Dear participants!

Welcome to this experiment. From now on, please refrain from talking with other participants. In case you have any questions or face any difficulties, contact one of the experimenters. Please ask question in such a way that other participants will not be disturbed. Additionally, we would be very grateful if you use paper supplied by us for taking notes.

General Information

This experiment simulates an asset market. Stocks of a fictitious company are traded on the stock market for 15 periods. Currency units in this experiment will be designated as "Taler". We use the following exchange rate:

1 Euro = 200 Taler

At the end of the experiment your earnings in Taler will be converted into Euros. In addition you will receive a 5 Euro show-up-fee.

Market description

The market consists of twelve subjects. Six participants are investors, the other six participants are traders. Each investor (she) will be randomly matched with a trader (he) at the beginning of the experiment. All six trader-investor pairs will stay fixed throughout the 15 periods of the experiment.

Investors receive 2000 Taler in starting capital at the beginning of the experiment. The investor can transfer money to the trader she has been matched to in each period. Instead of transferring, the investor can also withdraw money from her trader.

At the beginning of the experiment, traders participate in an initial public offering (IPO). The IPO will determine the initial distribution of stocks. After the IPO, stocks will be traded in a market for 15 periods. Now follows a thorough description of each of these points.

Investors

In each period you can transfer money to the trader. Transfers can be from zero up to the total of your current Taler holdings. The following screenshot shows the decision screen of the investor at the beginning of the first period. The circled screen element shows your current Taler holdings and provides an input field to transfer money to the trader. After you made your decision, please click "OK". Please be reminded, that in case you want your trader to purchase stocks in the IPO, you will have to transfer money to him. Details regarding the IPO will be discussed below.

At the beginning of the following periods (periods 2-15) you will see a different screen. You will still have the option to transfer additional money to the trader. See next page's screenshot. There the screen element on the left in the rectangle is the input field to transfer money. You cannot transfer more Taler, than you own.

The circled screen element on the right gives you the opportunity to withdraw money. It shows the stock and Taler holdings of your trader, as well as his portfolio's market value. Details on how the market value of the portfolio is calculated follow below. The highest amount of money that can be withdrawn from the investor is the market value of the portfolio.

The market value of the portfolio can be higher than the money holdings of the trader. If you decide to withdraw money above the trader's Taler holdings, the trader will have one trading period to procure the amount through liquidating stocks. In other words, the trader has one trading period to pay you back, after you decided how much money to demand from him. You cannot withdraw and invest money at the same time. If you made your decision, please click "OK".

The trader's end of period money holdings can be lower than the amount you wanted to withdraw. In that case, all money the trader holds is transferred to your account. You cannot force the trader to satisfy your demand.

Traders

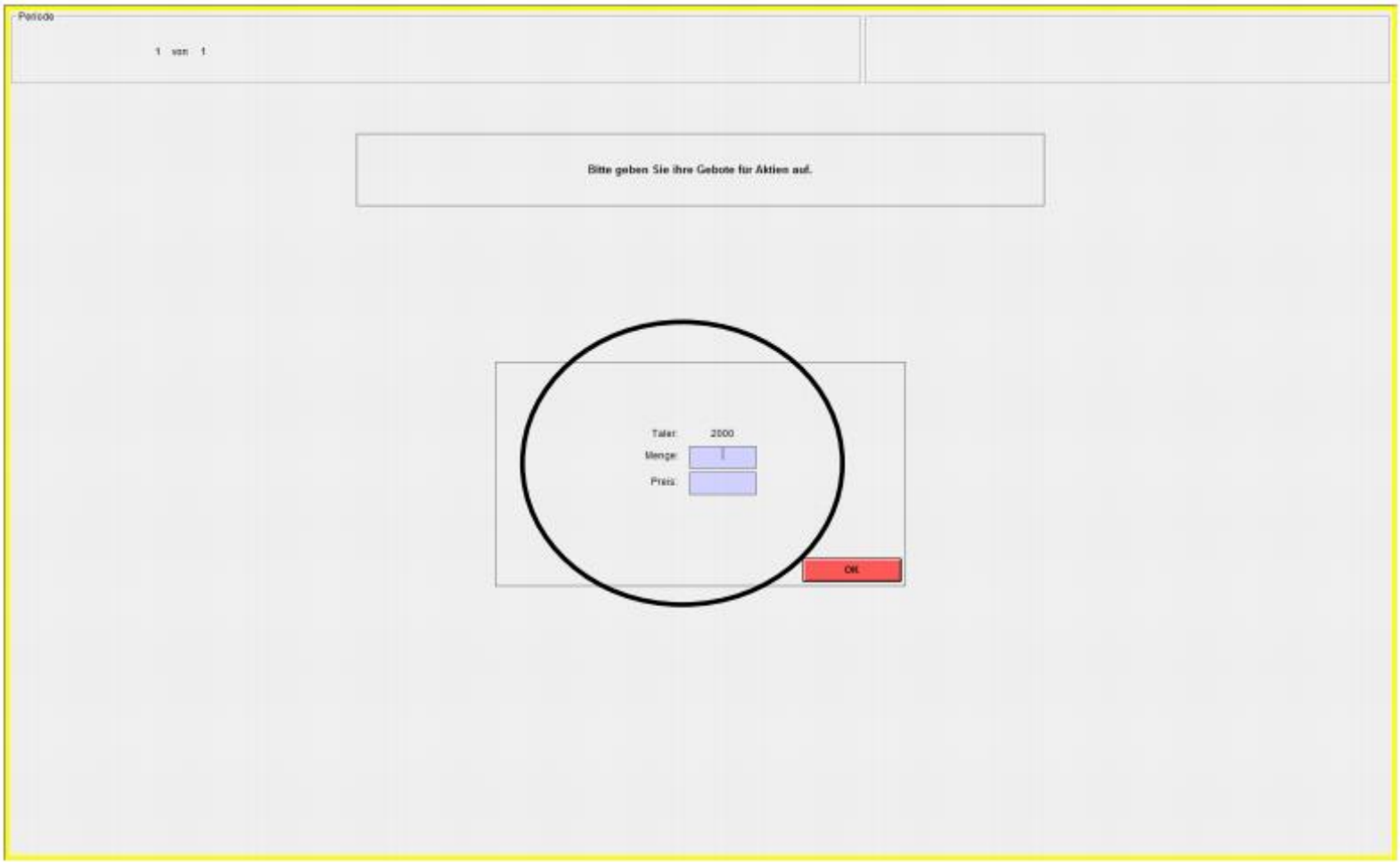
At the beginning of the first period you will learn how much money the investor has given to you. Based on your initial money holdings, you can formulate your demand for stocks. Stocks pay dividends at the end of each period. The dividend is random, and can be with equal probability 0, 8, 28 or 60 Taler. On average one unit of stock pays 24 Taler each period. If you buy a stock in the first period, it will pay out on average 24*15 = 360 Taler in dividends over the course of 15 periods. In case you buy a stock in the second period, it will pay on

