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JEL Codes: C91, D31, D63
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In search of unanimously preferred income distributions. Evidence from a choice experiment *

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Abstract

Using a choice-experiment in the lab, we look at preferences over pairs of income distributions within small groups in a firm-like setting. Is one type of distribution capable of attracting votes unanimously? It turns out that Pareto-dominance is the most important choice criterion: in binary choices over two distributions, all subjects prefer larger inequality when it makes everyone weakly better off. This is true, no matter whether income distribution is based on merit or luck. Unanimity only breaks once subjects' positions within the income distribution are fixed and known ex-ante. However, even then, 75% subjects prefer Pareto-dominant distributions. This suggests that efficiency motives are of primary importance, more so than the origin of inequality.
JEL classification: C91, D31, D63

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1 Introduction

One of the most important questions in economics is how to divide the social surplus and whether potential income inequality is acceptable or not. This question is not only relevant in a societal context but also within smaller groups, such as firms and organizations. Several motives of attitudes to income distribution have been unearthed and discussed by an abundant literature. These include purely self-regarding motives, whereby people focus on their own current income, future expected income, or income gaps vis-à-vis other relevant groups, as well as other-regarding motives, such as fairness of the income generation process (merit versus luck) (Konow, 2000), pure aversion for income differences (or for utmost top incomes) (Fehr and Schmidt, 1999), or Rawlsian pro-poor

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difference principle and maximin preferences (Charness and Rabin, 2002). These different motives are more or less salient depending on the setting of the choice that people have to perform, e.g. whether they choose behind the veil of ignorance or not.

This paper asks whether it is possible to identify a configuration where certain types of income distributions reach unanimity. It is based on a choice experiment framed as a series of choices between two projects that lead to different "bonus" distributions. More precisely, our design asks subjects to make a series of incentivized binary choices between two payoff distributions for a group of five individuals (the subject and four additional anonymous participants in the lab). Between subjects, we vary the origin of the position of the subject within the distribution (either based on luck or a real effort task). Within subjects, we vary whether one distribution is Pareto-dominant as compared to the other or not; we also ask subjects to choose both behind the veil of ignorance, hence not knowing their future rank and payoff, and with information about their position within their group. The series of binary choices that subjects have to make can be split into two categories: In the first category of choices, the total payoff is the same in the two proposed projects, but one distribution is more unequal and has higher top incomes and lower bottom incomes. In the second category of choices, the more unequal project Pareto-dominates the more equal one, i.e. it makes all of the group members weakly better off in absolute terms. Finally, we randomly assign subjects into a Merit and a Luck treatment: In the Merit treatment, people's position within their group of 5 is determined by their relative performance in an effort task to be performed at the end of the experiment. In the Luck treatment, ranking is determined randomly.

Our main finding is that, behind the veil of ignorance, subjects unanimously prefer the higher inequality project when it is Pareto-dominant. In this case, whether subjects belong to the Luck treatment or the Merit treatment does not make a difference. Unanimity only breaks once positions within the income distributions are fixed, i.e. subjects know their own ranking before they choose. However, even in that setting, about 75% of the subjects prefer the Pareto-dominant distribution over a more compressed payoff distribution. The rest of the subjects engage in money burning. They burn money at the top by choosing the low inequality project even if it does not improve the lot of the low-gain earners. Our results indicate that fixed positions are a source of frustration for a sizable share of subjects. Furthermore, we show that if subjects choose between two income that have the same efficiency (same total payoff), about 65% of them prefer the low-inequality distribution. When choosing behind the veil of ignorance subjects are significantly more likely to embrace the high inequality distribution if they are in the Merit rather than the Luck treatment. This significant treatment effect disappears as soon as subjects learn about their rank. In that case, 70% of the subjects prefer lower inequality when their own payoff is not affected. All subjects who are better off in the *low* inequality distribution, choose the latter, but only 80% of subjects who would be better off in the *high* inequality distribution choose the latter. Hence, 20% of individuals are strongly inequality averse and stick to their initially preferred income distribution even when this comes at a personal cost.

Our results contribute to the vast literature dedicated to distributive preferences. One part of this literature focuses on the various distributive motives that can affect choices. Engelmann and Strobel (2004, 2007) use a multi-player dictator game where they let subjects choose between three

different payoff distributions affecting them and two other players. Subjects' decisions reveal the relative importance of efficiency concerns, maximin preferences, and inequality aversion. However, there, subjects choose without uncertainty about their future payoff and position in the distribution. Their main finding is that inequality aversion does not play a major role in explaining behavior, as opposed to maximin preferences, efficiency concerns, and selfishness. Kritikos and Bolle (2001) show, in another choice experiment, that concerns about efficiency explain behavior better than strict inequality aversion. Our experiment also relates directly to papers testing Rawls theory experimentally such as Michelbach et al. (2003) and Frohlich et al. (1987). Michelbach et al. (2003) create 9 different income distributions that vary in terms of 4 allocation principles: equality, efficiency, need and merit. Subjects make hypothetical choices as impartial spectators: they appear to care both about equality and efficiency and seem to be doing their best to strike a balance between those two principles. Choices also vary a lot across socio-demographic characteristics. We depart from these papers by focusing more particularly on the conditions required to reach a consensus, rather than on the heterogeneity of preferences. Beckman et al. (2002) marks one of the few experimental contributions that tests explicitly whether subjects are more likely to vote in favor of Pareto-efficient distribution behind the veil of ignorance rather than when their position is revealed. Similar to us, they find considerable evidence that "envy" is more pronounced if subjects choose with known rank rather than behind the veil of ignorance.

We also complement other studies that focus more closely on the Merit versus Luck hypothesis, a distinction that is often considered as a criterion of fairness. Those who believe that the rich and the poor owe their situation to luck rather than effort may want to correct these "unfair" differences through income redistribution. Such theories of desert (Konow, 2003) have been documented empirically (Fong, 2001). They have been used to explain international differences in the demand for income redistribution and the extent of fiscal redistribution, in particular the divide between European countries and the United States. (Alesina and La Ferrara, 2005; Alesina and Angeletos, 2005). Several experimental studies use two-player dictator or ultimatum games to look at the effect of fairness concerns on altruistic behavior. They often use a contest, with a real effort task, and find that agents behave selfishly if the role of the first mover was earned rather than received without effort (Hoffman et al., 1994). Cherry et al. (2002) find a similar result for dictator games: dictators are less generous if their endowment was earned rather simply received.[1] Other experiments looked at multi-player versions of these games (Krawczyk, 2010; Durante et al., 2014; Bjerk, 2016; Lefgren et al., 2016), focusing mostly on redistribution rather than pure distributive preferences. They often conclude that merit matters but Durante et al. (2014) and Bjerk (2016) find that the source of income does not affect behavior if individuals know their rank within the distribution.

[1] Ruffle (1998) also shows that if the winner of a contest contributes more to the total payoff, she is also awarded a higher split by the dictator. Similarly, Oxoby and Spraggon (2008) find that if the dictator earns the total payoff, she behaves selfishly, but if the receiver earns it, she allocates on average a significant amount to the receiver.

2 Design of the experiment

Our laboratory experiment is designed to test how preferences over different income distributions depend on the three arguments described earlier: uncertainty about one's position, Pareto-dominance and the Merit versus Luck hypothesis. The experiment consists in asking subjects to make a series of incentivized binary choices between two payoff distributions, called Project A and Project B, for a group of 5 individuals (the subject and four additional anonymous participants in the lab). We frame this decision as a firm setting where bonuses must be allocated within a work group.[2] Participants are invited to the lab by panels of 20, 15 or 10 people and are then randomly allocated into groups of 5.[3] Subjects are not informed about the identity of the other members of their group.

2.1 Position uncertainty

In the first part of the experiment, subjects make 8 choices behind the veil of ignorance. They are informed that they have to make their decision without knowing their position within the group. In the Luck treatment, we explicitly inform subjects that their positions will be drawn randomly, while in the Merit treatment, they know that their positions will be based on a simple task to be performed at the end of the experiment. In both treatments, this information is revealed at the same moment: right before they start making the binary choices (see more details in section 2.3).

After they made the 8 first choices, subjects are informed about their position, which is not going to change until the end of the experiment. In the second part, they redo six of the eight choices, but this time, they know where they stand in the income distribution. These variations match real-life situations that can occur within a firm: Choosing behind the veil of ignorance corresponds to a situation where positions within the firm are open; by contrast, fixed positions in the distribution evoke a situation where there is no prospect of mobility.

2.2 The Choices

The binary choices belong to two categories: 4 Constant Efficiency Choices and 3 Pareto Comparable Choices, i.e. where one distribution (A) Pareto-dominates the other (B). The last choice (Choice 8) is a sanity check. Within each group of payoff distributions, subjects face the same type of trade-off, but the numbers are slightly modified so as to test the robustness of the choices to marginal changes in the distributions. Notice that, throughout this paper, Project B is always the project with the lowest inequality level.[4]

Table 1 displays Constant Efficiency Choices. The sum of the payoffs is constant across Project A and Project B, but Project A involves a higher degree of inequality than Project B. Hence, choosing Project B over Project A favors bottom players, to the detriment of top players.[5] The

[2]The exact framing is: *Imagine that you are in a group with which you are carrying a project, within a firm or an organization. You will choose between several projects that give to each member of your group different bonuses.*

[3]Variations in the number of subjects per session come from differences in show-up rates.

[4]Within each category of trade-offs, choices appear in random order, as well as the letter of the project. For some subjects, what is presented as Project A, on the left-hand side, as the first choice, was presented to others as Project B, on the right-hand side, for a later choice.

[5]The screenshot of a choice, as presented in the laboratory, can be seen in Figure C1.

pairs of choices differ by the degree of inequality (e.g. the difference in standard deviation between Project A and B is higher for Choice 1 as compared to Choice 2 and 3), as well as by the rank that is affected by the choice (e.g. top ranked players are not directly affected by the decision in Choice 3 but their payoff does vary in the other choices).

Table 2 displays the Pareto Comparable Choices, where Project A always Pareto-dominates Project B and presents a more unequal income distribution. Within this category of choices, we vary the ranks that benefit from choosing Project A. For example, in Choice 7 all but the bottom-rank player benefit from Project A, while only the first-rank player benefits in Choice 6.

Choice 8 is a sanity check, as it does not involve any kind of trade-off: behind the veil of ignorance, everybody is weakly better off choosing A $\{1,200;\ 1,100;\ 1,000;\ 900;\ 800\}$ than in B $\{800;\ 700;\ 600;\ 500;\ 400\}$ and inequality is constant across the two projects. Reassuringly, behind the veil of ignorance, 97% (309) subjects actually choose Project A.[6]

All choices are incentivized combining the random dictator approach with the random problem selection method. More precisely, for each part (behind the veil of ignorance, and decisions with known rank), subjects are told that the experimenter will randomly choose one person in each group of five subjects, and one out of the pairs of choices. The project that will have been chosen by that person in that round will become payoff relevant for herself and the other members of her group. We use the following exchange rate to convert experimental units into euros: 200 points = 1 euro.

Table 1: Constant Efficiency Choices

	Choice 1		**Choice 2**		**Choice 3**		**Choice 4**	
	A	**B**	**A**	**B**	**A**	**B**	**A**	**B**
Person 1	1400	1000	1300	1000	1000	1000	1400	1100
Person 2	900	800	850	800	800	800	1200	800
Person 3	600	600	800	600	600	500	600	700
Person 4	300	500	200	500	600	500	600	700
Person 5	100	400	150	400	150	300	300	600
Information below not shown to the subjects								
Total	3300	3300	3300	3300	2900	2900	3850	3850
Std. dev.	513	241	484	241	340	311	502	199
GINI	0.39	0.18	0.36	0.18	0.29	0.21	0.32	0.12

[6]Before letting the subjects choose between the different projects, they undertake a training round. To make sure that all subjects have understood the procedure, we let them answer a short questionnaire. Figure C5 in the Appendix shows screenshots of the training choice and the questionnaire.

