Supplementary Material 1: Participant instructions

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The written instructions provided to participants are shown below (next page). These instructions relate to sessions where the market screen for asset X was displayed on the left-hand side of the trading screen. Given the previously documented tendency for trading activity to be biased in favour of the market that appears on the left-hand side of the screen (see Chan et al. 2013) the market for Asset X was placed on the left for roughly half of the sessions in each treatment, and on the right for the remainder. The instructions for sessions where Y was displayed on the left are qualitatively the same. A screenshot and overview of the trading interface is shown in section 2. Treatments vary according to how earnings are calculated, which is addressed in section 6 of the instructions – this section was unique to each treatment. Treatments also vary according the amount of relative performance feedback given, which is covered in Section 5.

1. General Instructions

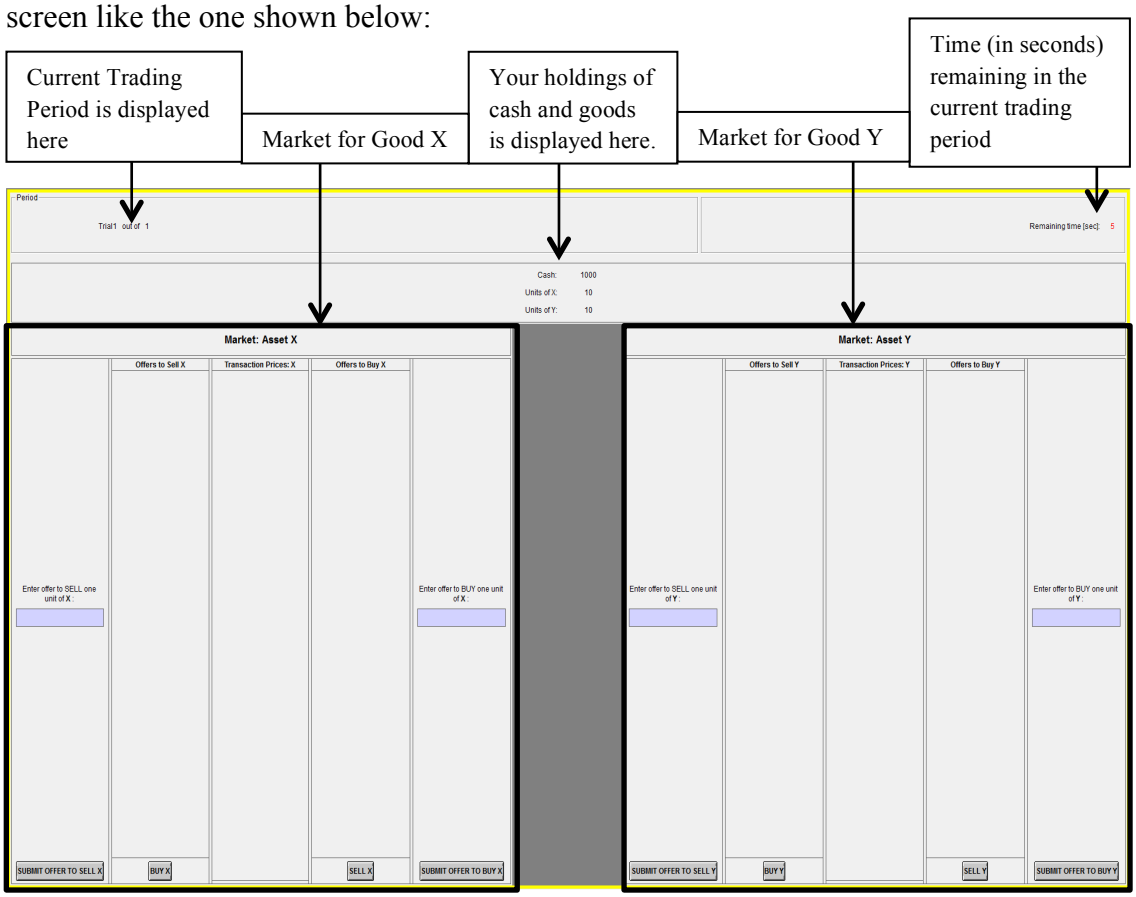
This is an experiment in the economics of market decision-making. The instructions are simple and if you follow them carefully and make good decisions, you may earn a considerable amount of money, which will be paid to you, in cash, at the end of the experiment. The experiment will consist of a sequence of trading periods in which you will have the opportunity to buy and sell in a market. All trading will be in terms of *francs*. The cash payment to you at the end of the experiment will be in Australian dollars, rounded up to the nearest 5 dollars. The conversion rate is ____ francs to 1 dollar.

