Welcome!

Thank you for participating in this experiment. Please turn off your cell phone and do not communicate with other participants until the end of the session.

If you have any questions, you can raise your hand or press the red button on the side of your desk at any time. We will come to answer you individually. During this session you will make several decisions. These decisions can earn you money. Regardless of these decisions, you will receive 5 euros for showing up on time.

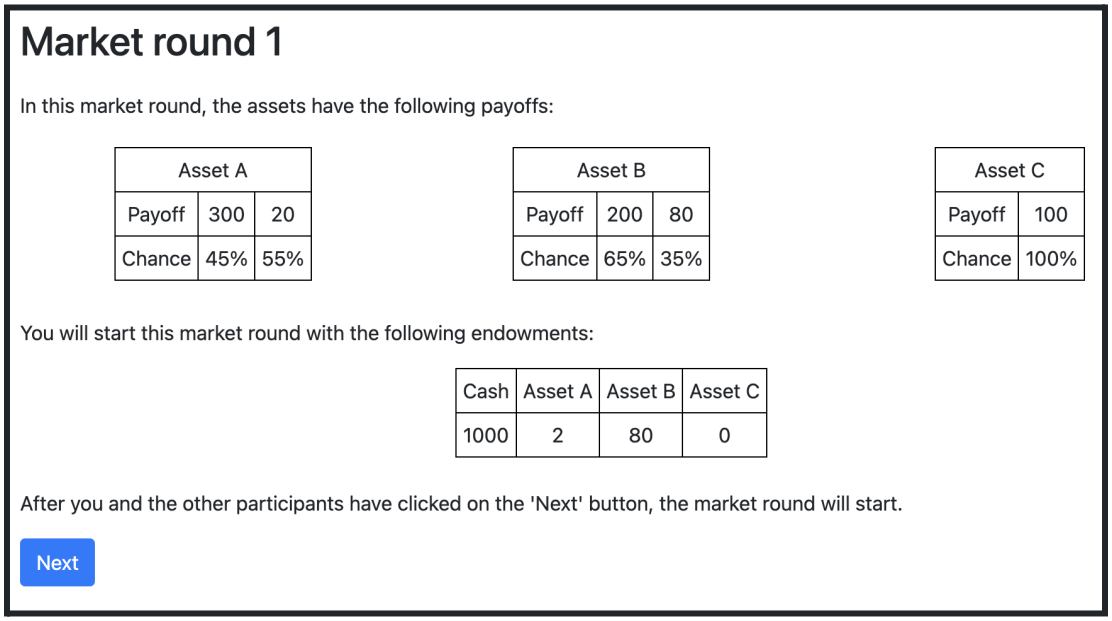
This experiment is composed of XXX rounds and a final questionnaire.

All instructions are on your screen. Please click OK to continue

PART 1

Market information

This part of the experiment consists of a simulated stock market. You will participate in 12 market rounds. At the beginning of each market round, you will see an introductory page that provides some useful information, as in the example below.



Market round 1

In this market round, the assets have the following payoffs:

Asset A		
Payoff	300	20
Chance	45%	55%

Asset B		
Payoff	200	80
Chance	65%	35%

Asset C	
Payoff	100
Chance	100%

You will start this market round with the following endowments:

Cash	Asset A	Asset B	Asset C
1000	2	80	0

After you and the other participants have clicked on the 'Next' button, the market round will start.

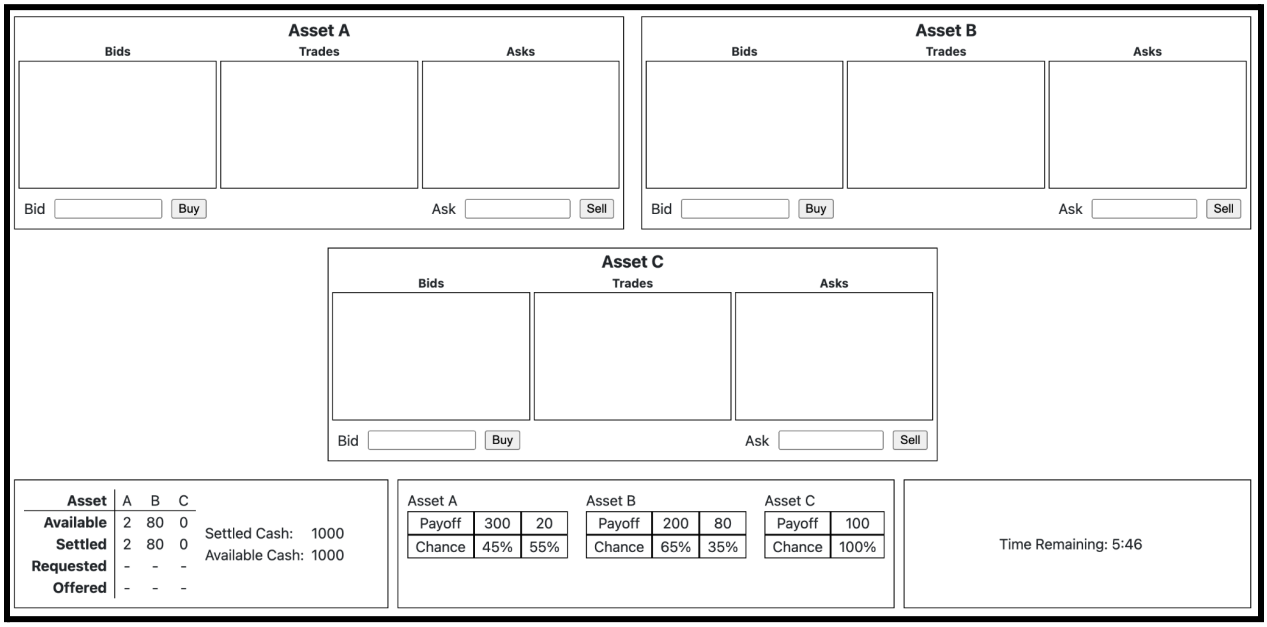
Next

During each market round, you can buy and sell three assets, called A, B and C. [change asset names to X Y Z] Each unit of an asset will pay out some amount of money (*payoff*) if you hold it at the end of the market round. The payoff of each asset can take different values. In the example below, the payoff to a unit of asset A equals 300 with 45% chance and 20 with 55% chance. The payoff to a unit of asset B equals 200 with 65% chance and 80 with 35% chance. The payoff to a unit of asset C is 100 for sure (100% chance). The actual payoffs will be determined by the computer at the end of the market round using the chances.

