Online Appendix for "Mis-judging merit: The effects of adjudication errors in contests"

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Appendix A: Proofs

Proof of Proposition 1. We need to prove that the equilibrium distribution of bids under inclusion error stochastically dominates the equilibrium distribution of bids under exclusion error, over the union of the two supports. The proof consists of two parts. In part (i), we show that $F^E(b) \geqslant F^I(b)$ for all b in the union of the supports of the two distributions. In part (ii), we show that the support of F^E is contained in the support of F^I. Denote $\bar{b}^E$ and $\bar{b}^I$ the upper bounds of the supports of $F^E(b)$ and $F^I(b)$, respectively.

i) Consider the two equilibrium distribution functions expressed in Equations **??** and **??** above. Notice first that for $b = \max\left\{\bar{b}^E, \bar{b}^I\right\}$, $F^E(b) = F^I(b) = 1$. For $b < \max\left\{\bar{b}^E, \bar{b}^I\right\}$, the condition $F^E(b) \geqslant F^I(b)$ is satisfied if and only if

$$u(w) - u(w-b) \geqslant (1-p)[u(w) - u(w-b)] + p[u(w+\pi) - u(w+\pi-b)].$$

Since, due to concavity it holds that

$$u(w) - u(w-b) \geqslant u(w+\pi) - u(w+\pi-b),$$

$F^E(b) \geqslant F^I(b)$ for all $b < \max\left\{\bar{b}^E, \bar{b}^I\right\}$.

ii) Next, we show that $\bar{b}^E \leqslant \bar{b}^I$. Suppose that this condition is not satisfied, i.e., suppose that $\bar{b}^E > \bar{b}^I$. Then, it must be the case that $F^E(\bar{b}^I) < 1 = F^I(\bar{b}^I)$, which is impossible due to part (i).

This implies that, for $b \geqslant \bar{b}^I$, $F^I(b) = F^E(b) = 1$; for $\bar{b}^E \leqslant b < \bar{b}^I$, $F^E(b) = 1 > F^I(b)$; for $b < \bar{b}^E$, $F^E(b) \geqslant F^I(b)$. Therefore, the distribution of bids under inclusion error stochastically dominates the equilibrium distribution of bids under exclusion error. Hence, $\mu^E \leqslant \mu^I$.■

Proof of Proposition 2. We need to prove that, in a prize scheme, the equilibrium distribution of bids under inclusion error stochastically dominates the equilibrium distribution of bids under exclusion error, over the union of the two supports. The proof consists of two parts. In part (i), we show that $G^E(b) \geqslant G^I(b)$ for all b in the union of the supports of the two distributions. In part (ii), we show that the support of G^E is contained in the support of G^I.

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i) Consider the two equilibrium distribution functions expressed in Equations **??** and **??** above. Notice first that for $b = \max\left\{\bar{b}^E, \bar{b}^I\right\}$, $G^E(b) = G^I(b) = 1$. For $b < \max\left\{\bar{b}^E, \bar{b}^I\right\}$, the condition $G^E(b) > G^I(b)$ is satisfied if and only if

$$\lambda u(b) > (1-p)\lambda u(b) + p[u(\pi) - u(\pi - b)].$$

Notice that when $u(x)$ is linear in x, $u(b) = u(\pi) - u(\pi - b)$. Thus, for all $\lambda > 1$, such that $\lambda u(b) > u(b)$, condition is verified. When $u(x)$ is (strictly) concave in x, due to diminishing sensitivity, it holds that $u(b) > u(\pi) - u(\pi - b)$. It follows that, for all $\lambda > 1$,

$$\lambda u(b) > (1-p)\lambda u(b) + pu(b) > (1-p)\lambda u(b) + p[u(\pi) - u(\pi - b)].$$

Thus, $G^E(b) > G^I(b)$ for all $b < \max\left\{\bar{b}^E, \bar{b}^I\right\}$.

ii) Next, we show that $\bar{b}^E < \bar{b}^I$. Suppose that this condition is not satisfied, i.e., suppose that $\bar{b}^E \geqslant \bar{b}^I$. Then, it must be the case that $G^E(\bar{b}^I) \leqslant 1 = G^I(\bar{b}^I)$, which is impossible due to part (*i*) result.

Given that $G^E(b) > G^I(b)$ for all $b < \bar{b}^I$ and $G^I(b) = G^E(b)$ at $b = \bar{b}^I$, then the distribution of bids under inclusion error stochastically dominates the equilibrium distribution of bids under exclusion error. Hence, $\mu^E < \mu^I$. ■

Proof of Proposition 3. When $u(x)$ is linear, the two equilibrium distribution coincide. Thus, we need to prove that, when $u(x)$ is (strictly) concave, in a penalty scheme the equilibrium distribution of bids under exclusion error stochastically dominates the equilibrium distribution of bids under inclusion error. The proof consists of two parts. In the first part (*i*), we show that $L^I(b) > L^E(b)$ for all b in the union of the supports of the two distributions. In the second part (*ii*), we show that the support of L^I is contained in the support of L^E.

i) Consider the two equilibrium distribution functions expressed in Equations **??** and **??** above. Notice first that for $b = \max\left\{\bar{b}^E, \bar{b}^I\right\}$, $L^I(b) = L^E(b) = 1$. For $b < \max\left\{\bar{b}^E, \bar{b}^I\right\}$, the condition $L^I(b) > L^E(b)$ is satisfied if and only if

$$(1-p)[u(\pi + b) - u(\pi)] + pu(b) > u(\pi + b) - u(\pi),$$

which holds true as, due to (strict) concavity, $u(b) > u(\pi + b) - u(\pi)$ for all $b \geqslant 0$.

ii) Next, we show that $\bar{b}^I < \bar{b}^E$. Suppose that this condition is not satisfied, i.e., suppose that $\bar{b}^I \geqslant \bar{b}^E$. Then, $L^I(\bar{b}^E) \leqslant 1 = L^E(\bar{b}^E)$, which is impossible given part (*i*) result.