average 25*15 = 336 Taler in dividends. The following table shows average dividend payoffs for each period.

Period	Average Dividend till the experiment's end	Calculation
1	360	24*15
2	336	24*14
3	312	24*13
4	288	24*12
5	264	24*11
6	240	24*10
7	216	24*9
8	192	24*8
9	168	24*7
10	144	24*6
11	120	24*5
12	96	24*4
13	72	24*3
14	48	24*2
15	24	24*1

The Initial Public Offering (IPO)

The IPO will take place at the beginning of the first period. Only traders will participate in the IPO. As a trader you will have to enter a demand for assets consisting of a quantity and a price. Total supply is 12 stocks. The following screenshot shows the IPO stage. You can enter the maximal price you are willing to pay for one unit of stock and a quantity in the circled field. If you have decided upon your demand for assets, please click "OK".



The market price is calculated based on the demand of all participants, and the total supply of assets. More on the computation of the market price follows below. The market price determines how much everybody has to pay for stocks. In case you receive stocks, the market price will never exceed the maximal price you were willing to pay, i.e. the price you entered in the field in the circled screen element. You don't observe other market participants' demand. The market price will be determined after every market participant made his choice.

Market price: Market participants that entered a price at or above the market price will receive stocks, as long as there is enough supply. The market price equilibrates demand and supply. This concept is most easily explained by means of examples.

Example 1: Total supply is 12 stocks, and 3 market participants enter the following demand.

- Participant 1 demands 8 stocks at a maximum price of 500
- Participant 2 demands 5 stocks at a maximum price of 400
- Participant 3 demands 3 stocks at a maximum price of 300

If the price were at or below 300 Taler, demand would be 8+5+3 = 16, therefore higher than the total supply of 12 .In case the price would be higher than 400, but at or below 500, demand would be 8. Hence there would still be 4 stocks in supply and there also would be

demand for these stocks. At a price of 400, the complete demand of participant 1 could be satisfied. Additionally, participant 2 could receive 4 out of the 5 assets he demands. This would lead to a total demand of 12 which equals supply and thus clears the market. Hence 400 is the market price, participant 1 will receive 8 stocks, participant 2 will receive 2 stocks. Participant 3 will receive no stocks, as his price is too low.

Example 2: Total supply is 12 stocks, and 3 market participants enter the following demand.

- Participant 1 demands 6 stocks at a maximum price of 400
- Participant 2 demands 6 stocks at a maximum price of 400
- Participant 3 demands 6 stocks at a maximum price of 400

In this example the market price is 400. Two participants whose demand of 6 will be satisfied, are randomly selected. The third participant won't receive any stocks.

Example 3: Total supply is 12 stocks, and 3 market participants enter the following demand.

- Participant 1 demands 4 stocks at a maximum price of 540
- Participant 2 demands 3 stocks at a maximum price of 470
- Participant 3 demands 2 stocks at a maximum price of 380

Total demand in the example is 9, and thus is below the supply at 12. In this case the market price is the lowest price, 380 in this example.

Please answer the following control questions. When you have finished please raise your hand. An experimenter will then check your results.

