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Article

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Games

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Article

On the Collective Choice among Models of Social Protection: An Experimental Study

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Abstract: A real-effort experiment is conducted in order to detect preferences for one out of three different models of the Welfare State characterized by different tax-and-transfer schemes. We reproduce a small society in the lab where: Subjects are grouped in three stylized classes (the rich, the middle class and the poor) on the basis of their performance in a real-effort activity; income and risk are assigned according to the class; tax revenue is spent to refund unlucky people and to provide a public good. Experimental subjects must choose (both under and without a veil of ignorance concerning their position in the society created in the lab) among (a) a baseline proportional scheme, where the State is neutral with respect to risk heterogeneity; (b) an actuarially fair scheme where low ability and low earnings subjects bear full individual responsibility for risk exposure and (c) a progressive scheme where mutual risk insurance spreads risk across all subjects such that low ability and low earnings individuals are compensated. Our most relevant finding is that preference is motivated less by a justice principle and more by self-interested considerations on the expectations surrounding one's own position in the society.

Keywords: welfare state; income distribution; self-interest; public expenditure; taxation JEL CLASSIFICATION: C9; D31; D63

1. Introduction

Many governments of advanced countries are reforming their Welfare States. As well-known, welfare systems consist of the pooling of fiscal revenues used by the public sector to subsidize the unemployed workers with monetary transfers, to finance the in-kind services of the health care system and of public school and universities, to smooth income across the life-cycle from the working period to retirement and to provide relief to the poor with free meals, food stamps and shelters. The reshuffling of earnings put forward by the tax and transfers system, and the provision of public and merit goods aimed to strengthen human capital on an equal basis, point to the two objectives of shrinking income inequality and expanding opportunities for well-being. In fact, for low ability and low income subjects, usually bearing an exposure to risk higher than the high ability and high income individuals, to buy social protection in the marketplace is often unaffordable, as private companies do not offer reasonably priced insurance contracts to “disadvantaged” people [1].

In the era of globalization, this traditional approach to welfare institutions is losing consensus. Governments perceive that the sentiment of large portions of the population leans towards “personal responsibility” in tackling risks. To pay lower taxes and be in charge of personal protection from risks seems to be preferred by many voters to the “mutual risk insurance” organized by the public sector. Furthermore, a too high public debt in some countries is orienting austerity policies towards shrinking the Welfare State. Welfare systems are also under strain for structural reasons. Social expenditures

are threatened by the rocketing cost of drugs and diagnostic tests, as well as by the ageing of the population (too generous PAYGO pension benefits have been abolished in order to strictly tighten the contributions paid during the job life).

In this paper, we perform a within-subjects experiment in the lab in which we elicit preferences for different schemes of taxation to finance the Welfare State. The aim is to get a deeper understanding of what motivates people as for the design of social protection, so to investigate the coherence with citizens' social preferences of the reforms currently devised. In particular, the protocol tries to pin down what is the ethical background of the voters' preference for "personal responsibility" in tackling risks, once they are exposed to alternative types of Welfare State. Assuming that people are interested in both functions—insurance and redistribution—provided by a typical welfare system, we implement different taxation schemes in the lab to finance the tax revenue. The protocol incentivizes the experimental subjects to take issue with the link between ability and risk exposure in forecasting their disposable income. In order to collect this information, we reproduce a small society in the lab where: (1) Subjects are grouped in three stylized classes (the rich, the middle class and the poor) on the basis of their performance in a real-effort activity; (2) income and risk of losing part of the experimental earnings are assigned according to the class; (3) tax revenue is spent to refund unlucky people who lose part of their income and to provide a public good and (4) subjects must choose among three different way to finance the Welfare State (WS)—neutral (proportional), individualistic (actuarially fair) and prioritarian (progressive)¹—both before and after being informed of their position in the society created in the lab. Our main result is twofold. First, we find that subjects are almost split between a preference for the individualistic and for the prioritarian Welfare State. This implies that there is no strong and defined preference for an actuarially fair regime. Second, it emerges that preferences are driven by self-interest rather than idealistic principles of justice.

Section 2 deals with the related literature and the contribution provided by our experiment. Sections 3 and 4 examine the experimental design and the procedure, respectively. Section 5 reports the theoretical predictions. Section 6 focuses on the data analysis, while Section 7 presents the conclusions.

2. Related Literature and this Experiment Contribution

Our paper was strictly related to the large number of experimental papers devoted to people's preferences for fairness and redistribution. This branch of the experimental literature mainly focused on two issues: (1) What people consider fair; and (2) the balance between considerations of fairness and self-interest.

Concerning the first point, the experimental evidence suggests that people generally have an innate desire for fairness (see [2,3], for a rich albeit not exhaustive survey). What emerges from further studies, however, is that fairness does not necessarily imply equal outcomes. How inequalities are produced matters. In particular, subjects are less likely to implement redistributive procedures when inequalities depend on their behavior. When endowments are earned rather than randomly assigned, proposers are more likely to offer unequal allocations of the pie in Ultimatum Games, while responders are more likely to accept unequal offers (see for instance Hoffman et al., 1996, [4]. In Third Party Punishment Games, third parties are less likely to punish the dictator when s/he does not opt for an equal share of the pie if the role has been assigned on the basis of players' relative performance in solving some puzzles [5]. In a series of Dictator Games, Cappelen et al. ([6,7]) find that inequalities due to factors that are perceived as being under people's control are more accepted. In experiments where redistribution is implemented through taxation, it emerges that people choose lower tax rates (lower redistribution) when pre-tax income is related to subjects' performance in some specific activity with

¹ The label indicates the extent to which the Welfare State copes with the subject's risk exposure, starting from the earnings accruing to him according to the ability shown in performing the task. The definitions in parentheses synthesize the distributive implications of the tax-and-transfer scheme.

respect to scenarios where participants' endowments are assigned through criteria based on luck ([8,9]). Becchetti et al. ([10,11]) find that when people are asked to choose among different distributive criteria, entitlement plays a relevant role (together with need).² In other words, inequalities may be to some extent justifiable if they are related to hard work or skills rather than pure luck.