Thus, given that $L^I(b) > L^E(b)$ for all $b < \bar{b}^E$ and $L^I(b) = L^E(b)$ at $b = \bar{b}^E$, then the distribution of bids under exclusion error stochastically dominates the equilibrium distribution of bids under inclusion error. Hence, $\mu^I < \mu^E$. ■

Proof of Proposition 4. To make comparisons of equilibrium bidding behavior of bidders with linear prospect-theory preferences across framings, recall that their equilibrium behavior in a penalty scheme coincides with the equilibrium behavior of bidders with linear expected-utility preferences in a prize scheme (described in Section 2.1). For a prize scheme, we consider instead the expressions for the equilibrium distribution functions derived in Section 2.3.

Under no errors, the relation between the equilibrium distribution function of bids in a penalty (L^N) and in a prize (G^N) scheme is the following:

$$L^N(b) = \frac{b}{\pi} \leqslant \frac{\lambda b}{\pi + (\lambda - 1)b} = G^N(b),$$

which holds true for all b and all $\lambda > 1$. Given that the supports of the two distribution functions coincide and they are equal to $[0, \pi]$, L^N stochastically dominates G^N (first-order stochastic dominance), and thus the expected bid in a penalty scheme is larger than the expected bid in a prize scheme.

Under inclusion error, the relation between the equilibrium distribution function of bids in a penalty (L^I) and in a prize (G^I) scheme is the following:

$$L^I(b) = \frac{b}{(1-p)\pi} \leqslant \frac{[(1-p)\lambda + p]b}{(1-p)[\pi + (\lambda - 1)b]} = G^I(b),$$

which holds true for all b and all $\lambda > 1$, given that the support for both distribution functions is $[0, (1-p)\pi]$. Thus, L^I stochastically dominates G^I, so that the expected bid in a penalty scheme is larger than the expected bid in a prize scheme.

Proposition **??** establishes that, also for linear preferences, it holds that $G^I(b) < G^E(b)$ for all b. Since in a penalty scheme the effects of exclusion and inclusion errors are symmetric, i.e., $L^I(b) = L^E(b)$, then it follows that $L^E(b) = L^I(b) \leqslant G^I(b) < G^E(b)$. Given that the support for L^E is $[0, (1-p)\pi]$—as in the exclusion error scenario of a prize scheme with linear expected-utility preferences—and the support for G^E is $[0, \frac{(1-p)\pi}{1+p(\lambda-1)}]$, where $\frac{(1-p)\pi}{1+p(\lambda-1)} < (1-p)\pi$ for all $\lambda > 1$, it follows that $L^E(b) < G^E(b)$ for all b, i.e., L^E stochastically dominates G^E. Thus, the expected bid in a penalty scheme is larger than the expected bid in a prize scheme.

Under adjudication error, the relation between the equilibrium distribution function of bids in a penalty (L^A) and in a prize (G^A) scheme is the following:

$$L^A(b) = \frac{b}{(1-2p)\pi} \leqslant \frac{[(1-p)\lambda + p]b}{(1-2p)[\pi + (\lambda - 1)b]} = G^A(b),$$

which holds true for all b and all $\lambda > 1$. The support of G^A is $[0, \frac{(1-2p)\pi}{1+p(\lambda-1)}]$, where $\frac{(1-2p)\pi}{1+p(\lambda-1)} \leqslant (1-2p)\pi$, the upper bound of the support of L^A. Thus, L^A stochastically dominates G^A, so that the expected bid in a penalty scheme is larger than the expected bid in a prize scheme. ■

Appendix B: Further evidence

In the post-experimental questionnaire, subjects perform the risk-aversion elicitation task by Dave *et al.* (2010). Specifically, subjects have to choose a lottery within a menu of six lotteries, where each lottery pays either one of two payoffs, depending on the outcome of a coin toss (i.e., with probability 0.5). Subjects are informed that choices in this task do not influence their final payoff, but they are asked to choose as if the choice had real monetary consequences. The lotteries are reported in Figure B1 below.

Figure B1: Risk-aversion elicitation task by Dave *et al.* (2010)

Lottery	Event	Payoff
1	Head	28
	Tail	28
2	Head	24
	Tail	36
3	Head	20
	Tail	44
4	Head	16
	Tail	52
5	Head	12
	Tail	60
6	Head	2
	Tail	70

Dave *et al.* (2010) establish that the optimal choice for risk-averse individuals is gamble 3 or higher, for risk-neutral individuals gamble 2 or lower, and for risk-loving individuals gamble 1. Figure B2 below reports the distribution of choices in our experiment, which is very similar to the distribution in the original paper. The risk-aversion indicator that we use in the empirical analysis of Section 4.4 is defined as $7 - n$ for gamble choice n.