The experiment will last no more than 2.5 hours, and will include up to 30 minutes of instructions and practice. Please do not speak with any other participants during the experiment. Please also remember to switch off your mobile phone. Failure to comply with these rules will result in your exclusion from the experiment and the forfeiture of all payments.

2. How to Use the Computerised Market

Before proceeding, we introduce the market interface that you will be using for the remainder of the experiment. Please note that any actions you take during this demonstration will **not** count towards your earnings or influence your position later in the experiment.

In this experiment, you will have the opportunity to buy and sell two different goods, called X and Y, in separate markets. In each trading period, you will see a computer screen like the one shown below:



Market: Good X

The market for good X is displayed on the **left-hand** side of your screen. All activity in relation to good X is shown and conducted here.

When you would like to offer to sell a unit of X, use the text area entitled "Enter offer to sell one unit of X" in the first column on the left. In that text area you can enter the price at which you are offering to sell a unit of X, and then select "Submit Offer To Sell X". Please do so now. Type in a number in the appropriate space, and then click on the button labelled "Submit Offer To Sell X".

You will notice that 8 numbers, one submitted by each participant in your market, now appear in the second column from the left, entitled "Offers to Sell X". Your offer is listed in blue. Submitting a new offer will replace your previous offer.

The lowest offer-to-sell price will always be on the top of that list and will, by default, be selected. You can select a different offer by clicking on it. It will then be highlighted. If you select "Buy X", the button at the bottom of this column, you will buy one unit of X for the currently selected sell price. Please purchase a unit now by selecting an offer and clicking the "Buy" button. Since each of you had offered to sell a unit of X and attempted to buy a unit of X, if all were successful, you all have the same number of units of X you started out with. This is because you bought one unit of X and sold one unit of X.

You may make an offer to buy a unit of X by selecting "Submit Offer to Buy X." Please do so now. Type a number in the text area "Enter offer to buy one unit of X", then press the button labelled "Submit Offer To Buy X". All offers to buy X appear under the column entitled "Offers to Buy X". The highest offer-to-buy price will always be on top of that list and will, by default, be selected. You can accept any of the offers-to-buy by selecting the offer and then clicking on the "Sell X" button. Please do so now.

The middle column of the market, labelled "Transaction Prices: X", shows the prices at which X has been bought and sold in this period. The most recent transaction will be listed at the top.

Market: Good Y

The market for good Y is displayed on the **right-hand** side of your screen. All activity in relation to good Y is shown and conducted here. The layout of this market is identical to the market for X. The trading rules and procedures for posting and accepting offers to buy and sell Y are also the same.

To post an offer to sell a unit of Y, use the text area entitled "Enter offer to sell one unit of Y" and then select "Submit Offer To Sell Y". Please do so now.

You can purchase a unit of Y by clicking the button "Buy Y" at the bottom of the column called "Offers to Sell Y". Once again, the lowest offer-to-sell price is listed at the top and is selected by default. You can accept any offer by selecting it before clicking "Buy Y". Please purchase a unit of Y now.

To make an offer to buy a unit of Y, type a number into the text area entitled "Enter offer to buy one unit of Y" and then select "Submit Offer To Buy Y". Please do so now.

These offers are listed in the column “Offers to Buy Y”. To accept an offer, click “Sell Y” at the bottom of this column. The highest offer-to-buy price is selected by default. You can accept any of the offers by selecting it before clicking “Sell Y”. Please do so now.

The middle column of the market, labelled “Transaction Prices: Y”, shows the prices at which Y has been bought and sold in this period. The most recent transaction will be listed at the top.

Other features of both markets:

When you buy a unit of a good (i.e. X or Y), your Cash balance decreases by the price of the purchase. Any other existing offer to buy that good submitted by you is also cancelled. When you sell a unit of a good, your Cash balance increases by the price of the sale, and any other existing offer to sell that good submitted by you is cancelled.

You can participate in both markets at the same time.

If you make offers to buy in both markets at the same time, and say your offer to buy X is accepted first, then your offer to buy Y remains standing as long as you have enough Cash after the purchase of X to honour it, and vice versa. If you do not have enough Cash, then your offer in the second market is cancelled. Similarly, if you have a standing offer to buy in one market, and accept another trader’s sell offer in the second market, then your offer to buy in the first market is cancelled if your remaining Cash balance is less than the amount of your offer.