At the beginning of each market round you are given some units of assets A, B and C. You are also given some amount of cash, which can be used to buy more units of the assets. The initial page of each market round reports the amounts of asset units and cash available to you, called endowments. In this example, you start the round with 1000 units of cash, 2 units of asset A, 80 units of asset B and 0 units of asset C. In each market round, you start with new endowments. Assets and cash that you have accumulated in the previous market round are not carried over to the next market round and so do not affect endowments.

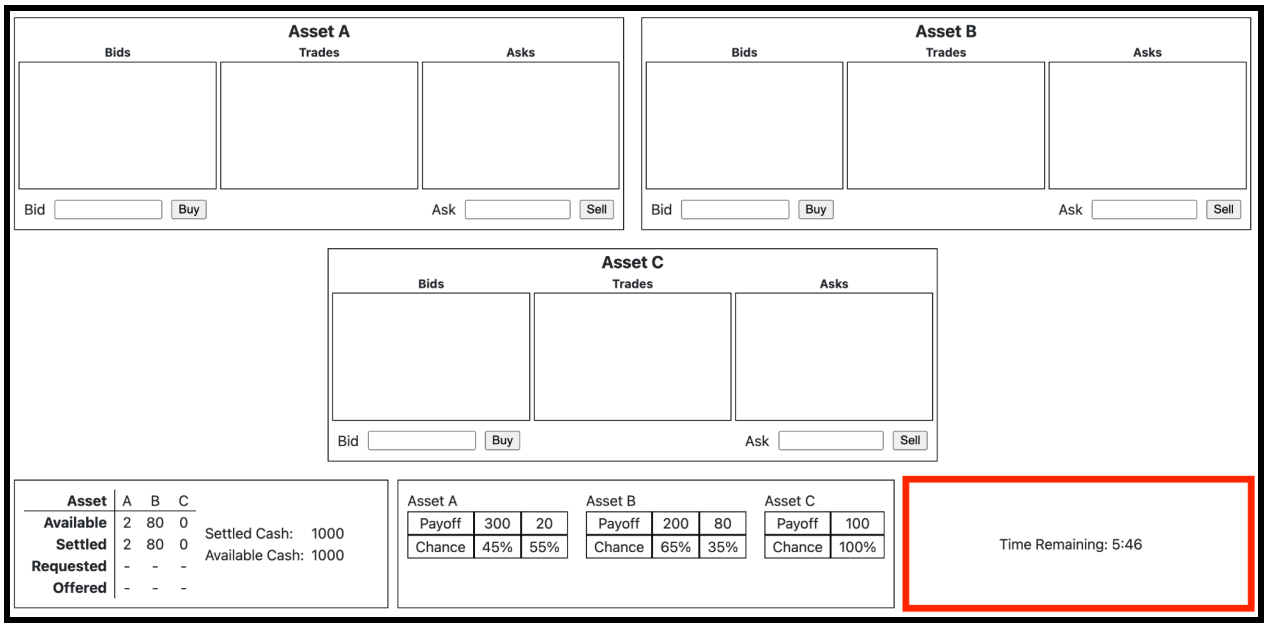
Market interface

After all participants have clicked on the ‘Next’ button, you will see a market interface. The figure below shows you an example of the market interface you will use to trade in the market. We will explain all the elements of the interface.



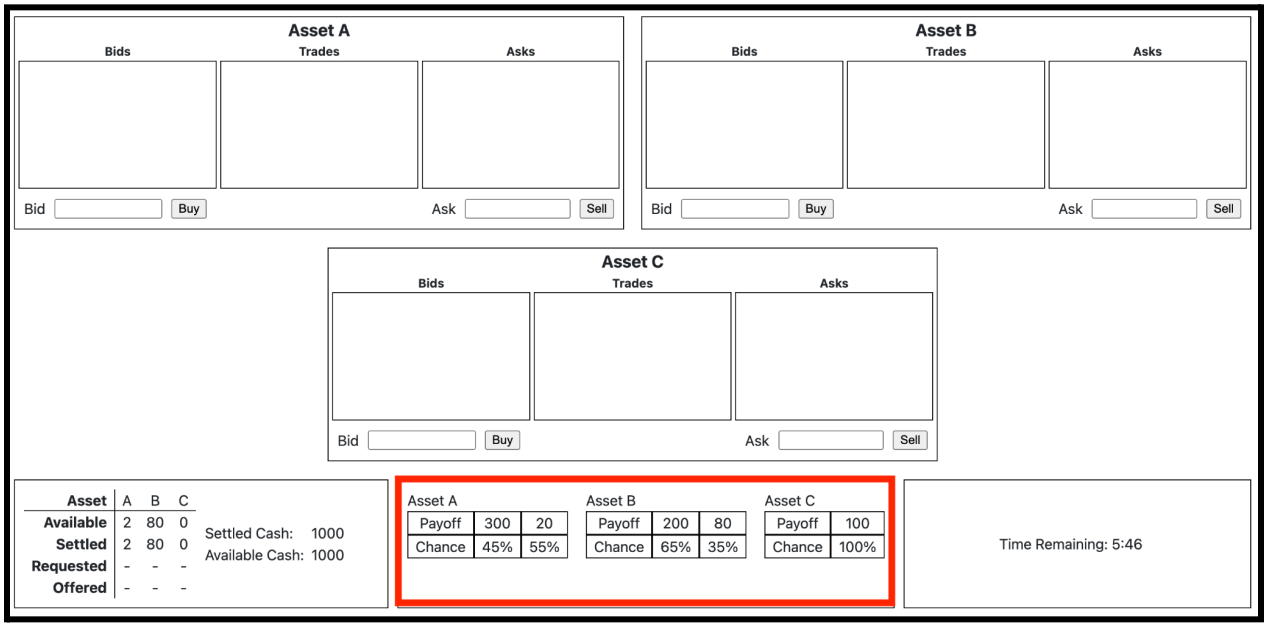
Time limit

Each round lasts 7 minutes. The time remaining in the round is shown in the highlighted box:



Assets payoffs

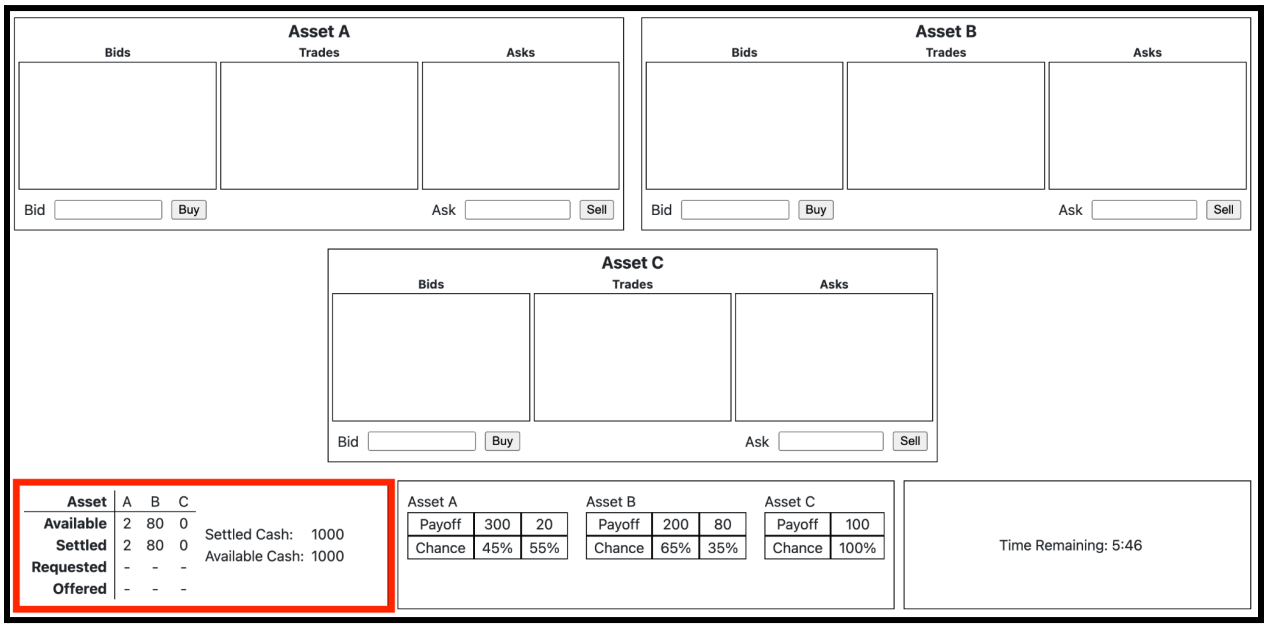
Information about the asset payoffs is summarized in the highlighted box. This is the same information that is given to you in the introductory page of this market round.



Available assets and cash balance

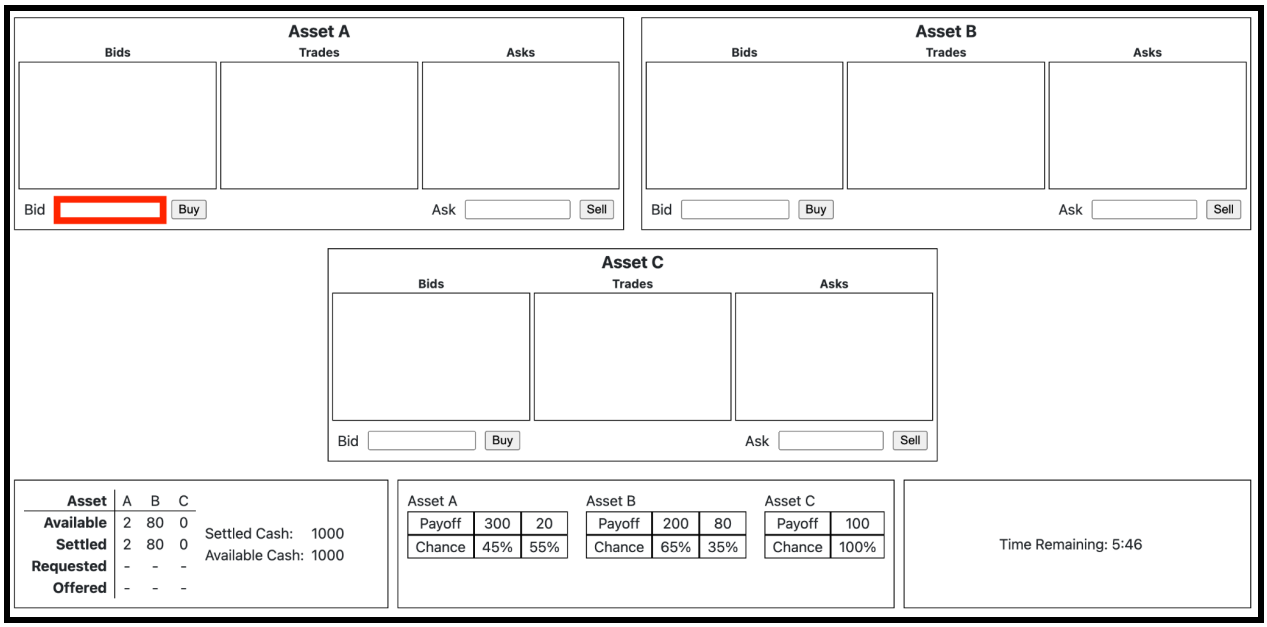
The amounts of asset units and cash available to you at each point in time is shown in the highlighted box. At the beginning of a market round, these values are equal to your endowments of assets and cash. This box also shows you the settled amounts of assets and cash, and the amounts of assets you requested and offered at each point in time. The difference between available and settled amounts is the following: the settled amount of assets or cash is what you currently own; the available amount of assets or cash is what you own minus what you have offered to other market participants in a transaction that is still pending. We will explain the meaning of all these terms later.