Table 2: Pareto Comparable Choices. Project A is Pareto-Dominant

	Choice 5		**Choice 6**		**Choice 7**	
	A	**B**	**A**	**B**	**A**	**B**
Person 1	1400	1000	3000	1000	1200	1000
Person 2	900	800	800	800	1000	800
Person 3	600	600	600	600	800	600
Person 4	500	500	500	500	700	500
Person 5	400	400	400	400	400	400
Information below not shown to the subjects						
Total	3800	3300	5300	3300	4100	3300
Std. Dev.	404	241	1095	241	303	241
Gini	0.23	0.18	0.52	0.18	0.19	0.18

2.3 Merit versus Luck

Between subjects, 150 subjects were randomly allocated to the Luck treatment and 170 to the Merit treatment. In the Luck treatment, positions within a payoff distributions are based on random draws. In the Merit treatment, positions are determined by the relative performance of subjects in a task. The task was designed to elicit effort and not innate talent. It consists in typing as many words as possible from a string of senseless five letters "words", in 30 seconds. Members of the group are then ranked in decreasing order based on the number of words that they were able to type in 30 seconds. In case two subjects typed the same number of words, their ranking is based on the time of completion of the last "word".[7] This allows having a quasi-continuous relative measure of effort and avoiding ties. In order to maintain the procedural balance between the treatments, we also have subjects in the Luck treatment perform the task. Needless to say, we instruct them that the task will bear no impact on their payoff or on the rest of the experiment.

Within the Merit treatment, subjects are informed, before making choices behind the veil of ignorance, that the ranking within their group will be determined by their relative performance in a task. However, we do not inform them about the nature of the task. Letting them know about it *ex-ante* would somewhat tear the veil of ignorance, as subjects would be able to form expectations about their performance. Nevertheless, we ask subjects to predict the position they expect to achieve after the task (before the latter is described) in order to have a subjective measure of self-confidence, that we will analyze in the robustness check section. A screenshot of the real effort task as presented in the laboratory can be found in the Appendix B and is displayed in Figure C4. Concerning the Luck treatment, subjects are informed before they make choices behind the veil of ignorance that their positions will be determined randomly within their group.

2.4 Control variables

The binary choices between two payoff distributions can also be interpreted as risky bets. De facto, risk aversion and inequality aversion are two closely related measures (e.g. Harsanyi, 1953).

[7] Before performing the real task, subjects underwent a 15 second training task.

In order to disentangle the two motives, we elicit risk aversion using two methods. First, we use an incentivized elicitation method introduced by Eckel and Grossman (2002) (henceforth Eckel-Grossman method). This method requires subjects to pick one out of six lotteries. The expected values and variance (riskiness) of the lotteries are jointly increasing.[8] Second, we let subjects choose between two different lotteries, depicted in Table A2 (Appendix A.1), that correspond to the same payoffs as Choice 1. Subjects have the choice between a relatively safe lottery (Lottery B) and a relatively risky lottery (Lottery A). The expected value is the same for both lotteries. A payoff is drawn randomly from the chosen lottery. For both lotteries the probability of getting any of the five payoffs is 0.2. As the lottery has the same values as Choice 1, a person who does not have any social preferences should make the same decision in face of the choice behind the veil of ignorance and this lottery. Conversely, any difference between a subject's choice in the lottery setting and in the group-payoff setting is likely to denote a pure preference for certain payoff distributions. We elicit risk aversion *before* the subjects choose behind the veil of ignorance. The subjects are informed about the result of the risk-aversion tasks at the *end* of the experiment.

We conducted 14 sessions with a total of 320 subjects. The basic socio-economic characteristics of the subject pool elicited through a post-experimental questionnaire are displayed in the Appendix Table A1.

3 Results

We present the results for each category of choices (Constant Efficiency and Pareto Comparable ones) along two dimensions: choices behind the veil of ignorance versus know position, and Merit versus Luck treatments.

3.1 Conditions to reach a consensus

Can subjects agree on what is the most desirable shape of the payoff distribution behind the veil of ignorance? Figure 1 displays the pooled results of the choices between Project A (high inequality project) and Project B (low inequality project). Observations are at the choice-subject level: there are 4 choices per subject in the Constant Efficiency Choices category (left panel) and 3 choices per subject in the Pareto Comparable Choices category (right panel).

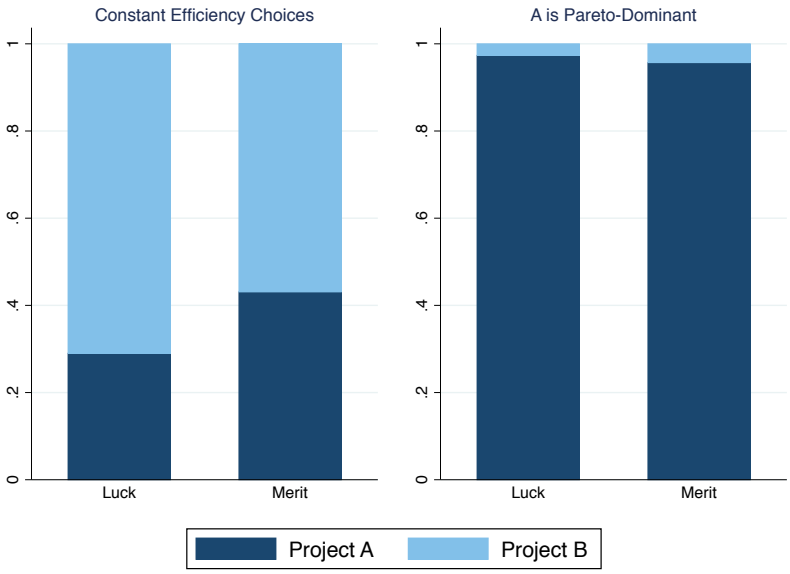
Regarding Constant Efficiency Choices, behind the veil of ignorance, we observe a high degree of heterogeneity. On average across both treatments, in 63% of the cases, subjects prefer the low inequality Project B. But subjects are less likely to choose Project B in the Merit treatment than in the Luck treatment: 57% of observations choose Project B in the Merit treatment against 71% in the Luck treatment (a two-sided t-test rejects equality in means at the 1% level). This pattern of 30/70 split for the Luck Treatment and 40/60 split for the Merit Treatment is fairly robust across all the Constant Efficiency Choices.[9] This result is in line with the literature on the Merit versus Luck hypothesis. However this is the only time, in the entire experiment, that the Luck and Merit

[8] The sixth lottery is an exception. Here, the variance is increasing compared to the fifth one, but not its expected value.

[9] This is shown in Figures A4.

treatments lead to different behavior. In all the other contexts we consider, i.e. Pareto Comparable Choices and choices with known rank, both Luck and Effort treatment groups behave similarly.

Figure 1: Choices Behind the Veil of Ignorance by Treatment



Moving to the right panel of Figure 1 that pools the results across the three choices where A is Pareto-dominant, we can see that when the more unequal distribution of Project A makes everyone at least weakly better off compared to Project B, then Project A is chosen almost unanimously and we reach a consensus. Surprisingly, the origin of inequality no longer matters: the results are not statistically different across the Luck and Merit treatments.

Here again, the results are not driven by one particular choice.[10] Specifically, Choice 6, with its large top payoff of 3000 units, is not driving the results. In all of the 3 binary choices of this category, at least 95% favor the more unequal Project A. Hence, behind the veil of ignorance, subjects do not seem to be bothered by top income inequality: Pareto dominance is more desirable.

These results are confirmed in a Logit regression (columns 1-3 in Table 3) pooling all of the 7 choices and displaying the marginal effects. We regress a dummy variable equal to 1 if Project B (low inequality) is chosen on the variables describing the context of the choice: a dummy equal to 1 if the subject is under the Merit treatment and 0 under the Luck treatment, and a dummy for the category of the choice (Constant Efficiency type of choice). The latter is what matters the most: moving from a Pareto Comparable Choice to a Constant Efficiency type of choice increases the probability to choose the low inequality Project B by 56.6 percentage points on average (column 1). The origin of the distribution matters, but much less: being in the Merit treatment reduces the probability to choose Project B by 7.3 percentage points, but this only holds for Constant Efficiency Choices: when the interaction term between the Merit dummy and the Constant Efficiency dummy is introduced in the regression, it attracts a negative coefficient, but kills the statistical significance of Merit main effect (columns 2 and 3).

[10]The distribution of decisions for Pareto Comparable Choices is found in Figures A4.

Table 3: Drivers of Inequality Aversion (Choice of Project B) - Logit Regressions on Pooled Data

	Veil of ignorance			Known position		
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. = 1 if Project B (low inequality) is chosen						
Merit	-0.0732***	0.0718	0.0677	-0.00601	0.0260	0.0302
	(0.0227)	(0.0646)	(0.0588)	(0.0202)	(0.0339)	(0.0334)
Constant Efficiency	0.566***	0.648***	0.633***	0.173***	0.203***	0.203***
	(0.0194)	(0.0474)	(0.0430)	(0.0185)	(0.0300)	(0.0296)
Merit * Constant Efficiency		-0.161**	-0.155**		-0.0562	-0.0579
		(0.0695)	(0.0650)		(0.0422)	(0.0419)
Risk aversion (Eckel-Grossman)			0.0312***			0.002
			(0.0065)			(0.0064)
(Payoff B - Payoff A)/Payoff A				0.526***	0.525***	0.528***
				(0.112)	(0.112)	(0.112)
Controls	No	No	Yes	No	No	Yes
Observations	2240	2240	2240	1920	1920	1920
Pseudo R^2	0.343	0.346	0.393	0.356	0.357	0.360

Robust standard errors clustered at the individual level in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The coefficients are marginal effects estimated using a logit model on pooled data. The unit of observation is the individual-choice level. *Merit* is a dummy variable equals to 1 if the subject is in the Merit treatment and 0 for the Luck treatment. *Constant Efficiency* equals 1 in the case of Constant Efficiency Choices (Choices 1 to 4) and 0 in the case of Pareto Comparable Choices (Choices 5 to 7). *Merit*Constant Efficiency* is an interaction term between the two previous variables. The last explanatory variable corresponds to the difference in payoff resulting from choosing Project B rather than Project A given the position of the subject in the distribution. Risk aversion is elicited using the Eckel-Grossman method; a higher value in the Eckel-Grossman task is equivalent to an increase in risk aversion. Columns 1 to 3 pool decisions made behind the veil of ignorance and columns 4 to 6 pool decisions made with known position within the income distribution. The control variables include age, and dummy indicators for: female, background in economics, employed, being in a relationship, holding a higher degree, and a "week of the session" dummy.

3.2 Choices with known position

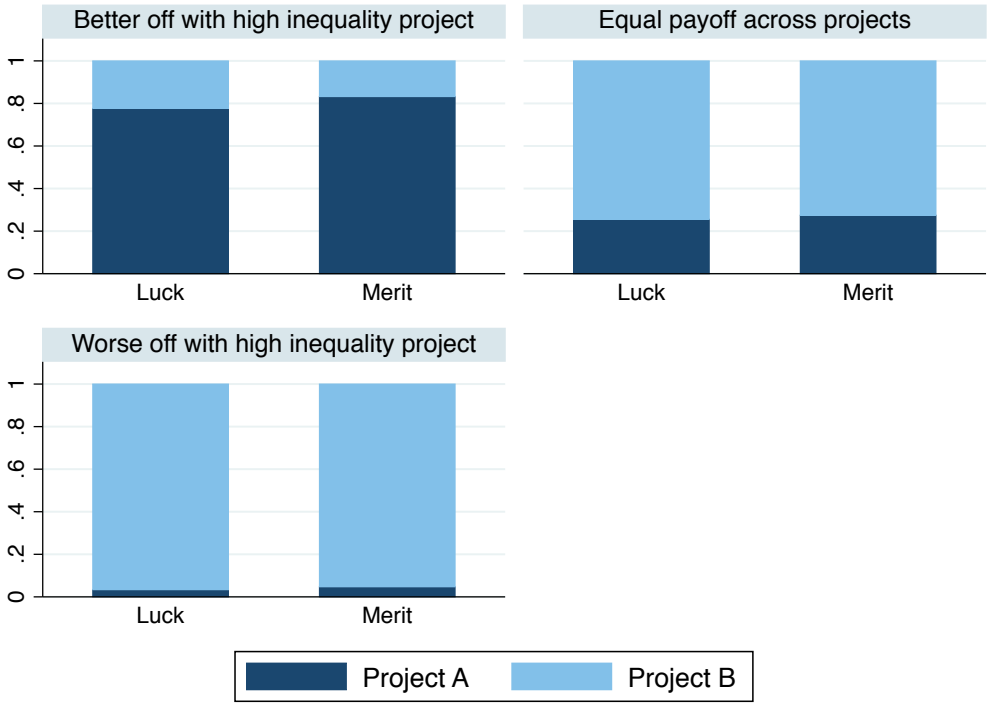
Thus far, we have shown that, when choices were made behind the veil of ignorance, it is possible to reach a consensus, and the main condition is Pareto-dominance. But what happens when subjects know their own positions in the distribution and have to make the same choices? Can a consensus still be reached? Figure 2 shows how subjects choose across projects for the Constant Efficiency Choices depending on their position. The top left panel displays the pooled results when subjects would be strictly better-off by choosing the high inequality Project A. The top right panel shows the choice of subjects whose earnings are the same in Projects A and B. Finally, the bottom panel shows how subjects react when they are worse off in the high inequality Project A.[11]

As one could expect, choices are largely driven by own-payoff maximization. Project A is selected in more than 80% of the time by subjects whose payoff is higher with this choice; but it is chosen in less than 3% by subjects who stand to loose by selecting it. When subjects face the same payoff in Project A and Project B, their choices are very similar to what happens behind the veil of ignorance, with the important difference that here, choices do not depend on the Luck versus Merit treatment.