You will now have about 10 minutes to buy and sell in both markets. This is a practice period. **Your actions in the practice period do not count toward your earnings and do not influence your position later in the experiment.** The only goal of the practice period is to master the use of the interface. Please be sure that you have successfully submitted offers to buy and offers to sell in both markets. Also be sure that you have accepted buy and sell offers in both markets. If you have any questions, please raise your hand and the experimenter will come by and assist you.

3. Specific Instructions for this Experiment

This experiment consists of you and 7 other traders. At the beginning of the experiment, all traders will be endowed with a portfolio consisting of 5 units each of two types of goods, called 'X' and 'Y', and 1950 francs in Cash.

The experiment consists of 12 periods, each lasting 3 minutes. In each period, two separate markets will operate in which you may buy and/or sell units of good X and Y respectively. Both goods can be considered assets with lives of 12 periods, and your inventory of X and Y carries over from one trading period to the next. Note that your cash balance and inventory of assets cannot fall below zero.

At the end of each trading period, each unit of X pays an identical dividend, which is randomly determined by the computer. The possible dividend values and the associated likelihoods are shown below:

Asset: X

Dividend		Likelihood
10	→	$^1/_2$
30	→	$^1/_2$

Since each dividend is equally likely, the average dividend per period for X is 20 francs.

Each unit of Y also pays an identical dividend at the end of each period, randomly determined by the computer. The possible dividend values and the associated likelihoods are shown below:

Asset: Y

Dividend		Likelihood
0	→	$^4/_5$
100	→	$^1/_5$

The average dividend per period for asset Y is 20 francs ($0\times{}^4/_5 + 100\times{}^1/_5 = 20$).

The dividend draws for X and Y are independent across trading periods. This means that for both assets, the likelihood of a particular dividend in a period is not affected by the dividends in previous periods. In addition, the dividend draws for X and Y are independent of each other. This means that the occurrence of a particular dividend for X does not affect the likelihood of a particular dividend for Y, and vice versa.

Each unit of X and Y expires worthless after the final dividend is paid at the end of period 12.

4. Average Holding Value Table

You can use the table at the end of this document to help you make decisions. It calculates the average amount of dividends you will receive if you hold a unit of an asset in your inventory for the rest of the market, or equivalently, how much in dividends you give up, on average, when you sell a unit at any time. Each of the 5 columns of the table is described below:

1. *Ending Period*: indicates the last trading period of the market, period 12.
2. *Current Period*: indicates the period during which the average holding value is being calculated.
3. *Number of holding periods*: This is equivalent to the number of times a dividend can be received if a unit of an asset is held in your inventory from the current period to the end of the market.
4. *Average Dividend Per Period*: gives the average amount that the dividend will be in each period for each unit of the asset that is held in your inventory. The number in this column is 20. This is because the average dividend in each period for both X and Y is 20 francs. Since both types of assets have the same average dividend per period, you can use this table to determine the average holding value for both X and Y.
5. *Average Holding Value Per Unit of Inventory*: gives the expected total dividend for the remainder of the market for each unit of an asset that is held in your inventory for the rest of the market. That is, for each unit you hold in your inventory for the remainder of the market, you will receive on average the amount listed in column 5 in dividends. Equivalently, it tells you how much in future dividends you give up on average when you sell a unit in the current period. The number in column 5 is calculated by multiplying the numbers in columns 3 and 4.

Example: Suppose that there are 4 periods remaining. Since the dividend paid on a unit of X has a 50% chance of being 10 and a 50% chance of being 30, the dividend is in expectation 20 per period for each unit of X. Since the dividend paid on a unit of Y has an 80% chance of being 0 and a 20% chance of being 100, the dividend in expectation is also 20 per period for each unit of Y. If you hold a unit of X or Y for 4 periods, the total dividend paid on that unit over the 4 periods is in expectation $4 \times 20 = 80$.

