

# Appendix

For Online Publication

## A Instructions

The instructions below are translated from the original German instructions. The instructions were read aloud to the participants.

**Overview** This is the first part of a two-part experiment. The second part will take place this coming Friday, November 7th, 2014. Depending on your decisions in this experiment you may be invited to the second part of the experiment. However, not all participants of this experiment will be invited to the second part. The experiment today is made up of several games and questionnaires. After each game/questionnaire, you will receive new instructions for the next game/questionnaire. In total, the experiment will take approx. one hour. For your participation you will receive a minimum payment of 5 Euro. Depending on your actions during the experiment you can earn more than that. After all questionnaires and games are done, your payoff will be shown on your monitor. You will then be handed a receipt in which you enter your earned payoff as well as your name and address. Please go then to the adjoining room to receive your payment.

**Quiz** In this quiz, we ask you to answer three questions of differing difficulty. Please try to answer as many of them as possible. You have 5 minutes of time, and you will receive one Euro for each question answered correctly.

1. A bat and a ball cost \$1.10. The bat costs \$1.00 more than the ball. How much does the ball cost?
2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?
3. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

**Questionnaire** On the screen before you, you see 10 decision situations. In each of these situations, you have the choice between two options, A or B. Both options contain a lottery with two possible amounts of money you can win, and their respective probabilities.

Example: In the first decision situation (the first row on your screen), Option A pays 2 € (with a probability of 10%) or 1.60 € (with a probability of 90%). Option B on the other hand pays 3.95 € (with a probability of 10%) or 0.10 € (with a probability of 90%).

The following 9 decision situations are very similar, and only the probabilities with which you can win the prizes change. Please choose between Option A and B by moving the scroll bar either to the left or to the right. Also note that you are restricted in the following way; after the first line in which you choose Option B over A, you have to choose Option B in all following lines. Your earnings from this lottery will be paid in cash after the end of the experiment. Which of the 10 decision situations will be paid is determined randomly by the computer. Depending on whether you chose Option A or B in this randomly chosen situation, either Lottery A or B will be played. Then a random number generator determines the amount that you win (of course with the stated probabilities).

**Game 1** In this game you choose a number between 0 and 100 (both included). The other participants also choose a number between 0 and 100. Your payoff depends on how far away your number is from 2/3 of the average of all chosen numbers (yours included). The closer your number to 2/3 of the average, the higher your payoff. Your payoff is calculated as follows:

$$\text{Payoff (in Euro)} = 1 - 0.05 * |\text{your number} - 2/3 * \text{average}|$$

In words: your payoff (in Euro) is calculated as 1 minus 0.05 times the absolute difference between your number and two thirds of the average of all chosen numbers. Since the absolute difference (as indicated by the absolute value bars “|”) is used, it does not matter whether your number is above or below two thirds of the average. Only the absolute distance is used to calculate your payoff. The smaller the difference, i.e. the distance of your number to two thirds of the average of the chosen numbers, the higher your payoff. Please note that your payoff cannot be negative. If your payoff, as calculated

with the above formula, turns out to be negative, then you will receive 0 Euro. Since the payoff for the other participants is calculated in the same way, they too have an incentive to choose a number that is as close as possible to  $2/3$  of the average. You are playing this game with all other participants that are presently in the room. You have 90 seconds to enter your number.

**Game 2** This game is very similar to the game played before. Again, it is your goal to choose numbers that are as close as possible to  $2/3$  of the average. This time, however, you will be playing against yourself. You are playing the same game as before, only this time the only player with whom you play, is yourself. This time you will be asked to enter two numbers between 0 and 100 (both included), and your payoff will depend on how close your numbers are to two thirds of the average of the two numbers that you chose. Since you play against yourself, the average number equals your first chosen number plus your second chosen number, divided by two. This time you will be paid twice, once for each number you choose. The payoff for your first chosen number is calculated as:

$$\text{Payoff (in Euro)} = 0.5 - 0.05|\text{Number1} - 2/3 * [((\text{Number1} + \text{Number2}))/2]|,$$

where Number1 is the first chosen number, and Number2 is the second chosen number. Your payoff for your second chosen number is calculated as:

$$\text{Payoff (in Euro)} = 0.5 - 0.05|\text{Number2} - 2/3 * [((\text{Number1} + \text{Number2}))/2]|,$$

You have 90 seconds to enter both numbers.

**Game 3 (Race to 60)** In this game, you play several repetitions of the game “Race to 60”. Your goal is to win this game as often as possible against the computer. In this game you and the computer alternately choose numbers between 1 and 10. The numbers are added up, and whoever chooses the number that pushes the sum of numbers to or above 60 wins the game. In detail, the game works as follows: You start the game against the computer, by choosing a number between 1 and 10 (both included). Then the game follows these steps: The computer enters a number between 1 and 10. This number is added to your number. The sum of all chosen numbers so far is shown on the screen. If

the sum is smaller than 60, you again enter a number between 1 and 10, which in turn will be added to all numbers chosen so far by you and the computer. This sequence is repeated until the sum of all numbers is above or equal to 60. Whoever (i.e. you or the computer) chooses the number that adds up to a sum equal or above 60 wins the game. You will be playing this game 12 times against the computer. For each of these games you have 90 seconds of time. For each game won, you receive 0,5 Euro.