Control question 1: Total supply is 12 stocks, and 3 market participants enter the following demand.

- Participant 1 demands 6 stocks at a maximum price of 640
- Participant 2 demands 8 stocks at a maximum price of 340
- Participant 3 demands 5 stocks at a maximum price of 140

The market price is _____

Control question 2: Total supply is 12 stocks, and 3 market participants enter the following demand.

- Participant 1 demands 5 stocks at a maximum price of 640
- Participant 2 demands 4 stocks at a maximum price of 340
- Participant 3 demands 1 stocks at a maximum price of 140

The market price is _____

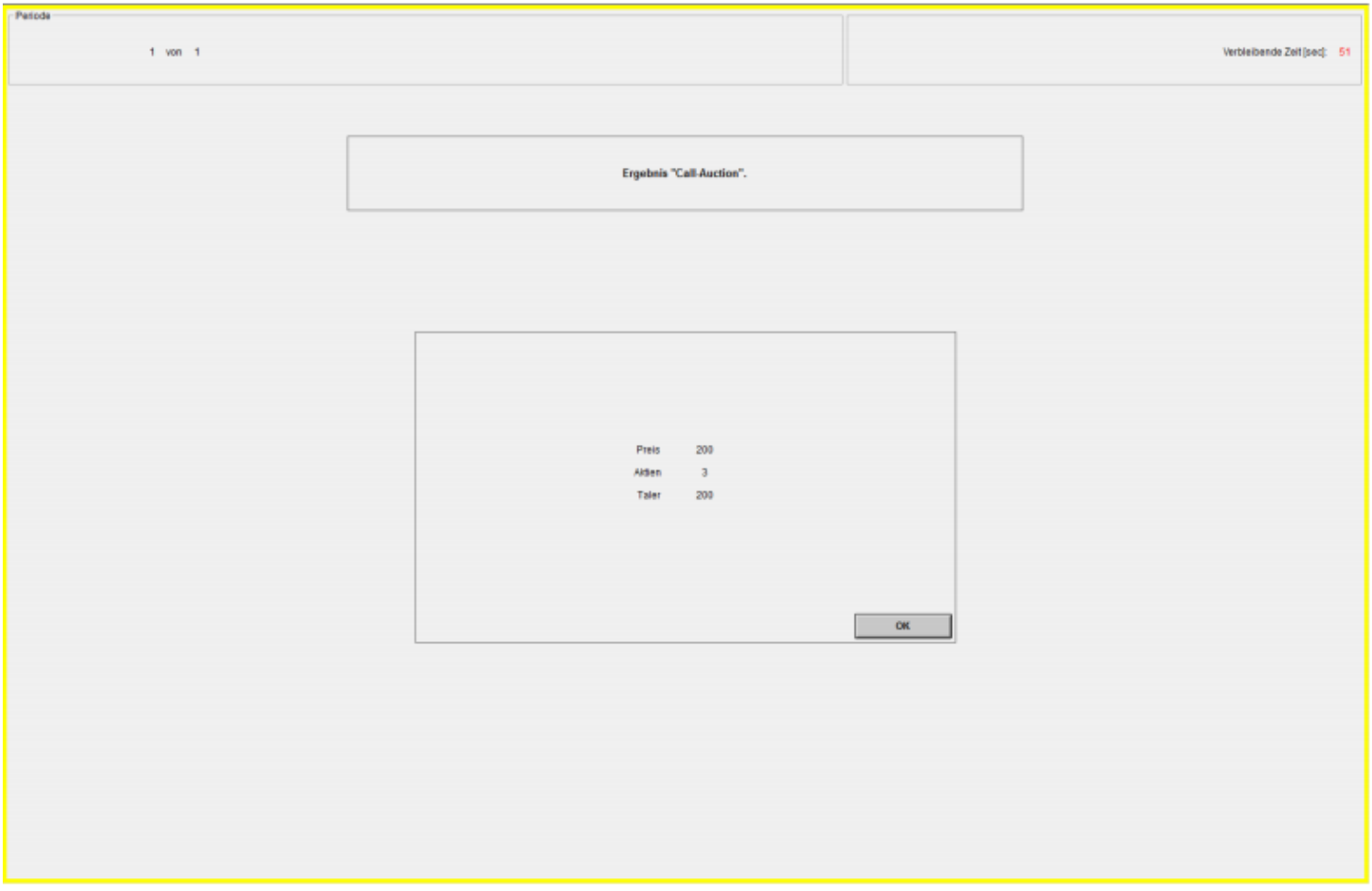
Following the IPO, you will be informed on how many stocks you received and how much money is left in your account. See the following screenshot.

The IPO takes place in the first period exclusively to allocate stocks between traders. After the IPO, the asset is traded in a market with a double auction. In each of the 15 periods, a 90 second double auction will be held. In every period except the first, the trader will be informed how much money the investor wishes to withdraw from his account.

