Appendix

General Instructions for the Experiment

You are taking part in an experiment in economics. This experiment is part of a research project conducted by the Swiss Federal Institute of Technology, Zurich. It is financed solely by research funds of the above-mentioned institution. The experiment's aim is to analyze people's financial decision-making behavior in the context of uncertainty.
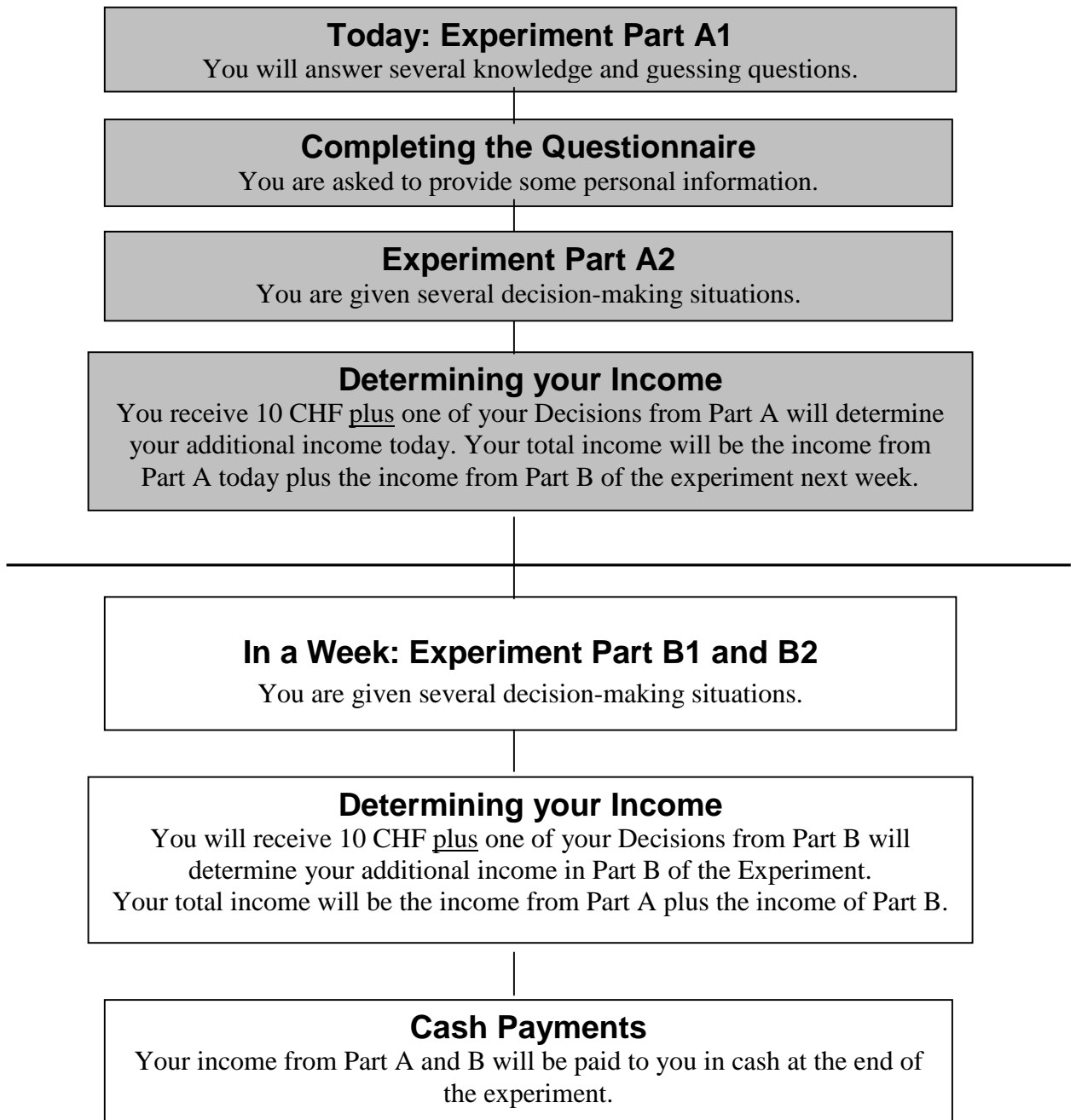
As you have seen on the registration to this experiment, it is split into two parts which will take place on different days, i.e. The first part is today and the second part is in a week. **The two parts of this experiment will be paid separately, but you will receive your whole income from the two parts at the end of the second experiment in a week.**

Your participation today is compensated with a lump-sum payment of CHF 10.-- <u>plus</u> you can earn additional income, the amount of which depends on chance as well as on your decisions. **It is therefore useful to read the following instructions very carefully.** You will also receive another lump sum payment of 10 CHF plus additional income from Part B next week. The total for both parts will be paid directly to you in CASH next week.