For example, you currently own 4 units of Asset A and you have just offered to sell 1 unit of Asset A so you are still waiting for other players to buy it. In that case, your available units of asset A are 3, which is one unit less than your settled units of asset A of 4. Now, consider an example in which you owDn 1000 in cash and you have just offered to buy 1 unit of Asset B for 200 so you are still waiting for other players to sell it to you. In that case, your available cash is 800, which is 200 less than your settled cash of 1000.

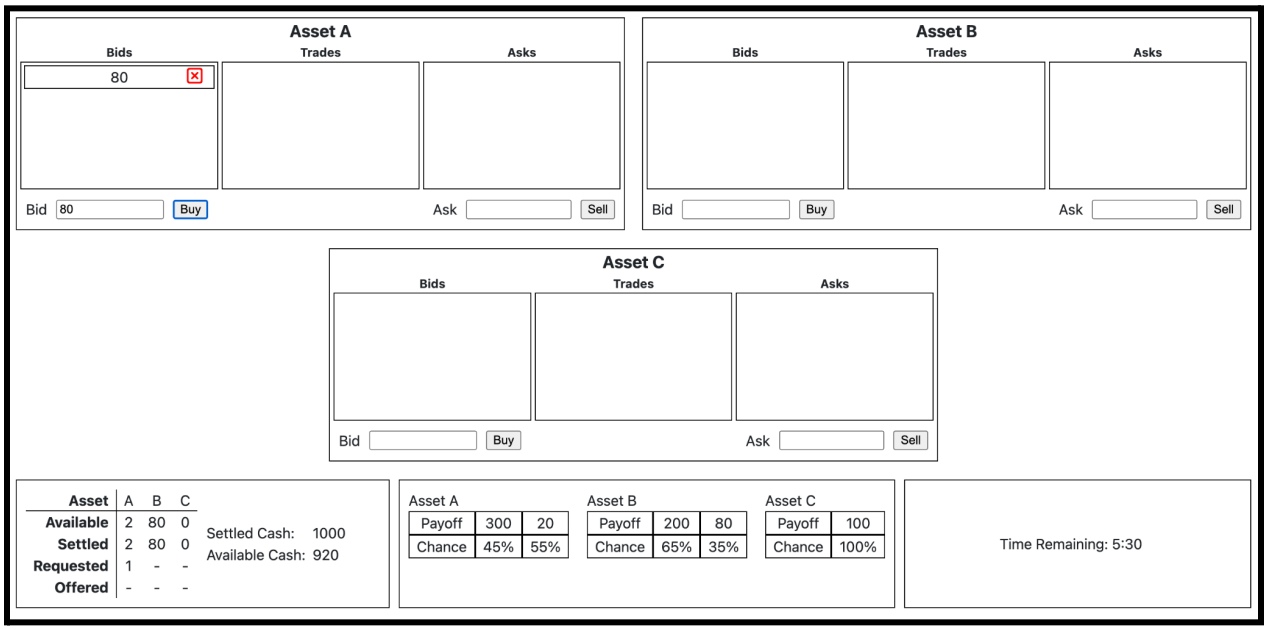


Entering bids

If you want to buy a unit of an asset, you must enter a bid. A bid is the price you are willing to pay for that unit. For example, to place a bid for asset A, you enter a number in the highlighted box and then click “Buy”.



In the example below, player 1 has entered a bid of 80 for one unit of asset A. You can cancel a bid that you have previously submitted by clicking on the red cross.

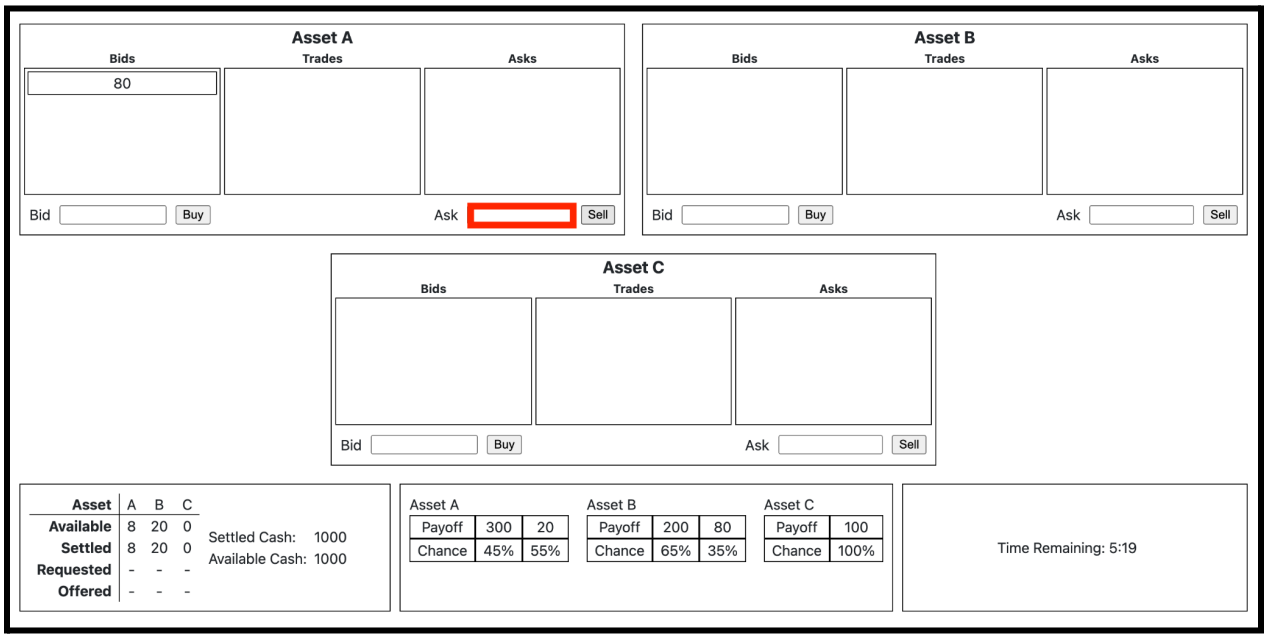


[need to highlight bid value in red]