## B Description of Cognitive Tasks & Risk Preference Elicitation

### B.1 CRT

The CRT tests the ability to overrule an initial intuitive response that is incorrect, and to engage in further reflection to find the correct answer. The test consists of three algebraic questions, which are:

1. A bat and a ball cost \$1.10. The bat costs \$1.00 more than the ball. How much does the ball cost?
2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?
3. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

### B.2 Guessing Game

Subjects play a total of two guessing games, one against the other subjects in the room and one against themselves. In these games, subjects are asked to state a number between 0 and 100, both inclusive. Subjects are paid according to the absolute distance of their guess to two thirds of the average guess. In the first case, this average is calculated as the average of all guesses of the subjects in the room. In the second case, where subjects play against themselves, we ask them to state two numbers. The average guess in this game is calculated as the average of these two numbers. In both cases, iterative deletion of dominated strategies leads to “0” as the equilibrium choice. The payoff function for the guessing game against others is given by:

$$\pi_{OS} = 1 - 0.05 \left| x - \frac{2}{3} \bar{x} \right|,$$

where  $x$  is the stated number, and  $\bar{x}$  is the average number stated by all other subjects. In the guessing game against oneself, each player plays the game for two “selves”. Hence she has two payoff functions:

$$\pi_{S1} = 0.5 - 0.05 \left| y - \frac{2}{3} \frac{y+z}{2} \right|,$$

$$\pi_{S2} = 0.5 - 0.05 \left| z - \frac{2}{3} \frac{y+z}{2} \right|,$$

where  $y$  and  $z$  denote the first and second number stated by subjects respectively. We decided to make payoffs based on absolute distance because this rule invokes the same equilibrium as the standard winner takes all scheme, while allowing to pay every subject for their choice. Note that this kind of payment scheme is common in the guessing game literature (e.g., [Costa-Gomes and Crawford \(2006\)](#), [Güth, Kocher, and Sutter \(2002\)](#)). Moreover, [Kocher and Sutter \(2006\)](#) argue that continuous payoff schemes “resemble financial decision-making much more than the basic winner takes-all scheme with a boundary equilibrium”).

### B.3 Race to 60

In the Race to 60, the participants play a game against the computer in which both sequentially pick values between 1 and 10, which are added up into a “common pool”. The goal of the game is to be the one to push this common pool to or above 60. By picking numbers such that the common pool adds up to the sequence : [5, 16, 27, 38, 49, 60] the first mover can always win this game. So, to always win the game the first mover should start by picking 5, then, after the computer has made its choice, pick whichever number pushes the common pool to 16, then to 27, then to 38, 49, and finally to 60 (or above). This game is used to measure the levels of backward induction subjects can make, by observing when they enter (and stay on) the optimal path.

Subjects played this game 12 times against a computer whose backward induction ability increased every two rounds. So, subjects started playing two rounds against a computer able to do only one backward induction step (i.e. the computer is able to pick the correct number to add up to 60 if the sum is above 49, otherwise the computer plays a random number). Then subjects played the following two rounds against a computer able to do two steps of backward induction (i.e. adding the numbers to 49 if the current sum is between 39 and 48, and to 60 if the sum is above 49), and so on. Subjects were not aware of this increase in ability of the computer.

Line	Lottery A				Lottery B			
	$p$	Euro	$p$	Euro	$p$	Euro	$p$	Euro
1	0.1	2.00	0.9	1.60	0.1	3.85	0.9	0.10
2	0.2	2.00	0.8	1.60	0.2	3.85	0.8	0.10
3	0.3	2.00	0.7	1.60	0.3	3.85	0.7	0.10
4	0.4	2.00	0.6	1.60	0.4	3.85	0.6	0.10
5	0.5	2.00	0.5	1.60	0.5	3.85	0.5	0.10
6	0.6	2.00	0.4	1.60	0.6	3.85	0.4	0.10
7	0.7	2.00	0.3	1.60	0.7	3.85	0.3	0.10
8	0.8	2.00	0.2	1.60	0.8	3.85	0.2	0.10
9	0.9	2.00	0.1	1.60	0.9	3.85	0.1	0.10
10	1.0	2.00	0.0	1.60	1.0	3.85	0.0	0.10

Table 8: Price list

We chose this procedure to be able to detect low levels of backward induction, since if the computer had played its best response all the time, we would have never been able to identify backward induction levels below 6. For example, imagine a subject with less than 6 steps of backward induction ability; this subject will not (most likely!) start out on the optimal path (5) and would be instantly “kicked” off the optimal path by a perfectly backward inducting computer, not allowing us to observe her true level of backward induction.