However, what about situations where subjects are, to some extent, responsible for their bad luck? According to the neat distinction between "brute luck" and "option luck" put forward by Dworkin,³ individuals deserve to be relieved from the consequences of unfortunate (brute) events, but not from the consequences of decisions for which they are responsible. Hence, would it be fair to share the health care costs of people whose illness depends directly on their bad habits? Even if it is both realistic and relevant to do so, this issue is addressed by only a few papers. Cappelen et al. [16] show that in the lab, when people's initial endowment depends on their choice between a safe alternative and a risky lottery, subjects who avoid risk generally do not support redistribution in favor of unlucky risk takers. A robustness check of this result is provided by Cettolin and Tausch [17], who find that cautious people are less inclined to share risk with those subjects who deliberately make highly risky choices even before knowing how risk will eventually materialize.

Concerning the second point, our paper was very close to those of Farina and Grimalda [8], Becchetti et al. ([10,11]) and Durante et al. [9]. In all these experiments, after having been informed about their payoffs in the treatments before the veil is dropped, players in the lab revise the criterion chosen under the veil in order to increase their payoff⁴. Becchetti et al. (2011, [10,11]) find also that players' preferences for distribution based on entitlement are actually due to self-interest considerations and optimism concerning their expected performance. Self-serving bias in subjects' social preferences are also reported in Cappelen et al. [25].

Preferences for different tax schemes are investigated by using different methods, surveys in particular. Jaime-Castillo and Saez-Lozano [26] confirm that self-interest motivations hold their importance even if preferences are also influenced by political ideology. Surveys are also used to elicit preferences of citizens as the knowledge about the costs of the Welfare State and their division varies (see, for instance, [27,28]). We think that an experimental inquiry could be useful to better shed light on this topic.

Our design and treatments make our paper an original contribution to this rich body of literature for several reasons.

² Subjects' high propensity to choose floor constraints in distributive decisions is also reported in Frohlich et al. ([12,13]) and Frohlich and Oppenheimer [14]; however, this was not the focus of our paper.

³ "Option luck is a matter of how deliberate and calculated gambles turn out-whether someone gains or loses through accepting an isolated risk he or she should have anticipated and might have declined. Brute luck is a matter of how risks fall out that are not in that sense deliberate gambles" ([15], p. 293).

⁴ Studies documenting self-serving bias in fairness judgment even when payments are hypothetical (see, for instance, [18–22]), are relevant although not directly related to the topic of this paper. Alesina and Angeletos [23] and Alesina and La Ferrara [24] show how people's preferences for a specific redistributive criterion depends on individuals' beliefs regarding what determines one's position in society. In particular, those who think that social mobility depends on effort are less in favor of redistribution with respect to people who believe that luck, birth and social connections determine success in life. This may explain differences between the USA and Europe. Even if they are not experimental papers, we think they provide relevant hints and are strictly related to the role played by self-interest when subjects are asked to opt into an allocation criterion. In fact, in a scenario where success in life depends on one's own behavior, a subject who thinks s/he will be a good performer is less likely to choose redistribution.

First, to our knowledge, ours is the first experimental paper⁵ where subjects are asked to choose the preferred tax and transfer scheme in a scenario where they are indirectly responsible for the level of risk they face (they do not choose it directly, but determine it through their performance). We think this is a truly realistic scenario that deserves investigation. In deciding on the preferred contract, experimental subjects choose between the solidaristic bias embedded in the principle of unconditional compensation for the disadvantaged and the meritocratic bias embedded in the principle that performance must be fully rewarded.⁶ Not surprisingly, the current theoretical debate on this topic focuses solely on the trade-off implied by these two alternative preferences for fairness, that is, whether compensation [32] or reward [33] must come first.

Second, we conducted a deep investigation into the relationship between beliefs concerning one's own performance and preferences for a specific taxation scheme to finance the Welfare State. In particular, we can detect whether meritocratic and solidaristic choices are due to a specific principle of justice rather than being strictly related to the fact that subjects are actually self-confident or unsure, respectively. This is the reason why we choose a within subject protocol where we can observe whether and how people change their choices according to their self interest when expected and actual performance do not correspond⁷.

Then, we implemented a Welfare State in the lab that provides two of its real life functions, insurance and redistribution, that were fundamental for our purposes. Few experimental papers examine these characteristics and none of them specifically study the relationship between unlucky events and performance⁸.

3. Experimental Design: A Society in the Lab

In this experiment, we attempted to reproduce a proxy of a small society in the lab where subjects belonged to a specific class according to their wealth. As in a real society, they were asked to pay taxes and were provided a public good by the State. Obviously, we did not reproduce all the complex dynamics that characterize a real society. Instead, we focused on the relationship between the State and its subjects. This simplification, where the variables of interest were controlled, should help us to better understand what drives people's preference for a specific taxation system. Our main

⁵ The limits of this experiment were the limits of each experimental inquiry. Clearly, we should be cautious when we interpret our data. We could not conclude that our results provided an exhaustive portrait of the whole population in a country. Yet, we could say how people with some specific characteristics behaved in a specific context. We were aware of the limits that are intrinsic to a lab where subjects were a pool of university students. However, as Alm et al. [29] argue: 'experimental results can contribute significantly to policy debates, as long as some conditions are met: The payoffs and the experimental setting must capture the essential properties of the naturally occurring setting that is the object of investigation. Laboratory methods may offer the only opportunity to investigate the behavioral responses to policy changes' (p. 325). Moreover, 'there is also no reason to believe that cognitive processes of students are different from those of "real" people' ([30], p. 43). Moreover, Alm et al. [31] show that external validity holds in a very related topic as tax compliance. Consequently, we thought the experimental method could be a suitable complementary tool to other methods of inquiry.

⁶ We are aware of the fact that real-life scenarios may be complicated. In particular, meritocratic principles may change according to the different perceptions of reward and responsibility. Subjects' performance in real life may depend both on elements under their control (for example, effort) and on characteristics beyond their control (personal skills, such as natural talents). At the same time, there is a kind of interdependence between the two. For example, it is possible that effort may improve the level of innate skills. In our experiment, we did not wish to investigate this point directly. We did not try to construct an instrument to measure either for effort or ability. We simply correlated income and luck to subjects' performance in an activity that might actually depend on both factors. In a certain sense, we replicated the same uncertainty about personal responsibility in the lab that we faced in everyday life. Obviously, as we explained in footnote iii, people might have their own ideas concerning the factors that might drive people to poverty. In our econometric analysis we checked this point.

