Instructions (M12)

Welcome

Dear participant, thank you for taking part in this experiment. It will last about 90 minutes. If you read the following instructions carefully, you can – depending on your decisions – earn some more money in addition to the 3 Euro show-up fee, which you can keep in any case. The entire of money which you earn with your decisions will be added up and paid to you in cash at the end of the experiment. These instructions are solely for your private information.

We will not speak of Euros during the experiment, but rather of ECU (Experimental Currency Units). Your whole income will first be calculated in ECU. At the end of the experiment, the total amount you have earned will be converted to Euro at the following rate:

1000 ECU = 90 Eurocents.

In order to ensure that the experiment takes place in an optimal setting, we would like to ask you to abide to the following rules during the whole experiment:

- do not communicate with your fellow students!
- do not forget to switch off your mobile phone!
- read the instructions carefully. If something is not well explained or you have any question now or at any time during the experiment, then ask one of the experimenters. Do, however, not ask out loud, raise your hand instead. We will clarify questions privately.
- you may take notes on this instruction sheet if you wish.
- after the experiment, remain seated till we paid you off.
- if you do not obey the rules, the data becomes useless for us. Therefore we will have to exclude you from this experiment and you will not receive any compensation.

Environment

You will learn how the experiment will be conducted later, first we introduce you to the basic situation. You will find control questions at the end of the description that help you to understand it better.

The Asset Market

In this experiment, you have the possibility to trade a financial asset in a stock exchange market for a total of ten rounds. Your final income (in Euro) will be determined by the sum of your per-round payoffs (in ECU). Every round, before the market opens for trade, the actual liquidation value of the asset is determined. It is either 125, 375, or 525 ECU and all values are equally likely to occur. The liquidation value is also common; that is, it is the same for all traders. Once the market closes, you receive the liquidation value for every share of the asset in your portfolio. For example, if the actual liquidation value of the asset is 375 ECU and you have a total of five shares of the asset, then you receive 1.875 ECU.

In the beginning of every round, every trader is endowed with four shares of the asset and 25.000 ECU. Yet, the 25.000 ECU are an interest free loan from a bank; that is, you will have to pay them back at the end of the very same round.

Information Structure

No trader is informed about the actual liquidation value before the trading stops in the first round of the experiment. From round two on, all traders receive some information about the liquidation value before the market opens. In particular, everybody gets to know one of the two values the asset **does not take**. Six traders learn one value the asset does not have and six traders the other. As an example consider a situation when the actual liquidation value is 125. In this case, six traders learn that it is not 375 and six traders learn that it is not 525.

The Computer Trader

In addition to the twelve human traders there is one computer program that participates in the market. **Most importantly, the computer trader does not receive any information with respect to the liquidation value of the asset before the market closes.**

Control Questions

Please answer the following control questions before you continue reading the instructions. Once you have written down all your answers, please raise your hand so that one of the experimenters can check them.

1. How many traders participate in the same market?

2. How many shares of the asset do you receive in the beginning of round 5?

3. Do you have to return your monetary endowment of 25.000 ECU at the end of the very same round?

4. How many traders receive information with respect to the liquidation value in round 1 of the experiment?

5. How many traders receive information with respect to the liquidation value in round 9 of the experiment?

6. Does the computer trader ever receive information with respect to the liquidation value of the asset?

7. Suppose you learn in round 5 that the liquidation value is not 525 ECU. How many traders receive the same information as you?

8. Imagine you learn in the end of round 6 that the liquidation value of the asset is 375.

   (a) If you bought one share of the asset at a price of 300 ECU, what was be your monetary gain (in ECU) from the trade?

   (b) If you bought one share of the asset at a price of 450 ECU, what was your monetary gain (in ECU) from the trade?

9. Imagine you learn in the end of round 6 that the liquidation value is 375.

   (a) If you sold one share of the asset at a price of 300 ECU, what was be your monetary gain (in ECU) from the trade?