Nevertheless, not all players are selfish payoff maximizers: almost 20% of the players chose the

[11]Note, that the trade-off a player faces differs across choices; e.g. top-ranked players face a trade-off in Choices 1 and 2 but not in Choice 3.

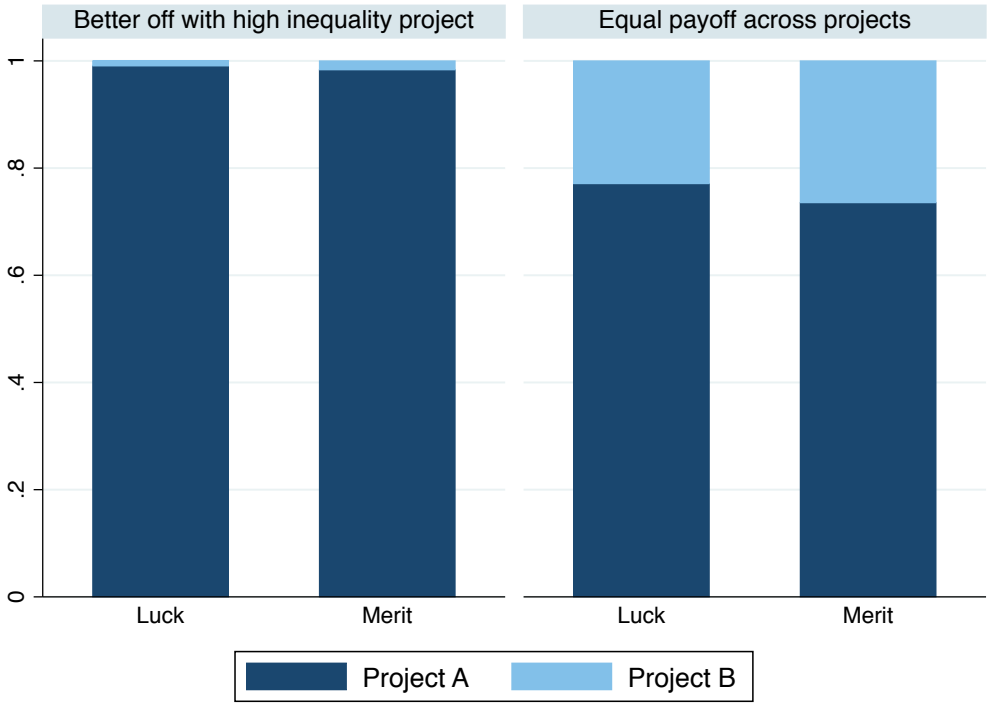
Figure 2: Decisions with Known Position - Constant Efficiency Choices



more equal Project B that favors the bottom-rank individual, even if it implies giving up a higher payoff for themselves. Interestingly, the willingness to sacrifice one's own income in order to decrease inequality is not related to Luck versus Merit treatments. The last 3 columns of Table 3 confirm these results. The only two significant predictors of choice are whether the subject is confronted to a Pareto-dominant choice (where A is Pareto-dominant), and the variation of payoffs between Project B and Project A. We should emphasize that these results come in spite of the high saliency of the effort task. Indeed, subjects went through the task right before making the choices with known positions. Finally, the choices are not significantly dependent on subjects' rank. Subjects choose Project A (or B) with the same likelihood no matter what their rank is (regressions are not reported here).

Figure 3 displays the pooled results of the Pareto Comparable Choices where Project A is Pareto-dominant and subjects know their position. Unsurprisingly, subjects still favor quasi-unanimously the high inequality project when it is in their advantage (left panel). However, when their gain is the same in Projects A and B about 23% of the subjects act as money burners. They burn money at the top by choosing Project B even if it does not improve the lot of the low-gain earners. If we interpret this result in a broader context, it echoes well a situation where positions within firms are fixed and upward mobility is no longer possible. Our results indicate that this situation is a source of frustration for a sizable share of the subjects.

Figure 3: Decisions with Known Position - A is Pareto-Dominant



4 Robustness Checks

4.1 Are subjects consistent within a category of choices?

Our main results are based on average choice frequencies, but it might be the case that subjects do not choose consistently throughout the experiment. We want to determine whether subjects are actually consistent within a category of choices, despite the fact that choices were displayed randomly.

Let's first look at results behind the veil of ignorance. Obviously, subjects choosing within the category of Pareto Comparable Choices are highly consistent since there is quasi-unanimity in all choices (about 92% of the subjects always select the same project within this category of choice). What about Constant Efficiency Choices behind the veil of ignorance? If we consider as being consistent a subject who chooses the same Project (A or B) in each of the four occasions, then we identify that 50.3% of the subjects are consistent. If we consider as being consistent subjects choosing the same Project (A or B) in 3 occasions out of 4, we find that 85% are consistent.

Turning to behavior with known rank, we observe that only 41% of the subjects always stick to the same Project (A or B) within the Constant Efficiency Choice category. But this is explained by the payoff maximization behavior we described in Section 3.2. Concerning Pareto Comparable Choices with known positions, 78% of the subject are always choosing the same project. We have shown above that a significant number of subjects burn money at the top of the distribution if they do not stand to gain from the unequal distribution. If subjects have the opportunity to burn money at the top of the distribution more than once, 88% of them do so every time they have the

opportunity.

In summary, subjects behave in a fairly consistent way within each category of choices, except when they engage in payoff maximization. In that case, they may switch in order to improve their payoff.

4.2 Is choosing behind the veil of ignorance the same as choosing between two lotteries?

If individuals do not have any distributive preferences, the choice between two income distributions is equivalent to a choice between two lotteries. Then the choices should be interpreted as reflecting risk aversion rather than social preferences. Prior literature suggests that this is not the case (Schildberg-Hörisch, 2010; Johansson-Stenman et al., 2002). To test this hypothesis we asked subjects in the risk elicitation part of the experiment to choose between two lotteries (Table A3) that are payoff-equivalent to Choice 1. Each lottery has five payoffs that are equally likely to be drawn. The only difference with Choice 1 is that subjects choose a lottery for themselves only and their decisions do not affect any others subjects. Figure A2 depicts the share of choices for each lottery by treatment group and compares it with the decisions made by each treatment group in Choice 1. The Luck treatment group does opt more for the equal project B (71.3%) than they opt for the safer lottery (64.7%), although both choices are payoff-equivalent. On the contrary, subjects in the Merit treatment group are slightly less likely to opt for Project B (54.1%) than for the safe lottery (59.4%). These differences cast doubt on the hypothesis that inequality aversion is indistinguishable from risk aversion.

Table 4: Is choice of Project B *only* explained by risk?

	(1)	(2)
Dep. Var. = 1 if Project B (low inequality) of Choice 1 is chosen		
Safe lottery is chosen	0.275***	0.262***
	(0.068)	(0.075)
Merit		-0.18***
		(0.0336)
Controls	No	Yes
N	320	320
Pseudo-R^2	0.058	0.133

Robust standard errors clustered at the session level in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The coefficients are marginal effects estimated using a logit model where the dependent variable is a dummy variable equal to 1 if the subject chose B in Choice 1 behind the veil of ignorance. The unit of observation is the individual level. *Safe lottery is chosen* equals 1 if the lottery equivalent to Project B is chosen. *Merit* is a dummy variable equal to 1 if the subject is in the Merit treatment and 0 for the Luck treatment. The control variables include age, and dummy indicators for: female, background in economics, employed, being in a relationship, holding a higher degree, and a week of the session dummy.

To test further whether choices behind the veil of ignorance are completely explained by risk aversion, we regress Choice 1 on the choice between the two lotteries and other covariates. As shown in Table 4 choosing the safe lottery increases the likelihood of also choosing the equal project by 27 percentage points. However, the inclusion of this predictor does not explain all of the choice variations, and other covariates such as Luck or Merit treatment, being employed, or having a background in economics, remain statistically significant.

4.3 Does the significant treatment effect pick up over-confidence?

The significant effect of the Merit treatment in the Constant Efficiency Choices could be driven by subjects who are over-confident, hence choose Project A because they believe that they will perform well at the task and achieve a top position. This would imply that they choose Project A for self-regarding motives instead of fairness motives. This is unlikely given that subjects have no information about the nature of the task when they make their choices. Nevertheless, in order to capture people's expectations, we asked subjects to estimate the position they will achieve after the task. It turns out that most subjects were relatively optimistic: 97.06% of the subjects in the Merit treatment predicted that they will at least achieve the third position, which implies that they are weakly better off in Project A in the Constant Efficiency Choices. However, only 45.9% of subjects actually chose Project A. If self-confidence were really driving the results, a much higher share of subjects should choose Project A.

Table 5: Confidence and Over-Confidence do not Predict Choices

	Constant Efficiency (excl. Choice 3)			Choice 3		
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. variable = 1 if Project B (low inequality) is chosen						
Predicts rank 2	0.0710		0.0769	0.0385		0.0470
	(0.0697)		(0.0702)	(0.0786)		(0.0787)
Predicts rank 3	0.0578		0.0684	0.390***		0.405***
	(0.0741)		(0.0728)	(0.0933)		(0.0908)
Predicts rank 4	-0.0540		-0.0548	0.140		0.144
	(0.164)		(0.162)	(0.181)		(0.184)
Rank		-0.0202	-0.0231		-0.0177	-0.0301
		(0.0204)	(0.0201)		(0.0260)	(0.0249)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	510	510	510	170	170	170
Pseudo R^2	0.117	0.115	0.120	0.179	0.102	0.185

Robust standard errors clustered at the individual level in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The coefficients were estimated using a logit model on the subjects in the Merit treatment. *Rank* denotes the position in a group that the subject will achieve after the effort task. A larger value means a lower gain; *Predicts rank #* are dummies indicating the self-reported rank the subjects expect to attain. The omitted category is expecting first rank (highest gain). The dependent variable is the choice made by subjects behind the veil of ignorance, coded 1 if subject chooses Project B and 0 if subjects chose Project A. The unit of observation is the individual-choice level within a category of choices. Regressions in columns 1 to 3 pool individual choices for Choices 1,2 and 4. There are thus 3 observations per treated individual in these regressions. Columns 4 to 6 only consider Choice 3; hence, there is one observation per individual. The control variables include risk aversion (Eckel-Grossman), age, and dummies for: female, background in economics, employed, being in a relationship, and holding a higher degree.