During the course of the experiment conversations are not allowed between participants. Violations of this rule will lead to exclusion from the experiment and from all payments. In case you have any questions, please contact the monitor.

Your Participation Number in this Experiment is:

The following scheme provides an overview of the course of the experiment. Every step will be explained in detail during the course of the experiment. There are two separate parts: Part A and Part B.

Today: Experiment Part A1
You will answer several knowledge and guessing questions.

Completing the Questionnaire
You are asked to provide some personal information.

Experiment Part A2
You are given several decision-making situations.

Determining your Income
You receive 10 CHF plus one of your Decisions from Part A will determine your additional income today. Your total income will be the income from Part A today plus the income from Part B of the experiment next week.

In a Week: Experiment Part B1 and B2
You are given several decision-making situations.

Determining your Income
You will receive 10 CHF plus one of your Decisions from Part B will determine your additional income in Part B of the Experiment.
Your total income will be the income from Part A plus the income of Part B.

Cash Payments
Your income from Part A and B will be paid to you in cash at the end of the experiment.

If you have any questions, please contact the monitor. The experiment will not start before all participants are familiar with these general instructions.

All the data gathered in this experiment is only for scientific purposes. That means the data will be anonymous and used only for academic purposes within the ETH Zürich.

Do you have any questions?

Explanation of Part A1

In this part, we will ask you two different kinds of questions about your knowledge and your knowledge-based behavior in guessing.

Please look at the examples on the next page!

Together with these instructions you received 10 sheets with two questions on each. You are asked to give an answer to each question and to state how sure you are in regard to the previously answered question. The ETH Zürich asks you to answer these questions carefully and to fill out the 10 sheets <u>in order and completely</u>.

After answering all the questions, please inform the monitor. Then we will ask you to fill in a questionnaire. After having finished the questionnaire, the next set of situations will be handed out. How these situations look will be explained in the instructions of Part A2.

Determining your Income

One of your decisions in Part A2 of the experiment will determine your additional income. However, your income from A2 depends on your answers in Part A1. Giving an injudicious answer or stating a meaningless probability in A1 can diminish your income in Part A2. How exactly the income will be determined will be explained in detail Part A2.

All the data gathered in this experiment is only for scientific purposes. That means the information will be anonymous and used only for research purposes within the ETH Zürich.

Do you have any questions?

Example Questions

The following is an example of a question about your knowledge:

Which of the following two statements is correct:

I.   A European call option gives the holder the right to buy the underlying asset in a certain time period for a certain price.

II. A European call option gives the holder the right to buy the underlying asset at a certain date for a certain price.

| (II)....... | **is the correct statement.** |

You have given a statement on the question at which time a European call option can be exercised. How sure are you about your answer (if you just don't know, your answer should be 50%, thus your answer should always be between 50 and 100%):

I am | ....% | **sure that my answer is correct.**

The following is an example of a knowledge-based guessing question:

The stock of the company Think Tools AG, which is in the business of software development and consultancy, had a price of 29.8 CHF on the 6th of November 2001 on the Swiss market exchange.

Indicate which of the following statements you believe:

I.   The price of the stock will be lower than 32 CHF on the 12th of November 2001.

II. The price of this stock will be higher than or equal to 32 CHF on the 12th of November 2001.

I believe statement | (II)....... |

You have stated your belief on the question if the price of Think Tools is higher or lower than 32 CHF on the 12th of November. How sure are you about your answer (if you just don't know, your answer should be 50%, thus your answer should always be between 50 and 100%)

I am | ....% | **sure of my answer.**

Explanation of Part A2

In this part you will have the opportunity **to choose between a bet on your answer to a question or a bet on a lottery**. The example on the next page explains your choices and how your income is determined.

