for that game.

A Correct

B Incorrect

Quiz Time!

Q3. In all games, the **RISKY** option is always **good** and always pays the benefit of \$100 minus the costs of \$25 = \$75.

A Correct

B Incorrect

Quiz Time!

Q4. If the **RISKY** option is **good**, then it pays the reward of \$100 with a chance of 50%.

A Correct

B Incorrect


Quiz Time!

Q5. If you knew the **RISKY** option to be **bad**, you would be best off by always choosing the **SAFE** option

A Correct

B Incorrect

Quiz Time!

Q6. If you received a reward of \$100  in an earlier round, you would be best off by always choosing the _____.

A **SAFE** option

B **RISKY** option

Quiz Time!

Q7. A **good** **RISKY** option always returns a reward of \$100 each time you use it.

A Correct

B Incorrect

Quiz Time!

Q8. A **bad** **RISKY** option returns a reward of \$100 with a 50% chance.

A Correct

B Incorrect

Quiz Time!

Q9. If the other participant has received a reward of \$100 , this means that your **RISKY** option is **good**.

A Correct

B Incorrect

Quiz Time!

Q10. If you have received a reward of \$100 , this means that your **RISKY** option is **good**.

A Correct

B Incorrect

Quiz Time!

Q11. If you choose the **SAFE** option in a given round, then you can never learn anything about your and the other participant's **RISKY** option in that round.

A Correct

B Incorrect

Quiz Time!

Q12. If you choose the **SAFE** option in a given round, then you cannot learn anything new about your and the other participant's **RISKY** option in that round unless the other participant receives a reward of \$100 from choosing their **RISKY** option.

A Correct

B Incorrect

Quiz Time!

Q13. The more you have used the **RISKY** option without receiving a reward of \$100, the less inclined you should be to choose the **RISKY** option in the future unless the other participant has received a reward of \$100 from choosing their **RISKY** option.

A Correct

B Incorrect



You have successfully finished the quiz.

The experiment follows. When you are ready please click "Next" to start the experiment.

Next

Round 1 of 3

You are in Game 1 of 25



You are randomly matched with **another** participant. You will stay in the same group for all 3 rounds.

Please make your choice by clicking on one of the two buttons.


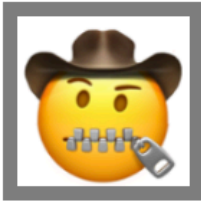
SAFE

RISKY

Round 2 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 -\$25	 \$?

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.


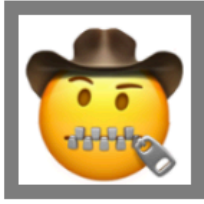


SAFE

RISKY

Round 3 of 3

You are in Game 1 of 25

EARNINGS

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 -\$25	 \$?
2	 $\$100 - \$25 = \$75$	 $\$100 - \$25 = \$75$

You are still matched with the **same** participant.

Please make your choice by clicking on one of the two buttons.

SAFE






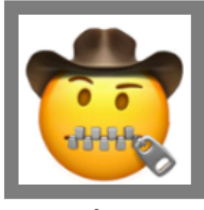
RISKY

Game Outcome

The game is over.

As a result, your earnings are \$125.

Round history

Round	YOUR EARNINGS	OTHER PARTICIPANT'S EARNINGS
1	 -\$25	 \$?
2	 $\$100 - \$25 = \$75$	 $\$100 - \$25 = \$75$
3	 $\$100 - \$25 = \$75$	 \$?

Next



You have successfully finished the main part of the experiment.

A brief questionnaire follows.

Your answers will be kept confidential and will not affect your earnings for today's experiment.

Please state your age:

Please state your gender:

Please state your degree and field of study:

Please briefly explain, in your own words, the rules of today's experiment:

Please briefly describe how you reached your decisions in this experiment:

Please briefly describe how, in your opinion, other participants reached their decisions in this experiment:

Next

Thank you for participating in this experiment!

Your Earnings

The randomly selected game for payment is **Game #9**. Your total earnings are therefore **\$125**.

This corresponds to **€8.33**.

In total, you earned **€18.33** in this experiment. This includes your participation payment of €10 for taking part in this experiment.