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Do quotas help women to climb the career ladder? A laboratory experiment

Valeria Maggian, Natalia Montinari, Antonio Nicolò

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Abstract

Women are underrepresented in leadership positions in business, politics, and in the academic and scientific community. Not taking advantage of the skills of highly qualified women constitutes a waste of talent and, consequently, a loss of economic growth potential. To design effective policy interventions that empower women to reach leadership positions, it is crucial to identify at which levels of the career ladder they should be introduced. In a laboratory experiment, we run a two-stage tournament to evaluate the impact of three different interventions on women's willingness to compete for top positions. We find that, compared with no intervention, a gender quota introduced at the initial stage is ineffective in encouraging women to compete for the top, while quotas introduced in the final stage of competition or in both stages increase women's willingness to compete for the top, without distorting the performance of the winners.

Text

Women are underrepresented in leadership positions in business, politics, and in the academic and scientific community, while they are overrepresented in mid-skill occupations[1,2].

Differences between men's and women's careers often emerge at an early stage and endure in women, who also experience fewer opportunities for career advancement. Even in those countries ranked at top positions in the Global Gender Gap Index[3] for providing women and men with equal opportunities, such as the Scandinavian countries, women are still underrepresented in top managerial positions, suggesting that gender equality of opportunities does still not ensure equality of outcomes.

Several studies have identified multiple explanations for the existence of the gender gap in top positions. Discrimination and gender stereotypes[4,5] as well as a different trade-off between men and women formulating their career and family plans[6-8] may prevent women from climbing the career ladder. Women are also found to perceive themselves as less qualified to run for political office[9], expressing lower career-entry and career-peak pay expectations[10,11] and lower expectations of successfully fulfilling job demand's success compared to men[12]. Recently, researchers have provided evidence of women's weaker inclinations to participate in competition due to different distributional preferences, higher risk aversion, and lower levels of self-confidence compared to men[13-17].

Gender inequality comes at a cost. Not taking advantage of the skills of highly qualified women constitutes a waste of talent and, consequently, a loss of economic growth potential. To design effective policy interventions that empower women to reach leadership positions without harming the meritocratic principle, it is crucial to identify at which levels of the career ladder they should be introduced. Policy interventions, such as affirmative action, implemented at entry level, could avoid an early sorting of women, with positive spillovers on the later stages, but could also reinforce women's underconfidence or self-stereotyping, impairing their chances of career advancement. Affirmative action for upper-level positions may have a cascade effect at lower levels and create role models for future generations, though it could fail to provide sufficient incentives to affect women's career decisions at early stages[18]. Different solutions have been adopted in different countries and job sectors. Quotas introduced at early stages of a career are invoked in male-dominated sectors (e.g., scientific and/or technology-based careers). Interventions at senior levels have been used in Sweden, where the government has introduced voluntary quotas for universities hiring full professors. The "Cascade Model" introduced in German universities in 2012 is a quota system applying to all levels of academic careers in order to ultimately increase the number of women at the highest level. Assessing the effect of policy interventions at different stages of a career is difficult, if not impossible, in empirical studies using cross-country analysis or panel data, because the introduction of such interventions can be related to changes in the social attitudes toward women or by women themselves. Our laboratory-based economic experiments, conducted in an artificial but highly controlled environment, allow to analyze the effect of gender quotas at different levels of a multi-stage tournament resembling a career ladder. We examine the effect of a gender quota in a two-stage tournament at (i) the entry level, (ii) the top level, or (ii) both levels of competition.

The experiment was run with 384 students from various academic backgrounds (N=384). Subjects were randomly assigned to groups of twelve, six men and six women. The experiment was divided in 5 stages.

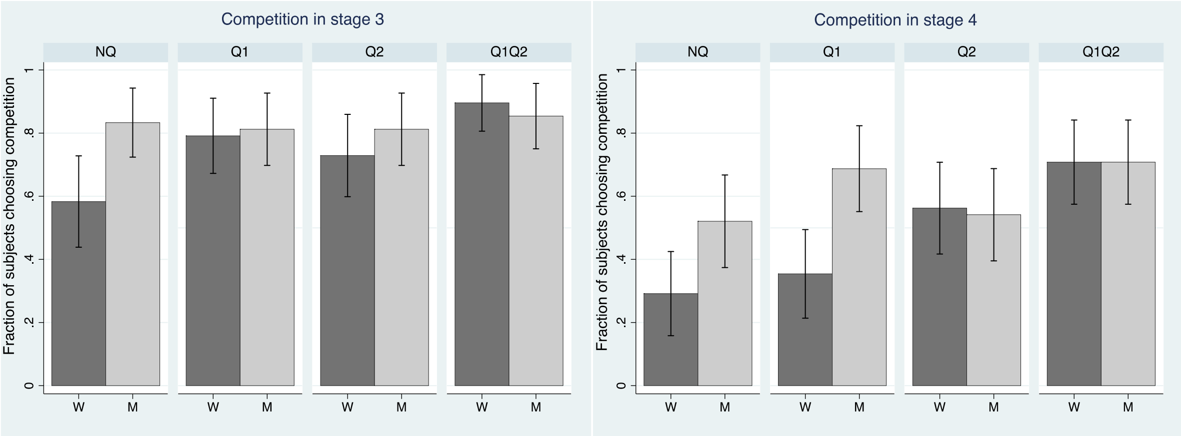
The experimental task in stages 1-4 was to add as many sets of three three-digit numbers and two decimal numbers as possible within 4 minutes.

In stage 1 (*piece rate*), subjects received €0.50 for each correct calculation. In stage 2 (*compulsory tournament*), group members competed against each other. The four members who solved the most calculations were paid €1.50 per correct answer. The other eight group members received nothing. In stages 3 and 4 subjects chose whether they wanted to be paid under a piece rate or a tournament scheme: in the tournament of stage 3, the four best performers received a payoff of €1.50 and the other participants nothing, while in the tournament of stage 4 only the two best performers received a positive payoff, equal to €3. In both stages 3 and 4, if the tournament was chosen, the subject's performance in the task was compared to the other group members' performance in stage 2. Stages 3 and 4 modeled a two-stage tournament replicating a career ladder. In stage 3, subjects chose whether to compete in a tournament or to be paid under a piece rate compensation scheme. In stage 4, only those who had chosen to compete in stage 3 decided whether to continue to compete in the incoming tournament or to apply a piece rate payment to their performance in the task. In stage 4, the tournament payment scheme was applied only to those who had chosen to compete, conditionally on being among the winners of stage 3 of the tournament, while a piece rate was implemented otherwise.

To investigate which policy intervention is more likely to positively affect women's top achievements (i.e., in stage 4, the most competitive tournament), we implement four treatments. In the No-Quota treatment (NQ), winners of the tournaments in stages 3 and 4 are the four and two group members with the largest numbers of correct calculations, regardless of their gender. In the Quota-at-initial-stage treatment (Q1), there are at least two women among the four winners of the stage 3 tournament, meaning that the two best performing women are winners, irrespective of their absolute ranking. Similarly, in the Quota-at-final-stage treatment (Q2), the best performing woman is always one of the two winners in stage 4. In the Quota-at-both-stage treatment (Q1Q2), a gender quota is introduced in both stages, 3 and 4, following the rules described above. In stage 5, we elicit subjects' risk preferences[19] and some socio-demographics information. In each stage, no information about relative performance is given to subjects until the end of the experiment.