Please look at the example on the next page!

Together with these instructions you received 10 white decision sheets with 2 choices on each. Please fill in all twenty numbered choices; each of them in turn and completely. One of your decisions in this Part A2 will determine the amount of money you earn today.

Determining Your Income in Part A

After completing all choices you will roll a twenty-sided die. The number occurring indicates the choice that is relevant. Any of your decisions in Part A2 is therefore equally likely to determine your income today.

For the relevant choice:

- If you chose **OPTION 1**, your income depends on your answer. If your answer is correct, you will earn 40 CHF. If your answer was wrong you earn 0.
- If you chose **OPTION 2**, your income will be determined by the following procedure:

  In the example above, the Option 2 bet was: 40 SFr. with probability 75%, nothing with probability 25%. You roll two ten sided dice. The red die defines the first digit, the orange die, the second digit of a number between 1 and 100 (00 means 100). If a number less than or equal to 75 occurs you win 40 CHF, but if instead one of the numbers from 76 to 100 occurs you win 0.

After all participants' incomes have been determined, today's session is over. Please return *all* sheets and documents we handed out. You will receive a statement indicating the amount ETH will pay you for Part A (10 CHF plus your additional income) when you attend the experiment's part B. You will also receive another lump sum payment of 10 CHF plus additional income from Part B next week. The total for both parts will be paid to you in CASH next week.

After you have read these instructions, and if no further questions should arise, please start to fill in the decision sheets. Please work through all sheets in turn and work through *all* decision situations on a sheet. As soon as you have finished all ten sheets, please contact your monitor. Thank you.

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Do you have any questions?

Example Choice

This page contains an example of the choices you will make and an explanation of how your income is determined.

This is an example of a numbered choice. It will start with a question that you previously answered in Part A1 and your answer.

(Previous Question from Part A1)

Which of the following two statements is correct:

I   A European call option gives the holder the right to buy the underlying asset in a certain time period for a certain price.

II   A European call option gives the holder the right to buy the underlying asset at a certain date for a certain price.

Your answer was   II   (Suppose your answer from Part A1 is II as shown)

You must choose whether your income depends on your answer (Option 1) or the bet on the lottery (Option 2)

Option 1: | This is a bet on the correctness of your answer to the question from Part A1.

40 CHF   **If your answer is correct.**

0 CHF   **If your answer in incorrect**

I choose option 1 ☐

Option 2: | This is a bet on a lottery. Whether you win depends on the roll of the dice. The probabilities stated may be different for each question.