#### B.4 Risk Preferences

To elicit risk preferences, we use a standard Holt and Laury price list (Holt and Laury, 2002). Subjects repeatedly choose between two lotteries (A and B), one involving relatively low risk, and one involving relatively high risk (i.e. a higher variance in potential payoffs). Table 2 describes all choices subjects face. In the Table,  $p$  represents the probability to win the “Euro” amount right of it in the table. The point at which subjects first prefer Option B over Option A can be used to assess their risk preferences.<sup>31</sup>

## C Index of Cognitive Sophistication

The index  $S_i$  used to rank participants is constructed according to the following weighted average:

<sup>31</sup>The software allowed to switch only once from Option A to B. See Appendix A for more details.

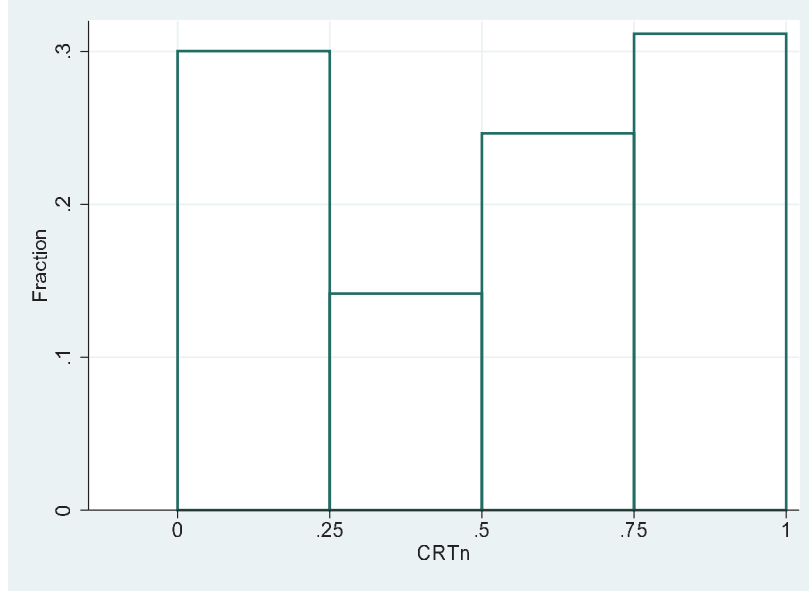


Figure 6: Histogram of  $CRT$

$$S_i = 1/3 * CRT_i + 1/3 * GG_i + 1/3 * R60_i$$

### C.1 CRT

$CRT$  is the normalized result of the number of correct answers for the CRT questions (if all three answers are correct,  $CRT = 1$ , if only two are correct,  $CRT = 2/3$ , if only one,  $CRT = 1/3$ , and  $CRT = 0$  if no correct answers).

### C.2 GG

The measure GG combines the outcomes of the Guessing Game and Guessing Game Against Oneself and is defined as  $GG = 0.5 * DistanceOSn_i + 0.5 * Selfn_i$ , where:

**DistanceOSn** The variable DistanceOSn is our measure of how well a subject performed in the guessing game. To construct it we take the following steps. First, we separate the choices of all subjects ( $ChoiceOS_i$ ) into two groups: those that played a dominated strategy (i.e.  $ChoiceOS > 66$ ) and the rest. Those in the former group are assigned a score of zero for their DistanceOSn. We then define our “objective” value, which is  $2/3$  of the average of choices all chosen numbers in the guessing game across all sessions, which



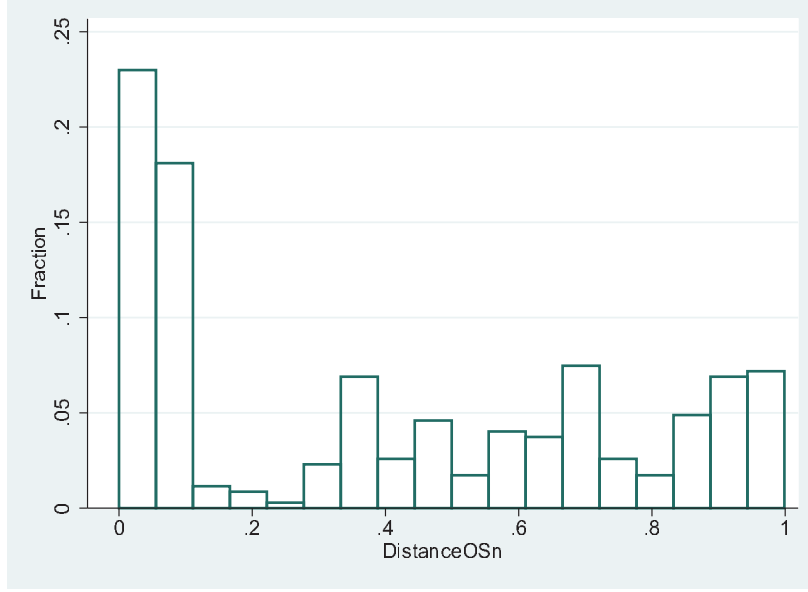


Figure 7: Histogram of DistanceOSn

is 25.587. With this, we create a measure called  $\text{Distance}_i$  as follows:

$$\text{Distance}_i = |(25.587 - \text{ChoiceOS}_i) / (66 - 25.587)|,$$

if  $\text{ChoiceOS}_i \leq 66$ . This allows us to rank all subjects in a range between zero and one, with zero being assigned to those players that played exactly the objective value and one to those subjects that played above 66. In addition, we posit that choosing a number below the objective value indicates a better understanding of the game than choosing a number above it. Accordingly, in our measure of cognitive sophistication for the guessing game we add an extra 50% to the “distance” for any choice above the objective value. This translates into the following equation:

$$\text{DistanceOSn}_i = \max\left\{0, \begin{cases} 1 - \text{Distance}_i * 1.5 & \text{if } \text{ChoiceOS}_i > 25.587 \\ 1 - \text{Distance}_i & \text{if } \text{ChoiceOS}_i < 25.587 \end{cases} \right\}$$

**Selfn** The measure  $\text{Selfn}$ , for cognitive sophistication in the “playing against self” game, is again a two-step procedure. We posit that the game has two dimensions of understanding: the first dimension is realizing that the numbers picked should always be close together (in fact they should be the same); the second dimension is realizing that there

is a unique correct answer (zero for both choices). In order to evaluate both dimensions we first measure the distance of each choice (ProximitySelf<sup>1</sup> and ProximitySelf<sup>2</sup>) to 2/3 of the average (AvgSelf) of both:

$$\text{ProximitySelf}_i^1 = |\text{Self}_i^1 - 2/3\text{AvgSelf}|$$

$$\text{ProximitySelf}_i^2 = |\text{Self}_i^2 - 2/3\text{AvgSelf}|$$

, where Self<sub>*i*</sub><sup>1</sup> is the first number chosen and Self<sub>*i*</sub><sup>2</sup> is the second number chosen by subject *i*. We then create a normalized measure for the proximity of both values:

$$\text{NormalizedSelf}_i^a = 1 - (\text{ProximitySelf}_i^1 + \text{ProximitySelf}_i^2)/100$$

Next we compute the second measure:

$$\text{Normalizedself}_i^b = 1 - (\text{Self}_i^1 + \text{Self}_i^2)/200,$$

which penalizes subjects for picking numbers away from the solution of the game. Using both NormalizedSelf<sup>*a*</sup> and NormalizedSelf<sup>*b*</sup> we create the final measure:

$$\text{Selfn}_i = (\text{NormalizedSelf}_i^a + \text{NormalizedSelf}_i^b)/2$$

### C.3 R60

R60 is composed by two measures extracted from the Race to 60 game and is defined as  $R60 = 0.5 * \text{Wonn}_i + 0.5 * \text{MeanBIn}_i$ , where:

**Wonn:** This measure is the normalization of the number of rounds won by each subject in the Race to 60 game (Won<sub>*i*</sub>):