In line with similar previous studies (*20,21*), in the compulsory tournament of stage 2 we find that men perform on average better than women, but this difference is not statistically significant (except in Q2, Mann Whitney test, p=0.016).

Fig. 1. Fig. 1. Fraction of female and male participants who chose to compete in stage 3 (left panel) and stage 4 (right panel), across all treatments (N=384 participants, 48 men and 48 women per treatment).

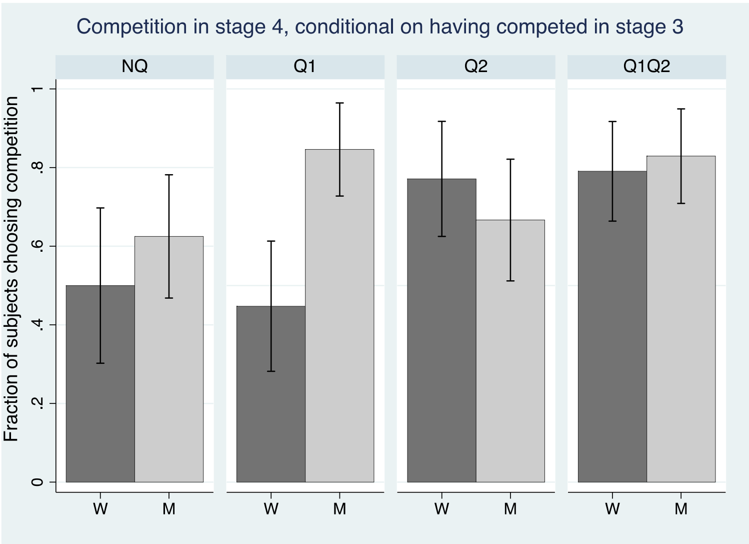


As shown in Fig. 1, in the NQ treatment, our benchmark, we observe a gender gap in the willingness to compete in both stage 3 and 4 of the experiment (stage 3: $\chi^2(1) = 7.261$, p=0.007, N=96; stage 4: $\chi^2(1) = 5.23$, p=0.022, N=96).

With respect to the benchmark, the introduction of a quota at stage 3, in Q1, reduces the observed gender gap ($\chi^2(1) = 0.06$, p=0.798), but it does not have any positive effect in terms of closing the gender gap in stage 4 ($\chi^2(1) = 10.69$, p=0.001). The introduction of a quota in stage 4, in Q2, slightly increases the proportion of women choosing competition with respect to the NQ treatment in stage 3 and boosts women`s participation in the tournament of stage 4 so that gender differences are no longer significant ($\chi^2(1)$ tests, in both stages: p>0.330, N=96). In Q1Q2, we observe a significant positive effect on women`s willingness to compete with respect to the NQ treatment in both stages, 3 and 4, with no difference between men and women ($\chi^2(1)$ tests, in both stages: p>0.536). The fraction of men who choose to compete in stage 3 and 4 does not vary across treatments, ($\chi^2(3)$ tests, in both stages: p>0.125).

Our findings suggest that introducing a quota at stage 3 has the expected direct effect of increasing women's willingness to compete in the tournament at the lowest level of the career, but it does not push them to compete for the top. Fig. 2 sheds further light on this phenomenon: it illustrates the fraction of participants who compete in stage 4, conditional on having competed in stage 3. The percentage of women who choose competition declines from 50% in NQ to 45% in Q1, while it increases to 77.14% in Q2 and 79.07% in Q1Q2. The percentage of men increases from 63% in NQ to 85% in Q1, 77.14% in Q2, and 82.93% in Q1Q2. A gender quota introduced at an initial stage of the career ladder does not increase the percentage of women who compete for the top, while it increases the percentage of men compared to the NQ treatment. Differently, a gender quota in the final stage boosts women's willingness to compete for the top without reducing men's participation.

Fig. 2. Fraction of female and male participants who chose to compete in stage 4, across all treatments, conditional on having chosen the competition in stage 3 (N=303 participants, NQT: 68; Q1T: 77; Q2T: 74 and Q1Q2T: 84).

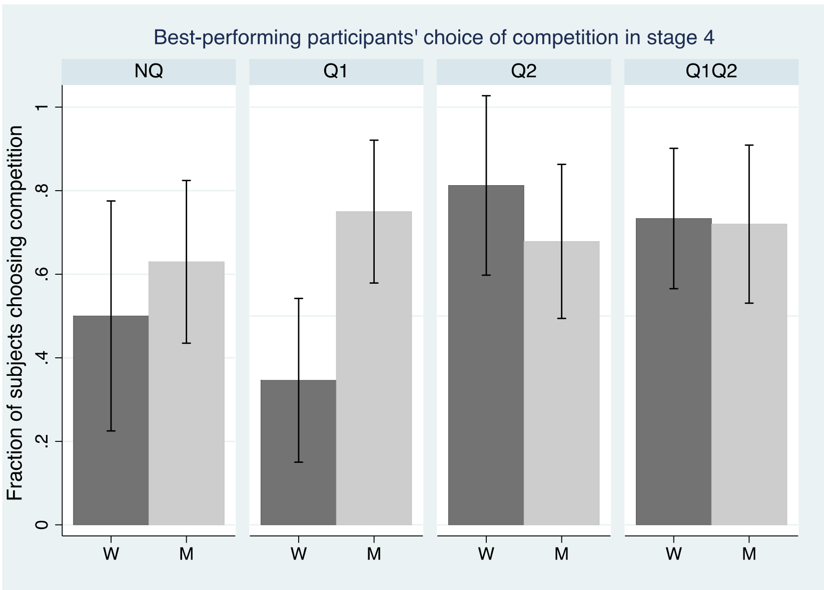


For a formal analysis of the determinants of subjects' willingness to compete and the effects of alternative policy interventions, we ran a number of probit regressions, which confirm all of our main findings (see the Extended Data Table 2).

The above analysis shows that a gender quota at an initial stage of the career ladder only temporarily increases women`s willingness to compete, thus not encouraging them to compete for the top. On the contrary, in Q2 a quota at the final stage of the career ladder has no effects on the initial stage compared to the NQ treatment, but it induces those women who decided to compete at stage 3 to keep competing because they now have more chances to reach the top. Introducing a quota at both stages, 3 and 4, has the same effect that Q2 has on women`s participation in the top tournament.

To shed more light on the effect of various policy interventions on women`s participation, we focus our attention on the best performing participants, identified as those who gave 5 or more correct answers in stage 4. This threshold, computed by means of numerical simulations, makes the choice of competing payoff maximizing in all treatments. As shown in Fig. 3, in Q1 the proportion of best performing women entering competition in stage 4 is lower than the proportion of best performing men ($\chi^2(1)= 8.905$, p=0.001, N=54), providing additional evidence of the potential negative effects of an initial stage gender quota. Taking Q1 as benchmark, in Q2 and Q1Q2 the proportion of best performing women who choose to compete significantly increases (Q1 vs. Q2: Fisher's exact test, p=0.005; Q1 vs. Q1Q2:$\chi^2(1)= 8.449$, p=0.004), while the choice of best performing men is not affected by the treatments ($\chi^2(3)= 1.052$, p=0.789).

Fig. 3. Fraction of best performing female and male participants who chose to compete in stage 4, across all treatments (N=196 participants; NQT: 43; Q1T: 54; Q2T: 44 and Q1Q2T: 55).