Furthermore, overconfidence would imply that predicted positions are a strong predictor of actual choices within the Merit treatment.[12] Table 5 tests this hypothesis. We include both predicted position and rank to control jointly for confidence and over-confidence. If confidence is driving the result, we should observe a correlation between future position and choice; if overconfidence is driving the results, we should see a relationship between predicted position and choice that persists after controlling for rank. However, none of the coefficients are statistically significant when pooling Choices 1, 2 and 4. Actual rank and predicted position also fail to predict choices in separate regressions. We do find that individuals who predict to be ranked third are significantly more likely to choose Project B in Choice 3, but this goes against the overconfidence hypothesis because they would actually loose part of their own payoff if they chose Project B and were actually ranked third.

5 Conclusion

We depart from the literature on distributive preferences by focusing on consensus rather than the heterogeneity of preferences. This experiment sheds light on the conditions under which unanimity over income distributions in small groups can be reached and when it breaks. It turns out that Pareto-dominant distributions are likely to reach a consensus, even if they come at the cost of higher inequality. But decisions must be made behind the veil of ignorance. Once positions are fixed and known ex-ante, a non negligible proportion of individuals engage in money burning at the top of the distribution. Despite the saliency of the effort task in our experiment, the relevance of the Merit versus Luck hypothesis appears to be rather weak in our context.

[12] We did not ask subjects in the Luck treatment about their predicted position, in order to avoid confusion.

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A Tables and Figures

A.1 Tables

Table A1: Balance Table

	(1) Luck	(2) Merit	(3) Overall	(4) Diff.	(5) p-value t-test difference in means
Age	24.88	25.38	25.15	-0.502	0.425
Secondary Degree	0.713	0.771	0.744	-0.057	0.243
Female	0.533	0.541	0.537	-0.008	0.889
Employed	0.173	0.212	0.194	-0.038	0.387
Student	0.687	0.647	0.666	0.040	0.455
Economics background	0.413	0.406	0.409	0.007	0.893
In a relationship	0.313	0.365	0.341	-0.051	0.335
Political Orientation	3.811	3.532	3.656	0.278	0.335
Risk loving (6 lotteries)	3.693	3.735	3.716	-0.042	0.816
Risk loving (2 lotteries)	0.647	0.594	0.619	0.053	0.336
Subjective risk measure	6.193	6.229	6.213	-0.036	0.883
N	150	170	320	320	

Notes: This table presents the summary statistics of individual characteristics of the whole sample. *Treated* is an indicator variable equal to 1 if the subject was in a group where performance rather than luck determined rank. *Secondary degree* is an indicator equal to 1 if the subject has a higher degree than the French Baccalaureate. *Employed* is an indicator variable equal to 1 if the subject is currently employed and not self-employed or in his studies. *Student* is an indicator equal to 1 if the subject is currently a student. *Economics background* is an indicator variable equal to 1 if the subject has an academic background in economics or a related subject; i.e. she is either an economics student or has studied it in the past. *In a relationship* is an indicator equal to 1 if the subject is currently in a civil relationship (the subject pool did not contain a married subject). *Political orientation* is a variable ranging from 0-10. 0 indicates that a subject identifies herself very much as being left wing and 10 indicates that a subject identifies herself as being very right wing. Risk loving (6 lotteries) corresponds to the choices made in the Eckel-Grossman task. A score closer to 1 means higher risk aversion. Risk loving (2 lotteries) is 0 if the subject is risk averse and one otherwise. Subjective risk measure goes from 0 to 10 where 0 means extreme reported risk aversion. The precise questions asked are presented in Appendix C.

Eliciting risk aversion

Table A2: Choice table to elicit risk aversion using Eckel-Grossman method (Lottery 1)

Lottery	Low gain	High gain	Mean	St. Dev.	r	Choice share
Lottery 1	140	140	140	0	$3.46 < r$	10.00%
Lottery 2	120	180	150	30	$1.16 < r < 3.46$	11.25%
Lottery 3	100	220	160	60	$0.72 < r < 1.16$	31.88%
Lottery 4	80	260	170	90	$0.5 < r < 0.72$	11.56%
Lottery 5	60	300	180	120	$0 < r < 0.5$	14.69%
Lottery 6	10	350	180	170	$r < 0$	20.63%

Notes: The second and third columns show the possible gains for each lottery. The probability of each gain to be drawn is 0.5 in all lotteries. The sixth column displays the implied range of the coefficient of relative risk aversion denoted as r assuming a CRRA utility function ($u(x) = x^{1-r}$). The probability of each payoff being chosen lies at 50% for all lotteries. The last columns shows the percentage of subjects that chose this lottery.

Table A3: Choice between two lotteries

	Lottery A	Lottery B
	1400	1000
	900	800
	600	600
	300	500
	100	400
Total	3300	3300
Standard deviation	512.84	240.83
GINI	0.39	0.18
Percent of choices	38.13%	61.88%
if luck	35.33%	64.67%
if merit	40.59%	59.41%

Notes: The columns show the possible payoffs of each lottery. The probability of any payoff in each lottery is 0.2. Subjects choose between Lotteries A and B.

A.2 Figures

Figure A1: Distribution of the Choices Made for Lottery 1

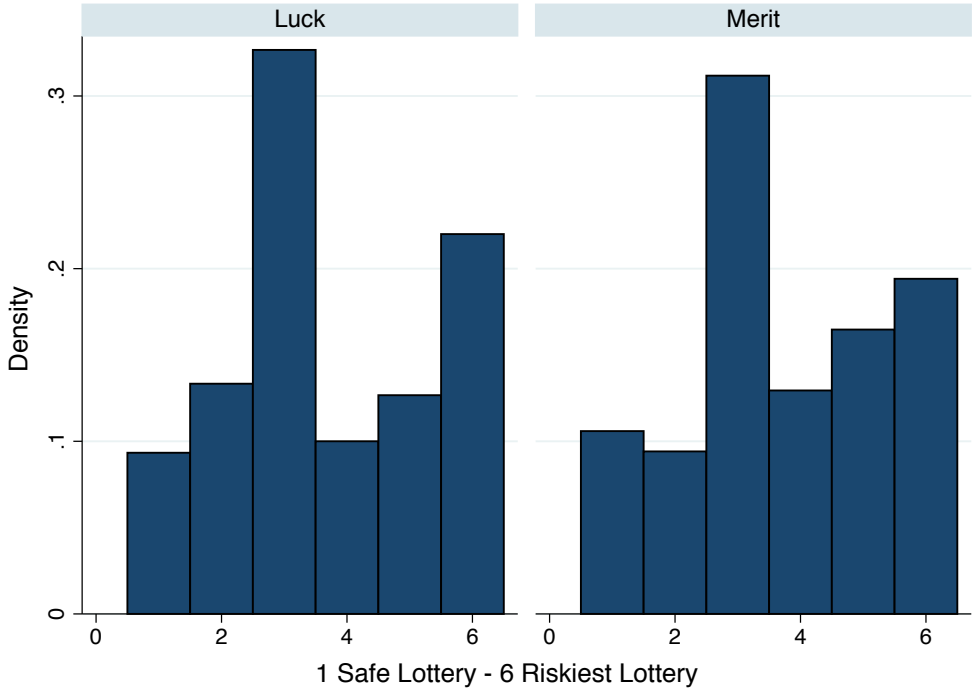
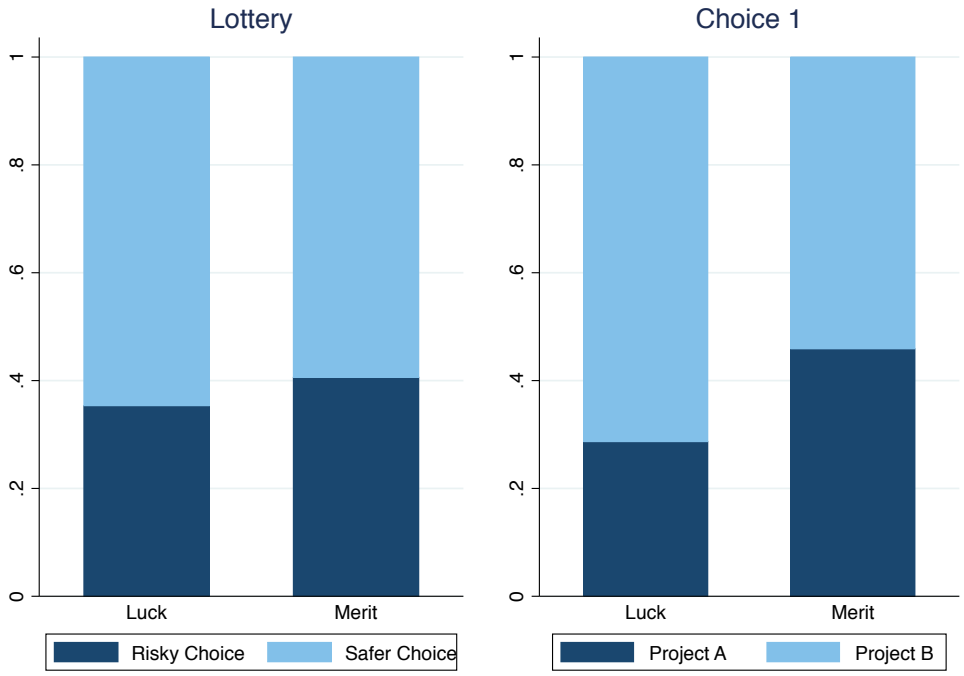


Figure A2: Differences between Choice 1 and the payoff-equivalent lottery



Notes: The lottery and Choice 1 are payoff-equivalent. In the lottery setting, subjects choose between two lotteries that have 5 equally likely payoffs. These payoffs are identical to the ones of Project A and Project B in Choice 1.

Figure A3: Distribution of the Choices Made Behind the Veil of Ignorance - **Constant Efficiency Choices**

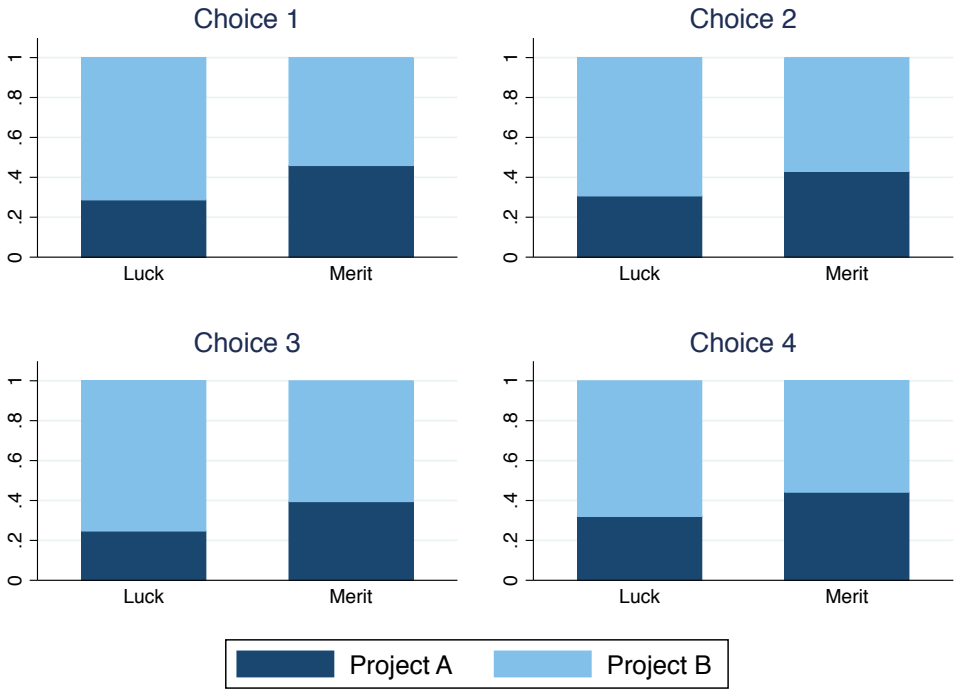


Figure A4: Distribution of the Choices Made Behind the Veil of Ignorance - **A Pareto-Dominant project**