$$\text{Wonn}_i = \text{Won}_i/12$$

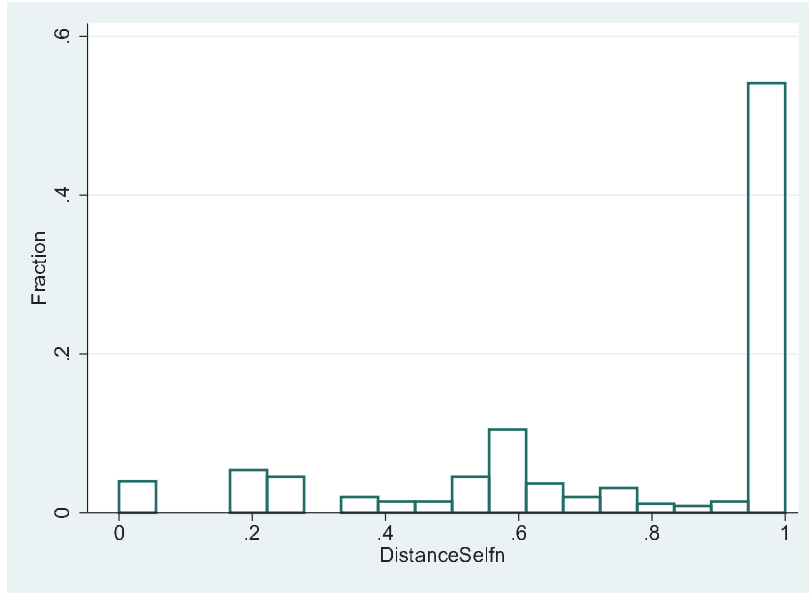


Figure 8: Histogram of Selfn

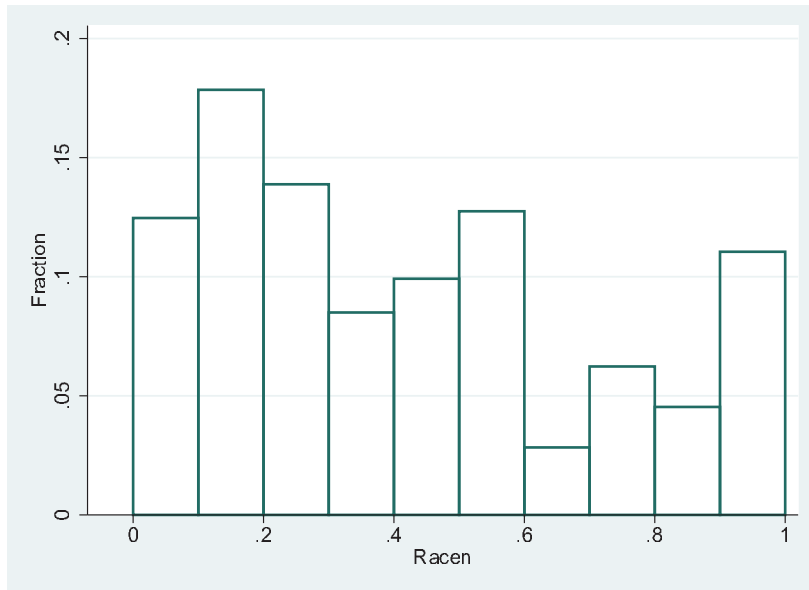


Figure 9: Histogram of Wonn

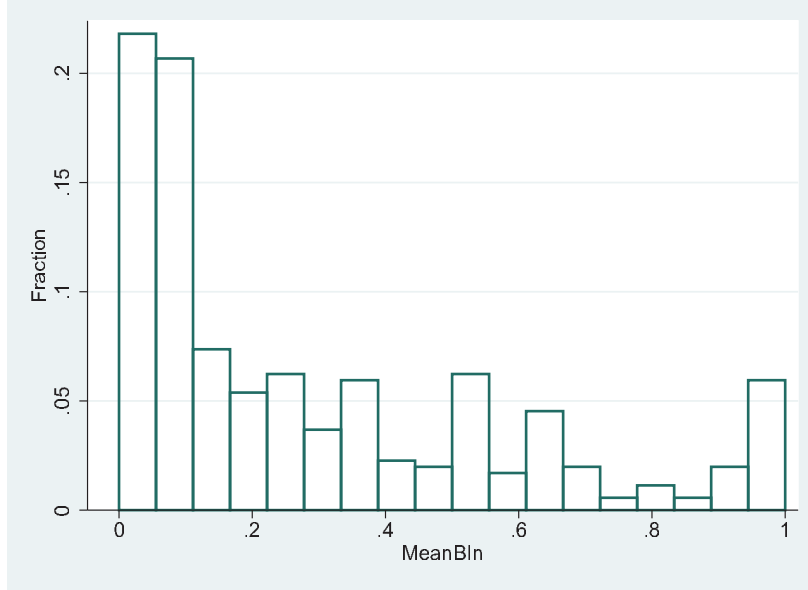


Figure 10: Histogram of MeanBIn

**MeanBIn** This measure is the average number of backward induction steps (MeanBIn) that a subject made during the 12 Rounds of Race to 60. Race to 60 has a correct path [5, 16, 27, 38, 49, 60] that allows the first mover to always win the game. The number of backward induction steps is dependent on when a subject enters this optimal path and stays on it. If a subject starts out with a 5, and then stays on the correct path, we say that she has 6 backward induction steps. In this case she has solved the game completely. Consequently, if a subject enters the correct path at, say, 38 she thinks three steps ahead. We then create the measure *MeanBIn* which is the normalized mean of backward induction steps that a subject has taken across all 12 rounds.

$$\text{MeanBI}_i = \sum_{r=1}^{12} \frac{\text{BIsteps}_{ir}}{12}$$

#### C.4 Distribution of $S_i$

Finally we present the distribution of  $S_i$  in Figure 11. Any subject with a score  $S_i > 0.678$  ( $S_i < 0.28$ ) was considered to be of High (Low) Sophistication.

The symmetric weighting of  $S_i$  was picked because *a priori* any choice of weights is arbitrary. We felt comfortable with this solution as our measures are highly correlated (see Table 9), pointing towards an  $S_i$  that is robust to changes in its weights. In order to

confirm this we sort our subjects into High and Low following the "No CRT", "No Guessing", and "No Race" criteria. In each of these cases one of the three main measures was dropped and equal weights were given to the remaining ones. The percentage of subjects that overlapped with our original symmetric measure and the robustness modifications are reported in Table 10. As is clear from the results our index  $S_i$  is robust to changes in its weights.