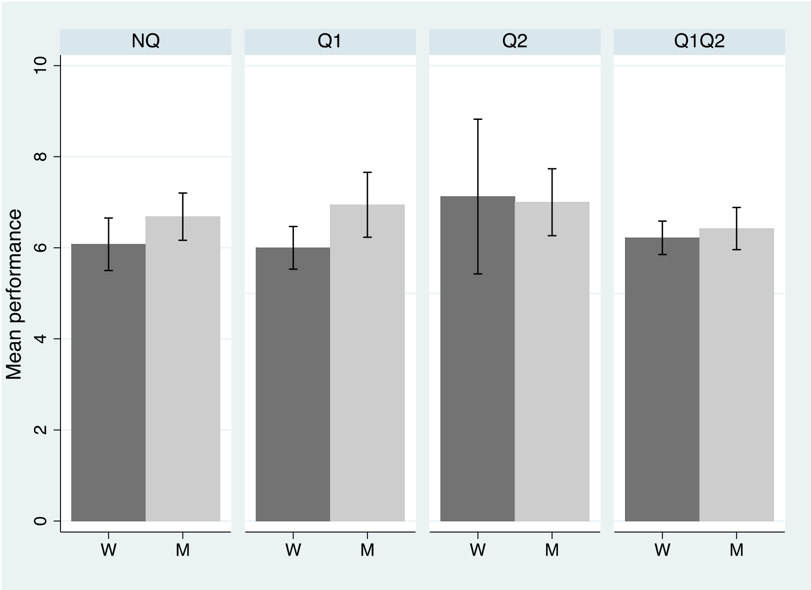


Moreover, 59.09% (13/22) of best performing women chose not to compete after stage 3 in Q1, while only 18.75% (3/16) took the same decision in Q2 and 21.43% (6/28) in Q1Q2.

In the following, we analyze how men`s and women`s beliefs about their relative ability vary across treatments, finding evidence that the introduction of a quota at an initial stage negatively impacts on women's confidence in their own ability. After having performed the task in stage 3 and having taken a decision about whether they wanted to compete or not in stage 4, all subjects were asked to guess their ranking in the compulsory stage 2 tournament. We find that in Q1 best performing women have more pessimistic beliefs about their relative ability: they rank themselves on average two positions lower compared to the NQ treatment (6.85/12 in Q1 vs. 4.94/12 in NQ, Mann-Whitney, z=2.67, p=0.008), while other pairwise comparisons with the NQ treatment are not significant. Differently, we observe that the beliefs of best performing men are not affected by treatments. We get a similar picture when we consider the beliefs of all participants. These findings suggest that a quota at an initial stage of the career ladder acts also as a cue for a gender stereotype, inducing best performing women to conform to it.

As a further analysis, we investigate the effect of gender quotas on the performance of the winners of the competition in stage 4 in order to evaluate the impact of these policies on efficiency. We observe that, taking the NQ treatment as a benchmark, there is no significant difference in the average performance of winners, meaning that the presence of quotas does not distort the pool of the winning candidates.

Fig 4. Average performance of winners of competition in stage 4, by gender and across all treatments (N=86 participants; NQT: 22; Q1T: 13; Q2T: 23 and Q1Q2T: 29.



In Fig. 4 we plot the average performance of winning participants in each treatment by gender. Within each treatment differences in the performance between men and women are not significant, with the only exception of Q1 where the difference is weakly significant: men give, on average, one more correct answer than women do (Mann-Whitney, z=1.78, p=0.074). Women's performance does not differ among treatments (pairwise comparisons, Mann-Whitney, all p>0.2669), while men's performance increases in Q1 compared to both NQ and Q1Q2 (Mann-Whitney, NQ vs. Q1: z=1.73, p=0.084 and Q1 vs. Q1Q2, z=1.79, p=0.074, respectively). Overall, we do not find any distortion in the performance of winning participants associated with the introduction of quotas.

In most developed countries, women's participation in the labor force has matched that of men. However, there is still a substantial gap both in the percentage of women employed in upper-level positions and when considering wage differentials.

Nowadays, one of the main scopes of gender policies is the promotion of women's leadership achievement in the different sectors of society without violating the meritocratic principle. To achieve this aim, it is extremely important to understand the effect of policy interventions along the different phases of a career path.

The laboratory provides the ideal environment to isolate and highlight possible drawback effects of gender quotas difficult to detect in the field, providing valuable insights for policy makers as well as for private and public companies interested in pursuing gender equality.

Our study supports the effectiveness of gender quotas for the appointment to leading positions but warns that policies limiting their intervention at the entry level of careers might be ineffective. We show that they discourage women from competing in the subsequent stages, undermining their self-confidence in their ability to successfully climb the career ladder. Our findings suggest that introducing a gender quota at the top successfully prevents best performing women from getting off the career ladder too early, without negatively affecting men`s decisions. Moreover, none of the interventions analyzed have entailed any efficiency loss measured in terms of performance of the winning participants. A policy introducing a gender quota only at the top turns out to be as effective as effective as a policy introducing a quota at all stages of a career. Therefore, under a principle of minimum interference, a policy introducing a gender quota only at the top is more advisable to be introduced as a policy intervention.

To the best of our knowledge, we are the first to investigate the role of gender quotas in a career path framework. Our results, even if obtained in a stylized and abstract environment, show that the stage at which a gender quota is introduced impacts differently on women`s willingness to get to the top. Further research is needed to complement our findings in order to understand the long-run effect of gender policies. Moreover, it would also be worth analyzing how affirmative action affects relationships within organizations, such as tasks assignment or team working, which are relevant factors in determining women’s paths to the top of the career ladder.

Methods

- **Experimental design**

All treatments were run in a between-subjects design. Subjects were randomly assigned to treatments. Once arrived in the laboratory, each participant was randomly assigned to one visually isolated computer terminal. Written instructions for the first stage were then distributed to all subjects and read aloud. Instructions about each of the following stages were distributed to the subjects and read aloud only after the completion of the previous stages. Individuals were asked to answer a set of control questions on the screen after each stage.

In stages 2, 3 and 4, ties between participants participating in tournaments were broken randomly.

The method of comparing a subject's competitive performance in stage 3 and stage 4 to the other group members' performance in stage 2 has several advantages. First, tournament entry decisions do not depend on a subject's expectation about the other members' entry decisions, but only on the subject's beliefs about her/his own ability. Second, stage 2 performances are competitive performances, and thus a subject competes against others when they were also exposed to a competitive payment scheme. Third, entering competition does not impose externalities on others. In principle, this means that stage 3 and stage 4 are an individual decision making problem.

Only those who have won the stage 3 tournament can compete in stage 4, therefore subjects are aware that their decision about whether competing or not in stage 4 is implemented only in case they have won the first stage of the multi-stage competition. Before performing the task in Stage 4, those subjects who have chosen competition in both Stage 3 and 4 were informed about whether they had won or lost the competition in Stage 3, but not about their relative ranking. Beside the one we implemented, two alternative solutions were possible. In the first, we could have decided not to disclose any information about stage 3 competition. However, in such a situation, in stage 4, subjects choosing the competition in stage 4 would have performed the task without knowing whether they were actually competing in a tournament or not. Since we were interested in the effect of quotas not only on decision to compete but also on the participants' performance, we decided to provide subjects with this information. In the second, we could have decided to disclose all the information about stage 3 competition, i.e. the relative ranking and performance of subjects. In this case, they would also have known whether the outcome would have been different without the policy intervention (if any). We decided not to give such explicit feedback because we wanted to better represent the way competitions work in reality. For instance, when candidates are informed about the outcome of a job application, they find out whether they have been successful or not and can also find out the identity of the successful candidate(s), but typically do not receive any precise information about their relative ranking.