⁷ In other words, we cannot understand whether a subject prefers a specific taxation scheme and under that scheme she obtains the higher payoff, or whether a subject prefers a specific taxation scheme because under that scheme she obtains the higher payoff. The only way to verify whether expected/actual performance affects subjects' choices is to implement a within subject design and observe whether subjects change their choice according to their self interest.

⁸ Ortona et al. [34] study the relationship between the existence of a Welfare State and people's labor supply with respect to a scenario where subjects live and work in a state of nature. Esarey et al. [35] study the relationship between people's political ideology and their preference for redistribution.

goal was to make the design extremely parsimonious and focus on the basic facts concerning the Welfare State so that the experiment could be replicated in other advanced countries for the purpose of inter-cultural comparison.

In the following sections, we will provide a detailed description of the characteristics of this experimental society.

3.1. Classes

We designed the experiment as a real-effort activity, where participants were asked to earn their initial income by performing an ability test. Specifically, they were given thirty Raven's matrices and were asked to solve as many as they could⁹. Participants were then grouped into three categories on the basis of their relative scores; that is, given n subjects participating, the best $n/3$ participants belong to the first category (the rich); the second $n/3$ belong to the second category (the middle class) and the worst $n/3$ belong to the third category (the poor)¹⁰. Depending on the category in which each participant was included as an effect of his or her performance, subjects were given an initial endowment and were exposed to a low, medium or high risk of suffering a bad event. We chose this task because, in our opinion, it was a good proxy of real life, where earnings were influenced by a mix of skills and effort.

The scheme works as follows. The rich were endowed with a gross income of 300 tokens and a 40% probability of losing 80 tokens. The middle class subjects were endowed with a gross income of 200 tokens and a 50% probability of losing 80 tokens. The poor were endowed with a gross income of 100 tokens and a 60% probability of losing 80 tokens¹¹.

3.2. Contracts

Subjects were asked to choose between three contracts: A, B and C. The three taxation schemes work as follows. The Neutral State (contract A) has proportional taxation. We imposed a 30% tax rate for each subject. The Individualistic State (contract B) is the "actuarially fair" one in which taxation is directly proportional not to income but to the subject's risk exposure. The payment for this contract consists of two elements: A proportional component with a 10% tax rate and a portion that is directly correlated to the risk of losing 80 tokens that each subject faces. Finally, the Prioritarian State (contract C) implements progressive taxation: The rich are taxed at a 35% rate, the middle class are taxed at a 30% rate and the poor are taxed at a 15% rate¹².

⁹ It was a nonverbal group test used to measure cognitive abilities. It was independent of linguistic and mere factual knowledge. The test consisted of a series of multiple choice questions. For each test item, the subject was asked to choose the missing element that completes a pattern. Patterns were presented in the form of 3×3 matrices. See Figure S1 for an example of a Raven's matrix. It was plausible to suppose that a good performance in this psychological test implies a certain level of effort (also effort related to other activities through which the abilities measured by the psychological tests might be developed). Consequently, we did not consider it as a precise measure of a specific characteristic like logic.

¹⁰ Obviously, we did not use terms like "rich", "poor" or "Welfare State" in the instructions. We used neutral terms.

¹¹ We know that in a society, the distribution of income is a continuum. Nevertheless, in order to simplify our environment, we chose to group subjects into three categories with a given income ratio among them. This ratio—the rich earn three times what the poor earn and the middle class twice—was inspired by the real distribution of income in the North of Italy, where we ran the experiment. In fact, according to data from the Ministry of the Economy, the income of the 75th percentile is three times the income of the 25th percentile and the income of the 50th percentile is twice the income of the 25th percentile ([36], p. 31, Figure 4). We were aware of the fact that our design did not provide a perfect representation of the proportion of wealth in a real society, where the number of rich people was lower. However, it was suitable to our purposes for several reasons. First, it allowed us to create the best database for our analysis. In fact, we had a sufficiently high number of observations for each category. Then, we wanted to detect whether people's position within the society affects choices. For this purpose, we simply needed to observe whether individual choices changed over the two rounds when the expected position was not the actual one. The relative number of poor and rich was irrelevant.

¹² The choice of these tax rates was not random. In particular, the median tax rate in our experiment, equal to 30%, is very close to the real marginal tax rate paid by Italian employees with a gross income between 8000 and 55,000 euro [37]. Moreover, these tax rates allowed us to maintain the same distance, in terms of tax contribution, between the rich and the middle class and between the middle class and the poor in each contract.

In each Welfare State, whatever the taxation scheme, the tax revenue was used to implement two functions. The first was to fully refund people who lose a part of their income (insurance)¹³. Second, the remaining part of the tax revenue was equally redistributed among all participants (public good)¹⁴. What do these contracts represent from the viewpoint of standard economic theory?

Contract A is “Neutral”, as the scheme preserves the right of the individual to be taxed in proportion to the reward connected to the experimental subject’s ranking in performing the task in the lab. The earnings distribution then abides by the principle of proportionality between marginal factor productivity and earnings ([22,38]) so that each worker’s disposable income probabilistically replicates the standard equivalence between earnings and his productive contribution. This contract does not take into consideration heterogeneity across citizens in terms of their different probabilities of experiencing disadvantaged conditions stemming from their different exposures to negative events (no horizontal equity in risk insurance).

The equity principle embedded in contract B aims to preserve the income distribution determined by market forces, while no weight is attributed to each subject’s income-dependent risk exposure. Contract B is “Individualistic” because by ensuring the actuarially fair “price”, this contract is meant to preserve self-ownership, both in the sense of the right to keep the reward from one’s ability and of each individual being responsible for protecting himself against his own risk exposure without expecting the financial support of “such a thing called society”. In particular, imperfect information about individual characteristics prevents the assessment of personal responsibility and suggests protecting incentives by retreating from redistributive policies and allowing individuals to fully bear the consequences of their choices [39]. Therefore, this second contract does not take into account the possible perverse consequences of correlation across dimensions of life in case of negative shocks to well-being, and simply sets the price equal to the probabilistic cost of a bad event. The tax-and-transfer system is then oriented to an “actuarially fair” Welfare State to prevent the high-risk individuals’ greater use of welfare institutions from being paid for by the low-risk individuals [40]. In this “individualistic” vision of the Welfare State, the low income individuals—that is, those who are more likely to gain from the welfare institutions, as in probabilistic terms, their benefits are bound to exceed their costs—are those who must fully bear the cost of their choices.