In the post-experimental questionnaire subjects also perform the loss-aversion elicitation task by Gächter *et al.* (2022), where they have to indicate for each lottery from a list of six, whether they would accept it or reject it. Each lottery produces either a gain of 6 euros or a loss whose amount varies across lotteries. Figure B3 below reports the list of lotteries, while Figure B4 reports the distribution of the loss-aversion indicator of subjects in our experiment: value 1 (7) corresponds to the choice of accepting (rejecting) all lotteries, and intermediate values are such that value n corresponds to the choice of rejecting the last $n - 1$ lotteries. Higher values of the indicator are associated with a higher degree of loss aversion. Gächter *et al.* (2022), on the basis of a simple cumulative prospect-theory model without probability weighting and with a linear utility function, establish that values larger than 3 are associated with a (strictly) positive degree of loss aversion. Notice that even if the distribution of parameters in Gächter *et al.* (2022) is similar to ours, their median subject's value for the loss-aversion indicator is 4, while ours is 5, that is, the distribution is shifted to the right towards more loss aversion.

Figure B2: Distribution of the risk aversion indicator measured with Dave *et al.* (2010) task

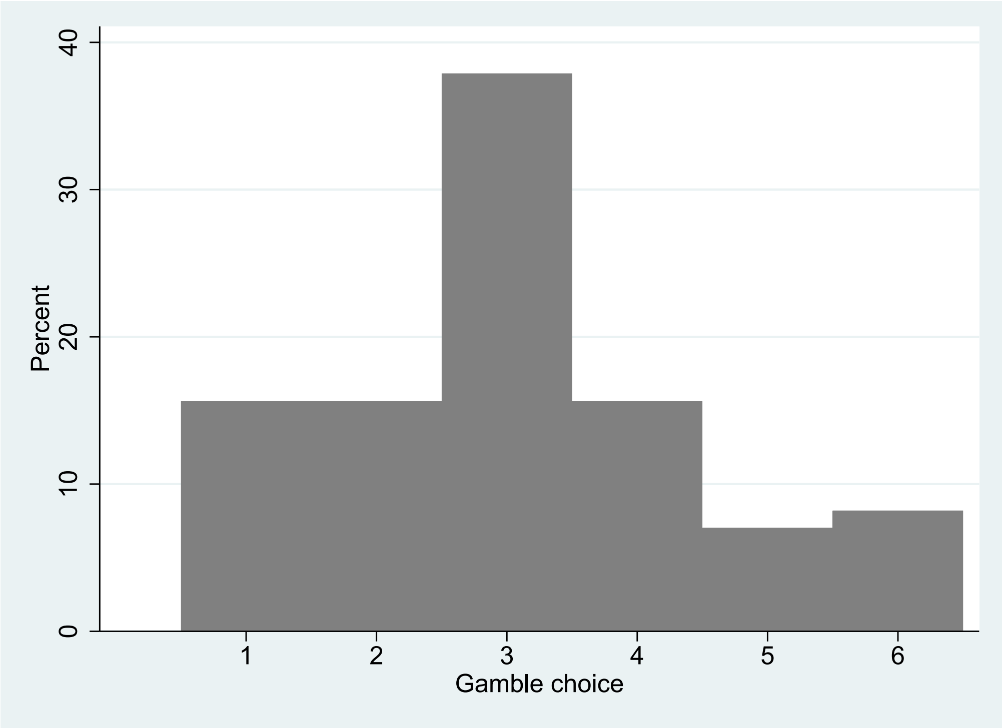


Figure B3: Loss-aversion elicitation task by Gächter *et al.* (2022)

Lottery	Event	Payoff
1	Head	-2
	Tail	6
2	Head	-3
	Tail	6
3	Head	-4
	Tail	6
4	Head	-5
	Tail	6
5	Head	-6
	Tail	6
6	Head	-7
	Tail	6

Figure B4: Distribution of the loss aversion indicator measured with Gächter *et al.* (2022) task