At the end of stage 3, after participants have submitted the choice of the payment scheme for stage 4 (but before they are informed about whether they are among the winner of the stage 3 competition and before performing the task in stage 4), we elicited the beliefs of all subjects regarding their relative ranks in stage 2. Subjects had to indicate their expected rank within the whole group of twelve members, but also within the sub-group composed by members of their own gender only (i.e. six members). Correct guesses were rewarded with €1 each, and the feedback was given only at the end of the experiment.

Subjects did not receive any feedback on their relative ranking in the compulsory competition in stage 2 or in the competition in stage 3 and in stage 4 until the very end of the experiment. In each stage, they were only informed about the absolute number of correctly solved exercises. This was done in order to avoid that subjects conditioned their choices on previous outcomes of competition. It is important to note that in stage 4 subjects received feedback about whether they had won or lost the competition in stage 3, but not about their relative ranking. As evidenced in point 4) of this list subjects made their choice of the compensation scheme to be applied in stage 4 before knowing whether they were among the winners of stage 3`s competition or not.

After stage 5, the experimental sessions included a second part. In Part 2 we measure the possible spillovers of gender quotas on subsequent dishonest behavior using a variation of the die under-the-cup task (Shalvi et al., 2011). In our experiment, reporting an odd number results in getting €4 while reporting an even number results in getting €1. We do not discuss the results from this part in this paper.

In order to avoid wealth effects, one stage among stages 1 to 4 of Part 1 was randomly selected for payment at the end of the experiment and added to the earnings of stage 5 of part 1 and the ones of part 2. Each subject also received a show-up fee of €5. The average payoff per subject was €17. Before proceeding with payment to the subjects, we asked participants to fill out a demographic form.

- **Statistics**

Frequencies of winning and ex-ante win probabilities

In the main text, we define best-performing participants those subjects who gave 5 or more correct answers in stage 4. This threshold makes the choice of competing payoff maximizing in all treatments, as shown in the Extended Data Table 1.

In order to define this threshold for the NQ treatment, we calculate the women (men)`s frequency of winning for each level of performance, when drawing 500,000 groups consisting of 6(5) men and 5(6) women, using the performance distribution in stage 2 of the entire sample (i.e. 384 participants) with replacement. We compare the frequencies of winning obtained in this way with the ex-ante stage 3 and 4 tournaments' win probabilities, that is 4/12=0.33 and 2/12=0.17.

When, for a specific level of performance, the frequencies of winning obtained via simulations are higher than the ex-ante win probabilities, we conclude that choosing to compete would be a payoff maximizing choice for the participants with that specific level of performance.

Panels a) and b) of the Extended Data Table 1 show the probability of winning stage 3 and stage 4 competition conditional on stage 2's performance for both men and women in the different treatments.

Note that the frequencies of winning in stage 3 and stage 4 for men is not affected by treatments, while for women it varies depending on the treatment. In particular, in the treatments where the gender quota is introduced in stage 3 (Q1 and Q1Q2), in order to be a winner of the tournament in stage 3, for a woman it is enough to be among the two best performers out of the six women in stage 2. Similarly, when the quota is introduced in stage 4 (Q2 and Q1Q2) to be the winner of the tournament in stage 4, it is sufficient to be the best women in the group of 6 women.

From the Extended Data Table 1 it can be noted that giving 4 (5) or more correct answers represents the threshold that makes the choice of competing in stage 3 (4) payoff maximizing in all treatments and for both genders. What changes for women, after the introduction of the quotas, is that the frequencies of winning increase for each level of performance (i.e. for a performance of 3 is increases from 2.31 to 11.81 in stage 3), but not so much to exceed the ex-ante probabilities of winning, altering the threshold. For men in all treatments (and women in the NQ treatment): for any given performance level, say, 3 for a man (woman), we draw 500,000 groups consisting of 5(6) men and 6(5) women, using the performance distribution of the 192 men and 192 women with replacement. We then calculate the man's (woman's) frequency of wins in this set of simulated groups. For women in the treatments with quota: for any given performance level, say, 3 for a woman, we draw 500,000 groups consisting of 5 women, using the performance distribution of the 192 women with replacement. We then calculate the woman's frequency of wins in this set of simulated groups of women applying the rules of the quota in the different stages. Note that the introduction of a quota increases the frequency of winning for women, but not as much to exceed the ex-ante win probabilities. For this reason, the thresholds which make the choice to compete payoff-maximizing do not change across genders and treatments.

Best-Performing participants

Since we focus on the intervention which encourage women to reach the top-positions, we identify as best-performing participants those who, in stage 4, met the threshold previously identified (i.e. who gave 5 or more correct answers). Irrespective from the gender and the treatments, for these participants, competing in stage 4 would have been the payoff-maximizing choice.

A set of Fisher's exact test confirm that, for the best-performing participants, the distribution of performances does not vary across treatments, (overall, p=0.290; men, p=0.705; women, p= 0.671).

An alternative method to identify best-performing participants would have been to consider those subjects who gave 5 or more correct answers in stage 2. Using this classification our results are qualitatively unchanged, as displayed in the Extended Data Figure 1, and by the supporting tests. As shown in the Extended Data Figure 1, in treatment Q1 the proportion of best-performing women entering competition in stage 4 is lower than best-performing men (χ^2 (1)= 3.556, p=0.059, N=36). Taking treatment Q1 as benchmark, the fraction of best-performing women who choose to compete increases in treatment Q1Q2 (Fisher's exact test, p=0.070) as well as in treatment Q2, despite such a difference fails in achieving significance (χ^2 (1)= 1.710, p= 0.191). The choice of the best performing men is not affected by the treatments (χ^2 (3)= 1.551, p=0.671). Moreover, 57.14% (8/14) of the best-performing women choose not to continue competing after stage 3 in treatment Q1, while only 30.77% (4/13) take the same decision in treatment Q2 and 23.53% (4/17) in treatment Q1Q2.

However, we decided not to use the subjects` performance in stage 2 for the identification of best-performing participants in our analysis because subjects' performance in stage 2 is not a good predictor of subjects' performance in the following stages. In particular, the 31.5% (121/384) of those subjects who would have been defined as best-performing in stage 2 would have not been included in the same category when considering their performance in stage 4. 71.07% (N=86/121) would have been classified as best-performing participants in stage 4 but not in stage 2, and 28.93% (N=35/121) would have been classified as best-performing participants in stage 2 but not in stage 4. The misclassification does not depend on subjects` choices of competition in stage 3 and in stage 4, both overall and separately for gender (stage 3: χ^2 (1)= 2.212, p=0.137; men: χ^2 (1)=0.3700, p=0.543, women χ^2 (1)= 1.683, p=0.194; Stage 4: χ^2 (1)= 0.230, p=0.632; women χ^2 (1)= 1.550, p=0.213, men χ^2 (1)= 0.066, p=0.798). Differently, it seems to be affected by treatments with the difference driven by women, who are less likely to be misclassified in treatment Q2 compared to the other treatments (χ^2 (3)= 7.083, p=0.069; women χ^2 (1)= 8.348, p=0.039, men χ^2 (1)= 2.636, p=0.451).

For this reason, we decide to define the best-performing participants by considering those subjects who gave 5 or more correct answers in stage 4.