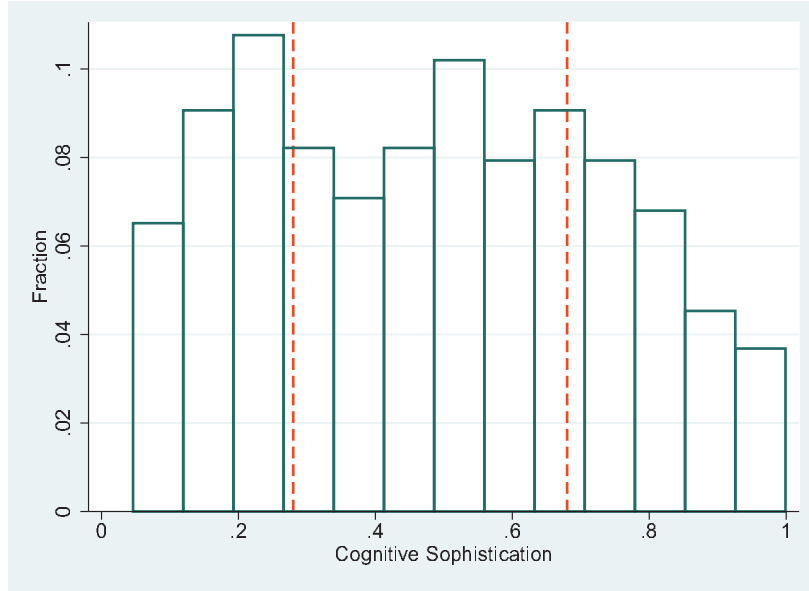


Figure 11: Histogram of Cognitive Sophistication( $S_i$ ). The red dashed lines mark the separation for Low and High Sophistication subjects.

	CRT	GG	R60
CRT	1	-	-
GG	0.422	1	-
R60	0.477	0.396	1

Table 9: Correlation between measures.

	High	Low
No CRT	0.828	0.771
No GG	0.828	0.809
No R60	0.716	0.857

Table 10: Percentage of overlapping subjects in the High and Low groups. No CRT is constructed by giving half of the weight to GG and the other half to R60, No GG is gives half the weight to CRT and half to R60, while No R60 gives half the weight to CRT and half to GG.

## D Asset Market Experiment Instructions

This is the second part of the experiment. <sup>32</sup>

**Overview** This is an economic experiment on decisions in markets. In this experiment we generate a market, in which you trade units of a fictitious asset with the other participants of the experiment. The instructions are not complicated, and if you follow them closely and make appropriate decisions, you can earn a considerable amount of money. The money that you earn during the experiment will be paid in cash at the end of the experiment. The experiment consists of 3 rounds. Each round consists of 15 periods (in the following also named trading periods) in which you have the opportunity to trade in the market, i.e. to buy and sell. The currency in which you trade is called “Taler”. All transactions in the market will be denoted in this currency. The payoff that you receive will be paid in Euro. You will receive one Euro for every 90 Taler.

**Experiment Software and Market** You will be trading in one of two markets, each of which consists of 7 participants. Both markets are identical in their functionality and are independent of each other. Your assignment to one of these markets is random, and you will stay in this market for the duration of the experiment. You can make your decisions in the market through the experiment software. A screenshot of this software can be found on the next page. In every trading period you can buy and sell units of an asset (called “share” from now on). In the top left corner of the screen you can see how many Taler and shares you have at every moment (see screenshot). In case you want to buy shares, you can issue a buy order. A buy order contains the number of shares that you want to buy and the highest price that you are willing to pay per share. In case you want to sell shares, you can issue a sell order. Similar to the buy order, a sell order contains the number of shares that you want to sell as well as the lowest price that you are willing to accept for each share. The price at which you want to buy shares has to be lower than the price at which you want to sell shares. All prices refer to prices of a single share.

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<sup>32</sup>In the instructions for the “shared-knowledge” High Sophistication treatments the following sentences were added at this point: “Based on your answers to the questionnaires and your actions in the games of the first part of the experiment, we have calculated a ”performance score” that reflects the quality of your decisions. You have been invited to this experiment today because your score was above average.”

The experiment software combines the buy and sell orders of all participants and determines the trading price, at which shares are bought and sold. This price is determined so that the number of shares with sell order prices at or below this price is equal to the number of shares with buy order prices at or above this price. All participants who submit buy orders above the trading price will buy shares, and those that have sell orders below the trading price will sell shares. Example of how the market works: Suppose there are four traders in the market and:

- Trader 1 submits a buy order for one share at the price of 60 Taler.
- Trader 2 submits a buy order for one share at the price of 20 Taler.
- Trader 3 submits a sell order for one share at the price of 10 Taler.
- Trader 4 submits a sell order for one share at the price of 40 Taler.

