<u>**Instructions**</u>

You are about to participate in an experiment in decision making.

Following the instructions on the screen, you will be asked to make some decisions: please read everything very carefully. At the end of the experiment, you will be paid cash according to your results. These results depend both on your decisions and on the decisions of another subject in this room. Your identity during the experiments will not be revealed to the other subjects in the experiment.

All the payoffs in the experiment are expressed in terms of "tokens". Earned tokens will be converted into euros at the end of the experiment according to this exchange rate: **1 Euro = 100 tokens**.

The experiment consists of three separate phases (A, B, C) each one consisting of five periods (1, 2, 3, 4, 5).

At the beginning of each phase, you will be randomly assigned to a fixed pair of two subjects. The pair composition will remain unchanged during the whole phase. At the beginning of a new phase, a new pair will be randomly formed.

In each pair, there are two roles:

- a *firm* that produces dangerous materials and runs the risk of incurring in an accident;

- an *insurer* that offers the firm a contract to cover her losses.

Before the experiment will start, you will be assigned a role: either the firm or the insurer. Your role will be the same for all the experiment, i.e. in each of the three phases.

In each period, the firm is given a fixed initial profit, deriving from selling its products. This profit is equal to **1.500 tokens**. However, if a loss occurs, the firm may lose part of this profit or all. In each phase, both the firm and the insurer are given a "*Damage Estimation Table*" showing the objective **damage** that the accident may cause and the **probability** at which a specific damage is generated.

The following table is a possible example:

	Small Loss	Medium Loss	Large Loss
Damage (in tokens)	200	500	1.500
Probability	**0.40**	**0.20**	**0.08**

Damage Estimation Table

According to this table, the accident does not occur with probability 0.32 (32%). With probability 0.40 (40%) it occurs and generates a small damage: the firm loses 200 tokens. With probability 0.20 (20%) it occurs and generates a medium damage: the firm loses 500 tokens. With probability 0.08 (8%) it occurs and generates a large damage: the firm loses 1.500 tokens.

The firm has the possibility to invest in safety. The safety prevention would reduce the probability that any damage occurs. In each period, the subject playing in the role of the firm is asked if he/she wants to invest at given cost, so to rely on a "*modified*" damage estimation table.

The following table is a possible example: at a cost of **270 tokens**, the firm can invest in safety, thereby reducing the probabilities of damages shown in the Damage Estimation Table into those shown in the following one:

	Small Loss	Medium Loss	Large Loss
Damage (in tokens)	200	500	1.500
Probability	**0.20**	**0.10**	**0.04**

Modified Damage Estimation Table

According to this example, if the subject playing in the role of the firm chooses to invest, before knowing whether the damage has occurred or not, 270 tokens are collected from his/her profits.

The investment decision of the firm is private information. This means that only the subject playing in the role of the firm knows if he/she has invested or not in safety. That is, neither the subject playing in the role of the insurer in the same pair nor any other subject in the room know his/her level of investment in safety.

At the beginning of the period, the subject playing in the role of the insurer faces a menu of **contracts** and has to choose which one to offer to the firm. Each contract is formed by two parts: a **premium** at which the contract is sold and a **deductible**. The premium is the price at which the insurance is sold. The deductible represents the amount of the loss that – although the firm buys the insurance – is not taken in charge by the insurer: it has to be paid by the firm.

The following "*Insurance Table*" is an example.

	Premium	Deductible
Contract A	350	0
Contract B	250	200

Insurance Table

According to this example,

- if the firm buys **Contract A**, a premium of 350 tokens is paid by the firm to the insurer. Since the deductible is equal to zero, if any damage occurs, the insurer covers all the damages. Therefore, the firm has no loss;

- if the firm buys **Contract B**, a premium of 250 tokens is paid by the firm to the insurer. If a small damage of 200 tokens occurs, since the deductible is 200, the firm will bear the entire loss. If the damage is of 500 tokens, the insurance contract B covers the loss that exceeds the deductible: the insurer covers the firm for 300 tokens (loss – deductible = 500 – 200 = 300) and the firm looses 200 tokens. In the same way, if the damage is of 1.500 tokens, the insurer covers the firm for 1.300 tokens (loss – deductible = 1.500 – 200 = 1.300) and the firm looses 200 tokens.

At the beginning of each phase, the subject playing as the insurer is presented with many contracts with different deductibles and premiums and he/she has to choose which one to offer to the firm. The insurer cannot modify the contract chosen at the beginning of a phase. Therefore, once he/she chooses a contract from the Insurance Table, the insurer can offer only that contract to the firm in each of the five periods of that phase. In each period of the phase, the firm has to choose whether or not to buy the contract offered by the insurer.

If the firm does not buy the contract, the insurer is left without any profit.