Regression analysis

In order to analyze the determinants of the entry choices in sage 4 competition, we estimate a probit model of the form:

$$\mathbf{Pr}(\boldsymbol{choice_i} = \mathbf{1}) = \boldsymbol{\Phi}\left(\boldsymbol{\alpha} + \boldsymbol{\beta female_i} + \sum_{j} \boldsymbol{\gamma_i\, policy_i} + \sum_{j} \boldsymbol{\delta_j\, female_i} \times \boldsymbol{policy_j} + \boldsymbol{C'\zeta} + \boldsymbol{\epsilon_i}\right) \quad (\mathbf{1})$$

The decision of individual i whether or not to enter competition in Stage 4 (choice=1 if a subject chooses competition in Stage 4, 0 otherwise) is regressed on gender, the three treatments Q1, Q2 and Q1Q2, the interaction between gender and treatments, and a vector of controls denoted by C'. The vector of controls comprises the participants` performance in the compulsory tournament of stage 2 (Performance in stage 2), the beliefs about own performance in stage 2 (Belief on Performance in Stage 2) and Willingness to take risk (Bomb). We also control for the competitiveness Index[22,23]. $\Phi(\cdot)$ is the cumulative distribution function of the standard normal distribution. In the Extended Data Table 2 we report the results from estimating (1) based on different sets of controls.

In column (1) we only control for the gender and the different treatments. We find that, with respect to the NQ treatment, both Q2 and Q1Q2 treatments have a positive and significant effect on the choice to compete in stage 4 while Q1 treatment has no significant effect. We also find a significant gender gap, indicated by the negative and significant coefficient of the dummy female.

In column (2) we add the participant's performance in stage 2, which turns out to be positive and significant, while other results are unchanged with respect to column (1). In column (3) we add beliefs about own performance in stage 2. The coefficient of this variable has a negative and significant effect, suggesting that the biggest the rank participants think to have, the lowest the probability for them to continue competing. When looking at the other independent variables we observe a reduction in the significance of the gender dummy, suggesting that part of the gender gap can be explained by men and women holding different beliefs about their relative ranking. We also find that the variable accounting for the performance in stage 2 does not achieve significance, suggesting that what matters in explaining the decision to compete is not the performance per se, but the participants` beliefs about their ability.

When adding the interaction terms between the treatment and gender in column (4), we observe that being a female in the NQ treatment diminishes the probability to enter competition in stage 4, as suggested by the significant coefficient of the female variable. Moreover, the significant coefficients of the interaction terms femalexQ2 and femalexQ1Q2 indicate the extent to which the difference in entering competition in stage 4 between males and females changes in the Q2 and Q1Q2 treatments, respectively, with respect to the NQ treatment. Finally, in column (5) we observe that the more competitive participants are, the more likely they will enter competition, as expected (competitiveness is captured by the competitiveness index). All the coefficients of the treatments variables are not significant, showing that males` behavior is not affected by the treatment, except in treatment Q1Q2, where males are even more likely to access competition in stage 4 with respect to the NQ treatment.

Overall, the results in columns (1) to (5) of the Extended Data Table 2 suggest that the beliefs about own ability can explain part of the differences in competition entry choices in Stage 4. However, in models (1)-(4) the dummy for the gender difference is still negative and significant, while the statistically significant residual gender gap in entry decisions disappears in column (5), when controlling for the Competitiveness Index.

Beside treatment Q1, whose coefficient never reaches statistical significance, the other treatments` coefficients have a positive and significant impact on women’s choice.

References and End Notes:

1. "The Global Gender Gap Index 2015" (Geneva: World Economic Forum 2015).
2. Bertrand, M. & Hallock, K. F. The gender gap in top corporate jobs. *ILR Rev* **55**, 3-21 (2001).
3. "The Global Gender Gap Report 2016" (World Economic Forum 2016).
4. Altonji, J. G. & Blank, R. M. Race and gender in the labor market. *Handbook of labor economics* **3**, 3143-3259 (1999).
5. Goldin C. & Rouse, C. Orchestrating Impartiality: The Impact Of 'Blind' Auditions On Female Musicians. *Am. Econ. Rev.* **90**, 715-741 (2000).
6. Erosa, A., Fuster, L. & Restuccia, D. Fertility decisions and gender differences in labor turnover, employment, and wages. *Rev. Econ Dynam.* **5**, 856-891 (2002).
7. Galor, O. & Weil, D. N. The gender gap, fertility, and growth. *Am. Econ. Rev.* **86**, 374-387 (1996).
8. Dessy, S. & Djebbary, H. High-powered careers and marriage: can women have it all? *BE. J. Econ. Anal. Poli.* **10**, 1935-1682 (2010).
9. Lawless, J. L. & Fox, R. L. Ed., *It takes a candidate: Why women don't run for office*. (Cambridge University Press, 2005).
10. Bylsma, W. H. & Major, B. Two routes to eliminating gender differences in personal entitlement: Social comparisons and performance evaluations. *Psychol. Women Quart.* **16**, 193-200 (1992).
11. Lyons, S. T., Ng, E. S. & Schweitzer, I. Changing demographics and the shifting nature of careers: Implications for research and human resource development. *Hum. Resour. Dev. Rev.* **13**, 181-206 (2014).
12. Barbulescu, R. & Bidwell, M. Do women choose different jobs from men? Mechanisms of application segregation in the market for managerial workers. *Organ. Sci.* **24**, 737-756 (2013).
13. Bartling, B., Fehr, E., Maréchal, M. A. & Schunk, D. Egalitarianism and competitiveness. *Am. Econ. Rev.* **99**, 93-98 (2009).
14. Balafoutas, L., Kerschbamer, R. & Sutter, M. Distributional preferences and competitive behavior. *J. Econ. Behav. Organ.* **83**, 125-135 (2012).

15. Croson, R. & Gneezy, U. Gender differences in preferences. *J. Econ. Lit.* **47**, 448-74 (2009).

16. Eckel, C. C. & Grossman, P. J. "Men, women, and risk aversion: Experimental evidence" in Handbook of Experimental Economics Results, C. R. Plott, V. L. Smith, Eds. (North-Holland, 2008) 1061–1073.

17. Niederle, M. & Vesterlund, L, Do women shy away from competition? Do men compete too much? *Q. J. Econ.* **122**, 1067-1101 (2007).

18. Bertrand, M., Black, S. E., Jensen, S. & Lleras-Muney, A. Breaking the Glass Ceiling? The Effect of Board Quotas on Female Labor Market Outcomes in Norway. (NHH Dept. of Economics Discussion Paper No. 28/2014, 2014); Available at SSRN: https://ssrn.com/abstract=2488955.

19. Crosetto, P. & Filippin, A. The "bomb" risk elicitation task. *.J. Risk Uncertain*. **47**, 31-65 (2013).

20. Balafoutas, L. & Sutter, M. Affirmative action policies promote women and do not harm efficiency in the laboratory. *Science* **335**, 579-582 (2012).

21. Niederle, M., Segal, C. & Vesterlund, L. How costly is diversity? Affirmative action in light of gender differences in competitiveness. *Manage. Sci.* **59**, 1-16 (2013).

22. Harris, P. B. & Houston, J. M. A reliability analysis of the revised competitiveness index. *Psychol. Rep.* **106**, 870-874 (2010).

23. Houston, J. M., Harris, P. B., McIntire, S. & Francis, D. Revising the Competitiveness *Index. Psychol. Rep.* **90**, 31-34 (2002).