Contract C (“Prioritarian”) devises the tax-and-transfer system according to the theoretical view that higher risk exposure must be compensated by giving priority to the needs of the individuals who are “worst-off” [41]. More precisely, contrary to the previous scheme, the Prioritarian view takes for granted both that in the real world, individuals are mostly not responsible for exhibiting low ability in their work performance¹⁵, and that markets fail in achieving horizontal equity. This latter circumstance materializes once the following two conditions are fulfilled: (i) The individual who shows a low ability in carrying out tasks in his workplace could not be completely responsible for his poor work performance because he suffers from bad luck¹⁶ (e.g., a poor educational record due to birth in a deprived household and/or to negative externalities such as neighbor and peer effects) and (ii) private companies usually charge very high premiums for contracts offered to high-risk, low earning individuals. Given that the market for insurance contracts is unable to equalize the distribution of opportunities across subjects, the lack of horizontal equality may further increase earning inequality.

¹³ Please notice that since a function of the Welfare State is full insurance, the individual effect of losing 80 tokens is exclusively indirect: A reduction of the pot available for redistribution.

¹⁴ We thought that our experimental welfare state was a good representation, in a laboratory, of what happens in the real world. In particular, we were able to take into account the negative correlation between the level of risk exposure—in health problems, for example—and the level of personal income.

¹⁵ According to Rawls, personal talents do not belong to individuals because they did not merit them; talents are to be redistributed through monetary compensation accruing to individuals poorly endowed with talents.

¹⁶ Many economists and philosophers writing on “distributive justice” maintain that inequalities induced by differential luck are to be compensated. Among others, Ronald Dworkin argued that a sharp distinction is to be made between a critical condition of life if it is the effect of “option luck” (that is, it is caused by inappropriate behaviour, e.g., a cancer suffered by a heavy smoker) versus the consequences of “bad luck”, i.e., drawing the wrong ticket in the lottery of life [42].

The design of contract C allows the disadvantaged individuals to bear a lower burden of the cost of the Welfare State in terms of the difference between taxes paid ex ante and expected benefits to be obtained ex post. The fulfillment of this latter objective unavoidably implies redistribution.

In our experiment, we designed the three contracts in a very simple way. In addition to the analytical advantage of devising a very parsimonious scheme, this delivers the practical advantage of reducing experimental subjects' cognitive mistakes. However, the relation between the classes and the contracts allows us to identify, in most cases, self-interest and ideological motivations behind people's choices: Rich and poor are clearly advantaged by a specific contract—the actuarially fair and the progressive contract, respectively—while the middle class is indifferent. Since middle class earnings are not modified by the tax-and-transfer reshuffling according to their performance, by studying the behavior of the middle group we are able to elicit the pure taste for solidarity. Table 1 underlines these issues. It reports the expected income for each class under each contract (computed on our lab society of 21 subjects) and it compares the redistributive power of each contract showing that the Individualistic Welfare State makes the poor even poorer in relative terms, while the Prioritarian State strongly reduces relative differences.

Table 1. The three Welfare State contracts and expected income variance.

<i>Initial Situation</i>			<i>Neutral Welfare State (Proportional Tax-and-Transfer Scheme)</i>		<i>Individualistic Welfare State (Actuarially Fair Tax-and-Transfer Scheme)</i>		<i>Prioritarian Welfare State (Progressive Tax-and-Transfer Scheme)</i>	
Class	Income	Relative Income (RI)	Expected Income (EA)	Relative Expected Income (REA)	Expected Income (EB)	Relative Expected Income (REB)	Expected Income (EC)	Relative Expected Income (REC)
Rich	300	3	230	2.5	258	4.2	215	2
Middle Class	200	2	160	1.8	160	2.6	160	1.5
Poor	100	1	90	1	62	1	105	1

3.3. Voting Scenarios

In each session, the experimental subjects participate in two voting rounds. In the first voting round, they must rank the three contracts. In this scenario, people do not receive any information about their performance and the category to which they belong. We call this round the 'Veil of Ignorance' condition (VOI)¹⁷. In the second voting round, people are asked to re-rank the contracts after being informed about their position in society (NO_VOI condition).

At the end of the experiment, the contract that received the highest number of preferences in the NO_VOI condition was actually implemented. In particular, each subject assigns three points to the preferred contract, two points to the second and one to the last one. For each contract, we summed the points assigned by all the participants. The contract that obtained the highest score was implemented for everyone. Subjects were perfectly aware of it.

During the experiment we treated the two scenarios as two separate treatments. This means that initially, no participant knew that the experiment consisted of two rounds and that they would be allowed to vote twice. In other words, experimental subjects were instructed round by round.

¹⁷ Consider the fact that in our experiment we did not implement the Rawlsian version of the veil of ignorance. In fact, our participants ignored their actual relative performance only, whereas they were aware of the nature of the task and they had expectations on their success in performing it. This thin veil of ignorance allowed detecting whether subjects change their choice over the two rounds (without and with information concerning their relative performance) according to their self interest.

This implies that under the VOI condition, participants were given instructions concerning that round only and that they were not informed about the existence of another round. We opted to implement the experiment this way because we did not want people's choices in the VOI scenario to be affected by the possibility of a further voting round.

The size of the Welfare State is often analyzed by relying on the political mechanism put forward by Meltzer and Richard [43], whereby the decisive median voter, being poorer than the average income, exerts a political pressure in the pools by voting for the party (or the coalition of parties) with more redistributive programs.

4. Procedure

This was a laboratory experiment in which decisions were recorded through the computer. Instructions were read by participants on their computer screen as an experimenter read them aloud. The experiment was programmed and conducted using Z-tree [44]¹⁸.