Double Auction

In a double auction, each trader can both buy and sell assets. To make bids – an offer to buy assets - or asks – an offer to sell assets, traders use the computer interface. Bid- and ask-prices can take on integer values between 1 and 999. Both stock and money holdings cannot fall below 0. Stocks pay a dividend at the end of each period, i.e. after the 90 seconds of trading are over. Dividends take on values of 0, 8, 28 and 60 Taler with 25% probability (see above).

If you buy stocks, your Taler holdings will decrease by your *expenses* (price*quantity). Conversely, if you sell stocks, your Taler holdings will increase by the *sales revenue* (again



price*quantity).

Trading

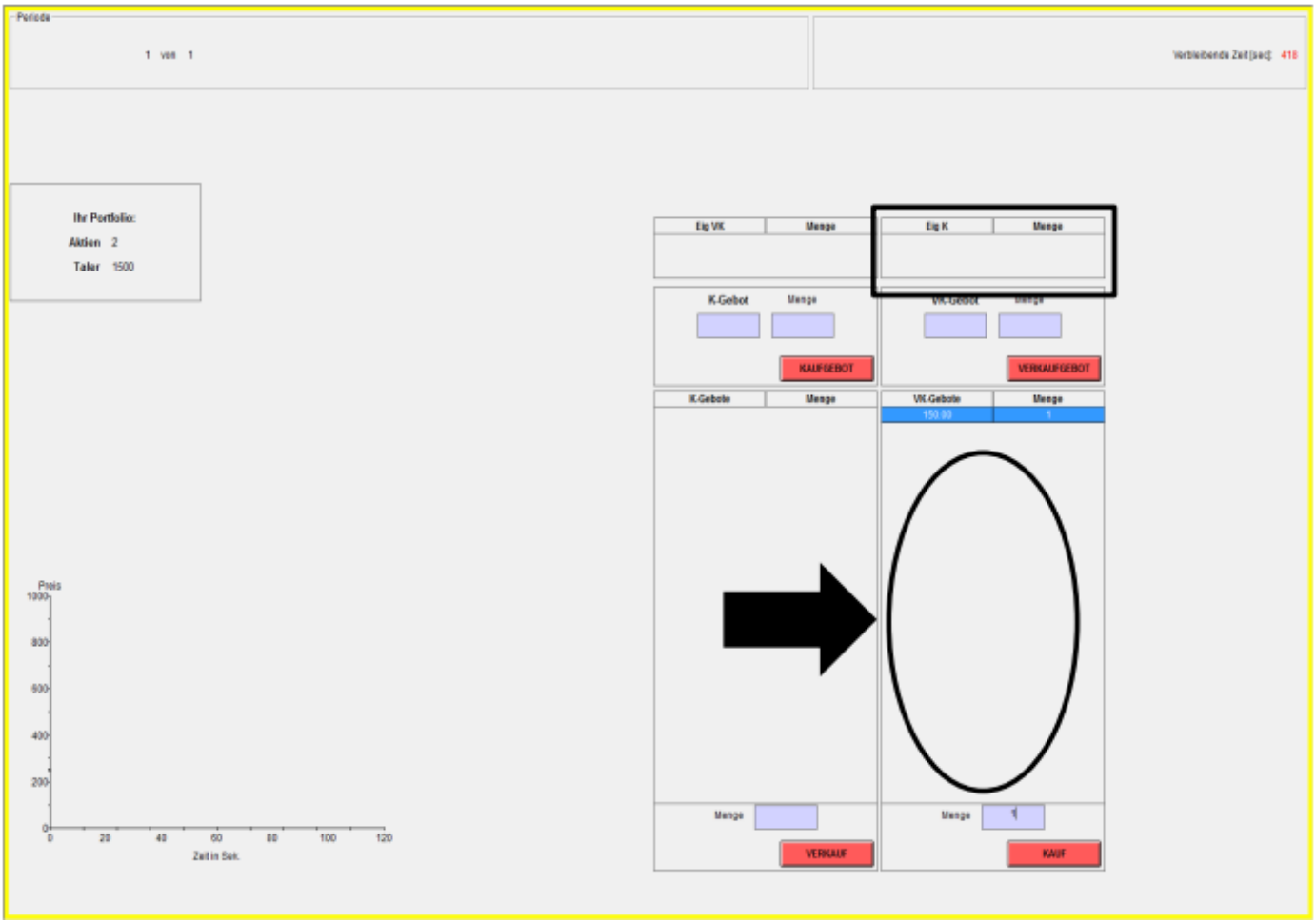
As a trader you can both buy and sell assets. This paragraph explains how buying and selling is conducted in the double auction. The following screenshot shows the trading screen during the experiment. The screen shows your current portfolio (upper left), a chart with transaction prices (lower left), and a table with bids and asks, this is where the arrow points at. More on bids and asks follows below. Only traders actively participate in the double auction. Investors only observe what happens in the market, without themselves trading.

Buying stocks

There are two possibilities to buy stocks. Either you make a bid, or you accept an ask.