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Figure Legends

Fig. 1. Fraction of female and male participants who chose to compete in stage 3 (left panel) and stage 4 (right panel), across all treatments (N=384 participants, 48 men and 48 women per treatment). The bars show, for each treatment and gender, the proportion of participants (between 0 and 1) who chose the tournament in each stage of the multi-stage tournament. Error bars, mean ± SEM.

Fig. 2. Fraction of female and male participants who chose to compete in stage 4, across all treatments, conditional on having chosen the competition in stage 3 (N=303 participants, NQT: 68; Q1T: 77; Q2T: 74 and Q1Q2T: 84). The bars show, for each treatment and gender, the proportion of participants (between 0 and 1) who chose the tournament in stage 4. Error bars, mean ± SEM.

Fig. 3. Fraction of best performing female and male participants who chose to compete in stage 4, across all treatments (N=196 participants; NQT: 43; Q1T: 54; Q2T: 44 and Q1Q2T: 55). The bars show, for each treatment and gender, the proportion of participants (between 0 and 1) who chose the tournament in both stages of the multi-stage tournament. Error bars, mean ± SEM.

Fig 4. Average performance of winners of competition in stage 4, by gender and across all treatments (N=86 participants; NQT: 22; Q1T: 13; Q2T: 23 and Q1Q2T: 29. The bars show, for each treatment, the average stage 4 performance (number of correct calculations) of those participants who won the tournament in stage 4. Error bars, mean ± SEM.

Ethical statement

In this paper we implemented a set of laboratory experiments with human subjects run at the University of Lyon. We have complied with all relevant ethical regulations. The study did not involve any risk for participants. Informed consent was obtained following the procedures of the laboratory at the University of Lyon and possible consequences of the studies were explained to all participants, who were free to quit the study at any time with no penalties.

Author Contributions

All authors have equally contributed to the work.

Author Information:

The authors declare no competing financial interests.

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- **Data Availability statement**

The datasets generated during and/or analyzed during the current study are available at the following **link**.

Supplementary Information for

Do quotas help women to climb the career ladder? A laboratory experiment

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This PDF file includes:

- Experimental Instructions

Part 1 – Instructions

Task
Your task in Part 1 is to solve correctly as many addition exercises as possible. To be more precise, you will have 4 minutes' time in order to solve as many additions of three randomly selected three-digit numbers and two decimal numbers as possible, by entering the sum of the five numbers. You will face a screen as the one depicted below.

Calculators or mobile phones are not allowed; however, you can make use of the provided scratch paper. Once you are ready, you can submit an answer by typing it in the box and clicking the submit button.
When you enter an answer the computer will immediately tell you whether your answer is correct or not. Your answers are anonymous.

Earnings for Part 1
In part 1 you get **50 cents per addition exercise you solve correctly** in the 4 minutes. Your payment does not decrease if you provide an incorrect answer. We refer to this payment as the *Piece Rate* payment.

If Part 1 is randomly selected for the final payment you will obtain the money earned in part 1 under the *Piece Rate* payment.

What happens now?
If you have any questions on part 1, please push the red button on your left at any moment during the experiment, an assistant will come to your seat to answer your questions in private.

Before starting the task, you will be asked to answer a few questions to verify your understanding.

After the control questions, you will have one minute in order to familiarize yourselves with the task. During this time, you can solve addition exercises, which do not count for your earnings.

Once the practice time is terminated, you will be informed when Part 1 is going to start.

Part 2 - Instructions

Task
In Part 2 you will be given 4 minutes to calculate the correct sum of a series of three randomly selected three-digit numbers and two decimal numbers.

Earnings for Part 2
For this Part your payment depends on your performance relative to that of a group of other participants. Groups are formed randomly at the beginning of this Part and each participant stays in the same group until the end of the experiment.

Allocation in groups: Each group consists of **12 participants, 6 of whom are men and 6 are women.** Each group member receives an identification code. All members keep their identification code for the entire experiment. The 6 women randomly receive the identification code F1, F2, F3, F4, F5 or F6. The 6 men randomly receive the identification code M1, M2, M3, M4, M5 or M6. You will not find out the identity of the other participants in your group during or after the experiment, so that all decisions remain anonymous.

In Part 2 your earnings depend on the number of addition exercises you solve compared to the eleven other people in your group.
The 4 individuals who correctly solve the largest number of addition exercises are the 4 winners of the tournament.

The 4 winners receive €1.50 per correct addition exercise, while the other participants do not receive any payment. In case of a tie, the ranking among the members with equal performances is determined randomly. We refer to this as the *Tournament* payment.

During the task and at the end of Part 2, you will only be informed about the number of your correct answers, but you will not be informed of whether you were among the winners of the tournament until all four parts of the experiment have been completed.

If Part 2 is randomly selected for the final payment, then your earnings depend on whether you were among the 4 winners in the tournament or not.

What happens now?
If you have any questions on part 1, please push the red button on your left at any moment during the experiment, an assistant will come to your seat to answer your questions in private.

Before continuing, you will be asked to answer a few questions to verify your understanding.

Part 3 - Instructions

Task
In Part 3, as in the previous two parts, you will be given 4 minutes to calculate the correct sum of a series of three randomly selected three-digit numbers and two decimal numbers. The rules to perform the task are the same as in Part 1 and Part 2.

Earnings for Part 3
In Part 3 you will now get to choose which of the two previous payments (i.e. the Piece Rate or the Tournament payment) you prefer to apply to your performance in the task.

[Quota]
The Tournament of Part 3, however, will be different from the one you just experienced in Part 2, since it contains a *gender quota*. This means that a certain number of winning positions are reserved for women. We will refer to it as *Q-Tournament payment*. We will explain you in detail the rules of the *Q-Tournament* below.

Moreover, your decision in Part 3 also affects the decision you will face in Part 4. Therefore, before making your choice for the payment in Part 3, further instructions about Part 4 will be given in the following.

- **Earnings in Part 3 if you choose the *Piece Rate* payment scheme:** you receive 50 cents per addition exercise you correctly solve.
- **Earnings in Part 3 if you choose the *Tournament* payment scheme:** your performance will be evaluated in comparison with the performance of the other eleven group members in Part 2. As a reminder: Part 2 is the one that you have just completed.

  There will be 4 winners in the tournament of Part 3. Whether or not you are among them is determined as follow.

  [NoQuota] If you enter more correct answers than 8 of your group members did in Part 2, then you will receive **€ 1.50 per correct answer** (i.e., 3 times the *Piece Rate* payment). In other words, only 3 members of your group can have a Part 2- performance which is higher than your Part 3-performance, otherwise you receive **no payment** for this Part. In case of a tie, the ranking among the members with equal performances is determined randomly.

  [Quota] In each group, two of the 4 winners are in any case the 2 women with the best performance (of all 6 women). The other 2 winners are the group member with the best performance among the remaining members (i.e. excluding the 2 best-performing women). In case of ties, the ranking among the members with equal performances is randomly determined. If you are among the winners you will receive **€ 1.50 per correct answer** (i.e., 3 times the *Piece Rate* payment), otherwise you receive **no payment** for this Part.

  We now give an example, in order to illustrate the way that the winners are determined in the *Q-Tournament.*

  In order to compare your Part 3-performance with Part 2 performance of the other members of your group we do the following: we replace your Part 3-performance to your performance in Part 2 and we re-rank the group`s members according to their performance. So the new ranking is determined by your performance in part 3 and the performance of other eleven members of your group in part 2.