Participants entered the laboratory and took a seat in front of a computer. They were immediately asked to switch off their mobile phones and stop talking to their colleagues. First, instructions concerning the task to be carried out were presented. Subjects were informed about the nature of the task and were provided an example of Raven's matrix in order to familiarize them with their activity. Then, participants were instructed on how the classes were created, how the risk of losing money was simulated in the lab, the characteristics of the three contracts and the rules of the first voting round (VOI condition). A sheet of paper with all this information was also distributed. At this point, a set of control questions was asked in order to ensure that the players understood the rules of the game.

Before performing the task, we asked players to predict the category to which they would belong, and we paid them if the prediction was correct. At this point, subjects began the task. When they completed the task they participated in the first voting round (VOI condition). Then, they were informed about the category they belonged to, at which point we asked them to re-rank the three Welfare contracts (NO_VOI condition).

At the end, they cast a ten-sided die. If the number was lower than five (six, seven) for subjects that belonged to the first (second, third) category, 80 tokens were lost. On the basis of people's rankings, the computer announced the preferred Welfare State and each participant could view his/her own payoff on his/her computer screen. Finally, before receiving their payment, subjects participated at a Holt and Laury series of lotteries in order to elicitate their attitude towards risk and they filled out a socio-demographic questionnaire.

The value of each token was 0.08 euro. A correct category prediction was compensated in the amount of 1 euro and the questionnaire, 3 euro. The average gain was 15 euro. There was no fee paid for appearing because it would represent a sort of guaranteed wage, which was neither suitable nor desirable for our research question. In fact, there was no reason to introduce a guaranteed wage in a Welfare State when it was already the result of a specific process.

The entire experiment preserved anonymity among participants.

5. Theoretical Predictions

Starting from a simple economic consideration, we expected that self-interested subjects would choose the taxation scheme that maximized their expected payoff. This means that in the VOI scenario, people who expected to be rich would choose the actuarially fair Individualistic contract, while people who expected to be poor would choose the progressive Prioritarian contract. The same principle held in the NO_VOI scenario: The rich would choose the Individualistic State while the poor would choose the Prioritarian one. Concerning the middle class, there was no economic reason to prefer any of the Welfare States. In fact, their expected payoff was the same no matter the contract. Clearly, we expected

¹⁸ The experiment was programmed by Marie-Edith Bissey.

that people would change their choices in the NO_VOI condition with respect to the VOI condition if their prediction of their relative performance was at odds with the actual result.

To sum up:

Hypothesis 1 (H1): *The expected/actual rich will choose the Individualistic State.*

Hypothesis 2 (H2): *The expected/actual poor will choose the Prioritarian State.*

Hypothesis 3 (H3): *The expected/actual middle class will be indifferent. Consequently, they will randomly choose one of the contracts.*

Hypothesis 4 (H4): *Participants will change their choices in the NO_VOI condition with respect to the VOI condition if their prediction of their relative performance is wrong.*

6. Data Analysis and Results

6.1. Sample

Overall, 147 undergraduate students participated in the experiment—63 from the University of Milan-Bicocca, 42 from the University of Piemonte Orientale and 42 from the University of Turin. They were recruited through a web-based recruitment system. Since subjects' choices were not significantly different across locations, we performed our analysis on the pooled sample¹⁹.

At the end of each experimental session, we collected data concerning participants' socio-demographic characteristics and attitudinal views about society and risk tolerance through a questionnaire. This allowed us to test to what extent these issues played a role in determining people's choices.

Concerning socio-demographic characteristics, we collected data on age, gender, religious affiliation, volunteering activities, job, political orientation and school career. Forty-two percent of our sample was male. On average, they were 24 years old and 28% were workers. Sixty-six percent were believers (60% Catholics) and 35% were volunteers. Thirty-six percent were centre-left/left-wing politically, while 28% were center-right/right-wing. Examining subjects' school careers, only 17% scored less than 70 as a high-school final mark, while 80 were both the mean and the median value²⁰.

A second set of questions focused on the reasons why some people succeed in life while some others fail. More specifically, we asked subjects: "Below are listed several reasons why some people get ahead and succeed in life and others do not. Using a 1–5 scale, where '1' means "Of no significance" and '5' means "extremely important", please tell me how important each factor is as a reason for a person's success: (a) willingness to take risk; (b) money inherited from families; (c) hard work and initiative; (d) ability or talent a person is born with; (e) good looks; (f) connections; (g) being a member of a particular race or ethnic group; (h) getting the suitable education; i) gender". For each item, subjects must select a value from 1 to 5 where 1 means 'Of no significance' and 5 means 'extremely relevant'. Since it was possible to identify two classes of factors—intrinsic and contextual—we constructed two indices. The SKILL_INDEX was computed as the mean of the values subjects selected for items (a), (c), (d) and (h), while the PERSONAL_INDEX was the mean of subjects' choices for the remaining items. Overall, people seemed to consider intrinsic factors more relevant than contextual ones. In fact, the average value of the SKILL_INDEX was significantly higher than the average value of the PERSONAL_INDEX (4.07 vs. 3.05, Wilcoxon test, $p = 0.000$).

¹⁹ Chi-squared tests ran on contingency tables where choices and locations were coupled (both in the VOI and in the NO_VOI scenario) did not reject the null hypothesis of independence ($p > 0.43$).

²⁰ In Italy, the high-school final mark ranges from 60 to 100.

In the questionnaire, we detected participants' attitude towards the Welfare State. Subjects were asked: "Which of the following sentences is more in line with your way of thinking?: (A) We should live in a society where the government is large even if taxes are high or (B) we should live in a society where the tax burden is low but everyone should take care of herself".

Approximately 60% of our experimental subjects selected option A.

Two further questions concerned participants' perception of their status, both in the lab and in real life. First, before performing the task, we asked them to predict the category to which they would belong. Then, we asked about their expectations for the future through the following question: "In Italy, people like you and your family are likely to improve their standard of living". Subjects must select a value from 1 to 5 where 1 means 'I do not agree at all' and 5 means 'I completely agree'.