To make bids, enter both a price per unit in the field "K-Gebot" and a quantity. After you clicked the button "Kaufgebot", the bid becomes visible in the table. Every participant will be able to see the bid. Previous' pages screenshot highlights the relevant fields

To accept asks, please refer to the example in the following screen-shot. In this example, there is an open ask for 150 Taler and 1 unit of stocks. To accept the ask, click on it. Then enter in the box "Menge" the quantity you would be willing to buy for a price of 150. Click on "Buy" to finalize the transaction. Accordingly your Taler holdings will sink, and your stock holdings



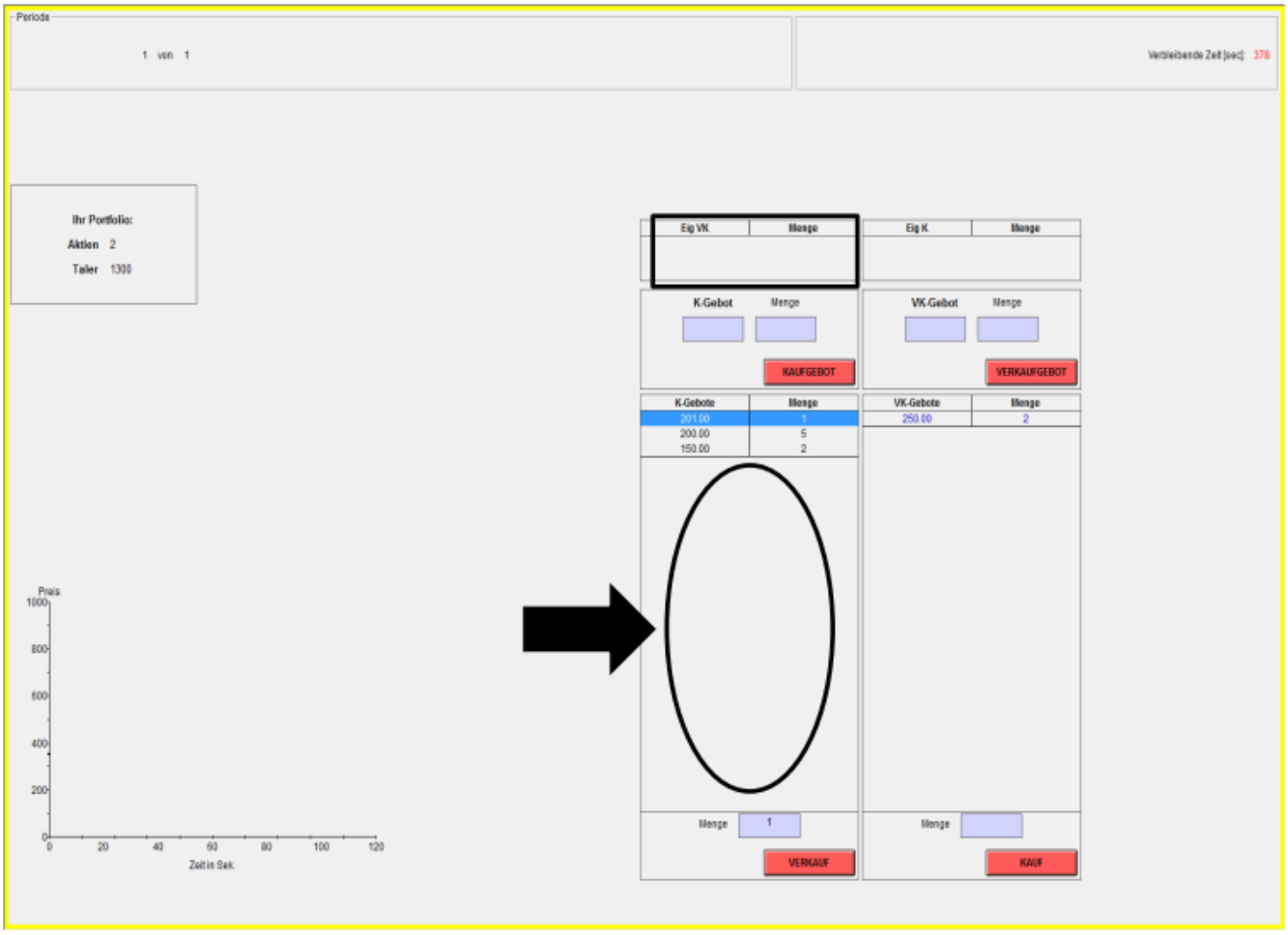
will rise. Bought stocks will be shown in the rectangularly marked box (see screenshot below), so that you can keep track of your purchases.