At any price above 40, there are more units offered for sale than units for purchase. At any price below 20, there are more units offered for purchase than for sale. At any price between 21 and 39, there is an equal number of units offered for purchase and sale. The trading price is the lowest price at which there is an equal number of units offered for purchase and sale. In this case, the trading price is 21 Taler. Trader 1 buys one share from Trader 3 at the price of 21 Taler. Trader 2 buys no shares, because her buy order price is below the trading price. Trader 4 does not sell any shares, because her sell order price is above the trading price.

**Specific Instructions for this Experiment** This experiment consist of 3 independent rounds, each consisting of 15 trading periods. In every period you can trade in the market, according to the rules stated above. At the start of each round, you receive an endowment of Taler and shares. This endowment does not have to be the same for every participant. As mentioned, you can see the amount of shares and Taler that you own on the top left corner of your screen. Shares have a life of 15 periods. The shares that you have purchased in one period are at your disposal at the next period. If you happen to own 5 shares at the end of period 1, you own the same 5 shares at the beginning of period 2. For every share you own, you receive a dividend at the end of each of the 15 periods. At the end of each period, including period 15, each share pays a dividend of either 0, 4, 14, or



Accuracy	Your Earnings
Within 10% of actual price	5 Taler
Within 25% of actual price	2 Taler
Within 50% of actual price	1 Taler

30 Taler, with equal probability. This means that the average dividend is 12 Taler. The dividend is added automatically to your Taler account at the end of each period. After the dividend of period 15 has been paid, the market closes and you will not receive any further dividends for the shares that you own. After this round is finished, a new round of 15 period starts, in which you can buy and sell shares. Since all rounds are independent, shares and Taler from the previous period are not at your disposal anymore. Instead, you receive the same endowment of shares and Taler that you had at the beginning of round one. The experiment consists of 3 rounds with 15 periods each.

**Average Holding Value** The table “Average Holding Value”, which is attached to these instructions, is meant to facilitate your choices. The table shows how much dividend a share pays on average, if you hold it from the current period until the last period, i.e. period 15 of this round. The first column indicates the current period. The second column gives the average earnings of a share if it is held from this period until the end of the round. These earnings are calculated as the average dividend, 12, multiplied by the number of remaining periods, including the current period.

**Predictions** In addition to the money you earn by trading shares, you can earn additional money by predicting the trading prices. In every period, before you can trade shares, you will be asked to predict the trading prices in all future periods. You will indicate your forecasts in a screen that looks exactly like the screen in front of you. The cells correspond to the periods for which you have to make a forecast. Each cell is labeled with the period for which you are asked to make a forecast. The amount of Taler you can earn with your forecasts is calculated as follows.

You can earn money on each and every forecast. The accuracy is calculated separately for each forecast. For example, in period 2, your forecast from period 1 and your forecast from period 2 are evaluated separately. If both forecast are within 10% of the actual price, you earn  $2 \cdot 5 = 10$  Taler. If one is within 10% of the actual price and one is within 25% of the actual price, but not within 10%, you earn  $5 \text{ Taler} + 2 \text{ Taler} = 7 \text{ Taler}$ .

**Your Payoff** For your participation you receive a fixed payment of 5 Euro and a payment that depends on your actions. The latter part of the payment is calculated for each round, as the amount of Taler that you have at the end of period 15, after the last dividend has been paid, plus the amount of Taler you receive for your forecasts. Your payoff for each round is calculated as:

The amount of Taler you have at the beginning of period 1  
+ the dividends you receive  
+ Taler that you receive from selling shares  
– Taler that you spend on shares  
+ Taler that you earn with your forecasts.

The total payment that you receive in Euro consists of the sum of Taler you earn in all three rounds, multiplied by  $1/90$ , plus the fixed payment of 5 Euro.

Period	Average Holding Value
1	180
2	168
3	156
4	144
5	132
6	120
7	108
8	96
9	84
10	72
11	60
12	48
13	36
14	24
15	12