Approximately 33% of the participants thought that they would fall in the rich group, while 56% thought they would belong to the middle class. Only 11% believed they would fall in the poor category. Only 39% of the subjects were correct in their prediction. Concerning people's expectations for the future, the group was largely pessimistic: Half of them did not agree that they would have the opportunity to improve their standard of living, while less than 2% completely agreed they would have that opportunity.

Finally, subjects' attitude towards risk was measured through a set of questions asking: "What is your attitude towards risk for each of the specific contexts? (a) Car driving; (b) money matters; (c) leisure and sport activities; (d) career and (e) health". For each item, subjects had to tick a value from 0 to 10 where 0 means 'Completely risk averse' and 10 means 'Completely willing to accept risk'. We then computed two indices: The FINANCIAL_RISK_i index was computed as the mean of the values subject *i* selects for items (b) and (d), while the PHYSICAL_RISK_i index was the mean of subject *i*'s tolerance in the remaining items. In our sample, people were more willing to take financial risks than physical ones (5.52 vs. 4.72; Wilcoxon test, $p = 0.000$).

In the next session we would examine whether and to what extent these characteristics influence subjects' decision-making process.

6.2. Results

Result 1. Subjects' choices were driven by self-interested considerations both under the veil of ignorance and when the veil drops.

Under both the VOI and the NO_VOI scenario, the most favored contract was the actuarially fair one—the Individualistic Welfare State. The second most favored state was the Prioritarian state based on a progressive tax system. Even if choices under the two scenarios seem to be in line, however, when we studied subjects' coherence in the two situations, it turns out that only 78 subjects out of 147 confirmed their choice once the veil was lifted. Thus, 69 subjects revised their choice (see Table S1).

How can we explain this result? The key point was to try and understand what factors drive people's choices in both scenarios and lead most of them to switch when the veil drops. Since people could choose among three possible options in each scenario that could be ordered in terms of redistributive power, we selected the ordered-probit model as the most suitable econometric tool²¹. The two specifications were (see Table S2):

$$\begin{aligned} \text{CHOICE_VOI}_i = & \alpha + \beta_1 \text{GUESS_FIRST}_i + \beta_2 \text{GUESS_LAST}_i + \beta_3 \text{WELFARE_STATE}_i + \\ & + \beta_4 \text{STATUS_IMPROVEMENT}_i + \sum_r \eta_r \text{DEMOG}_i + \sum_s \gamma_s \text{RISK_INDICES}_i + \\ & + \sum_z \omega_z \text{SUCCESS_INDICES}_i + \varepsilon_i, \end{aligned} \quad (1)$$

where:

²¹ We performed a further analysis running a multinomial logit. The results did not change.

CHOICE_VOI_i is subject *i*'s preferred contract under the VOI scenario;

GUESS_FIRST_i is a dummy variable equal to 1 if subject *i* thinks (s)he will be in the first category (rich);

GUESS_LAST_i is a dummy variable equal to 1 if subject *i* thinks (s)he will be in the third category (poor);

WELFARE_STATE_i is a dummy variable equal to 1 if subject *i* chooses option A in the question aimed at detecting his/her attitude towards the Welfare State and 0 otherwise;

STATUS_IMPROVEMENT_i is a variable reporting subject *i*'s answer to the question detecting his/her level of agreement concerning the opportunity to improve his/her standard of living in the future;

DEMOG_i is a series of demographic controls including age, gender, religious belief, volunteering activities, job and political orientation²²;

RISK_INDICES_i are the two measures of risk: FINANCIAL_RISK_i and PHYSICAL_RISK_i;

SUCCESS_INDICES_i are the two indices reporting subject *i*'s perception of the role played by different factors in determining people's success: SKILL_INDEX_i and PERSONAL_INDEX_i;

and (see Table S3)

$$\begin{aligned} \text{CHOICE_NO_VOI}_i = & \alpha + \beta_1 \text{FIRST}_i + \beta_2 \text{LAST}_i + \beta_3 \text{WELFARE_STATE}_i + \\ & + \beta_4 \text{STATUS_IMPROVEMENT}_i + \sum_r \eta_r \text{DEMOG}_i + \sum_z \omega_z \text{SUCCESS_INDICES}_i + \varepsilon_i, \end{aligned} \quad (2)$$

where:

CHOICE_NO_VOI_i is subject *i*'s preferred contract when the veil drops;

FIRST_i is a dummy variable equal to 1 if subject *i* belongs to the first category (rich);

LAST_i is a dummy variable equal to 1 if subject *i* belongs to the third category (poor).

It was revealed that in both scenarios, belonging to a certain—hypothesized or real—category strongly matters. In other words, the rich (expected or actual) were more likely to choose the Individualistic State while poor people were more likely to select the Prioritarian one. More specifically, people who thought they would be in the rich category were 28% more likely to choose the actuarially fair contract and 22% less likely to vote for the progressive one. When the veil dropped, this effect was even stronger. In fact, rich people were 50% more likely to vote for the actuarially fair contract and 42% less likely to opt for the progressive one. At the same time, poor people were 23% more likely to vote for the progressive contract and 21% less likely to choose the actuarially fair option. Moreover, the actuarially fair contract was the least favored contract among the poor while the progressive contract was the last choice for most of the rich. Notice that this was perfectly in line with H1 and H2: The principle of self-interest maximization holds since category 1 and category 3 obtain the highest pay-offs under the actuarially fair contract and the progressive contract, respectively.

This result was strengthened if we analyzed in detail what made people switch to a different contract as soon as the veil dropped. We concentrated our attention on the change in choices when the veil was lifted and subjects became aware of their category and focused on the actuarially fair and progressive contracts. In fact, these two contracts each maximize the payoff for a different group, the rich and the poor, respectively.

Under the VOI condition, 66 subjects were in favor of the actuarially fair contract. Out of 66 subjects, only three—those participants who expected to belong to the third category—voted against their self-interest. What do those 66 subjects do when the veil is lifted? It turns out that 35 once again chose the actuarially fair contract (22 belonged to the rich and 10 to the middle class), while 24 subjects—16 poor and seven belonging to the middle class—decided to vote for the progressive contract.