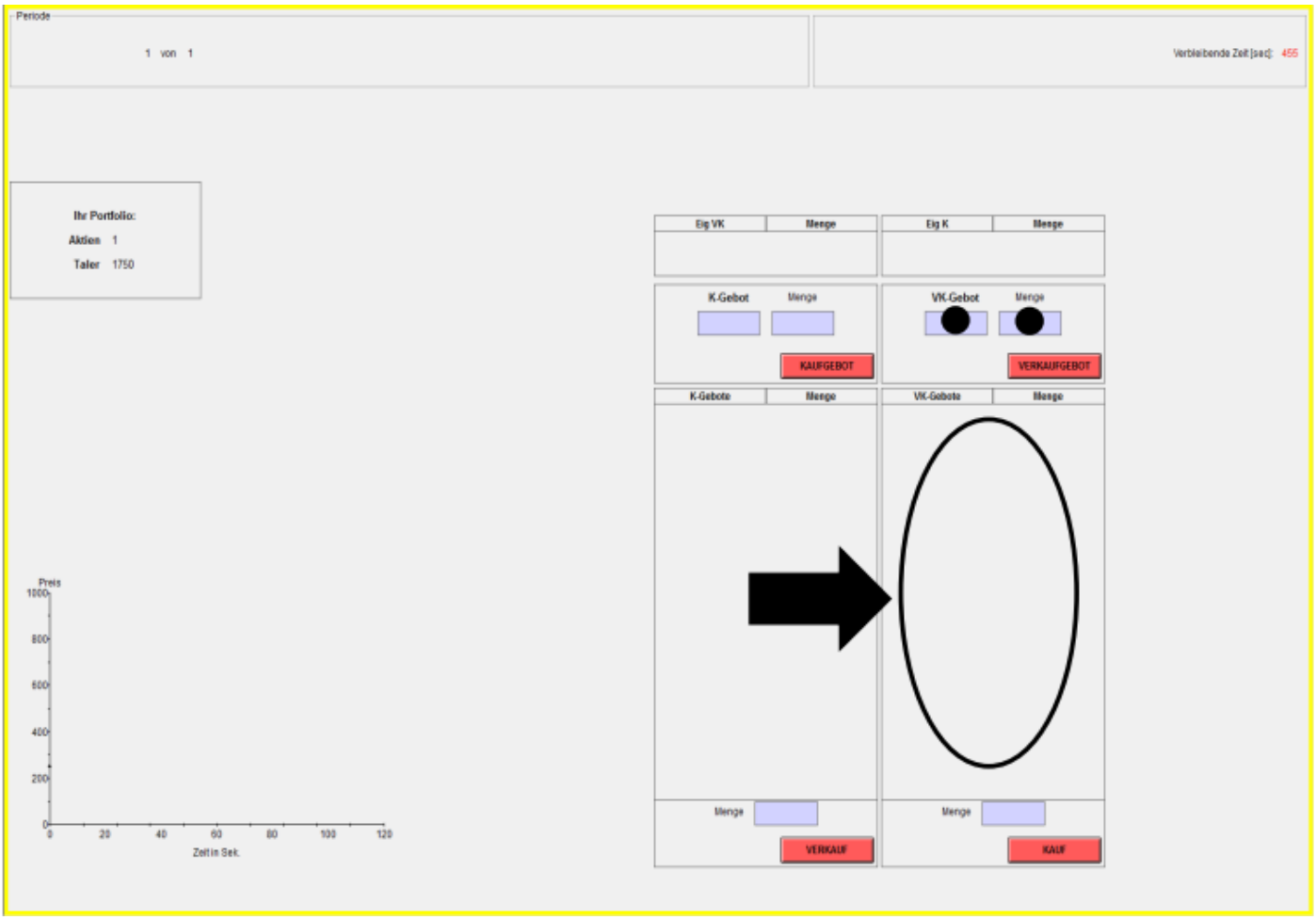
Selling stocks

There are also two possibilities to sell stocks. Either you make an ask, or you accept a bid.

To make an ask, enter both a price per unit in the field “VK-Gebot” and a quantity, see screen-shot below. After you clicked “Verkaufgebot”, your ask becomes visible in the table. Every participant will able to see the ask. The screenshot on this page marks the relevant fields.

To accept bids, please refer to the example in the screenshot on the following page. There are three open bids in the table. To accept one of the bids, click on it. Then enter the quantity you are willing to sell for this price in the box “Menge”. Click on “Verkauf” to finalize the transaction. Accordingly your Taler holdings will rise, and your stock holdings will sink. Sold stocks will be shown in the rectangularly marked box (see screenshot), so that you can keep track of your sales.