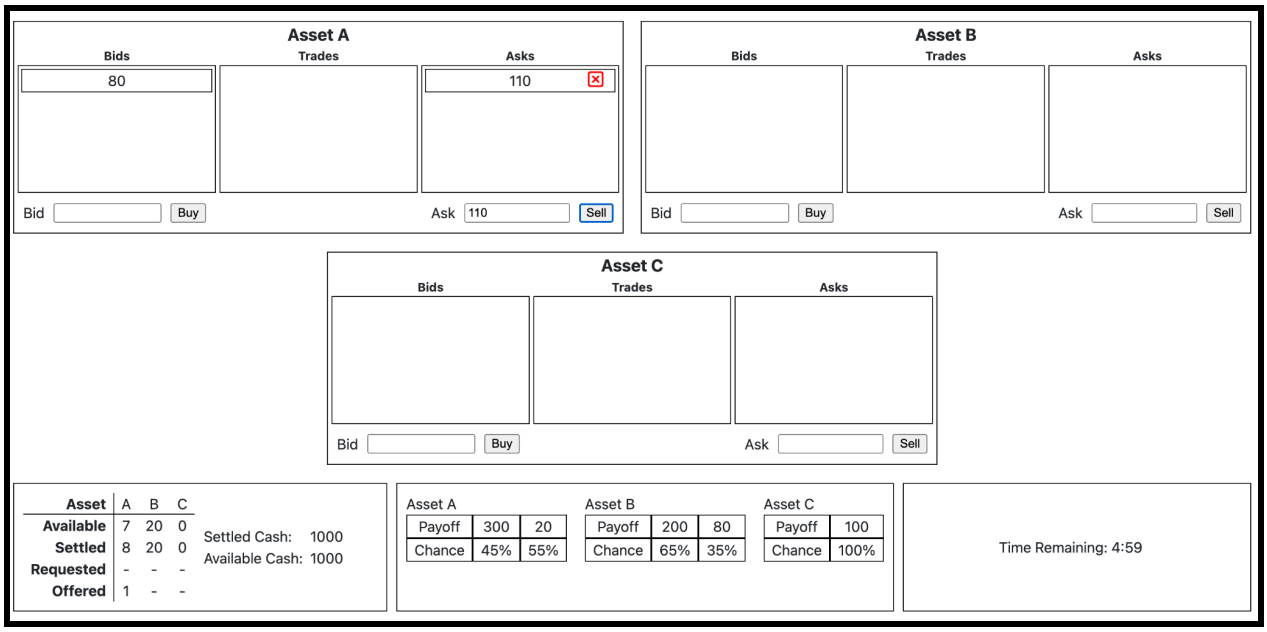
When you submit a bid for an asset, the number of requested units for that asset increases by 1. At the same time, your available cash decreases by the amount of the bid (80 in this example). Thus, while you are still waiting for other players to sell the asset to you, your available cash is 920, which is 80 less than your settled cash balance of 1000.

Entering asks

If you want to sell a unit of an asset, you must enter an ask. An ask is the price you are willing to accept for selling that unit. For example, to enter an ask for asset A, player 2 can enter a number in the highlighted box and then click "Sell".



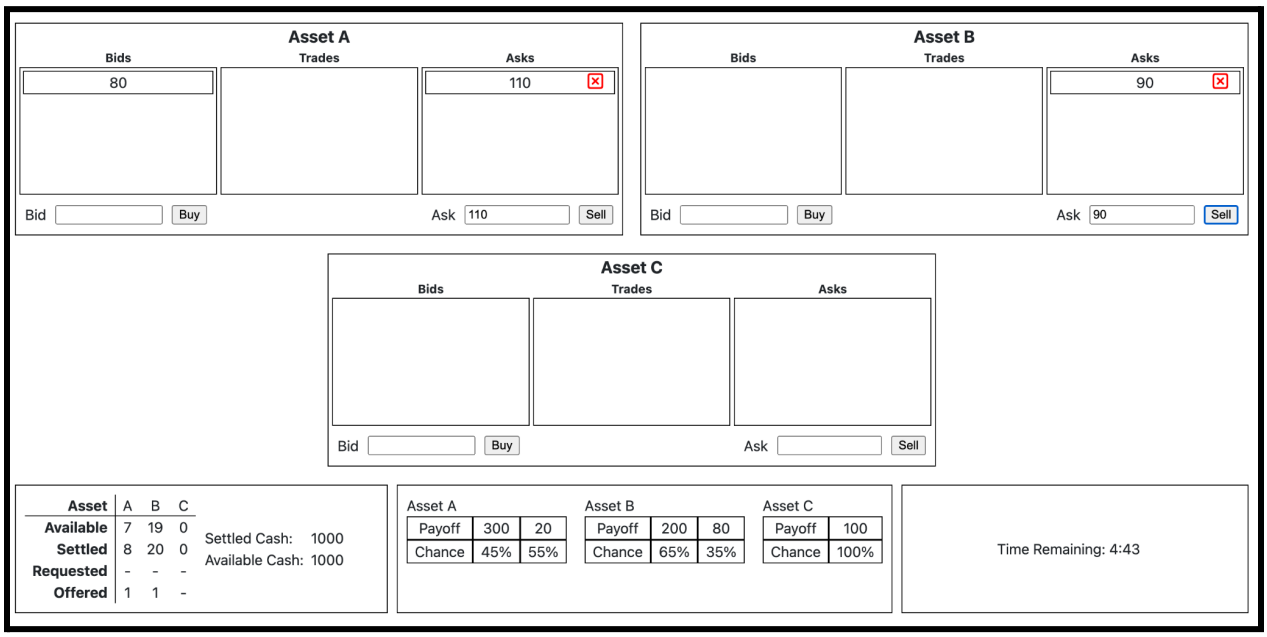
In the example below, player 2 has entered an ask of 110 for one unit of asset A. You can cancel an ask that you have previously submitted by clicking on the red cross.



[need to highlight ask value in red]

When you submit an ask, the number of offered units increases by 1 and your available number of asset units decreases by 1. In the example above, while player 2 is still waiting for other players to buy the asset she offered, her available units of asset A are 7, which is one unit less than her settled units of asset A of 8.