In the VOI scenario, 41 subjects were in favor of the progressive contract. Only four out of 41—those who expected to belong to the first category—voted against their self-interest. When the

²² We dropped the high school final mark because of its significant correlation with the expected category.

veil was lifted, 24 again chose the progressive contract (11 were poor, and 12 belonged to the middle class), while 11 subjects decided to vote for the actuarially fair contract, nine of them being rich. More generally, out of 52 subjects who switched and belonged either to the rich or to the poor—the classes that take advantages from a specific contract—40 people (77%) chose another contract when the veil dropped in order to maximize their monetary payoff.

We ran a probit regression whose specification was (see Table S10):

$$\text{SWITCH}_i = \alpha + \beta_1 \text{GUESS}_i + \beta_2 \text{WELFARE_STATE}_i + \beta_4 \text{STATUS_IMPROVEMENT}_i + \sum_r \eta_r \text{DEMOG}_i + \sum_s \gamma_s \text{RISK_INDICES}_i + \sum_z \omega_z \text{SUCCESS_INDICES}_i + \varepsilon_i, \quad (3)$$

where:

SWITCH_i is a dummy variable equal to 1 if subject i selects a different contract when the veil drops and 0 otherwise;

GUESS_i is a dummy variable equal to 1 if subject i correctly predicts the category (s)he will belong to and 0 otherwise.

From 3, it became clear that the only reason to change one's mind when the veil dropped was an incorrect prediction of one's position in the society. In fact, 76% of people who incorrectly predicted their position and could obtain a monetary advantage changing their choice, actually switched. This was in line with H4.

To sum up, those subjects who preferred the Individualistic income distribution under the VOI condition either thought that they were high-ability subjects or that they belonged to the middle class (which was favored by no contract), while the Prioritarian contract was preferred by those who thought they were poor (or, again, belonged to the middle class). Without the veil of ignorance, the same scenario emerged, as subjects appeared to act out of self-interest: The rich prefer the Individualistic distribution, and the poor were in favor of the Prioritarian contract.

Result 2. Under the VOI condition, most of the expected middle class participants opted for the actuarially fair (Individualistic) contract, while under the NO_VOI condition, the preferred contract of the actual middle class was the progressive (Prioritarian) one.

Given the relevance of self-interest shown by the results analyzed thus far, we turned to a deeper study of the behavior of the middle class. According to the payoffs structure, no contract provided any monetary advantage to the middle class.

Let us start from the hypothetical middle class under the VOI—those 83 participants who believed that they would belong to the middle class once the veil dropped. The actuarially fair contract was the first preference (selected by 35 people), while the progressive contract came second (chosen by 29 subjects). Shifting to the NO_VOI condition, we saw that the progressive contract was the one favored by the actual middle class (chosen by 20 out of 49 subjects). One reason for these inconsistent choices was certainly the fact that the two groups of the expected middle class and the actual middle class did not match. In fact, only 30 subjects correctly predicted belonging to the middle class. Twenty-three of them were perfectly consistent in their choices over the two scenarios, and only eight of them preferred the actuarially fair contract. Moreover, among the 14 subjects who thought they would be rich and were in fact middle class when the veil was lifted, only three preferred the actuarially fair contract. Even if eight of them were in favor of the actuarially fair contract under VOI, only two confirmed their vote when the veil was lifted. The disappointment about their actual ability and earnings ranking might play a role in explaining this finding. Finally, among the five people who thought they would be poor and were in fact middle class when the veil was lifted, four were in favor of the progressive contract under VOI and three confirmed their choice when the veil was lifted.

Again, we ran an ordered probit regression in order to better understand middle class participants' choices. The specification was (see Table S12):

$$\begin{aligned} \text{CHOICE_NO_VOI}_i = & \alpha + \beta_1 \text{GUESS_FIRST}_i + \beta_2 \text{GUESS_LAST}_i + \beta_3 \text{WELFARE_STATE}_i + \\ & + \beta_4 \text{STATUS_IMPROVEMENT}_i + \beta_5 \text{FIRST_PROGRESSIVE}_i + \beta_6 \text{FIRST_ACTFAIR}_i + \\ & + \sum_r \eta_r \text{DEMOG}_i + \sum_z \omega_z \text{SUCCESS_INDICES}_i + \varepsilon_i. \end{aligned} \quad (4)$$

It is shown that people who thought they would be in the first category and those who opted for the progressive contract under the VOI were more likely to choose the Prioritarian Welfare State.

What happens to the 53 subjects whom, under the VOI condition, incorrectly predicted belonging to the middle class? Twenty-five were actually rich and 19 of them chose the actuarially fair contract (12 of them selected a different contract under VOI), while 28 were poor, 19 of whom chose the progressive contract (11 of them chose a different contract under VOI). This implied that as far as subjects realize they were in a class that was favored by a specific contract, they changed their mind and chose that contract.

How can we interpret this evidence? In our design, the middle class votes on the Welfare State were not intended to establish an impartial social choice, but simply to study how people without any economic interest choose. In this case, we might observe their latent preference for either meritocracy or solidarity in a context where the utility provided by the monetary payoff was not relevant (payoff was the same under any contract).

Under the VOI condition, most of the middle class subjects preferred either the Individualistic Welfare State or the Prioritarian one. The former were probably driven by the belief that people who are poor are responsible for their situation, and consequently, the rich should not be coerced to help them. The latter were probably more prone to thinking that society is plagued by the inequality of opportunity and that more lucky people should bear part of the risk associated with being poor.

How should we evaluate the finding that without the VOI, the subjects belonging to the middle class seemed to be more inclined to choose the Prioritarian contract? This group of middle income people was composed not only of subjects who took account of the fact of being less skilled (and thus less rich) than expected and switched to this contract when the VOI was dropped but also of subjects who confirmed their choice in favor of the redistributive Welfare State. This latter sub-group continued to prefer the Prioritarian contract.

All in all, the choice of the middle class was the result of two different dynamics: The coherence of people who correctly predicted their affiliation with the middle class and confirmed their choice, and the disappointment of people who thought they would fall in with the best performers and decided to become egalitarian as soon as they realize they were less well-off. Finally, the belief of belonging to the middle class had no effect on choices in the NO_VOI scenario. As soon as subjects realized that their actual class was favored by a particular contract, they opted for it. In other words, self-interest was definitely stronger than any other motivation and the expectation of being more talented than they actually were influenced their decision even when monetary earnings were not involved (see also Tables S4–S9, S11 and S13 for a detailed overview of the results).