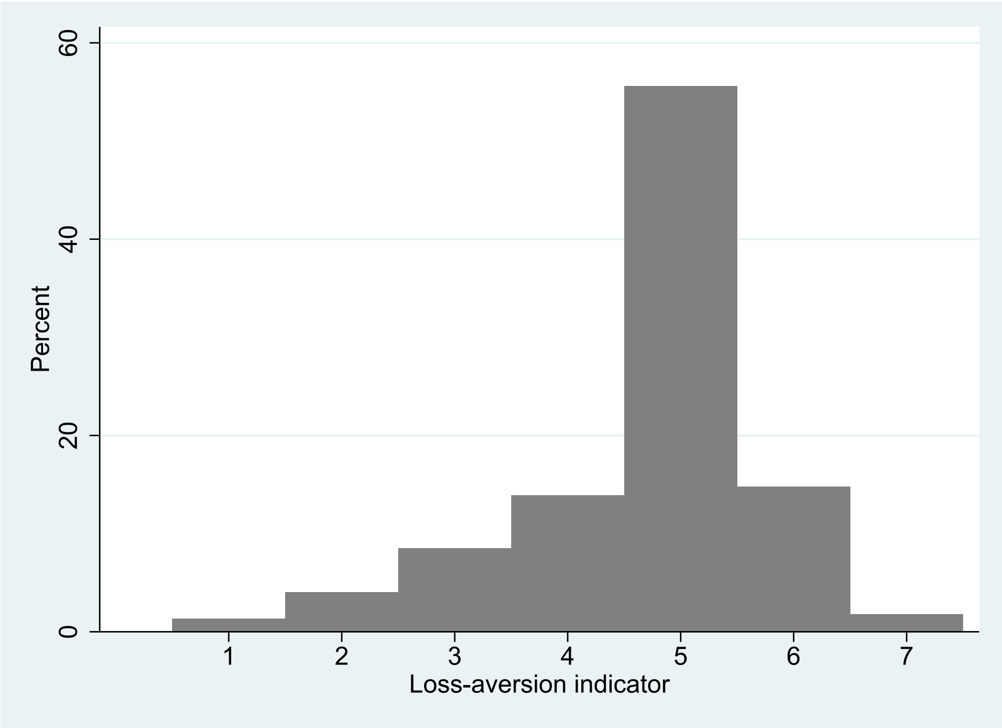


Figure B5: Distribution of bids in Prize, by error treatment

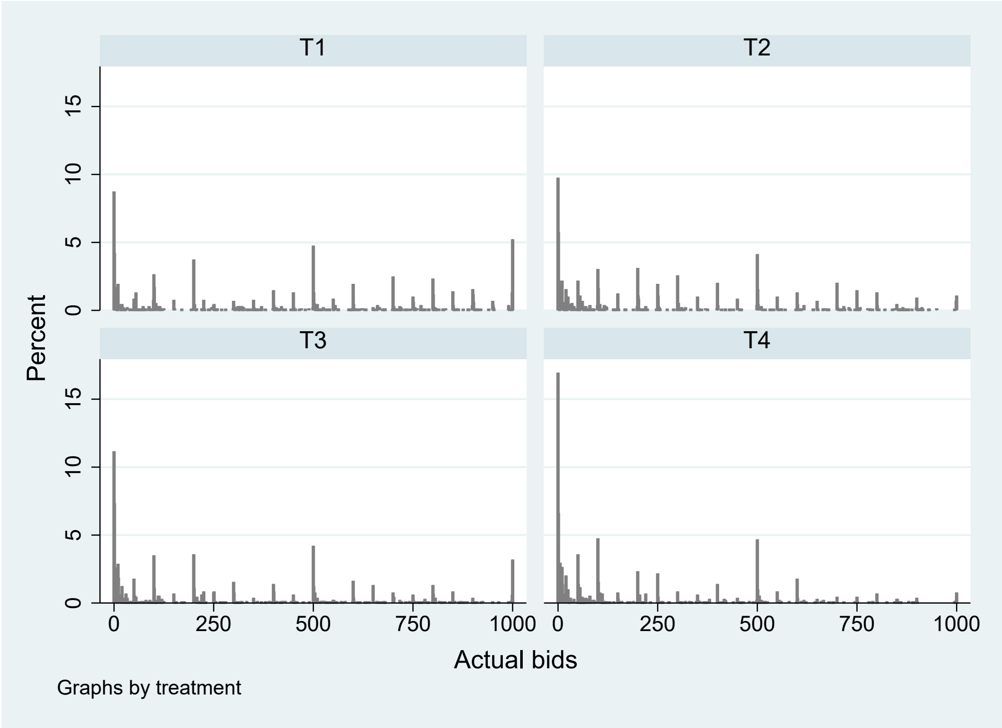
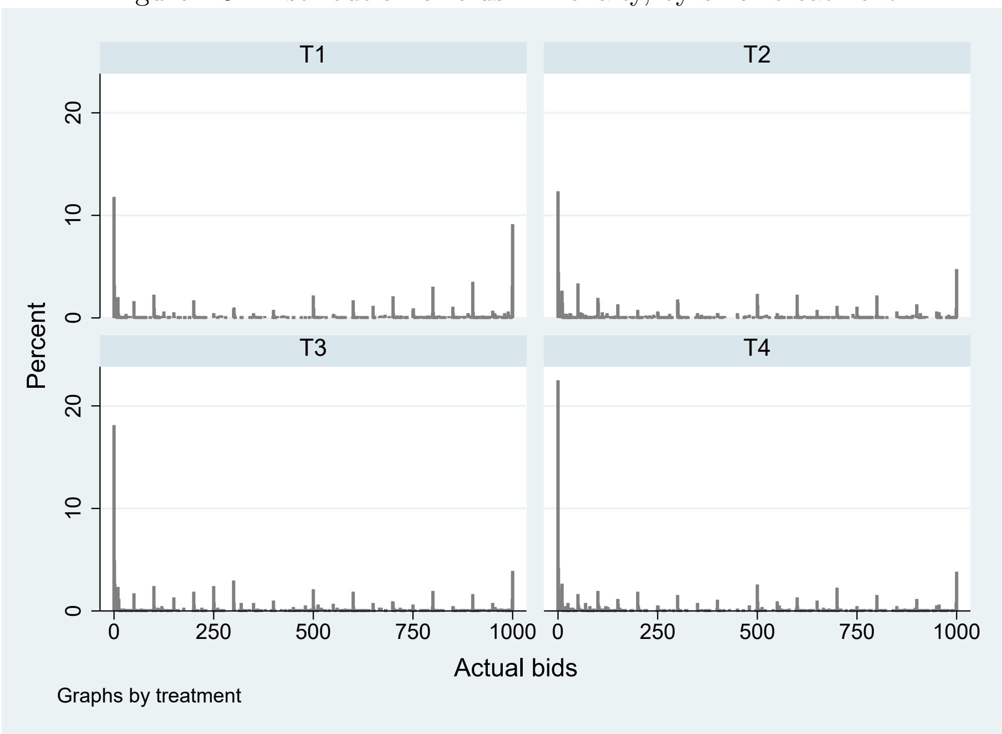