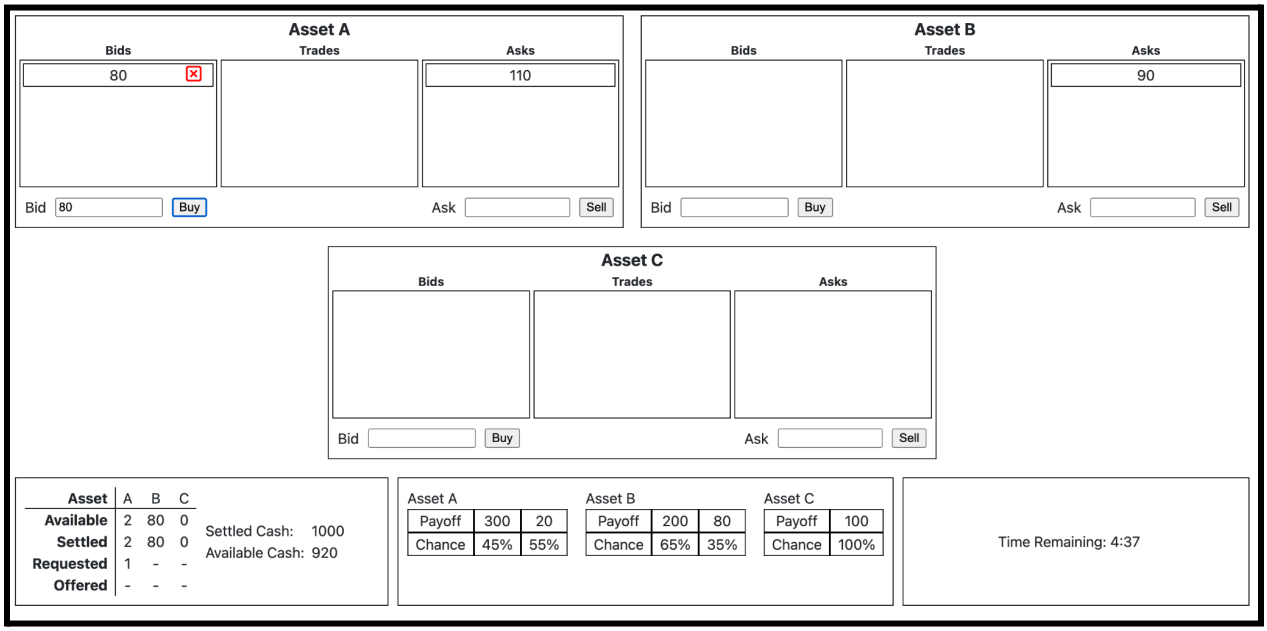
You can submit multiple bids and asks. In the example below, player 2 submits a new ask for asset B.



[need to highlight bid value in red]

Trading

You can see the bids and asks of other players for each asset. Continuing with the previous example, player 1 can see the asks of player 2 as shown below. [show case with multiple bids/asks for an asset and explain how they are sorted]



[highlight bids and asks, maybe use different colors for different players or labels]

In this example, the highest bid for asset A is 80, but the lowest ask for asset A is 110. As long as the ask price is higher than the bid price no transaction will happen. If the bid of player 1 had been higher than or equal to the ask of player 2, then player 1 would have automatically bought one unit of Asset A from player 2.

Assume that player 1 is willing to pay the price asked by player 2 for one unit of asset B (90). Then, there are two ways for player 1 to buy asset B from player 2:

1. First, player 1 can enter a bid for asset B of 90.

2. Second, player 1 can double-click on the 90 ask. In this case, player 1 will be asked to confirm that she wants to buy one unit of asset B at that price.

In both cases, the transaction will be carried out: player 1 will buy one unit of asset B from player 2 at a price of 90.

Selling an asset works in a similar way. Assume that player X is willing to sell one A unit at the price asked by player 1 (80). Then, there are two ways for player X to buy asset A from player 1:

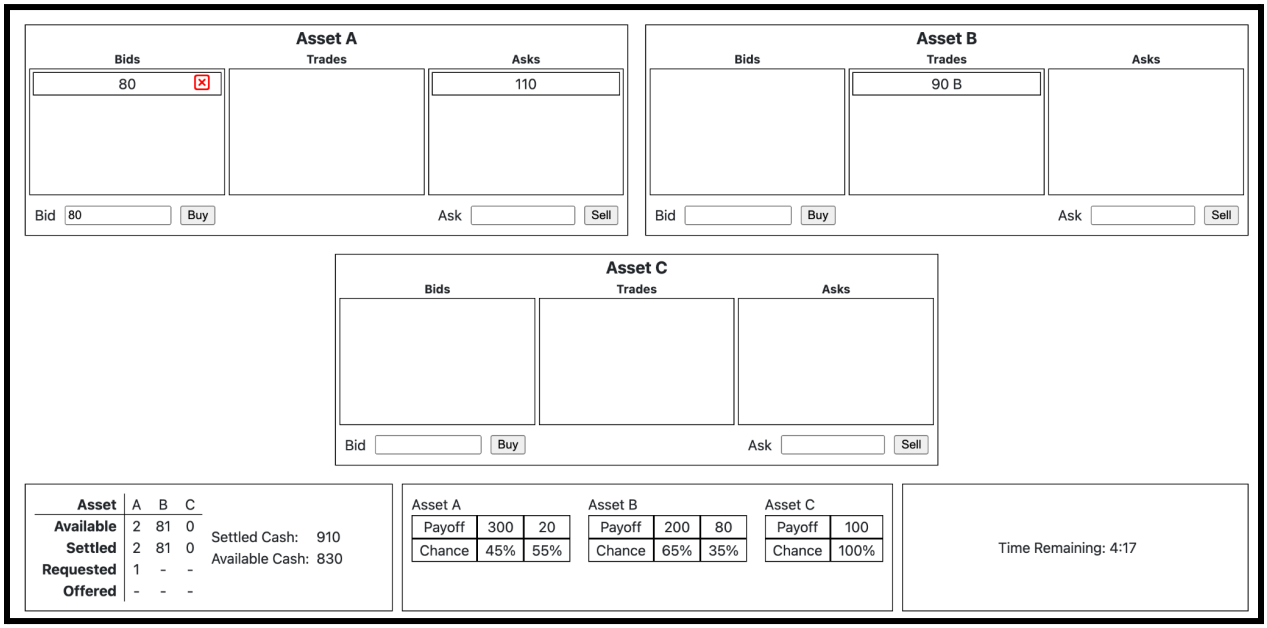
1. First, player X can enter an ask for asset A of 80.