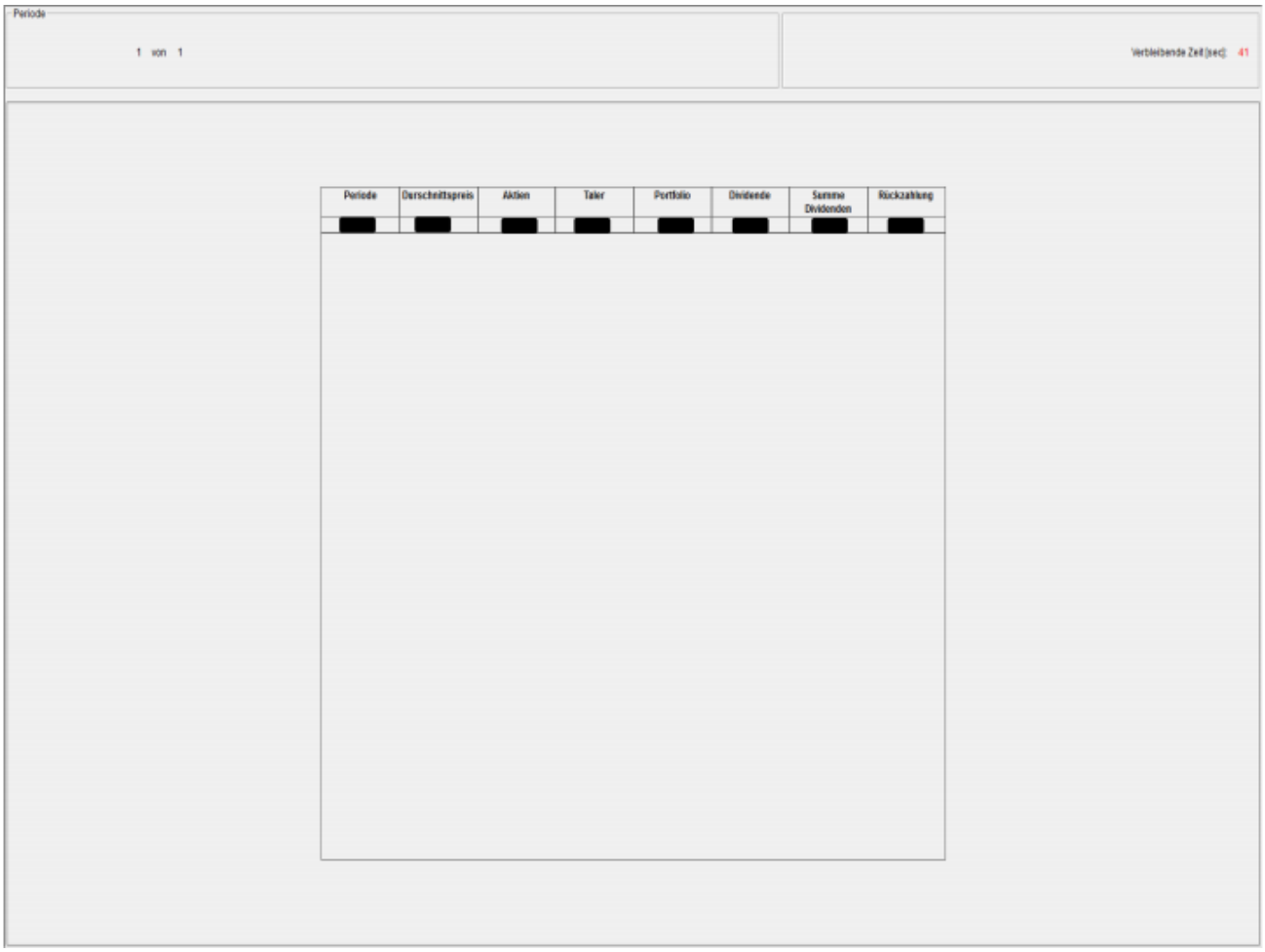
After the double auction

After the double auction, dividend payments will be made public. You Taler holdings will increase according to these dividend payments. Both traders and investors will get an overview of their account.

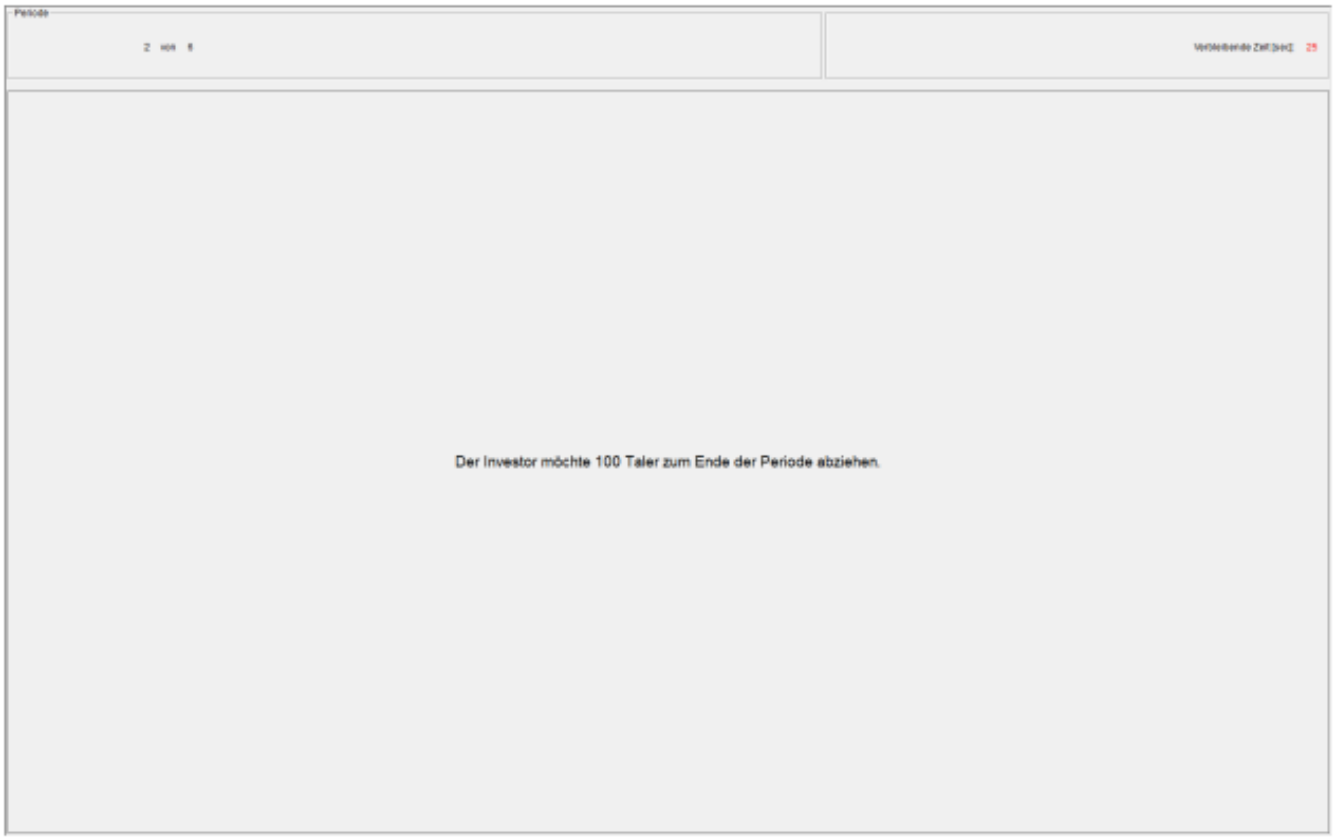
This overview shows from left to right, the period, the average stock trading price, stock and Taler holdings at the end of the period. Additionally, the table shows the market value of the portfolio. The market value is calculated from the number of stocks weighted by the average trading price, and Taler holdings. Therefore the value of the portfolio is calculated as:

Market Value Portfolio = Taler Holding + (Number Stocks)*Average Price

Moreover the table shows dividends per stock, and the sum of dividends. The last column shows the Taler amount returned to the trader.



After seeing this overview, the investor can decide whether and how much money he wants to transfer to his trader. Alternatively, she can also decide to withdraw money. Possible actions for the investor have been discussed above. Please be reminded, that the trader cannot withdraw more money than the market value of the portfolio. The market value can exceed Taler holdings of the trader. The trader learns how much he either is supposed to return or how much additional money he received, after the investor made her decision. See the following two screenshots. Afterwards a new period of trading begins.


Periode
Der Investor möchte 100 Taler zum Ende der Periode abziehen.


Periode
Der Investor hat 100 Taler zusätzlich investiert.

LL TREATMENT

Payoffs

After the experiment, this is after 15 trading periods, all Taler holdings of the trader will be transferred back to the investor. In case the amount transferred is above 2.000 Taler, for example at 5.000 Taler, earnings are going to be equally split between trader and investor. In this case earnings are 3.000 Taler (5.000 – 2.000). So the investor receives her initial endowment of 2.000 back, and in addition receives 1.500 Taler, this is half the revenue. The trader receives the other half of earnings in addition to his fix wage of 2.000.

Losses will not be shared between trader and investor. They will be covered by the investor only. That applies if the trader's final Taler holdings are below 2.000 after the end of the experiment. If final Taler holdings are for example 1.000, the investor would receive these 1.000 Talers. Compared to the initial endowment, she would have lost 1.000 Talers. The trader would still receive a fixed wage of 2.000. However he would not earn a bonus, as he does in the case of earnings.

All final Taler holdings will be converted into Euros and are the basis of payoffs.

LLC TREATMENT

Payoffs

After the experiment, this is after 15 trading periods, all Taler holdings of the trader will be transferred back to the investor. In case the amount transferred is above 2.000 Taler, for example at 5.000 Taler, earnings are going to be equally split between trader and investor. In this case earnings are 3.000 Taler (5.000 – 2.000), except if half the earnings are above **300**. If half the earnings are above 300, the trader receives exactly 300 Taler, while the investor receives the rest. The earnings of the trader are capped at 300. The trader receives in any case a fixed wage of 2.000.

In the example above, this means, the investor receives her initial endowment of 2.000 back, and in addition receives 2.700 from the 3.000 Talers earned. The trader receives a 300 Taler in addition to his fix wage.

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Losses will be split between trader and investor. Final Taler holdings below 2.000 are losses. For example final Taler holdings are 1.000, the investor then would receive 1.500. She would have lost 500 compared to her initial endowment. The trader would get a deduction off his fixed wage of 2.000. So he would receive 1.500 Taler.

To summarize: both gains and losses are equally split between trader and investor.

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After the experiment

There are some short tasks to fulfill after the experiment. You will be paid for each task. Payment from the tasks will be added to your trading gains. Each task will explained on screen.

Let's start

The experiment will begin soon. The first two rounds are going to be practice rounds to familiarize you with all aspects of the experiment. The practice rounds are not payoff relevant.

Good luck!