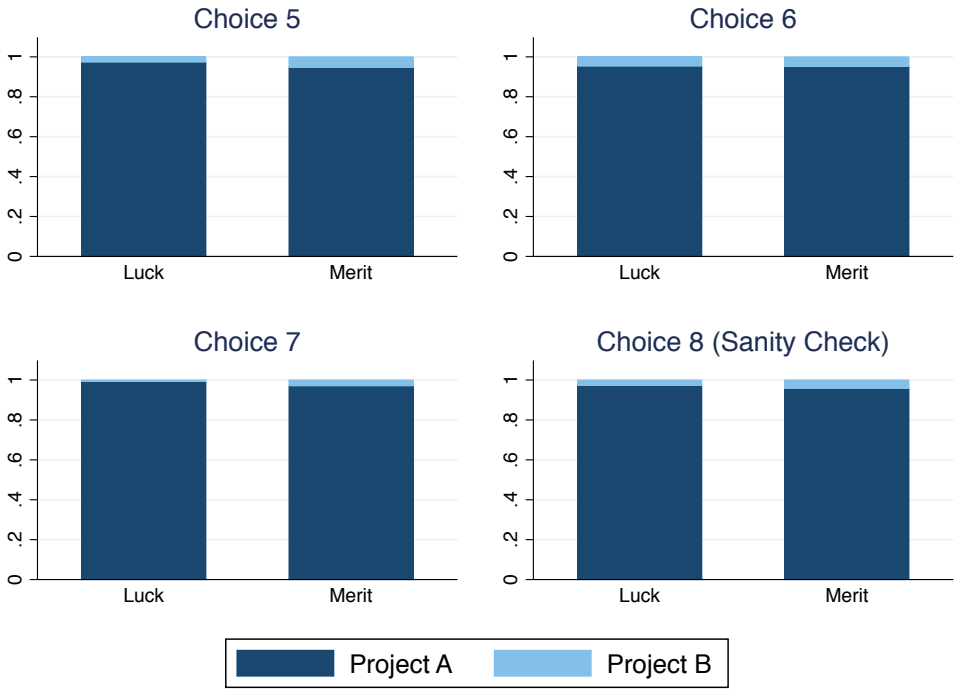


Figure A5: Choice 1 (Constant Efficiency Choice) with Known Rank - by Rank Order

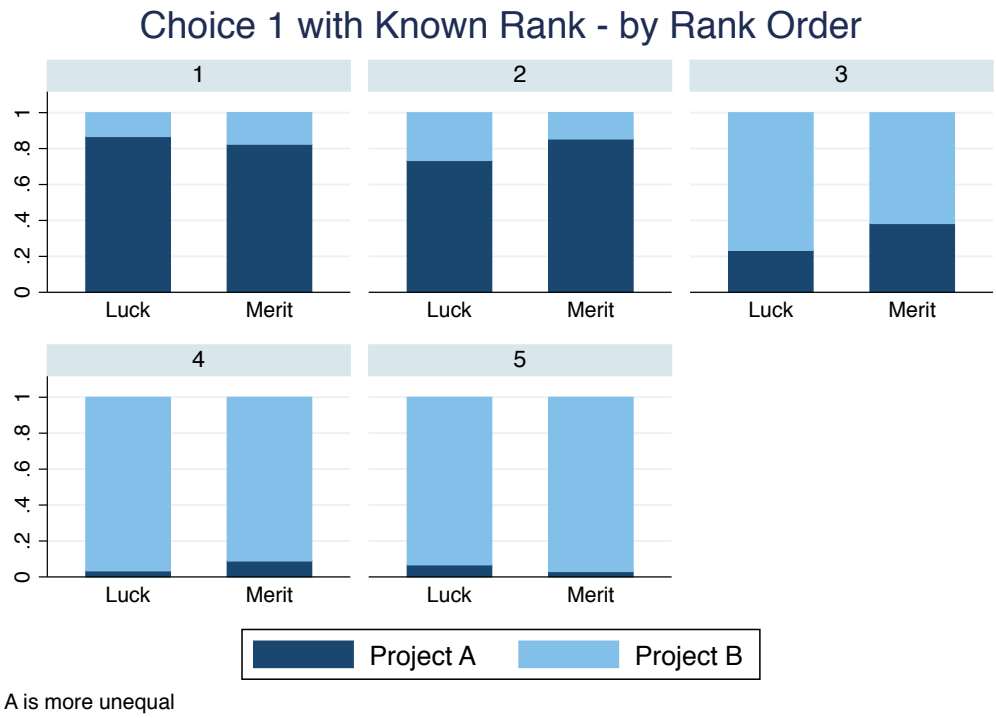


Figure A6: Choice 2 (Constant Efficiency Choice) with Known Rank - by Rank Order

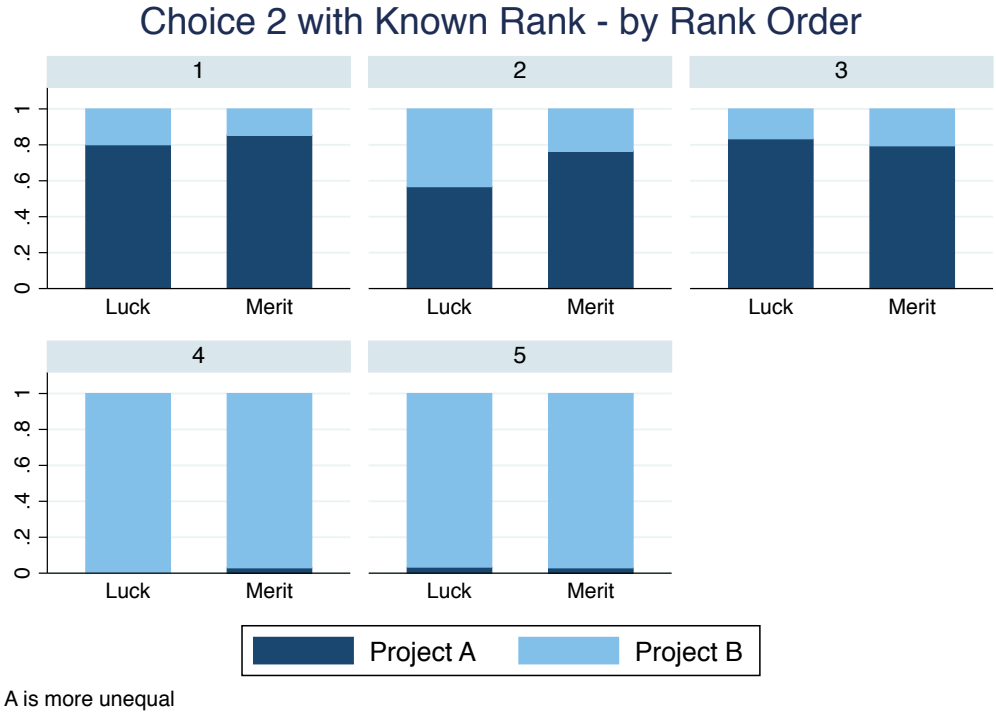


Figure A7: Choice 3 (Constant Efficiency Choice) with Known Rank - by Rank Order

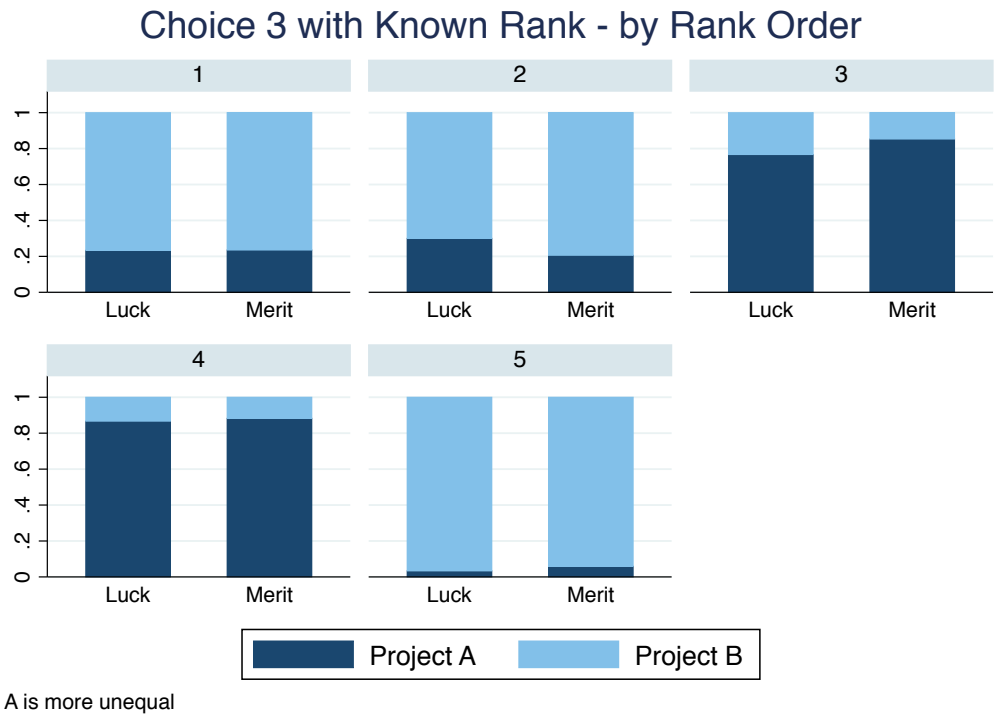


Figure A8: Choice 5 (A Pareto-Dominant) with Known Rank - by Rank Order

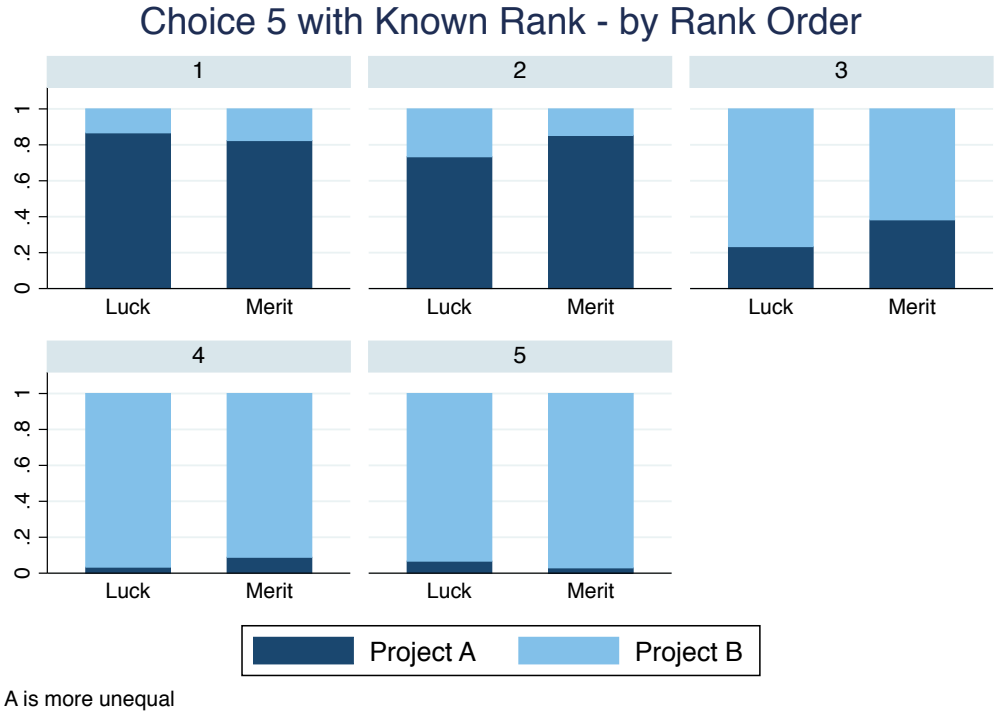


Figure A9: Choice 6 (A Pareto-Dominant) with Known Rank - by Rank Order