40 CHF   **with probability 75%**

0 CHF   **with probability 25%**

I choose option 2 ☐

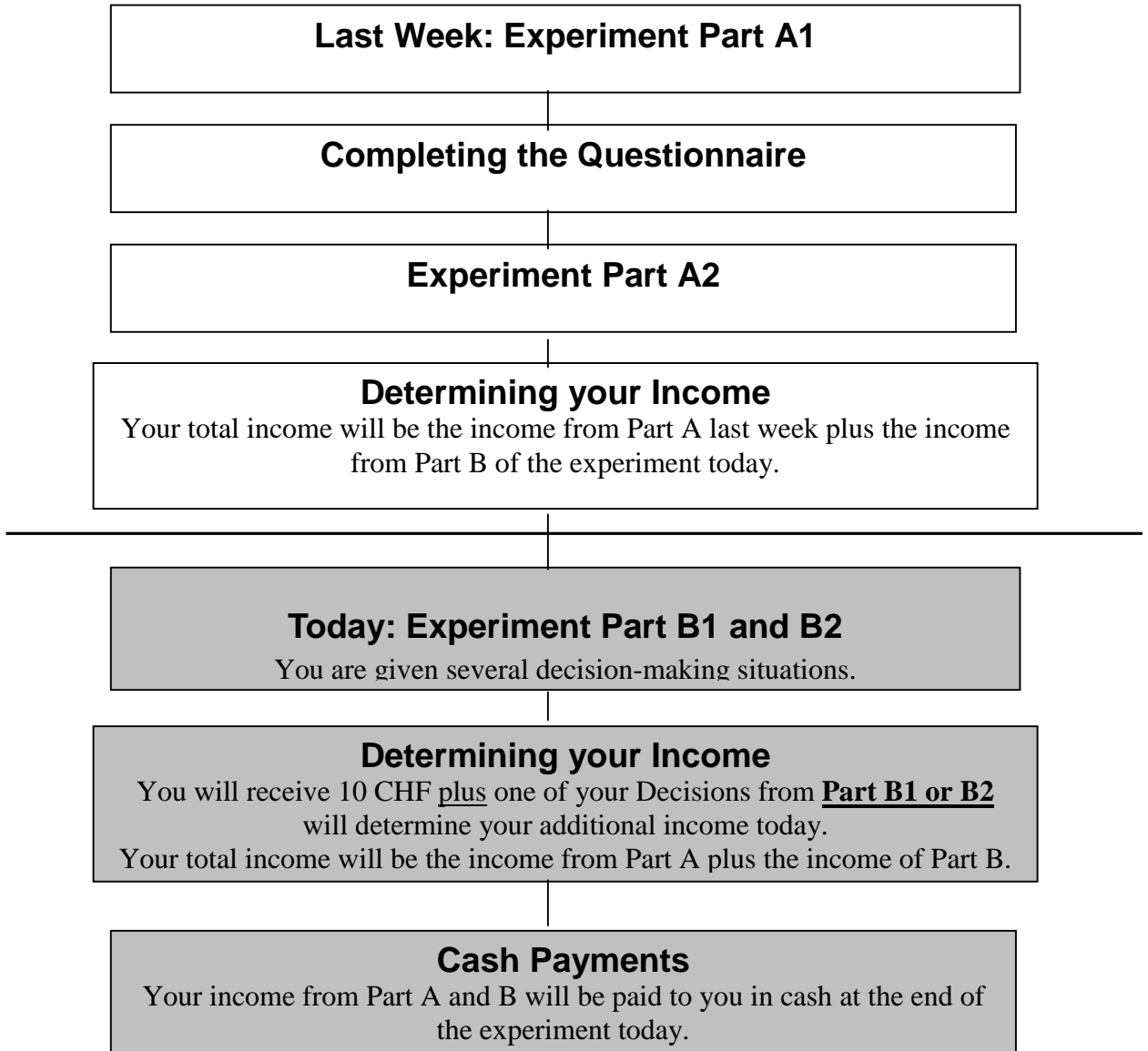# General Instructions for the Experiment, Part B

You are in the second part of an experiment in economics. This experiment is a research project conducted by the Swiss Federal Institute of Technology, Zurich. It is financed solely by research funds of the above-mentioned institution. The experiment's aim is to analyze people's financial decision-making behavior in the context of uncertainty.

You have already attended part A last week. Your participation in this part B of the experiment is again compensated with a lump-sum payment of CHF 10.--. During the course of the experiment you can again earn additional income, the amount of which depends on chance as well as on your decision-making. **It is therefore useful to read the following instructions very carefully.** After the end of the experiment the money you earned in this part B as well as the money you earned last week in part A will be paid to you directly in cash.

During the course of the experiment conversations are not allowed between participants. Violations of this rule will lead to exclusion from the experiment and from all payments. In case you have any questions, please contact your instructor.

Your Participation Number in this Experiment is:

The following scheme provides an overview of the experiment. Every step of Part B will be explained in detail during the session. The different sections, namely B1 and B2, will be independent of one another.

Last Week: Experiment Part A1

Completing the Questionnaire

Experiment Part A2

Determining your Income Your total income will be the income from Part A last week plus the income from Part B of the experiment today.

Today: Experiment Part B1 and B2 You are given several decision-making situations.

Determining your Income You will receive 10 CHF plus one of your Decisions from **Part B1 or B2** will determine your additional income today. Your total income will be the income from Part A plus the income of Part B.

Cash Payments Your income from Part A and B will be paid to you in cash at the end of the experiment today.

If you have any questions, please contact the monitor. The experiment will not start before all participants are familiar with these general instructions.

After all participants have read these instructions, you will receive the instructions and the decision sheets for Part B1 of the experiment.   *Do you have any questions?*

Explanation for Part B1

Together with these instructions you received eight decision sheets (sheet 1-8). On each sheet there are thirty-nine decisions. You are to fill in these 8 decision sheets; each of them in turn and completely. After all participants have completed **Part B1**, you will be provided with the instructions and the decision sheets for **Part B2** where you will fill in another 4 decision sheets (sheet 9-12).