Figure B6: Distribution of bids in Penalty, by error treatment



Appendix C: Experimental instructions

[Instructions for the Prize framing]

Welcome and thank you for participating in this experiment. By closely following the following instructions you will have the chance to earn an amount of money that will be paid in cash at the end of the experiment. You are not allowed to talk or communicate with other participants. If you have any questions, raise your hand and an assistant will help you. The following rules apply to *all participants.*

General instructions

- The experiment consists of 40 periods.
- In each period:
  - You will be assigned to a group of **2 participants**, paired randomly and anonymously, and, given your choices and the choices of the other participant, you will have the chance to earn an amount in **ECU** (**100 ECU = 1 EURO**).
  - Every participant has a monetary endowment of **1000 ECU** (10 euro) and will participate in a contest where, without observing the choices of the other participant, he/she has to decide how many tickets to buy from a minimum of 0 to a maximum of 1000, at the cost of 1 ECU per ticket.
  - The participant who buys most tickets wins the contest and obtains a prize of **1000 ECU** (10 euro) given some rules that are illustrated below.
  - Earnings are determined in the following way: **PROFIT = ENDOWMENT - TICKET EXPENDITURE + PRIZE (IF ANY)**

    Notice that the ticket expenditure will be subtracted to your final earnings independently of whether you obtain the prize or not
- At the end of the experiment the computer will randomly draw **one period**.
- Earnings obtained in the selected period, plus 2 euro for filling a questionnaire at the end of the experiment, will be paid in cash.

Periods 1 - 10

- The participant in the pair who buys most tickets wins the contest (in case of a tie, the winner is randomly drawn by the computer with probability $\frac{1}{2}$).
- The winner obtains the prize, the loser does not obtain the prize.

Example

You buy **a** tickets and the other participant buys **b**, where **a** > **b**. Hence, you won the contest. Therefore:

- you obtain the prize and earn:

  1000 (endowment)

  − **a** (tickets expenditure)

  +1000 (prize)

  = 2000 − **a** (period earnings in ECU)

- the other participant does not obtain the prize and earns:

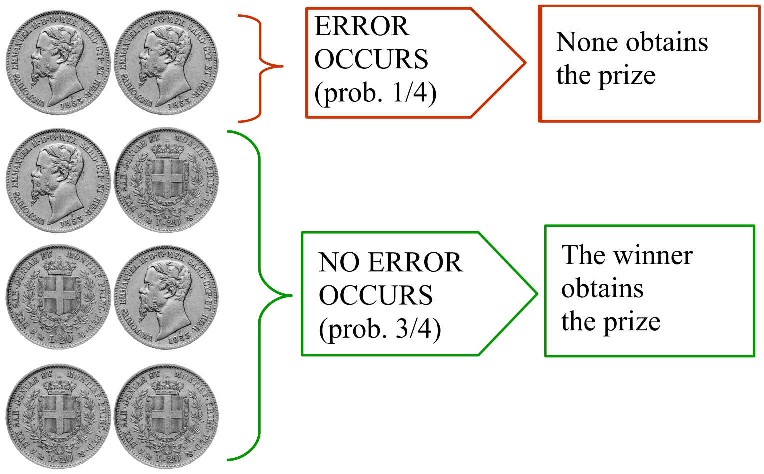
  1000 (endowment)

  −**b** (tickets expenditure)

  = 1000 − **b** (period earnings in ECU)

Periods 11 - 20

- The participant in the pair who buys most tickets wins the contest (in case of a tie, the winner is randomly drawn by the computer with probability $\frac{1}{2}$).
- When assigning the prize an **error** may occur: with probability $\frac{1}{4}$ the winner does not obtain the prize. Thus:
  - if no error occurs (with probability $\frac{3}{4}$), the winner obtain the prize and the loser does not obtain it.
  - if the error occurs (with probability $\frac{1}{4}$), **the winner does not obtain the prize** and the loser does not obtain the prize (that is **none obtains the prize**).
- The computer will determine whether the error occurs depending on the realization of two coin tosses that will be shown on the screen as illustrated in the figure below. If the realization is **(head, head)**, an error occurs; if the realization is not **(head, head)**, no error occurs.



Example: You buy **a** tickets and the other participant buys **b**, where $\mathbf{a} > \mathbf{b}$. Hence, you won the contest.