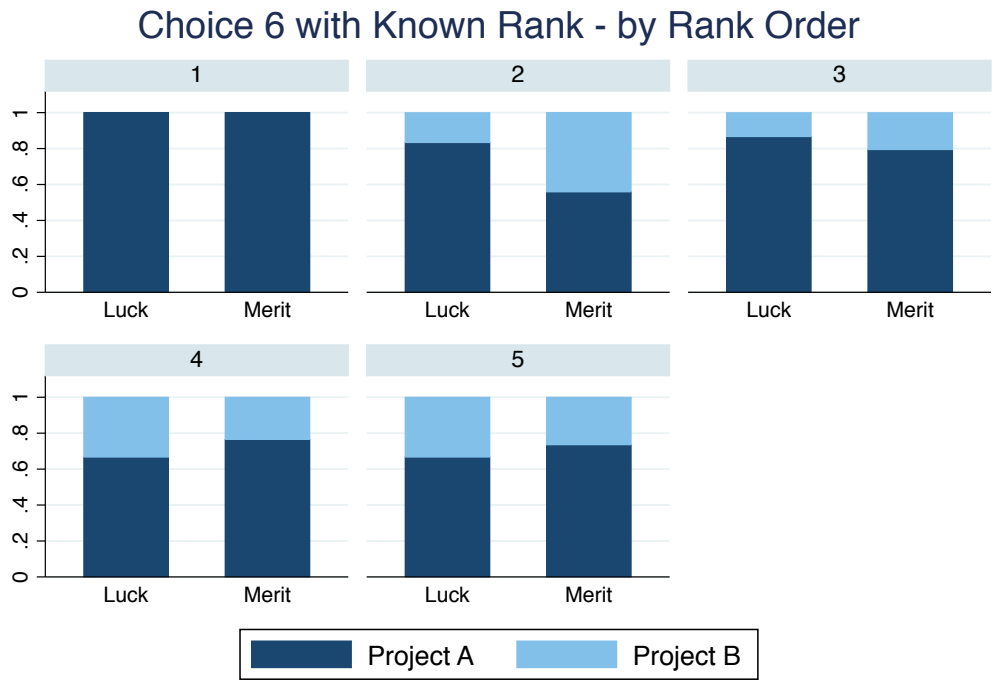
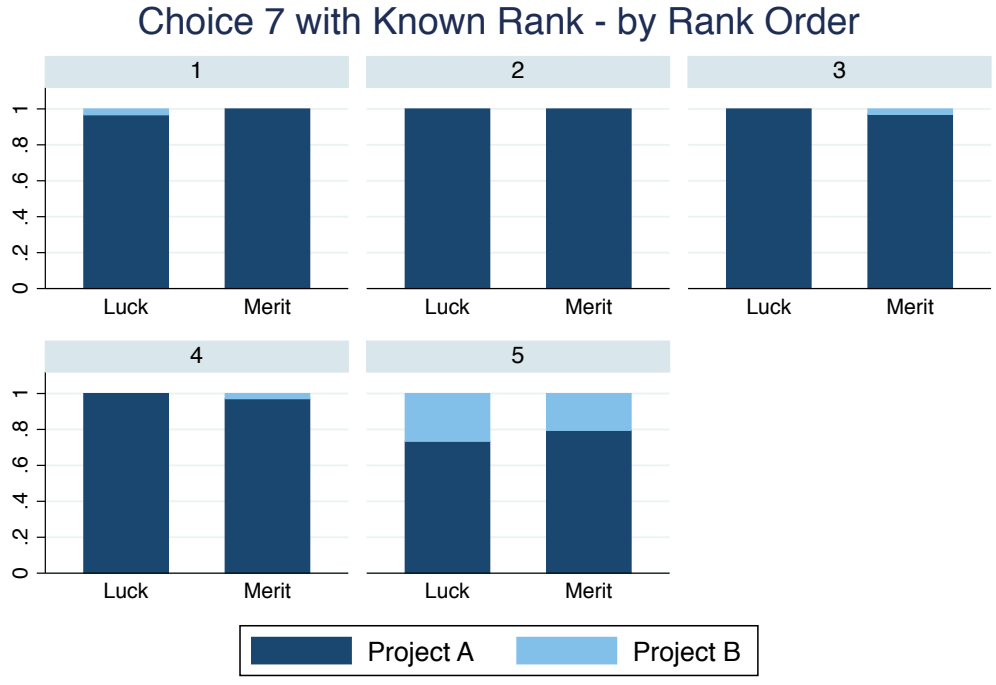


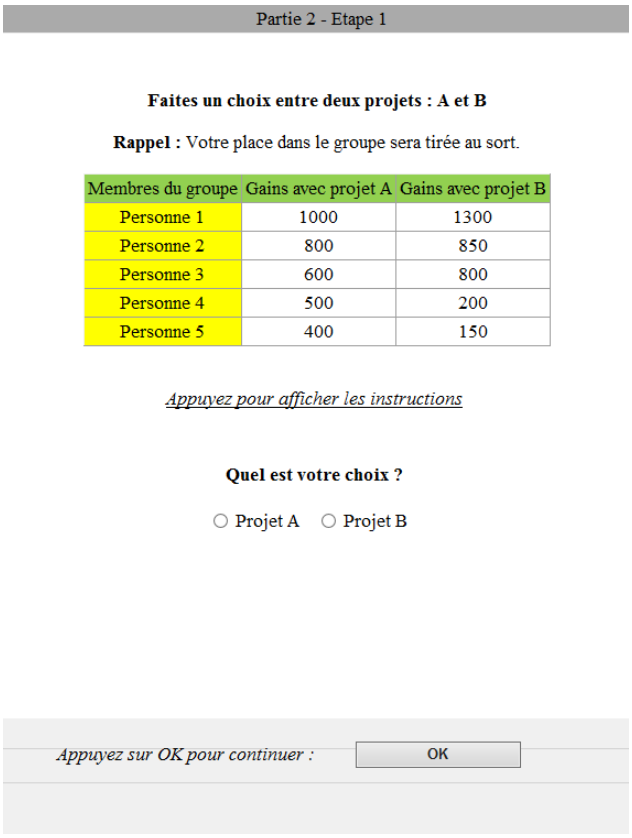
Figure A10: Choice 7 (A Pareto-Dominant) with Known Rank - by Rank Order



B Screenshots of the Experiment

Figure C1: Screenshot of Choice Behind the Veil of Ignorance(Choice 2)

(a) Luck group



(b) Merit group

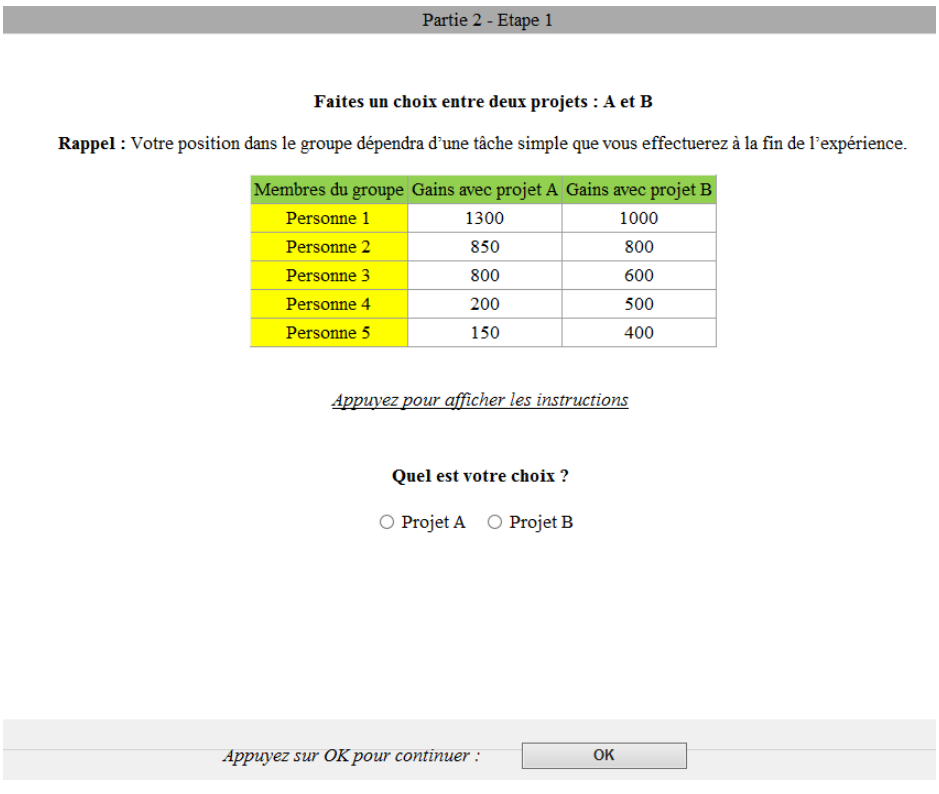
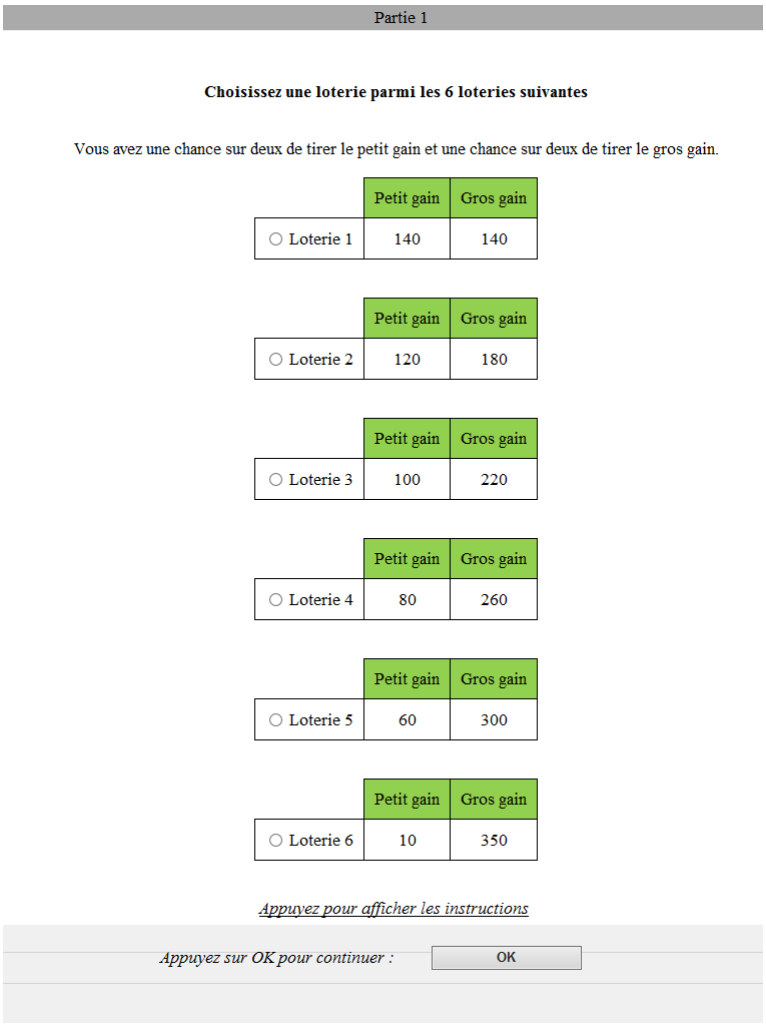


Figure C2: Screenshot of Risk Aversion Elicitation

(a) Eckel-Grossman Task



(b) Eckel-Grossman Task

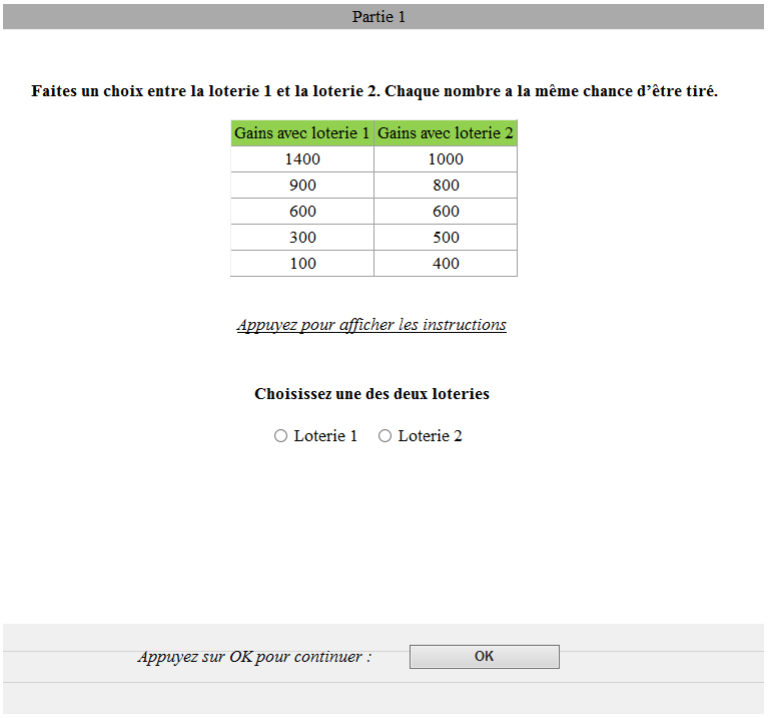


Figure C3: Screenshot of Choice with Known Position (Choice 6, Rank 2)