The setup is as follows: In each situation you can choose between two alternatives: You can either choose a fund or have an amount of money for sure.

- The certain amount varies between CHF 1.-- and CHF 39.--. This means you will obtain certain **income for sure**, if the corresponding decision situation determines your income.

- A fund means an **uncertain income**. The income depends on the market price of that fund on the stock exchange today as compared to yesterday. If today the price of the fund increases by 0.5% or more, you receive CHF 40.--. If the fund does not increase by 0.5% or decreases, you receive nothing.

Please look at the example decision sheet!

There are two different types of funds you will decide upon: *real* funds and *virtual* funds.

There are four different *real* funds (sheet 1-4) — one on each decision sheet. These are funds issued by the Bank Hofmann. Bank Hofmann is a small Swiss bank specialized in the field of private banking. The real fund's price is indicated by its stock market price today at 3 pm.

There are four different *virtual* funds (sheet 5-8) — one on each decision sheet. The prices of these four funds are created by a random number generator based on a probabilistic rule. We will determine the price today using the same process that we used to generate the historical price pattern shown in the figures and the table of each virtual fund's decision sheet.

Example Decision Sheet

In all situations on this decision sheet you can choose whether your income depends on a fund or an amount of money for sure.

If you choose the fund you will get:

40 CHF	If the price of the fund increases by 0.5% at 3 pm today.
0 CHF	If the price of the fund does not increase by 0.5% at 3 pm today.

Your amount of money for sure

Decision situation	↓	I choose the money	I choose the virtual fund
1	1 CHF	☐	☐
2	2 CHF	☐	☐
3	3 CHF	☐	☐
4	4 CHF	☐	☐
5	5 CHF	☐	☐
6	6 CHF	☐	☐
7	7 CHF	☐	☐
8	8 CHF	☐	☐
9	9 CHF	☐	☐
10	10 CHF	☐	☐
11	11 CHF.	☐	☐
12	12 CHF	☐	☐
13	13 CHF	☐	☐
14	14 CHF	☐	☐
15	15 CHF	☐	☐
16	16 CHF	☐	☐
17	17 CHF	☐	☐
18	18 CHF	☐	☐
19	19 CHF	☐	☐
20	20 CHF	☐	☐
21	21 CHF	☐	☐
22	22 CHF	☐	☐
23	23 CHF	☐	☐
24	24 CHF	☐	☐
25	25 CHF	☐	☐
26	26 CHF	☐	☐
27	27 CHF	☐	☐
28	28 CHF	☐	☐
29	29 CHF	☐	☐
30	30 CHF	☐	☐
31	31 CHF	☐	☐
32	32 CHF	☐	☐
33	33 CHF	☐	☐
34	34 CHF	☐	☐
35	35 CHF	☐	☐
36	36 CHF	☐	☐
37	37 CHF	☐	☐
38	38 CHF	☐	☐
39	39 CHF	☐	☐

Explanation:

You will be asked in each decision situation (one through thirty-nine) to mark your choice:

- The amount of money for sure (listed in the second column of the table)

    -or-

- The virtual fund. For example, in situation 1 you can choose between 1 CHF for sure and the virtual fund.

If you choose the fund, your payment depends on it's price determined today. The box in the upper right hand corner shows exactly how your payment is determined.

The table and graphs on your right describe the historical pattern of the fund.