  We obtain a new ranking where males and females can be ranked according to their performance.

1) F_A	1) M_A
2) F_B	2) M_B
3) F_C	3) M_C
4) F_D	4) M_D
4) F_E	5) M_E
4) F_F	6) M_F

Where F_A is the best performing woman and F_F is the worst performing woman. In the same way, M_A is the best performing man and M_F the man with the worst performance.

The two women with the best performance, F_A and F_B, are definitely two of the four winners of the *Q-Tournament*. In order to determine the other two winners, we must find out who are the other two group members with the best performance among the remaining ten ones (besides F_A and F_B).

Hence, there are at least 2 women and at most 2 men as winners in a *Q-Tournament*.

In summary

A woman is a winner of the *Q-Tournament* if she has a better Part 3-performance than:

i) the other 4 women in her group in Part 2, **OR**

ii) 8 members of her group in Part 2.

A man is a winner of the Q-Tournament if he has a better Part 3-performance than

i) the other 4 men in his group in s, **AND**

ii) 8 members of his group in Part 2

After the task, you will only be informed about the number of your correct answers but you will not be informed about whether you were among the winner of the [NoQuota: *Tournament*] [Quota: *Q-Tournament*].

If Part 3 is randomly selected for the final payment, then your earnings depend on the choice of the payment and on your performance in this task.

Now, before to continue, we will explain how your choice in Part 3 affects the choices you can do in Part 4.

Part 4 - Instructions

The decision you make about the payment you want to be applied to your performance in Part 3 also affects the decision you will face in Part 4.

Task

In Part 4, you will be again given 4 minutes to calculate the correct sum of a series of three randomly selected three-digit numbers and two decimal numbers. The rules to perform the task are the same as in the three previous parts.

Earnings for Part 4

If in Part 3 you have chosen the *Piece Rate* payment, then in Part 4 you will be automatically paid according to the *Piece Rate* payment also in Part 4: you will receive 50 cents per problem you solve correctly in Part 4.

If in Part 3 you have chosen the [NoQuota: *Tournament*] [Quota: *Q-Tournament*] scheme, two cases can happen:

- If you are NOT among the 4 winners in Part 3, then in Part 4 you will be automatically paid according to the *Piece Rate* payment: in this case you receive 50 cents per problem you solve correctly in Part 4.

- If you are among the 4 winners in Part 3, then in Part 4 you will again have the possibility to choose whether you want to be paid according to the *Piece Rate* or a [NoQuota: *Tournament*] [Quota: *Q-Tournament*] payment:

  - If in Part 4 you choose the *Piece Rate* payment you receive 50 cents per problem you solve correctly in Part 4;

  - [NoQuota: *Tournament*] If in Part 4 you choose the *Tournament* payment your performance will be evaluated in comparison to the performance of the other eleven group members in Part 2. There will be 2 winners in the tournament of Part 4. Whether or not you are among them is determined as follow.
    If you enter more correct answers than 10 of your group members did in Part 2, then you will receive **€ 3 per correct answer** (i.e., 4 times the *Piece Rate* payment). In other words, only 1 other member of your group can have a Part 2- performance which is higher than your Part 4- performance, otherwise you receive **no payment** for this part. In case of a tie, the ranking among the members with equal performances is determined randomly.

  - [Quota: *Tournament*] If in Part 4 you choose the *Q-Tournament* your performance will be evaluated in comparison to the performance of the other eleven group members in Part 2.
    There will be 2 winners in the tournament of Part 4. Whether or not you are among them is determined as follows. **Note that in the tournament of Part 4 there is a gender quota as in Part 3: 1 out of the 2 winning positions are reserved for women.**
    If you enter more correct answers than 10 of your group members did in Part 2, then you will receive **€3 per correct answer** (i.e., 4 times the *Piece Rate* payment). In other words, only 1 other member of your group can have a Part 2- performance which is higher than your Part 4- performance, otherwise you receive **no payment** for this part.

    The 2 winners of Part *4 Q-Tournament* are determined as follows.
    In each group, one of the 2 winners is in any case the woman with the best performance (of all women in her group). The other winner is the group member with the best performance among the remaining members (i.e. excluding the best-performing woman). In case of ties, the ranking among the members with equal performances is randomly determined.
    We now give an example, in order to illustrate the way that the winners are determined in the *Q-Tournament*. In order to compare your Part 4-performance with Part 2 performance of the other members of your group we do the following: we replace your Part 4-performance to your performance in Part 2 and we re-rank the group members according to their performance. So the new ranking is determined by your performance in Part 4 and the performance of other seven members of your group in Part 2.
    We obtain a new ranking where males and females can be ranked according to their performance.

1) F_A	1) M_A
2) F_B	2) M_B
3) F_C	3) M_C
4) F_D	4) M_D
4) F_E	5) M_E
4) F_F	6) M_F

Where F_A is the woman with the best performance, and F_F is the woman with the worst one. In the same way, M_A is the best performing man and M_F the man with the worst one. The woman with the best performance, F_A, is definitely one of the two winners of the Q-Tournament. In order to determine the other winner, we must find out who is the other group member with the best performance among the remaining seven ones (besides F_A).

In summary

A woman is a winner of the *Q-Tournament* if she has a better Part-4 performance than

i) the other 5 women in her group in Part 2, **OR**
ii) 11 members of her group in Part 2.

A man is a winner of the Q-Tournament if he has a better Part-4 performance than

i) the other 5 men in his group in Part 2, **AND**
ii) 11 members of his group in Part 2

There is at least 1 woman and at most 1 man as winners in a *Q-Tournament*.

What happens now?

If you have any questions on Parts 3 and 4, please push the red button on your left at any moment during the experiment, an assistant will come to your seat to answer your questions in private. Before continuing, you will be asked to answer a few questions to verify your understanding.

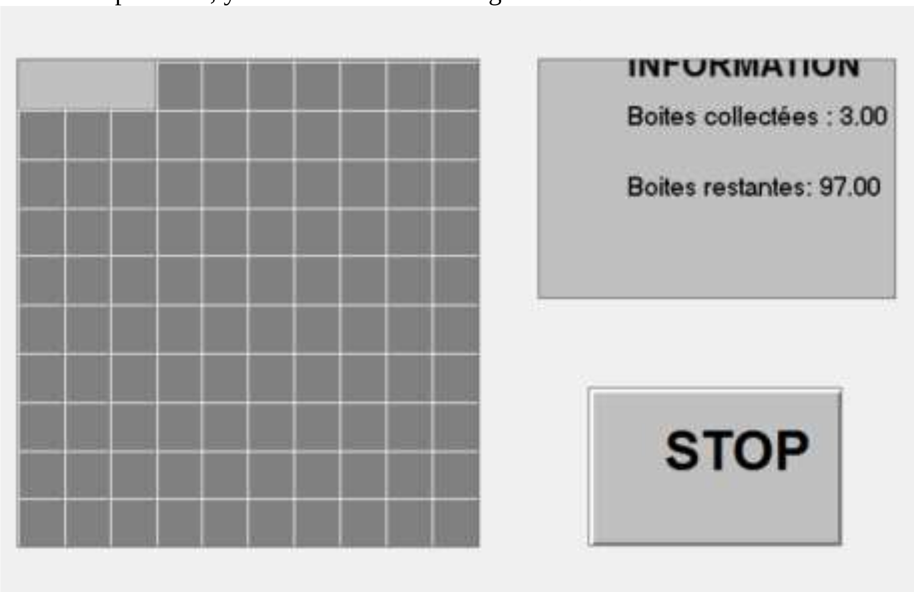
After that, we will continue with Part 3. First you will be asked to choose whether you want the *Piece Rate* or the [Quota: *Q-Tournament*] [NoQuota: *Tournament*] as a payment to be applied on your Part 3 performance.