2. Second, player X can double-click on the 80 bid. In this case, player X will be asked to confirm that she wants to buy one unit of asset B at that price.

In both cases, the transaction will be carried out: player X will sell one unit of asset A to player 1 at a price of 80.

More generally, a trade occurs whenever a player enters a bid greater than or equal to the lowest ask, or a player enters an ask lower than or equal to the highest bid, or when a player double-clicks on a current ask or bid. When the highest bid is greater than the lowest ask, then the transaction is carried out automatically at the ask price.

Trades are recorded in the middle-column of the respective asset panel. Players who participated in the trade will see a letter next to the transaction price: a B if they bought and an S if they sold. The figure below shows the screen of player 1 who bought one unit of B.

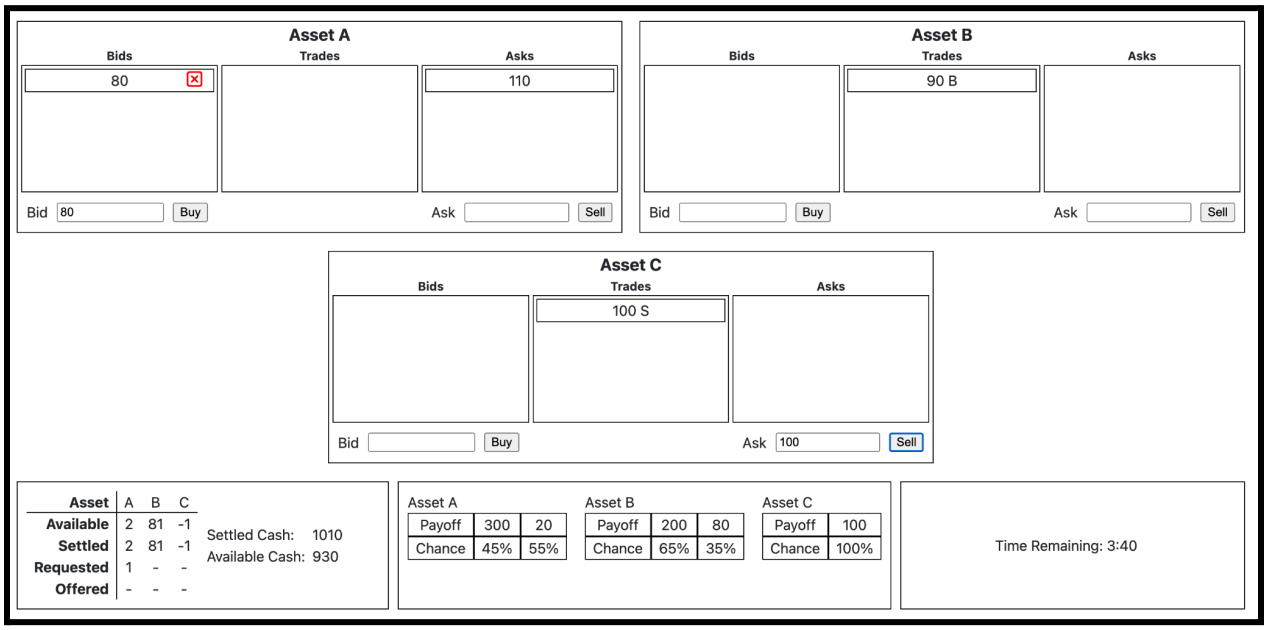


[highlight completed trade]

Short-selling

Each player has 0 endowment of asset C, but you are allowed to sell up to 10 units of asset C even if you do not own any. If you sell asset C, you will have a negative settled amount of asset C. Thus at the end of the market round, you will have to pay the payoff of asset C for each unit you have sold. You are not

allowed to have negative amounts of assets A and B. The figure below shows an example where player 1 sold one unit of asset C at 100. As a result of this transaction, player 1's current holdings of asset C are equal to -1, while her cash balance has increased by 100. Because player 1 is short 1 unit of asset C, the payoff of asset C (also equal to 100) will be deducted from her final payoffs.



[highlight completed trade and current holdings]

Borrowing cash

You are allowed to borrow up to $100 to buy assets. If you end up with a negative cash balance, it will be subtracted from your final points in the market round.

Final points

At the end of each market round your payoff is given by the actual payoff for each asset times the number of units of each asset you own, plus your remaining cash balance. You will see a summary page like the one shown below for player 1. In this example, the players has 2 units of asset A, 81 units of asset B, -1 units of asset C (he or she sold one unit short during the round) and 1010 in cash at the the of the market round. In this market round, the realized payoffs are: 20 for asset A, 80 for asset B, 100 for asset C. So the final payoff to the players is:

$$2 \times 20 + 81 \times 80 - 1 \times 100 + 1010 = 40 + 6480 - 100 + 1010 = 7430$$

Market round 1: results

	Asset A	Asset B	Asset C	Cash
Final Holdings	2	81	-1	1010.0

Loan amount: 0
Realized payoff to asset A: 20
Realized payoff to asset B: 80
Realized payoff to asset C: 100
Your final payoff: 7430 points

Next

PART 1 QUIZ

Please select the correct answer. Each correct answer is worth $0.25.

1. Which of the following statements is correct?
A. There are two safe assets (A and B).
B. There are three risky assets (A, B and C).
C. There are two safe assets (A and B) and a risky one (C).
D. There are two risky assets (A and B) and a safe one (C).

2. Which of the following statements is correct?
A. The payoffs of the risky assets are not related.
B. When the payoffs of Asset A is high then the payoff of Asset B is low.
C. When the payoffs of Asset A is high then the payoff of Asset B is high.
D. When the payoffs of Asset A is low then the payoff of Asset B is low.

3. Which of the following statements is correct?
A. Your endowment in a round depends on your earnings in the previous round.
B. Each round you start with a new endowment of cash and shares.
C. Your cash in a round is impacted by your trading in the previous round.
D. Your endowment in a round depends on the asset payoffs in the previous round.

4. Which of the following statements are correct?
A. A trade occurs when a trader enters a bid greater than or equal to the lowest ask, or enters an ask lower than or equal to the highest bid.
B. A trade occurs when a trader enters a bid lower than or equal to the lowest ask, or enters an ask lower than or equal to the highest bid.
C. A trade can only occur when a trader enters a bid that is equal to an ask.
D. A trade can only occur when at least a bid and an ask have already been posted.