5. Summary Screen

At the end of each trading period, a status report will appear on screen for 30 seconds. It displays the following information:

- Your Cash balance before the payment of dividends. This is calculated as:

  CASH BEFORE DIVIDENDS = BEGINNING OF PERIOD CASH

  + (PERIOD SALES REVENUE – PERIOD EXPENDITURE ON PURCHASES)

- The dividends paid by X and Y in this period.
- The number of units of X and Y in your inventory at the end of the period.
- The total amount of dividends you receive this period. This is calculated as:

  PERIOD TOTAL DIVIDEND = (END-OF-PERIOD UNITS OF X × DIVIDEND PER UNIT OF X FOR THE PERIOD)

  + (END-OF-PERIOD UNITS OF Y × DIVIDEND PER UNIT OF Y FOR THE PERIOD)

- Your Cash balance at the end of the period, which is calculated as follows:

  END-OF-PERIOD CASH = CASH BEFORE DIVIDENDS + PERIOD TOTAL DIVIDEND

- Your Account Total. This is equal to your end-of-period Cash plus the value of your holdings of X and Y.

  In periods 1 through to 11, your end-of-period holdings of X and Y are valued at their respective median traded price in that period. So, your Account Total at the end of period 1-11 is calculated as:

  ACCOUNT TOTAL = END-OF-PERIOD CASH

  + (END-OF-PERIOD UNITS OF X × MEDIAN TRADED PRICE OF X DURING PERIOD)

  + (END-OF-PERIOD UNITS OF Y × MEDIAN TRADED PRICE OF Y DURING PERIOD)

  Since all units of X and Y expire worthless after the final dividend payment at the end of period 12 (i.e. at the end of the market), your Account Total at the end of period 12 is equal to your end-of-period Cash balance:

  ACCOUNT TOTAL (end of period 12) = END-OF-PERIOD CASH

- The average Account Total in your market. ****← this point does <u>not</u> appear in the *Baseline* treatment instructions, but does appear for all other treatments****

After seeing the summary screen, press the "Continue" button to go to the next period. The next period will begin once everyone has pressed the "Continue" button, or once the 30 seconds have elapsed, whichever comes first.

6. Your Earnings

**** *Baseline* only: ****

Your earnings from this market will equal the balance of your Account Total at the end of the market. Remember that this is equal to your Cash balance at the end of the market.

Note that you do not have to calculate your earnings by yourself. The computer does all the work.

**** *Carrot* only: ****

Your earnings from this market will depend on your performance relative to the other traders in your market. Your performance is measured by comparing the balance of your Account Total at the end of the market (i.e. your final Cash balance) to the average end-of-market Account total/Cash balance in your market. Your payoff is calculated as follows:

$$Earnings_i = \begin{cases} 3000 & if \quad C_i < C^* \\ 3000 + 2(C_i - C^*) & if \quad C_i \geq C^* \end{cases}$$

where C_i is your final Account Total/Cash balance and C* is the average final Account total/Cash balance in your market.

Example: Suppose that the average end-of-market Cash balance in your market is 3500 francs. If your final Cash balance is say 3200 francs, you will earn 3000 francs. On the other hand, if your final Cash balance is say 4500 francs, you will earn 3000 + 2×(4500 – 3500) = 5000 francs.

Note that you do not have to calculate your earnings by yourself. The computer does all the work.

**** *Stick* only: ****

Your earnings from this market will depend on your performance relative to the other traders in your market. Your performance is measured by comparing the balance of your Account Total at the end of the market (i.e. your final Cash balance) to the average end-of-market Account total/Cash balance in your market. Your payoff is calculated as follows:

$$Earnings_i = \begin{cases} 0 & if \quad C_i < \frac{1}{2}C^* \\ 3000 & if \quad \frac{1}{2}C^* \leq C_i \leq C^* \\ 3000 + 2(C_i - C^*) & if \quad C_i > C^* \end{cases}$$

where C_i is your final Account Total/Cash balance and C* is the average final Account total/Cash balance in your market.

Example: Suppose that the average end-of-market Cash balance in your market is 3500 francs. If your final Cash balance is say 1000 francs, you will earn 0 francs from this market. If your final Cash balance is 3200 francs, you will earn 3000 francs. On the other hand, if your final Cash balance is say 4500 francs, you will earn $3000 + 2\times(4500 - 3500) = 5000$ francs.

Note that you do not have to calculate your earnings by yourself. The computer does all the work.

Average Holding Value Table

Ending Period	Current Period	Number of Holding Periods	×	Average Dividend Per Period	=	Average Holding Value Per Unit in Inventory
12	1	12		20		240
12	2	11		20		220
12	3	10		20		200
12	4	9		20		180
12	5	8		20		160
12	6	7		20		140
12	7	6		20		120
12	8	5		20		100
12	9	4		20		80
12	10	3		20		60
12	11	2		20		40
12	12	1		20		20