Beliefs elicitation

After the completion of the task in stage 3, participants went to an unannounced stage of incentivized beliefs elicitation. Correct guesses were rewarded with €1 each. The beliefs elicited referred to performances in Task 2. Specifically, we asked subjects to guess their relative ranking within their group of 12 subjects and within the group of 6 subjects with the same gender. We also asked participants whether they expect males to have an average performance higher, lower or equal performance than females to test for their gender stereotypes.

Part 5 - Instructions

In the fifth part of the experiment, you will see the following screen:



On your left you see a field composed of 100 boxes.

You earn 0.10 Euro for every box that is collected. Every second a box is collected, starting from the top-left corner. Once collected, the box disappears from the screen and your earnings are updated accordingly. At any moment, you can see the amount earned up to that point.
Such earnings are only potential, however, because one of these boxes hides a time bomb that destroys everything that has been collected.

You do not know where this time bomb lies. You only know that the time bomb can be in any place with equal probability. Moreover, even if you collect the time bomb, you will not know it until the end of the experiment.

Your task is to choose when to stop the collecting process. You do so by hitting 'Stop' at any time.

The position of the bomb in the paying round has been randomly determined.

If you happen to have collected the box where the time bomb is located, you will earn zero. If the time bomb is located in a box that you did not collect, you will earn the amount of money accumulated when hitting 'Stop'.

If you have any questions on the fifth part, please push the red button on your left.

Control questions for part 1-4 of the experiment
[on the screen]
[Before Part 1 of the experiment started, all participants had to correctly answer the following questions aimed at verifying their understanding of the experimental instructions. Corrected answers are highlighted in yellow.]

Questions about the General Structure of the experiment

1. How many parts compose the experiment?
   [_] 4
   [_] 5
   [_] 6

2. How do the experimental earnings are determined?
   [_] The earnings of the five parts are summed up to determine the experimental earnings.
   [_] One from the first four parts 1-4 will be randomly selected and the earnings obtained in the selected part will be added to the earnings of part 5 to determine the experimental earnings.
   [_] One from the five parts will be randomly selected and the earnings obtained in the selected part determine the experimental earnings.

Questions about Part 1 (Piece Rate). Think now to Part 1, where the Piece Rate Payment is applied.

3. Imagine that Participant A has correctly solved 10 exercises while 5 were incorrect. How much does s/he earn in Part 1?
   [_] 2.5 Euros
   [_] 5 Euros
   [_] 10 Euros

[After the completion of Part 1 and before Part 2 of the experiment started, all participants had to correctly answer the following questions aimed at verifying their understanding of the experimental instructions.]
Questions about Part 2 (Tournament). Think now to Part 2, where the Tournament Payment is applied.

1. Imagine that Participant A has solved 10 exercises and 5 of them were incorrect. His/her performance is the second highest in his/her group. How much does s/he earn in Part 2?
   [_] 7.5 Euros
   [_] 10 Euros
   [_] 15 Euros

2. Imagine that Participant A has solved 4 exercises and 1 of them were incorrect. His/her performance is the fifth highest in his/her group. How much does s/he earn in Part 2?
   [_] 9 Euros
   [_] 4 Euros
   [_] 0 Euros

[After the completion of Part 2 and before Part 3 of the experiment started, all participants had to correctly answer the following questions aimed at verifying their understanding of the experimental instruction.]
Questions about Part 3 & 4 Think now to Part 3, where participants are given the possibility to choose between the Piece Rate and the [Quota: *Q-Tournament*] [NoQuota:Tournament] Payment Scheme.

1. **Imagine that Participant A has chosen the Piece Rate and that s/he solved 8 exercises, and 2 of them were incorrect. How much does s/he earn in Part 3?**
   [_] 0 Euros
   [_] 3 Euros
   [_] 6 Euros
   [_] 18 Euros

[NoQuota:]

2. **Imagine that Participant A has chosen the Tournament and that s/he solved 6 exercises, and 0 of them were incorrect.**
   a. **If, when comparing his/her performance to the part 2-performance of the other group members, his/her part 3-performance is the fourth highest in his/her group. How much does s/he earn in Part 3?**
      [_] 0 Euros
      [_] 3 Euros
      [_] 6 Euros
      [_] 9 Euros

b. **If, when comparing his/her performance to the part 2-performance of the other group members, his/her part 3-performance is the seventh highest in his/her group. How much does s/he earn in Part 3?**
[_] 0 Euros
[_] 3 Euros
[_] 6 Euros
[_] 9 Euros

[Quota:]

2. **Imagine that Participant B is a woman. She has chosen the Q-Tournament and that she solved 12 exercises, and 2 of them were incorrect. When comparing her performance to the part 2-performance of the other group members, her part 3-performance is the fifth highest in her group, but the second highest among all women in her group. How much does s/he earn in Part 3?**
[_] 10 Euros
[_] 15 Euros
[_] 30 Euro

3. **Imagine that Participant A has chosen the Piece Rate in Part 3. What are his/her possible choices in Part 4?**
[_] He/she can only apply the Piece Rate payment scheme to his/her performance in Part 4.

[_] He/she will be given the possibility to choose again between the [NoQuota:Tournament] [Quota: *Q-Tournament*] and a Piece Rate payment scheme for his/her performance in Part 4.

[_] he/she will be forced to apply the [NoQuota:Tournament] [Quota: *Q-Tournament*] payment scheme for his/her performance in Part 4.

4. **Imagine that Participant A has chosen [NoQuota:Tournament] [Quota: *Q-Tournament*]in Part 3 and that s/he has chosen the [NoQuota:Tournament] [Quota: *Q-Tournament*] also in Part 4. What happens if, after his/her choice, he/she is informed that he/she is not among the winners of the [NoQuota:Tournament] [Quota: *Q-Tournament*] in Part 3?**

[_] He/she can apply the [NoQuota:Tournament] [Quota: *Q-Tournament*] to his/her performance in Part 4.

[_] He/she can only apply the Piece Rate payment scheme to his/her performance in Part 4.

5. **Imagine that Participant A has chosen the [NoQuota:Tournament] [Quota: *Q-Tournament*] in Part 3 and that s/he has chosen the [NoQuota:Tournament] [Quota: *Q-Tournament*] also in Part 4. After he /she is informed that he/she is among the winners in Part 3, he/she perform the task in Part 4. In order to determine whether he/she is among the winner in Part 4, which of the following rules will be applied?**

[_] His Part 4-performance will be compared to the Part 3-performance of the 11 group members. Then the rule for the [NoQuota:Tournament] [Quota: *Q-Tournament*] in part 4 will be applied.

[_] His Part 4-performance will be compared to the Part 2-performance of the 11 group members. Then the rule for the [NoQuota:Tournament] [Quota: *Q-Tournament*] in part 4 will be applied.

[_] His Part 4-performance will be compared to the Part 3-performance of the group members who have chosen the Tournament [NoQuota:Tournament] [Quota: *Q-Tournament*] in Part 3.
Then the rule for the [NoQuota:Tournament] [Quota: *Q-Tournament*] in part 4 will be applied.