- If **no error occurs** you obtain the prize and earn:

  1000 (endowment)
  $-\mathbf{a}$ (tickets expenditure)
  +1000 (prize)
  $= 2000 - \mathbf{a}$ (period earnings in ECU)

- If **an error occurs** you do not receive the prize and earn:

  1000 (endowment)
  $-\mathbf{a}$ (ticket expenditures)
  $= 1000 - \mathbf{a}$ (period earnings in ECU)

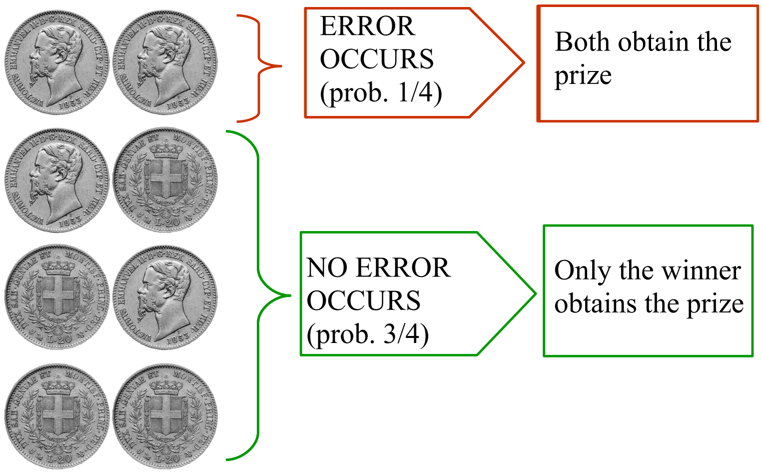
- Whatever the realization of the coin tosses, the other participant, who lost the contest, does not obtain the prize and earns:

  1000 (endowment)
  $-\mathbf{b}$ (tickets expenditure)
  $= 1000 - \mathbf{b}$ (periods earnings in ECU)

Periods 21 - 30

- The participant in the pair who buys most tickets wins the contest (in case of a tie, the winner is randomly drawn by the computer with probability $\frac{1}{2}$).
- When assigning the prize an **error** may occur: with probability $\frac{1}{4}$ **the loser obtains the prize**. Thus:
  - if no error occurs (with probability $\frac{3}{4}$)), the winner obtains the prize and the loser does not obtain the prize.
  - if an error occurs (with probability $\frac{1}{4}$), the winner obtains the prize and **the loser obtains the prize** (that is **both obtain the prize**).

- The computer will determine whether the error occurs depending on the realization of two coin tosses that will be shown on the screen as illustrated in the figure below. If the realization is **(head, head)**, an error occurs; if the realization is not **(head, head)**, no error occurs.



Example: You buy **a** tickets and the other participant buys **b**, where $\mathbf{a} > \mathbf{b}$. Hence, you won the contest.

- Whatever the realization of the coin tosses, you obtain the prize and earn:

  1000 (endowment)
  $-\mathbf{a}$ (tickets expenditure)
  +1000 (prize)
  $= 2000 - \mathbf{a}$ (period earnings in ECU)

- If **no error occurs** the other participant, who lost the contest, does not obtain the prize and earns:

  1000 (endowment
  $-\mathbf{b}$ (tickets expenditure)
  $= 1000 - \mathbf{b}$ (periods earnings in ECU)

- If **an error occurs** also the other participant obtains the prize and earns:

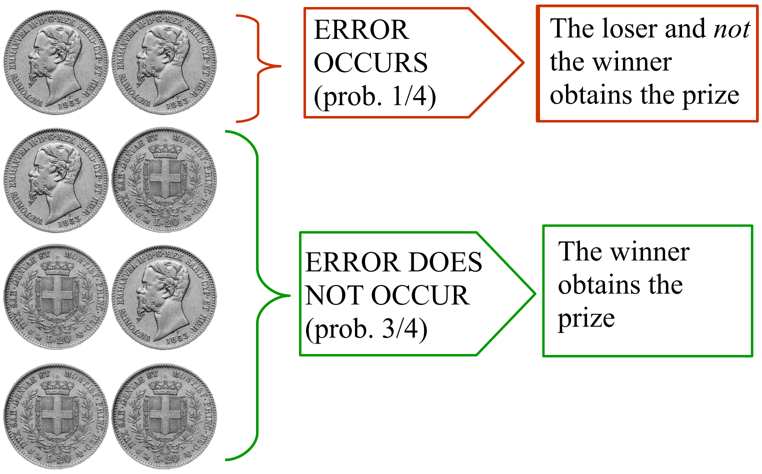
  1000 (endowment)
  $-\mathbf{b}$ (tickets expenditure)
  +1000 (prize)
  $= 2000 - \mathbf{b}$ (period earnings in ECU)

Periods 31 - 40

- The participant in the pair who buys most tickets wins the contest (in case of a tie, the winner is randomly drawn by the computer with probability $\frac{1}{2}$).
- When assigning the prize an **error** may occur: with probability $\frac{1}{4}$ **the winner does not obtain the prize** and **the loser obtains the prize**. Thus:

– if no error occurs (with probability $\frac{3}{4}$), the winner obtains the prize and the loser does not obtain the prize.
– if an error occurs (with probability $\frac{1}{4}$), **the winner does not obtain the prize** and **the loser obtains the prize**.

- The computer will determine whether the error occurs depending on the realization of two coin tosses that will be shown on the screen as illustrated in the figure below. If the realization is **(head, head)**, an error occurs; if the realization is not **(head, head)**, no error occurs.