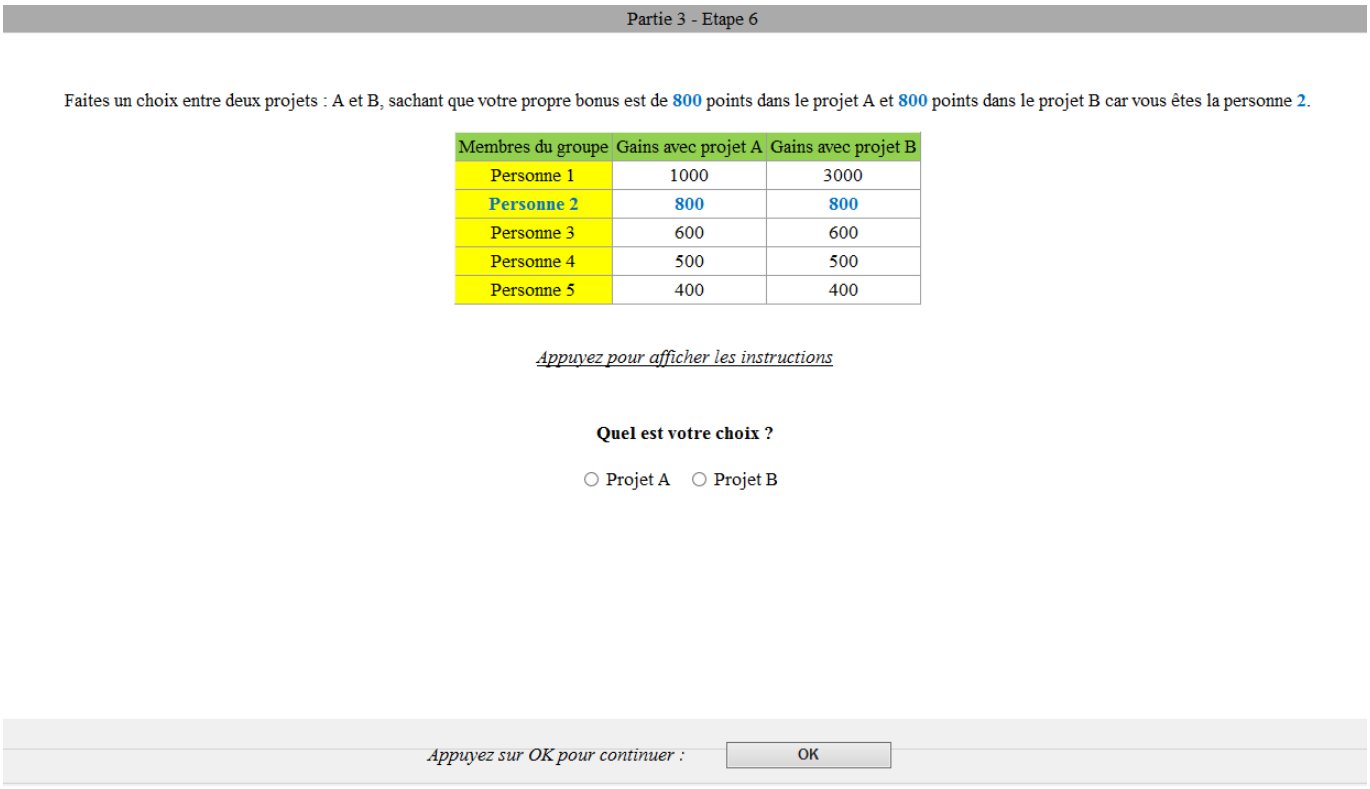


Figure C4: Screenshot of the Real Effort Task

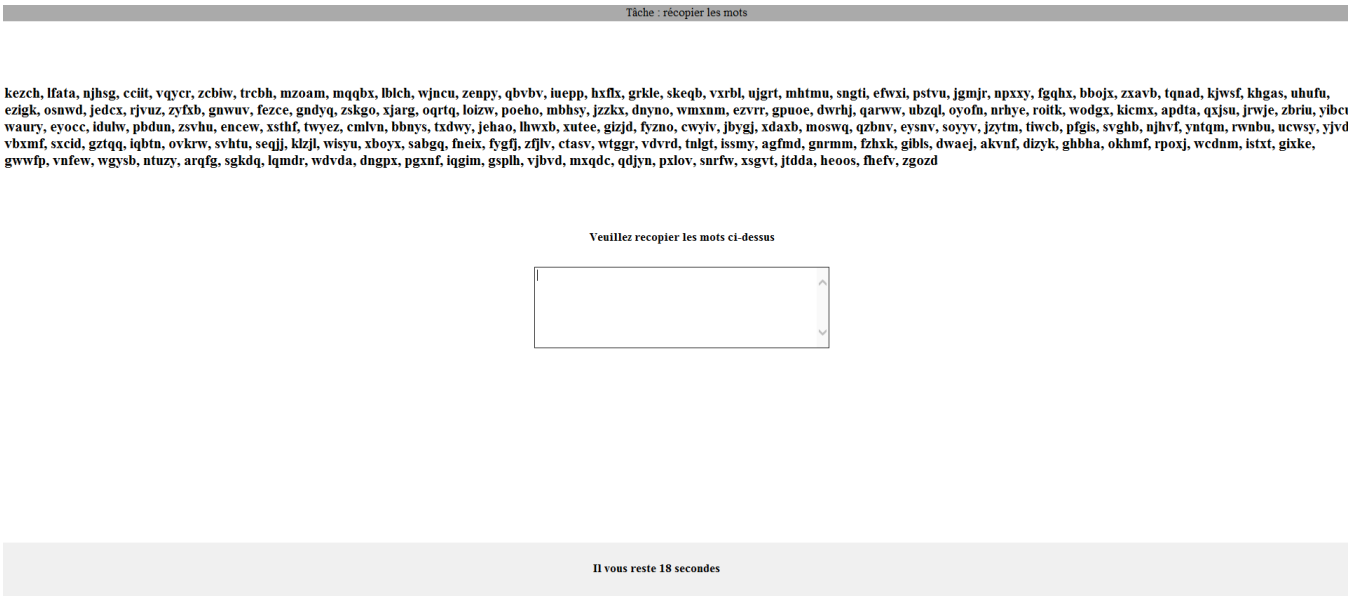
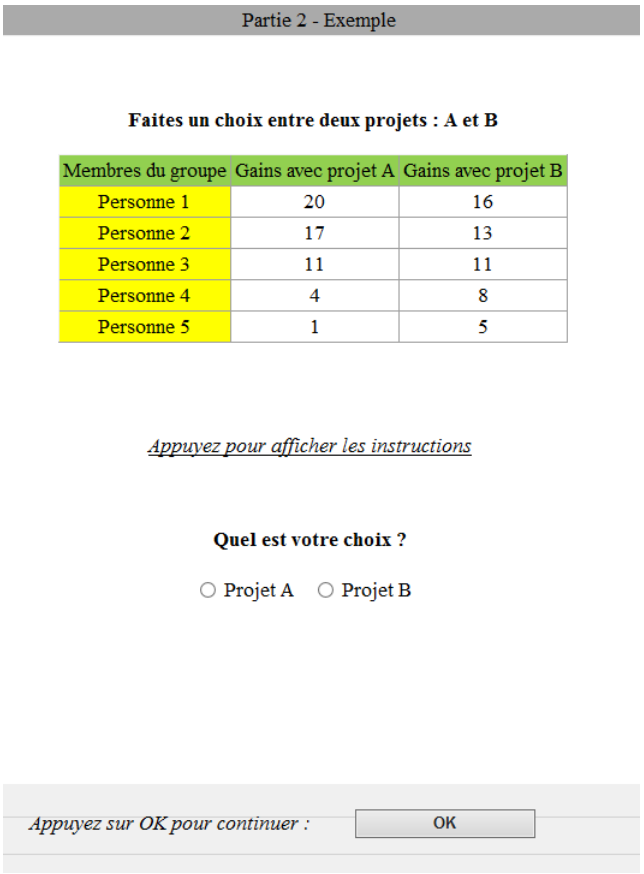
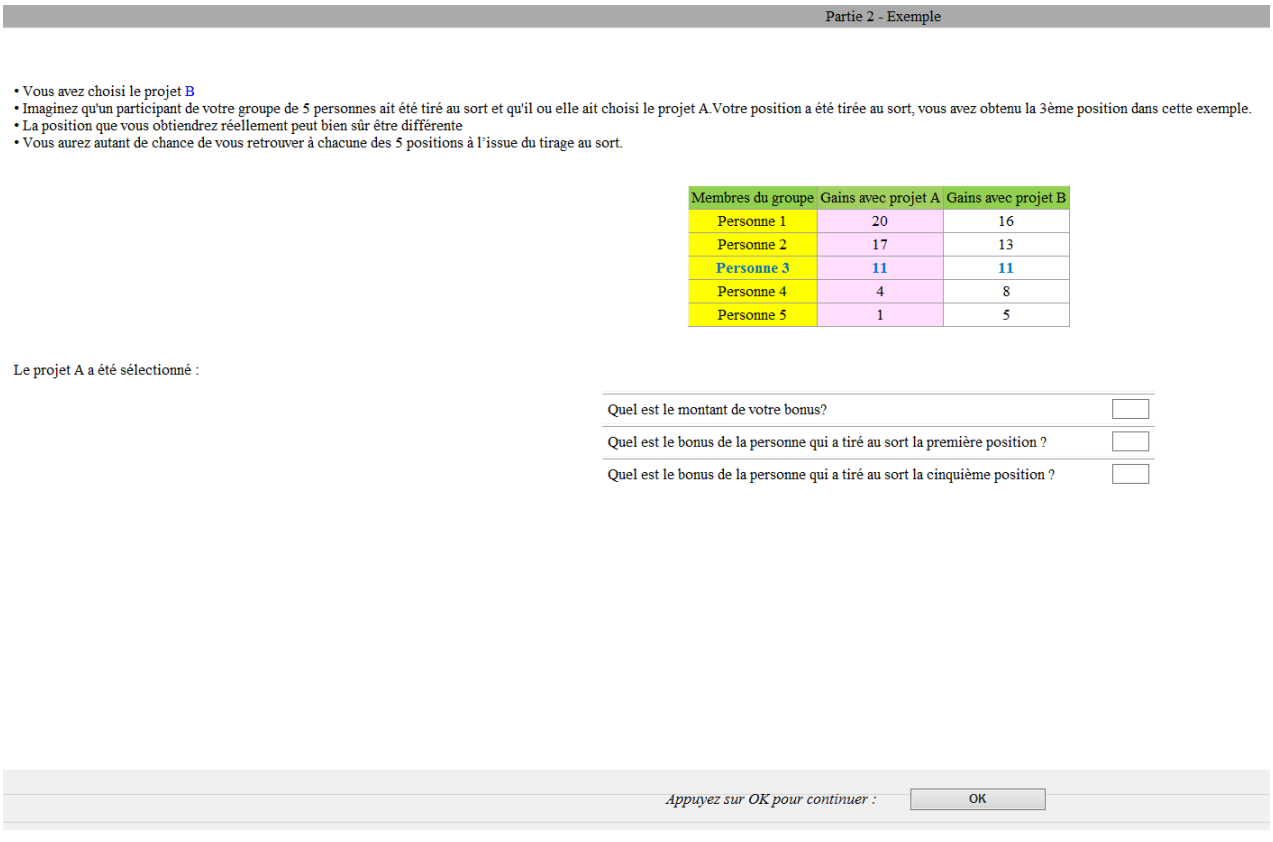


Figure C5: Comprehension test

(a) Screen 1



(b) Screen 2



(c) Screen 3

Partie 2 - Exemple

Membres du groupe	Gains avec projet A	Gains avec projet B
Personne 1	20	16
Personne 2	17	13
Personne 3	**11**	**11**
Personne 4	4	8
Personne 5	1	5

Quel est le montant de votre bonus? - Vous avez raison, votre bonus serait de **11** points.