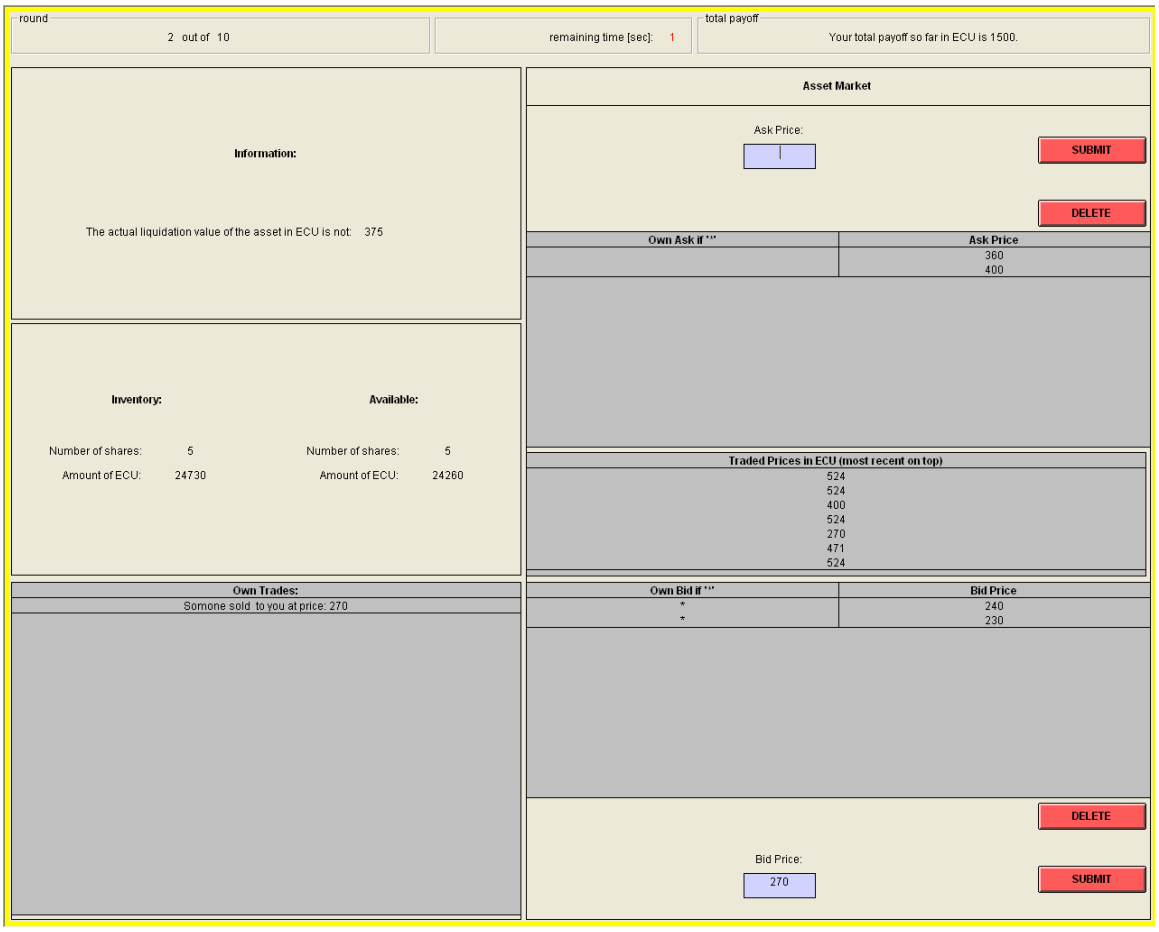
   (b) If you sold one share of the asset at a price of 450 ECU, what was your monetary gain (in ECU) from the trade?

The Experiment

In the next step, we will now go over a brief instruction period so that you get used to the computer interfaces.

The Trading Mechanism

After the determination of the liquidation value, a stock exchange market opens for 300 seconds. On the top of the corresponding computer screen you can identify the current trading round, how long the market remains to be open, and the total amount of ECU you have gained so far. In our example, we are in the second out of ten trading rounds, the market remains to be open for one second, and the trader has earned 1500 ECU so far.



The screen is further divided into two main parts, the boxes on left hand side and the boxes on the right hand side. The boxes on the left hand side provide different pieces of information whereas the boxes on the right hand side are needed to trade the asset. At

first, we introduce the purposes of the boxes on the left hand side.

1. The box on the top is entitled **Information**. As it had been said before, in round one of the experiment no trader has information about the liquidation value of the asset. From round two on, you will get to know one of the two values the asset does not take. You will see each of the two possible values the asset does not have with the same probability. In our example, the trader learns that the liquidation value is not **375**.