Example: You buy **a** tickets and the other participant buys **b**, where $\mathbf{a} > \mathbf{b}$. Hence, you won the contest. If **no error occurs**:

- you obtain the prize and earn:

  1000 (endowment)
  −**a** (tickets expenditure)
  +1000 (prize)
  = 2000 − **a** (period earnings in ECU)

- the other participant does not obtain the prize and earns:

  1000 (endowment)
  −**b** (tickets expenditure)
  = 1000 − **b**(period earnings in ECU)

If **an error occurs**:

- you do not obtain the prize and earn:

  1000 (endowment)
  −**a** (tickets expenditure)
  = 1000 − **a** (period earnings in ECU)

- the other participant obtains the prize and earns:

  1000 (endowment)
  −**b** (tickets expenditure)
  +1000 (prize)
  = 2000 − **b** (period earnings in ECU)

[Instructions for the Penalty framing]

Welcome and thank you for participating in this experiment. By closely following our instructions you will have the chance to earn an amount of money that will be paid in cash at the end of the experiment. You are not allowed to talk or communicate with other participants. If you have any questions, raise your hand and an assistant will help you. The following rules apply to *all participants.*

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  - Every participant has a monetary endowment of **2000 ECU** (20 euro) and participates in a contest where, without observing the choices of the other participant, he/she has to decide how many tickets to buy from a minimum of 0 to a maximum of 1000, at the cost of 1 ECU per ticket.
  - The participant who buys most tickets wins the contest and obtains a prize of **1000 ECU** (10 euro) given some rules that are illustrated below.
  - The participant who buys least tickets loses the contest and obtains a penalty of **1000 ECU** (10 euro) given some rules that are illustrated below.
  - Earnings are determined in the following way: **PROFIT = ENDOWMENT - TICKETS EXPENDITURE - PENALTY (IF ANY)**

    Notice that the ticket expenditure will be subtracted to your final earnings independently of whether you obtain the penalty or not.
- At the end of the experiment the computer will randomly draw **one period**.
- Earnings obtained in the selected period, plus 2 euro for filling a questionnaire at the end of the experiment, will be paid in cash.

Periods 1 - 10

- The participant who buys least tickets loses the contest (in case of a tie, the loser is randomly drawn by the computer with probability $\frac{1}{2}$).
- The loser obtains a penalty, the winner does not obtain a penalty.

Example: You buy **a** tickets and the other participant buys **b**, where **a** > **b**. Hence, you won the contest. Therefore:

- you do not obtain the penalty and earn:

  2000 (endowment)

  -**a** (tickets expenditure)

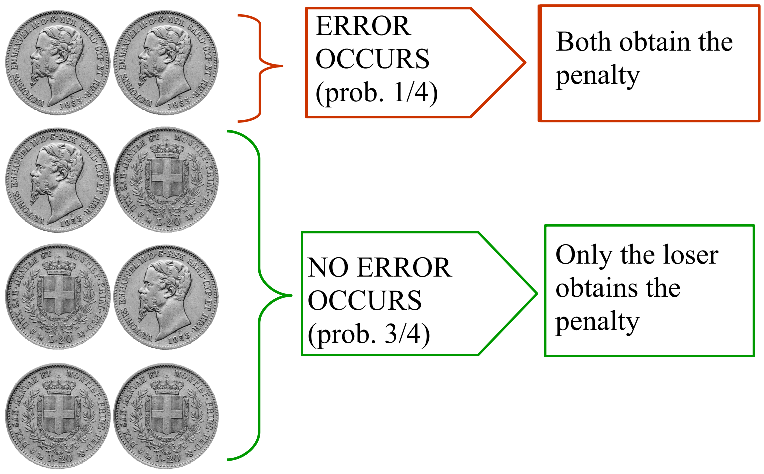
  = 2000 - **a** (period earnings in ECU)

- the other participant obtains the penalty and earns:

  2000 (endowment)
  -**b** (tickets expenditure)
  -1000 (penalty)
  ___
  = 1000 - **b** (period earnings in ECU)

Periods 11 - 20

- The participant who buys least tickets loses the contest (in case of a tie, the loser is randomly drawn by the computer with probability $\frac{1}{2}$).
- When assigning the penalty an **error** may occur: with probability $\frac{1}{4}$ **the winner obtains the penalty**. Thus:
  - if no error occurs (with probability $\frac{3}{4}$), the loser obtains the penalty and the winner does not obtain the penalty.
  - if an error occurs (with probability $\frac{1}{4}$), the loser obtains the penalty and **the winner obtains the penalty** (that is **both** obtain the penalty).
- The computer will determine whether the error occurs depending on the realization of two coin tosses that will be shown on the screen as illustrated in the figure below. If the realization is **(head, head)**, an error occurs; if the realization is not **(head, head)**, no error occurs.



Example: You buy **a** tickets and the other participant buys **b**, where **a** > **b**. Hence, you won the contest. Therefore:

- If **no error occurs** you do not obtain the penalty and earn:

  2000 (endowment)
  -**a** (tickets expenditure)
  ___
  = 2000 - **a** (period earnings in ECU)

- If **an error occurs** you obtain the penalty and earn:

  2000 (endowment)

  -**a** (tickets expenditure)

  -1000 (penalty)

  = 1000 - **a** (period earnings in ECU)

- Independently of the realization of the coin tosses, the other participant, who lost the contest, obtains the penalty and earns:

  2000 (endowment)