Quel est le bonus de la personne qui a tiré au sort la première position ? - Vous avez raison, votre bonus serait de **20** points.

Quel est le bonus de la personne qui a tiré au sort la cinquième position ? - Vous n'avez pas raison, votre bonus serait de **1** points et non 3.

Appuyez sur OK pour continuer : OK

C Post-experimental Questionnaire

After the subjects made all their choices, them subjects questions about their age, occupation, political attitudes and attitudes about redistribution. We instructed the subjects that their answers are strictly anonymous (as in the whole experiment). All the questions were asked in French. Additionally, we confronted 75 subjects with four choices they made earlier (Choice 1 and 6, both behind the veil of ignorance and with known rank) and they could explain the reasons for their choice. For those choices, we also elicited beliefs (incentivized) of the same 75 subjects about other players' behavior. In the appendix we only include questions that are used as controls in the main part of the paper or the balance table. The other questions as well as the results from the belief elicitation and the open answer question are available on request.

Question 1 - Risk taking Answered on a scale 0 (not at all willing to take risks) to 10 (very willing to take risks).

- *English:* Are you generally a person who is willing to take risks or do you try to avoid taking risks?
- *French:* En général, êtes-vous une personne prête à prendre des risques ou est-ce que vous évitez la prise de risque? 0 (j'évite la prise de risque); 10 (je suis prêt à prendre des risques)

Question 2 - Gender Answered by opting between 'man' and 'woman'

- *English:* Are you a man or a woman?
- *French:* Êtes-vous un homme ou une femme?

Question 3 - Age Answered by typing their age

- *English:* How old are you?
- *French:* Quel âge avez-vous?

Question 4 - Marital status Answered by opting between 'in a relationship', 'single', 'separated/divorced' and 'widowed'

- *English:* What is your marital status?
- *French:* Quel est votre statut marital?

Question 5 - Labor market status Answered by opting between 'employed', 'self-employed', 'homemaker', 'retired', 'unemployed', 'student', 'working student' and 'other'

- *English:* What is your current employment situation?
- *French:* Quelle est votre situation d'emploi? Cochez la réponse qui vous convient:

Question 6 - Academic background Answered by ticking a field, with the option to enter a missing one

- *English:* What field are/were you enrolled in as a student?
- *French:* Quelle discipline étudiez-vous ou avez-vous étudié?

Question 7 - Degree Answered by opting between no degree, primary school, middle school (brevet des collèges), high school (baccalauréat) and university degree (enseignement supérieur)

- *English:* What is your highest diploma?
- *French:* Quel est votre diplôme le plus élevé?

D Experimental Instructions

The following section will include the experimental instructions. All the experimental instructions were read aloud to the subjects and the subjects were asked to read them by themselves after they have been read out aloud. Each title in the instructions symbolizes a new slide the subjects got presented. For each part of the experiment, we will present a choice table to give the reader an idea of how the subjects experienced the experiment in the laboratory. A simulation of the experiment is available on request. All the introductions have been done in French as presented here. English instructions are available on request.

D.1 Introduction of the experiment

Description de l'expérience *(Luck and Merit groups)*

- Il s'agit d'une expérience en 3 parties.
- Cette expérience est anonyme. Votre identité ne sera jamais connue.
- Vous devrez faire une série de choix entre deux projets.
- Pour chacune des trois parties, vous recevrez une rémunération qui dépendra de vos choix et de ceux des participants.
- Le montant total de vos gains vous sera payé en liquide à la fin de l'expérience
- A la fin, on vous demandera de remplir un questionnaire, de manière anonyme.

D.2 Part 1

Description de la partie 1 *(Luck and Merit groups)*

- Nous allons vous demander de choisir la loterie à laquelle vous aimeriez jouer parmi les 6 loteries suivantes.
- Dans chaque loterie, vous avez la même chance de gagner le gros gain et le petit gain.
- On vous offre de jouer (gratuitement) à l'une de ces loteries et de gagner le montant qui sera tiré au sort.

  $\longrightarrow$ Choisissez la loterie avec laquelle vous voulez jouer.

Vos gains pour la partie 1 *(Luck and Merit groups)*

- Le montant tiré au sort sera converti en euros
- Le taux de conversion est de 1€ = 200 points.
- Le montant total de vos gains vous sera payé en liquide à la fin de l'expérience.

- A présent lisez à nouveau les instructions qui apparaissent sur votre ordinateur et n'hésitez pas à lever la main pour que je vienne vous voir si vous avez des questions

The subjects will proceed by making their first choice. The screen is depicted in Figure C2 on the right hand side

Suite de la partie 1 ***(Luck and Merit groups)***

- Nous allons maintenant vous demander de choisir entre deux nouvelles loteries comportant chacune 5 nombres.
- On vous offre de jouer (gratuitement) à l'une de ces loteries et de gagner le montant qui sera tiré au sort.
- Autrement dit, un nombre sera tiré au sort dans la loterie que vous aurez choisie et vous gagnerez le nombre de points indiqués. Tous les nombres ont la même chance d'être tirés.
- A présent lisez à nouveau les instructions qui apparaissent sur votre ordinateur et n'hésitez pas à lever la main pour que je vienne vous voir si vous avez des questions

The subjects will proceed by making their second choice. The screen is depicted in Figure C2 on the left hand side

D.3 Part 2

Partie 2 ***(Luck and Merit groups)***

- A partir de maintenant, et jusqu'à la fin de la partie, vous jouez avec le même groupe composé de 4 autres personnes.
- Imaginez qu'il s'agit d'un groupe avec lequel vous menez un projet, au sein d'une entreprise ou d'une organisation. Vous choisirez entre plusieurs projets qui donnent à chaque membre du groupe des bonus différents.
- La composition des groupes est déterminée au hasard par l'ordinateur.
- Vous ne connaîtrez jamais l'identité des gens avec qui vous jouez et eux non plus ne connaitront pas votre identité.
- Vos choix ne seront jamais communiqués aux autres personnes. Vous serez le seul à savoir ce que vous avez choisi de jouer
- Vous allez devoir faire 8 fois de suite un choix entre deux projets différents pour votre groupe.
- Chaque projet rapporte un bonus différent à chaque personne de votre groupe.

Only shown to the Luck group

- A chaque étape, chaque personne indiquera son choix. Puis on tirera au sort l'une des 8 étapes et l'un des membres de votre groupe (tous les membres, vous y compris, ont la même chance d'être choisis). On appliquera le projet de son choix.
- Votre position dans le projet de ce participant sera déterminée au hasard.

Only shown to the Merit group

- Votre bonus et celui des autres membres de votre groupe seront déterminés par votre performance à une tâche simple réalisée à la fin de cette partie. Le plus performant de votre groupe obtiendra le bonus le plus gros, le deuxième plus performant obtiendra le deuxième plus gros bonus et ainsi de suite.

Shown to both groups

Partie 2 - Exemple *(Luck and Merit groups)*

- Avant de passer aux choix réels, nous vous montrerons d'abord un exemple de choix que vous devrez effectuer.
- A présent lisez à nouveau les instructions qui apparaissent sur votre ordinateur et n'hésitez pas à lever la main pour que je vienne vous voir si vous avez des questions

The subjects proceed in making practice choices. A screenshot of the practice choice and the resulting questionnaire can be seen in Figure C5.

Partie 2 *(Luck and Merit groups)*

- Nous allons à présent passer aux choix réels
- A présent lisez à nouveau les instructions qui apparaissent sur votre ordinateur et n'hésitez pas à lever la main pour que je vienne vous voir si vous avez des questions

The subjects proceed making the 8 choices from behind the veil of ignorance. A screenshot of one of those choices can be seen in Figure C1.

D.4 Real effort task

Only shown to the luck group

Tâche simple à réaliser sur votre ordinateur *(Luck group)*

- Vous et votre groupe allez effectuer une tâche simple sur votre ordinateur afin de rester concentrés.
- Cette tâche n'aura aucun impact sur le reste de l'expérience

- Vous devrez recopier, à l'aide de votre clavier, le plus de « mots » possible que vous verrez sur votre écran pendant une durée limitée de 30 secondes, en séparant les mots par un espace ou une virgule. Ces « mots » n'ont aucun sens et ne sont qu'une suite de plusieurs lettres. L'ordre des « mots » n'a pas d'importance.
- Vous allez d'abord effectuer un essai pendant une durée de 15 secondes.
- Vous devez recopier le plus de « mots » possible en 15 secondes.
- A présent lisez à nouveau les instructions qui apparaissent sur votre ordinateur et n'hésitez pas à lever la main pour que je vienne vous voir si vous avez des questions

The subjects proceed making the trial of the typing task. If they type nothing, we asked if they understood the assignment.

- Vous allez à présent effectuer la tâche réelle d'une durée de 30 secondes

The subjects proceed making the real task. Afterwards, they will be told what their payoffs for Part 2 where.

Only shown to the merit group

Tâche simple à réaliser sur votre ordinateur *(Merit groups)*

- Vous et votre groupe allez effectuer une tâche simple sur votre ordinateur afin de rester concentrés.
- Votre performance à cette tâche déterminera votre position et celle des autres membres de votre groupe dans le projet tiré au sort.
- La personne de votre groupe la plus performante obtiendra le bonus le plus élevé. La moins performante obtiendra le bonus le moins élevé.
- Vous devrez recopier, à l'aide de votre clavier, le plus de « mots » possible que vous verrez sur votre écran pendant une durée limitée de 30 secondes, en séparant les mots par un espace ou une virgule. Ces « mots » n'ont aucun sens et ne sont qu'une suite de plusieurs lettres. L'ordre des « mots » n'a pas d'importance.
- La personne la plus performante sera celle qui aura écrit le plus grand nombre de mots en 30 secondes. En cas d'égalité, le temps exact du dernier mot tapé sera utilisé pour départager les ex æquo. Le plus rapide pour taper le dernier mot sera classé premier. La même procédure s'appliquera pour les cas d'égalité dans le reste du classement.
- Vous allez d'abord effectuer un essai pendant une durée de 15 secondes.
- Vous devez recopier le plus de « mots » possible en 15 secondes.

The subjects proceed making the trial of the typing task. If they type nothing, we asked if they understood the assignment.

D.5 Part 3

Shown to both groups

Partie 3 *(Luck and Merit groups)*

- Votre position dans le groupe est à présent connue
- Vous aviez obtenu une certaine position à l'issue de la partie 2. Vous allez conserver cette position pour la partie 3.
- On vous demande à nouveau de choisir entre deux projets pour votre groupe.
- Mais dans cette partie, vous connaissez votre position et donc votre bonus pour chaque projet (en bleu dans le tableau).
- Vous devez choisir entre deux projets, six fois de suite.

Vos gains pour la partie 3 *(Luck and Merit groups)*

- Un des 5 participants et une des 6 étapes seront tirés au sort (tous les membres, vous y compris, ont la même chance d'être choisis).
- Le projet choisi par ce participant s'appliquera.
- Chaque personne de votre groupe conserve la position déterminée à la fin de la partie 2. Vous obtiendrez donc les bonus correspondant à votre position dans le projet retenu.
- A présent lisez à nouveau les instructions qui apparaissent sur votre ordinateur et n'hésitez pas à lever la main pour que je vienne vous voir si vous avez des questions

The subjects proceed making the six choices with known rank and known payoff.

D.6 Questionnaire *(Luck and Merit groups)*

- Nous allons maintenant vous demander de répondre à quelques questions.
- La première partie du questionnaire vous demande de faire à nouveau une série de 2 choix entre deux projets.

The subjects answer the questionnaire with the hypothetical choices and then they answer the questions of the questionnaire. The phrasing of the questions asked in the questionnaire can be found in appendix C.