2. The box in the middle gives you an overview about your portfolio and your cash account. In the left part of this box, the **Inventory**, you find how many shares of the asset you possess (in our example you possess 5) and how many ECU you have in your cash account (in our example you have 24.730 ECU). The right part of the box, which is denominated **Available**, has the following aim:

   Any sell offer you make is binding. So, if you want to sell one share of the asset, then you must be able to deliver it at any time in the future once the offer is accepted. To insure this, we reduce the number of shares available to you by one whenever you place a new sell offer. As the number of available shares is not allowed to be negative, you can have in total at most as many standing sell offers as shares in the inventory. In our example, the number of available shares is equal to the number of shares in the inventory because the individual does not have any open sell offers.

   A similar approach applies to the available ECU. If you want to buy one share of the asset, then you must be able to pay for it in the future. To insure this, we reduce the available ECU by the amount you are willing to pay whenever you place a new buy offer. As the available ECU is not allowed to be negative, the total value of your buy offers cannot exceed the amount of ECU in the inventory. In our example, you see on the right hand side of the screen that the trader has two standing buy offers (the ones marked with a star at the prices of 230 and 240 ECU). Hence, a total of 470 ECU is subtracted from the ECU in the inventory to come up with 24.260 ECU this individual can still use for additional buy offers.

3. The box at the bottom is called **Own Trades**. This box contains a list of your own trades during a round. The most recent trade is on the top of the list. In our example, the individual made so far one trade in this round. S/he bought one share of the asset at a price of 270 ECU.

The boxes on the right hand side of the screen are denoted **Asset Market**. We are going to explain next how the asset is bought and sold using these boxes.

1. If you want to sell one share of the asset, enter the minimum amount of ECU you want to obtain in the field denominated **Ask Price**. You have to confirm your decision by pressing the button **Submit**. Your offer appears immediately in the column **Ask Prices** where all open sell offers are collected. The open sell offers are ordered with the lowest ask price being on the top of the list. You can easily identify your own open sell offers; they are marked with the symbol *. We want to remind you that any additional sell offer decreases the amount of available shares by one. You are allowed to withdraw a sell offer that has not found a buyer. To do so, you only have to select the sell offer you want to eliminate from the list and to click on the button **Delete**. As a consequence, the amount of available shares rises by one again.

2. If you want to buy one share of the asset, enter the maximum amount of ECU you are willing to pay in the field denominated **Bid Price**. You have to confirm your decision by pressing the button **Submit**. Your offer appears immediately in the column **Bid Prices** where all open buy offers are collected. The open buy offers are ordered with the highest bid price being on the top of the list. You can easily identify your open buy offers; they are marked with the symbol *. We remind you that any additional buy offer decreases the amount of available ECU by the value of your bid. You are allowed to withdraw a buy offer that has not found a seller. To do so, you only have to select the buy offer you want to eliminate from the list and to click on the button **Delete**. As a consequence, the available ECU goes up again.