If the firm buys the contract, the insurer receives as profit:

- the premium of the contract, if the accident does not occur;

- the deductible, if the accident occurs.

In each period, given the possible losses and probabilities that the firm faces (the initial probabilities, if she has not invested in safety, or the modified probabilities, if she has paid the investment cost), a computer will randomly determine, for each firm independently, if one of the three losses occurs.

The fact that at the end of the period a loss has occurred or not is made public information to both subjects in a pair, whatever the fact that the investment in safety is made or not and that the insurance contract is bought or not.

Final profits in each period

Firm

The firm receives 1.500 tokens at the beginning of each period.

The firm can invest (or not) in safety measures by paying a cost to reduce the probabilities of the accident.

Moreover, the firm can accept (or reject) the contract offered by the insurer (each contract is composed by a premium and a deductible).

If the accident does not occur in a period and the firm is not insured, his/her final profit in the period is the initial profit, minus the investment in safety (if any).

If the accident does not occur in a period and the firm is insured, his/her final profit in the period is the initial profit, minus the investment in safety (if any), minus the insurance premium.

If the accident occurs in a period and the firm is not insured, his/her final profit in the period is the initial profit, minus the investment in safety (if any), minus the loss caused by the damage. In particular, if the loss is higher than the initial profit, the firm earns 0 (there is no debt of the firm that is moved to the next period).

If the accident occurs in a period and the firm is insured, his/her final profit in the period is the initial profit minus the investment in safety (if any), minus the insurance premium, minus the deductible (if any).

Insurer

At the beginning of the phase, the insurer chooses one contract from the Insurance Table, the one that may maximize its profits in the five periods of the phase.

Then, he/she offers the chosen contract to the firm.

If the **firm does not buy** the insurance contract in a period, the insurer is left with **0 profits** in that period.

If the **firm buys** the insurance contract, the insurer earns:

- the **premium** paid by the firm **if the accident does not occur** ;

- the **deductible** paid by the firm **if the accident occurs**.

Summary of period 1:

1. The insurer chooses one insurance contract to offer to the firm.
2. The firm, after having seen the insurance contract offered by the insurer, decides simultaneously:
   - to invest or not in safety measures;
   - to buy or not the insurance contract.
3. Both the firm and the insurer learn the profits of the period and if an accident has occurred.

Summary of periods from 2 to 5:

1. The firm, after having seen the insurance contract offered in period 1 by the insurer, decides simultaneously:
   - to invest or not in safety measures;
   - to buy or not the insurance contract.
2. Both the firm and the insurer learn the profits of the period and if an accident has occurred.

Payment at the end of the experiment

At the end of the experiment, we will randomly select from an envelop containing three letters (A, B, C) the phase that determines subjects' earnings.

The **insurer** will be paid **the sum of the final profits collected in that phase**, i.e. each of the five periods final profits of that phase will be converted in euros.

For the **firm**, we will randomly select from another envelop containing five numbers (1, 2, 3, 4, 5), the period of the above selected phase that will determine his/her earnings. **Only the final profits of that period** will be converted in euros.

Phase A

Sizes and Probabilities of Damages:

Loss	Small	Medium	Large
Damage	200	500	1.500
Probability	**0.30**	**0.20**	**0.10**

Investment cost: **155**

Loss	Small	Medium	Large
Damage	200	500	1.500
Probability	**0.15**	**0.10**	**0.05**

Set of Insurance contracts:

	Deductible	Premium
Contract A	0	310
Contract B	0	465
Contract C	0	620
Contract D	200	190
Contract E	200	285
Contract F	200	380
Contract G	500	100
Contract H	500	150
Contract I	500	200

Phase B

Sizes and Probabilities of Damages

Loss	Small	Medium	Large
Damage	200	500	1.500
Probability	**0.50**	**0.20**	**0.07**

Investment cost: **153**

Loss	Small	Medium	Large
Damage	200	500	1.500
Probability	**0.25**	**0.10**	**0.035**

Set of Insurance contracts:

	Deductible	Premium
Contract A	0	305
Contract B	0	458
Contract C	0	610
Contract D	200	151
Contract E	200	227
Contract F	200	302
Contract G	500	70
Contract H	500	105
Contract I	500	140

Phase C

Sizes and Probabilities of Damages

Loss	Small	Medium	Large
Damage	200	500	1.500
Probability	**0.70**	**0.20**	**0.04**

Investment cost: **150**

Loss	Small	Medium	Large
Damage	200	500	1.500
Probability	**0.35**	**0.10**	**0.02**

Set of Insurance contracts:

	Deductible	Premium
Contract A	0	300
Contract B	0	450
Contract C	0	600
Contract D	200	112
Contract E	200	168
Contract F	200	224
Contract G	500	40
Contract H	500	60
Contract I	500	80