Graphs for the fund are shown below
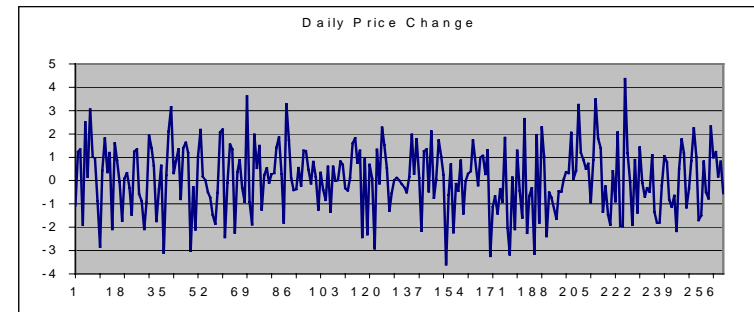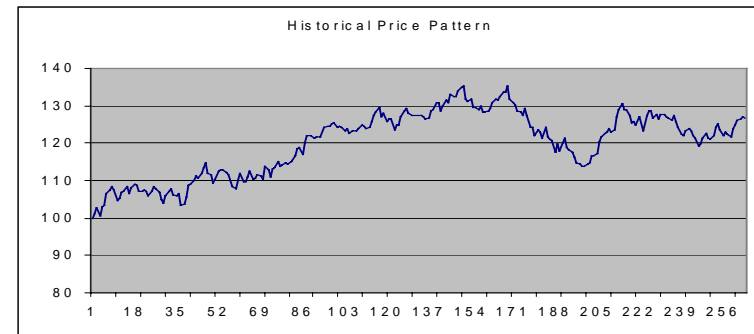**The first graph shows the daily prices for the fund for the last 260 trading days.**
The second graph shows the daily price changes over the same period.
The table contains the daily fund price as well as the daily changes for the last ten days.

Historical Price Pattern

Daily Price Change

Trading day	251	252	253	254	255	256	257	258	259	260
Daily prices	122.04	122.88	122.37	121.61	123.95	124.94	126.18	126.35	127.18	126.63
Daily price changes	-1.50	0.84	-0.51	-0.77	2.35	0.98	1.25	0.17	0.83	-0.56
(% Changes)	(-1.21%)	(0.68%)	(-0.41%)	(-0.63%)	(1.93%)	(0.79%)	(1.00%)	(0.13%)	(0.66%)	(-0.44%)

Determining your Income

At the end of the experiment your income will be determined by one of your decisions from Part B1 or B2 of the experiment. The relevant decision will be chosen at random. All of your decisions from B1 **and** B2 are therefore equally likely to determine your income during the experiment. First you roll a twelve sided die. If one of your decision sheets from Part B1 should become relevant, your income will be determined as follows:

The number appearing on the die gives you the relevant decision sheet. Second you draw a card numbered from 1 to 39. That card determines the decision situation.

In this particular situation, if you chose the certain amount, your income will be this amount.

If the relevant fund you chose is a *real* fund, your income depends on the market price of the fund at 3 pm today. If the fund price increases by 0.5% or more you will earn 40 CHF. If the fund price does not increase by 0.5% or decreases you will earn nothing. The stock prices we are using are the prices announced by the internet stock broker Swissquote on their official homepage and consequently are not known until 3 pm. At 3:15 pm today, we will show you the prices announced on the internet by Swissquote (url: www.swissquote.ch).

If the relevant fund you chose is a *virtual* fund, your income is determined as follows. Prior to today's session, we generated a price for day 261 using the same probabilistic rule that was used to generate the historical price pattern shown in the relevant decision sheet. We repeated the determination process for the price on day 261 forty times. Each of the forty prices is written on a card. You will draw one of these cards to determine today's price for the virtual fund. If the fund price increases by 0.5% or more you will earn 40 CHF. If the fund price does not increase by 0.5% or decreases you will earn nothing.

After you have read these instructions, and if no further questions should arise, please start to fill in the decision sheets. Please work through all sheets in turn and work through *all* decision situations on a sheet. As soon as you have finished all eight sheets, please contact your monitor. Thank you.

All the data gathered in this experiment is only for scientific purposes. That means the data will be anonymous and used only for academic purposes within the ETH Zürich.

Do you have any questions?

Explanation for Part B2

Together with these instructions you received 4 decision sheets. On each decision sheet there are again thirty-nine decisions. You are asked in this Part B2 to fill in these four decision sheets; each of them in turn and completely. In each decision-making situation you have again to decide between a certain amount of money or a fund.

However, in all decision situations of Part B2 you now have information about the probability that the market price will increase by 0.5%.

Again, the setup is as follows: In each situation you can choose between two alternatives: You can either choose a fund or have an amount of money for sure.

- The certain amount varies between CHF 1.-- and CHF 39.--. This means you make a certain **income for sure**.

- A fund means an **uncertain income.** The success of the fund is determined by the same rule as in Part B1, i.e. a 0.5% increase of the price. However, the success of the risky fund depends on the roll of a twenty-sided die and is described more completely below. If the roll of the die indicates that price of the fund increased by 0.5% or more, you receive CHF 40.--. If the fund didn't increase by 0.5% or decreased, you receive nothing.