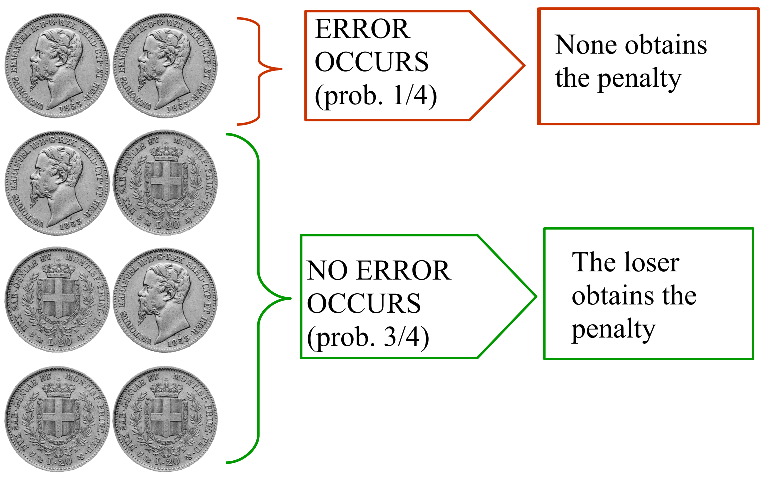
  -**b** (tickets expenditure)

  -1000 (penalty)

  = 1000 - **b** (period earnings in ECU)

Periods 21 - 30

- The participant who buys least tickets loses the contest (in case of a tie, the loser is randomly drawn by the computer with probability $\frac{1}{2}$).
- When assigning the prize an **error** may occur: with probability $\frac{1}{4}$ **the loser does not obtain the penalty**. Thus:
  - if no error occurs (with probability $\frac{3}{4}$), the loser obtains the penalty and the winner does not obtain the penalty.
  - if an error occurs (with probability $\frac{1}{4}$), **the loser does not obtain the penalty** and the winner does not obtain the penalty (that is **none obtains the penalty**).
- The computer will determine whether the error occurs depending on the realization of two coin tosses that will be shown on the screen as illustrated in the figure below. If the realization is **(head, head)**, an error occurs; if the realization is not **(head, head)**, no error occurs.



Example: You buy **a** tickets and the other participant buys **b**, where **a** > **b**. Hence, you won the contest. Therefore:

- Independently of the realization of the coin tosses, you do not obtain the penalty and earn:

2000 (endowment)
-**a** (tickets expenditure)

= 2000 - **a** (period earnings in ECU)

- If **no error occurs**, the other participant, who lost the contest, obtains the penalty and earns:

  2000 (endowment)
  -**b** (tickets expenditure)
  - 1000 (penalty)

  = 1000 - **b** (period earnings in ECU)

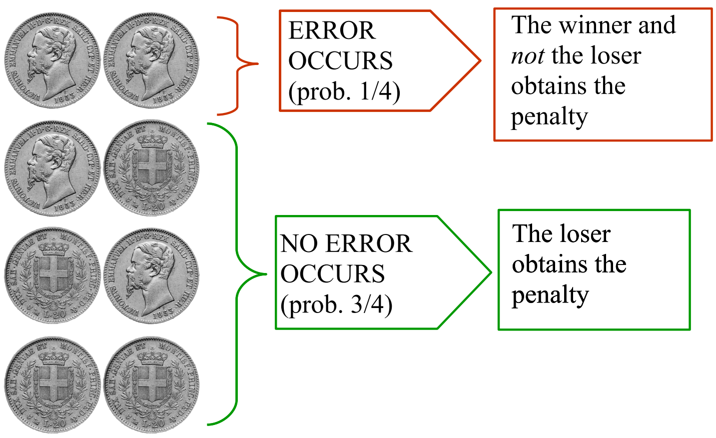
- If **an error occurs**, also the other participant does not obtain the penalty and earns:

  2000 (endowment)
  -**b** (tickets expenditure)

  = 2000 - **b** (period earnings in ECU)

Periods 31 - 40

- The participant who buys least tickets loses the contest (in case of a tie, the loser is randomly drawn by the computer with probability $\frac{1}{2}$).
- When assigning the prize an **error** may occur: with probability $\frac{1}{4}$ **the loser does not obtain the penalty and the winner obtains the penalty**. Thus:
  - if no error occurs (with probability $\frac{3}{4}$), the loser obtains the penalty and the winner does not obtain the penalty.
  - if an error occurs (with probability $\frac{1}{4}$), **the loser does not obtain the penalty and the winner obtains the penalty**.
- The computer will determine whether the error occurs depending on the realization of two coin tosses that will be shown on the screen as illustrated in the figure below. If the realization is **(head, head)**, an error occurs; if the realization is not **(head, head)**, no error occurs.



You buy **a** tickets and the other participant buys **b**, where **a** > **b**. Hence, you won the contest.
If **no error occurs**:

- you do not obtain the penalty and earn:

  2000 (endowment)

  - **a** (tickets expenditure)

  = 2000 - **a** (period earnings in ECU)

- the other participant obtains the penalty and earns:

  2000 (endowment)

  -**b** (tickets expenditure)

  -1000 (penalty)

  = 1000 - **b** (period earnings in ECU)

If **an error occurs**:

- you obtain the penalty and earn:

  2000 (endowment)

  -**a** (tickets expenditure))

  -1000 (penalty)

  = 1000 - **a** (period earnings in ECU)

- the other participant does not obtain the penalty and earns:

  2000 (endowment)

  - **b** (tickets expenditure)

  = 2000 - **b** (period earnings in ECU)