5. Which of the following statements are correct?
A. A trade occurs when a trader clicks on a number in the trades column.
B. A trade occurs when a trader clicks on Bid.
C. A trade occurs when a trader clicks on Ask.
D. A trade occurs when a trader double-clicks on a current ask or bid.

6. Which of the following statements is correct?
A. Your available and settled amount of assets are always equal.
B. Your settled amount of assets decreases when you place an ask.
C. Your available amount of assets decreases when you place an ask.
D. Your available amount of assets decreases when you place a bid.

7. Which of the following statements is correct?

A. Your available and settled amount of cash are always equal.

B. Your available cash decreases when you place a bid whereas your settled cash stays the same.

C. Your settled cash decreases when you place a bid whereas your available cash stays the same.

D. Your available cash increases when you place a bid.

PART 2

In this task you will be asked to make a series of choices. You will see 15 tables, each consisting of 11 rows. An example is shown below.

Option A		Option B
100	○ ○	100 with probability 33% or 50 with probability 67%
90	○ ○	100 with probability 33% or 50 with probability 67%
80	○ ○	100 with probability 33% or 50 with probability 67%
70	○ ○	100 with probability 33% or 50 with probability 67%
60	○ ○	100 with probability 33% or 50 with probability 67%
50	○ ○	100 with probability 33% or 50 with probability 67%
40	○ ○	100 with probability 33% or 50 with probability 67%
30	○ ○	100 with probability 33% or 50 with probability 67%
20	○ ○	100 with probability 33% or 50 with probability 67%
10	○ ○	100 with probability 33% or 50 with probability 67%
0	○ ○	100 with probability 33% or 50 with probability 67%

Each row has two options, of which you must choose one: 'Option A' or 'Option B'. Option A gives you a sure payoff. Option B gives you one of two possible payoffs, each with some probability. In the example above, option B gives a payoff of 100 with a 33% chance and a payoff of 50 with a 67% chance. Option B is the same for all 11 rows in a given table, but option B changes from table to table.

In each line, you will be asked to indicate whether you prefer option A or option B. The computer will help you make your choices by avoiding mistakes. For example, if you select 'Option A' for a given line, the computer will mark 'Option A' for all previous lines (up to the first). Similarly, if you select 'Option B' for a line, the computer will mark 'Option B' for all subsequent lines (up to the last one).

When the experiment is over, only one row from all the rows in all the tables will be randomly selected for payment. Thus, each line has the same probability of being chosen for the payouts, so you should pay equal attention to all your choices.

Let's assume that the following line has been chosen for the payment calculation:

70	○ ○	100 with probability 33% or 50 with probability 67%

If you selected 'Option A' for this line, you will win 70 cents. If you selected 'Option B' for this line, the computer will randomly choose a number between 1 and 3 to determine your winnings. If the randomly selected number is 1 (33% chance), you will win 100 cents. If the randomly selected number is 2 or 3 (67% chance), you will win 50 cents.

PART 2 QUIZ

1. Assume you have Option B which gives a payoff of 100 cents with a 50% chance and a payoff of 0 cents with a 50% chance. Option B is determined by a computer that randomly selects a number between 1 and 100. Which of the following statements is correct?

A. you win 100 cents if the randomly selected number is between 1 and 33, and 0 otherwise.

B. you win 100 cents if the randomly selected number is between 34 and 100, and 0 otherwise.

C. you win 100 cents if the randomly selected number is between 1 and 50, and 0 otherwise.

D. you win 100 cents if the randomly selected number is between 6 and 100, and 0 otherwise.

2. Assume you have Option B which gives a payoff of 100 cents with a 5% chance and a payoff of 0 cents with a 95% chance. Option B is determined by a computer that randomly selects a number between 1 and 10. Which of the following statements is correct?

A. you win 100 cents if the randomly selected number is between 1 and 5, and 0 otherwise.

B. you win 100 cents if the randomly selected number is between 6 and 100, and 0 cents otherwise.

C. you win 100 cents if the randomly selected number is between 1 and 50, and 0 otherwise.

D. you win 100 cents if the randomly selected number is between 51 and 100, and 0 otherwise.

3. Assume you have Option B which gives a payoff of 100 cents with a 33% chance and a payoff of 0 cents with a 67% chance. Option B is determined by a computer that randomly selects a number between 1 and 100. Which of the following statements is correct?

A. **you win 100 cents if the randomly selected number is between 1 and 33, and 0 otherwise.**

B. you win 100 cents if the randomly selected number is between 34 and 100, and 0 cents otherwise.

C. you win 100 cents if the randomly selected number is between 1 and 50, and 0 cents otherwise.

D. you win 100 cents if the randomly selected number is between 51 and 100, and 0 cents otherwise.

4. Assume that you need to choose between two options A and B. Option A gives you a sure payoff of 50 cents. Option B gives a payoff of 100 cents with a 5% chance and a payoff of 0 cents with a 95% chance. Option B is determined by a computer that randomly selects a number between 1 and 100. Which of the following statements is correct?

A. if you chose Option B, your payoff is certain and equals 0 cents.

B. if you chose Option B, your payoff is certain and equals 100 cents.

C. if you chose Option B, you win 100 cents if the randomly selected number by the computer is between 1 and 5, and 0 cents otherwise.

D. if you chose Option B, you win 100 cents if the randomly selected number by the computer is between 1 and 50, and 0 cents otherwise.

5. Assume that you need to choose between two Options A and B. Option A gives you a sure payoff of 50 cents. Option B gives a payoff of 100 cents with a 33% chance and a payoff of 0 cents with a 67% chance. Option B is determined by a computer that randomly selects a number between 1 and 100. Which of the following statements is correct?

A. if you chose option A, your payoff is certain and equals 0 cents.

B. **if you chose option A, your payoff is certain and equals 50 cents.**

C. if you chose Option A, you win 100 cents if the randomly selected number by the computer is between 1 and 5, and 0 cents otherwise.

D. if you chose Option A, you win 100 cents if the randomly selected number by the computer is between 1 and 50, and 0 cents otherwise.