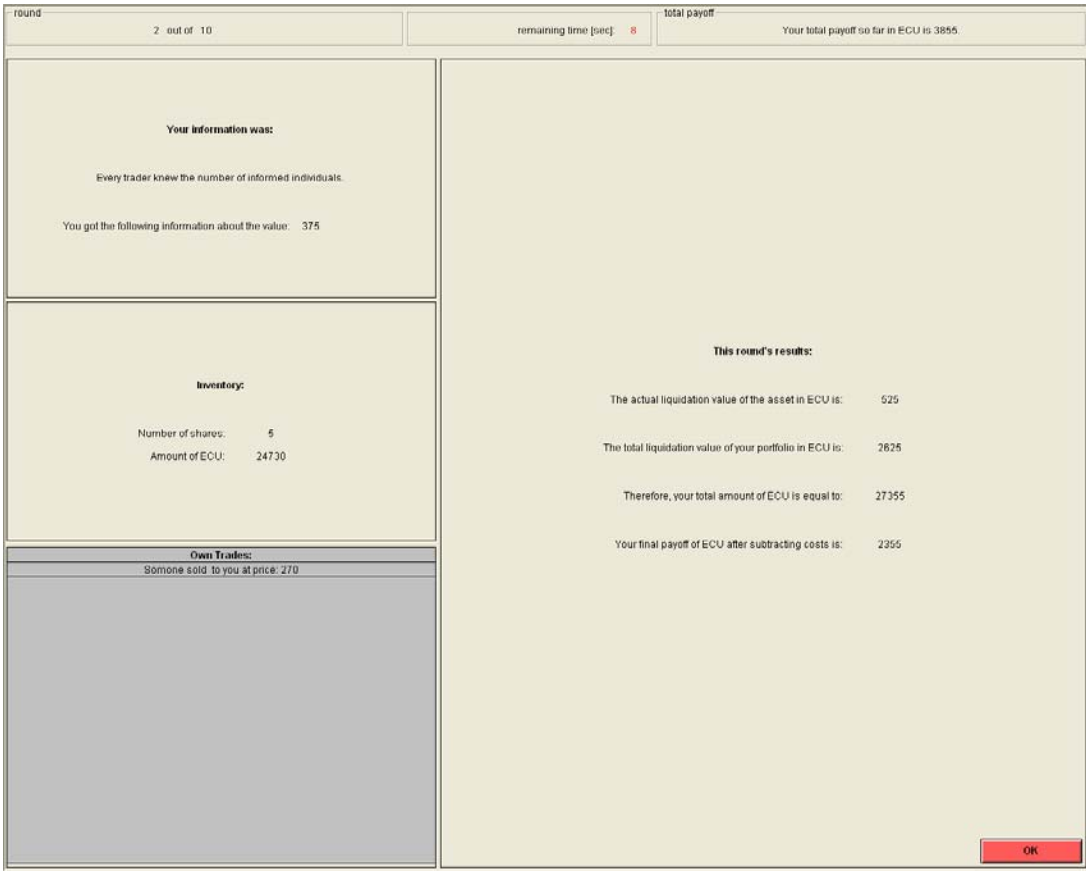
3. **When and how does a trade take place?** A trade is possible if the **highest bid price** is at least as high as the **lowest ask price**. In this situation, one bidder is willing to pay for the asset at least as much as one seller asks for it. These situations are recognized by the system and trade takes place automatically. The traded price will be equal to the one proposed by the first of the two parties. One simple example clarifies this: Suppose that in a certain situation the lowest ask price is 170 ECU and that the highest bid price is 169 ECU. Then, no trade is possible. If another bidder is willing to pay 177 ECU for the share, the only thing s/he needs to do is to enter a bid of 177 ECU into the system following the procedure of point (2) above. The system recognizes that a trade is possible; that is, the seller receives 170 ECU from the buyer's inventory (because the seller was first in the market) and the buyer receives one share of the asset from the seller's inventory.

   An important box on the right hand side is called **Traded Prices**. In it, you find a list of all prices at which a trade took place. The most recent trade price is on the

top of the list. In our example, the most recent price is 524 ECU.

Round Summary

Once the market closes, the asset is liquidated. In the corresponding computer screen you find different pieces of information. On the left hand side of the screen you find (a) your particular information with respect to the actual liquidation value of the asset, (b) how many shares and how many ECU you have in your inventory, and (c) a history of your trades.



On the right hand side you find the summary statistics of this round. We inform you about the actual liquidation value of the asset (in our example it is 525 ECU). This value is multiplied with the number of shares in your inventory to determine the liquidation value of your portfolio (since the trader has five shares in her/his portfolio, the value of the portfolio is in our example equal to 2.625 ECU). Afterwards, we add the amount of ECU in your inventory to it (the sum is in our example equal to 27.355 ECU). Finally, we subtract the 25.000 ECU that have been given to you in the beginning of the round as an

interest free loan. As a result, we obtain the final payoff of the round (in our example it is 2.355 ECU). This amount is added to your earlier payoffs. For example, in the top right corner of the screen you see now that your total current payoff is 3.855 ECU (1.500 ECU from the first plus 2.355 ECU from the second round).

Click on the button **OK** to proceed to the next trading round. Note that every trader starts again with 25.000 ECU from an interest free loan and four shares of the asset. At the end of the last round, you will get a short electronic questionnaire regarding your personal background. This data will only be used for statistical purposes.

FINAL QUESTION: Suppose you want to sell the asset at a price of 400. In which field do you have to enter the price, in the ASK or in the BID cell? Once you have written down the answer, please raise your hand.