Please look at the example decision sheet!

Determining your Income

At the end of the experiment your income will be determined by one of your decisions from Part B1 or B2 of the experiment. The relevant decision will be chosen at random. Any of your decisions from B1 **and** B2 is therefore equally likely to determine your income during the experiment. First you roll a twelve sided die. If one of your decisions from Part B2 should become relevant, your income will be determined as follows:

The number appearing gives you the relevant decision sheet. Second you draw a card numbered from 1 to 39. That card determines the decision situation. In this particular situation, if you chose the certain amount, your income will be this amount.

If you chose the risky fund, your income will be determined by the roll of a twenty sided die. Your decision sheet has some numbers from 1 to 20. If one of those numbers is rolled, you win 40 CHF. If some other number is rolled you win nothing.

After you have read these instructions, and if no further questions should arise, please start to fill in the decision sheets. Please work through all sheets in turn and work through *all* decision situations on a sheet. As soon as you have finished all four sheets, please contact your monitor. Thank you.

Cash Payments

After all participants' incomes have been determined, the experiment is over. Please return *all* sheets and documents we handed out to you. You will receive your income plus your lump-sum compensation (CHF 10.--) of **Part A** as well as your income plus your lump-sum compensation (CHF 10.--) of **Part B** in cash.

All the data gathered in this experiment is only for scientific purposes. That means the data will be anonymous and used only for academic purposes within the ETH Zürich.

Do you have any questions?

Example Decision Sheet

In all situations on this decision sheet you can choose whether your income depends on a fund or an amount of money for sure.

If you choose the fund:

Decision situation	Your amount of money for sure ↓	I choose the money	I choose the risky fund
1	1 CHF	☐	☐
2	2 CHF	☐	☐
3	3 CHF	☐	☐
4	4 CHF	☐	☐
5	5 CHF	☐	☐
6	6 CHF	☐	☐
7	7 CHF	☐	☐
8	8 CHF	☐	☐
9	9 CHF	☐	☐
10	10 CHF	☐	☐
11	11 CHF.	☐	☐
12	12 CHF	☐	☐
13	13 CHF	☐	☐
14	14 CHF	☐	☐
15	15 CHF	☐	☐
16	16 CHF	☐	☐
17	17 CHF	☐	☐
18	18 CHF	☐	☐
19	19 CHF	☐	☐
20	20 CHF	☐	☐
21	21 CHF	☐	☐
22	22 CHF	☐	☐
23	23 CHF	☐	☐
24	24 CHF	☐	☐
25	25 CHF	☐	☐
26	26 CHF	☐	☐
27	27 CHF	☐	☐
28	28 CHF	☐	☐
29	29 CHF	☐	☐
30	30 CHF	☐	☐
31	31 CHF	☐	☐
32	32 CHF	☐	☐
33	33 CHF	☐	☐
34	34 CHF	☐	☐
35	35 CHF	☐	☐
36	36 CHF	☐	☐
37	37 CHF	☐	☐
38	38 CHF	☐	☐
39	39 CHF	☐	☐

Explanation:

You will be asked in each decision situation (one through thirty-nine) to mark your choice:

- The amount of money for sure listed in the second column of the table

-or-

- The fund.

For example, in situation 1 you can choose between 1 CHF for sure and the fund.

If you choose the fund, your payment depends on the probability of a 0.5% increase as described in the upper right corner. For this example, the probability that the risky fund will increase by 0.5% or more and you gain 40 CHF is listed as 3 out of 20 (or 15%). Therefore the probability it will not be successful is 17 out of 20 (or 85%) You gain 40 CHF if any of the three numbers out of twenty listed in the box comes up when the twenty-sided die is rolled.

The graph shows the probability of a 0.5% increase as well as the probability of an increase less than 0.5%.

	The fund is successful (increases by 0.5% or more)	**The fund is unsuccessful (increases by less than 0.5%)**
Probability	3/20 (15%)	17/20 (85%)
Your gain	40 CHF	0 CHF
Numbers which indicate a success	1,8,16	

Probability the fund is <u>successful</u>

15%

☐ 40 CHF
☐ 0 CHF

85%

Probability the fund is <u>unsuccessful</u>