## E Extra tables

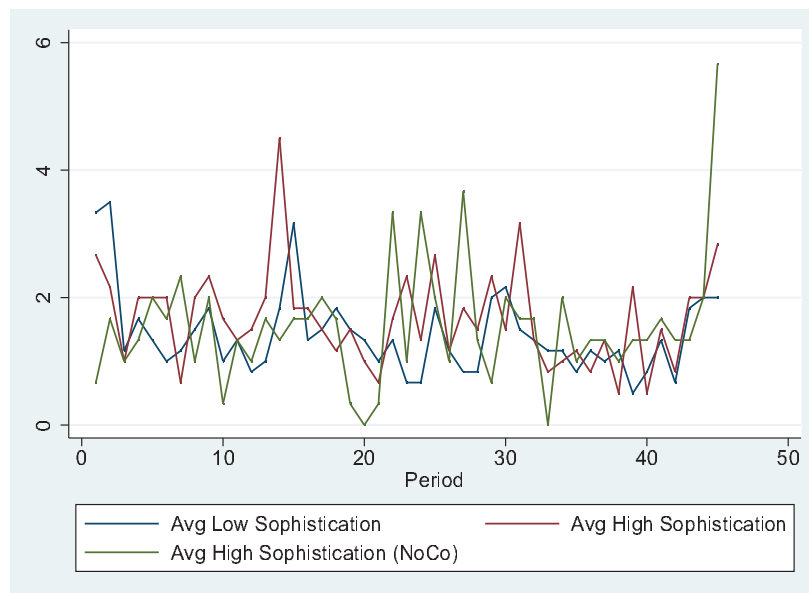


Figure 12: Average transactions across market types

Field of Study	Frequency	Percent	Accumulated Percent
Not reported	6	14.29	14.29
Anthropology	1	2.38	16.67
Business Administration	1	2.38	19.05
Business Mathematics	1	2.38	21.43
Economics	1	2.38	23.81
Electrical Engineering	1	2.38	26.19
Energy Technology	3	7.14	33.33
Engineering	2	4.76	38.10
English / American Studies	1	2.38	40.48
Environmental Engineering	1	2.38	42.86
German studies	1	2.38	45.24
Industrial Engineering	5	11.90	57.14
Landscape Planning	1	2.38	59.52
Law	2	4.76	64.29
Mathematics	1	2.38	66.67
Political science	1	2.38	69.05
Psychology	2	4.76	73.81
Romance languages and literature	1	2.38	76.19
Social sciences	1	2.38	78.57
Sports Science	1	2.38	80.95
Theology	1	2.38	83.33
Transportation	2	4.76	88.10
other	5	11.90	100.00
Total	42	100.00	

Table 11: Low sophistication subjects (self reported) Field of Study

Field of Study	Frequency	Percent	Accumulated Percent
Not reported	4	6.35	6.35
Biology	1	1.59	7.94
Business Mathematics	1	1.59	9.52
Chemistry	1	1.59	11.11
Computer science	2	3.17	14.29
Economic computer science	3	4.76	19.05
Economics	4	6.35	25.40
Electrical Engineering	2	3.17	28.57
Energy Technology	2	3.17	31.75
Engineering	10	15.87	47.62
Engineering Sciences	1	1.59	49.21
Geography	1	1.59	50.79
Industrial Engineering	10	15.87	66.67
Law	1	1.59	68.25
Mathematics	12	19.05	87.30
Musicology	1	1.59	88.89
Psychology	1	1.59	90.48
Technical computer science	1	1.59	92.06
Transportation	3	4.76	96.83
other	2	3.17	100.00
Total	63	100.00	

Table 12: High Sophistication subjects (self reported) Field of Study

	Low		High		$R^2$ Low/High
	Roundtrend	Periodtrend	Roundtrend	Periodtrend	
Round 1		.103*** (.004)		.875*** (.003)	.659/.961
Round 2	.536*** (.010)	.061*** (.006)	.905*** (.004)	.075*** (.004)	.885/.992
Round 3	.739*** (.010)	-.002 (.004)	.897*** (.005)	.101*** (.005)	.899/.997

*Notes:* The null hypothesis is that the coefficient is equal to zero (\* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )).

Table 4a: Estimated coefficients for Roundtrend and Periodtrend in the adaptive model without Clustering.

	Fundamental value ( $\gamma$ ) Low	Fundamental value ( $\gamma$ ) High	$R^2$ Low/High
Round 1	-.090*** (.025)	.778*** (.008)	.617/.842
Round 2	.628*** (.021)	.984*** (.003)	.790/.978
Round 3	.793*** (.015)	.956*** (.002)	.844/.988

*Notes:* The null hypothesis is that the coefficient is equal to one (\* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )).

Table 5a: Estimated coefficients in the fundamental value model without clustering.

	Low		High		$R^2$ Low/High
	$\alpha$	$\beta$	$\alpha$	$\beta$	
Round 1	1.07 (3.68)	.620*** (.142)	8.82*** (2.21)	1.44*** (.168)	.178/.369
Round 2	-8.92*** (2.78)	.365*** (.138)	-5.25*** (1.08)	.445*** (.076)	.067/.209
Round 3	-10.3*** (2.35)	.356*** (.115)	-2.53 (1.72)	.694** (.130)	.094/.179

*Notes:* The null hypothesis is that the coefficient for  $\alpha$  is zero (\* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )). For  $\beta$  the null hypothesis is that the coefficient is equal to one (\* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )).

Table 6a: Relationship between actual and predicted price without clustering.