7. Discussion and Conclusions

Our setup, although utterly parsimonious, was neatly arranged to elicit the preference for a Welfare State under the veil of ignorance. Two contracts were symmetrically positioned to favor the pursuit of self-interest by each of the two classes, respectively, whereas no contract was to be preferred by the third class. The main tendencies that stood out from our experiment were as follows.

(1) The actuarially fair contract was preferred by those who were (or thought they were) at the top of the ability—and thus earnings—ranking, while the Progressive contract was preferred by those who were (or thought they were) at the bottom of the ability—and thus earnings—ranking. Moreover, most of the people who switched to a different contract when the veil of ignorance dropped ultimately chose the system of taxation that guaranteed them the highest earnings.

(2) The middle class behaved differently depending on the VOI or the NO_VOI treatment. In particular, under VOI these subjects did not think that being relatively more exposed to risk was a reason for ranking compensation before reward; instead, without the VOI, most of them changed their mind, as their voting turned out to be in favor of redistribution.

As we mentioned in the Introduction, many advanced countries are pointing to shrinking Welfare institutions. We may wonder whether voters are favorably disposed towards the move in the direction of individual responsibility substituting mutual risk insurance. From our experiment, the answer is no for several reasons. First, if we look at the percentage of people who preferred a specific contract, both under the VOI condition and under the NO_VOI scenario, it emerged that subjects were almost split between the Individualistic and the Prioritarian Welfare State. This implies that there was no strong and defined preference for an actuarially fair regime. Moreover, we show that preferences were driven by people's expectations—under the VOI—and by their effective position in the society—in the NO_VOI scenario. As stated above, this is clear when we analyzed the behavior of our rich and our poor. This may imply that when citizens ask for more individual responsibility in the welfare regime, they are not driven by idealistic principles of justice, but rather by their self-interest. In other words, they believe that under an Individualistic Welfare State, they have sufficient skills to improve their position within the society. Finally, let us focus on our middle class. As we explained in detail in the previous sections, our experimental middle class was, by construction, indifferent among the three Welfare States we proposed. Although we were aware that it was not a perfect representation of a real-life middle class, we thought that the characteristic of being advantaged by no specific contract might help us to disentangle ideological from self-interested motivations. What emerged from our results was that this middle class did not show any particular inclination toward the actuarially fair contract. In fact, if under the veil of ignorance, the actuarially fair contract was slightly preferred to the progressive one, when the veil was lifted, the progressive contract became the preferred one. Clearly, this phenomenon was observed because the two populations were not identical. In particular, among people who now belonged to the middle class, we could observe that subjects who predicted they would belong to the rich under the VOI and chose the actuarially fair contract shift to the progressive contract when the veil was removed and they discovered they belonged to the middle class. This choice did not influence their income. We could explain this result in terms of disappointment. In other words, when a subject who thought (s)he was in the upper class of a society discovered that this was not the case, the disappointment led him/her to choose the solidaristic distribution of resources, even if it provided no direct monetary advantages. This observation reinforced our findings that people chose a system, and in particular an actuarially fair system, if they predicted and observed a material gain from it.

Of course, our experimental results represent only a suggestion of how the general opinion is evolving about the ways in which institutions of social protection should be formed. Indeed, this cautionary remark is also driven by the close turn-out summarized as Result 1. Since our subjects almost split their preferences between the actuarially fair and the progressive fiscal system after the veil was lifted, we were induced to think that overall voting on redistributive welfare institutions largely depended upon the composition of the population. Indeed, many studies inquiring into income inequality in advanced countries show that the kernel of income distribution is evolving towards bimodality, thus shrinking the size of the middle class (for a recent overview, see [45]).

All in all, our results suggest that in advanced countries majority of voting on the Welfare State responds to self-interested motivations. This feature of the constituency is bound to polarize preferences. Not only the poor, but also middle class individuals, which in our design had in principle no interest in the tax-and-transfers reshuffling, under the no-VOI conditions tended to opt for redistribution. The policy suggestion is that welfare institutions should not be focused on the reshuffling of earnings across deciles enacted by the tax-and-transfer system, which may magnify conflicts of interest among self-interested social groups. Public programs should be mainly oriented to fostering human capital, by raising the ability of low income individual and by lowering their risk exposure. To the extent that

a less unequal distribution of opportunities would enable the disadvantaged individuals to improve their income prospects, market income distribution could become more meritocratic and social mobility could be boosted.

Supplementary Materials: The following are available online at <http://www.mdpi.com/2073-4336/10/4/41/s1>, Figure S1: An example of Raven's matrix. Determine the missing square, choosing among options A, B, C, D and E, Table S1: Preference distribution across the three contracts under the VOI condition, given the choice under the NO_VOI condition, Table S2: Ordered probit regression (1)—marginal effects. Dependent variable: CHOICE_VOI, Table S3: Ordered probit regression (2)—marginal effects. Dependent variable: CHOICE_NO_VOI, Table S4: Preferred contract under the VOI condition (percentages by expected category), Table S5: Preferred contract under the NO_VOI condition (percentages by category), Table S6: Less favored contract under the VOI condition (percentages by expected category), Table S7: Less favored contract under the NO_VOI condition (percentages by category), Table S8: Preferred contract (percentages by category) under the NO_VOI condition, by subjects preferring the Individualistic contract under the VOI condition, Table S9: Preferred contract (percentages by category) under the NO_VOI condition, by subjects preferring the Prioritarian contract under the VOI condition, Table S10: Probit regression (3)—marginal effects. Dependent variable: SWITCH, Table S11: Preference distribution under both VOI and NO_VOI conditions (by middle class subjects who correctly predicted their status), Table S12: Ordered probit regression (4)—marginal effects. Dependent variable: CHOICE_NO_VOI (for the middle class only), Table S13: Preferred contract by category under the NO_VOI condition (by the expected middle class subjects who under the VOI condition wrongly predicted their status).

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