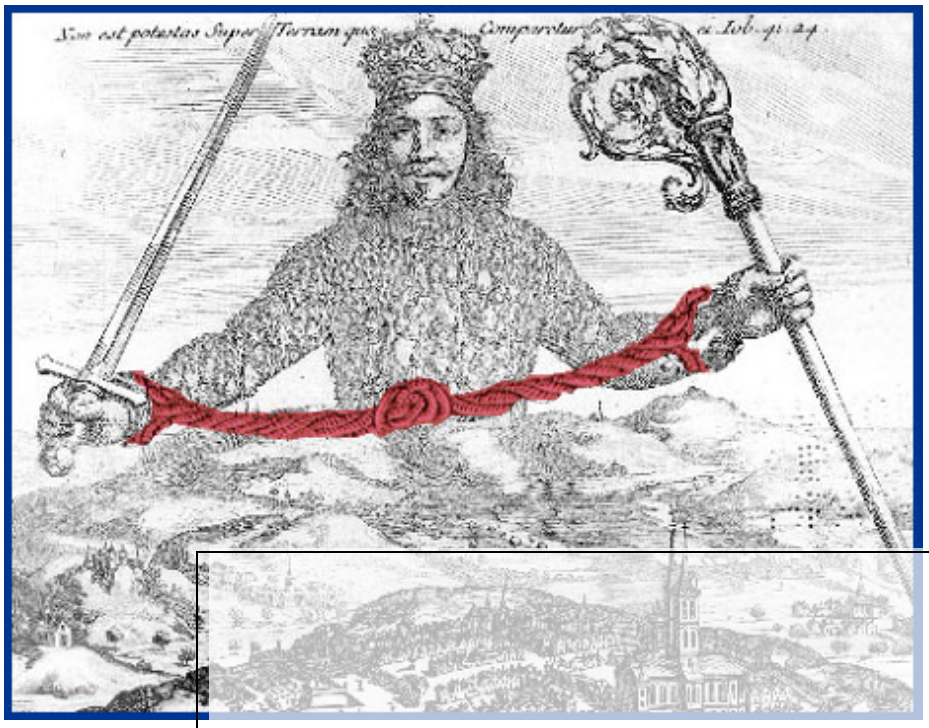

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Intergenerational Sharing of Non-Renewable Resources: An Experimental Study Using Rawls's Veil of Ignorance

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1. Introduction

Current generations have two crucial advantages over future ones when it comes to intergenerational resource utilization: first of all, they have the *de facto* power to overproportionally take advantage of a given resource stock since the non-existing unborn cannot effectively intervene ("Dictatorship of the Present"). Secondly and related to this, the currently living are perfectly aware of this power asymmetry. In consequence, it is not surprising that the now living enforce "intergenerationally unfair" resource consumption paths, realizing benefits now while shifting burdens to future individuals.

But what if the currently living could not be sure if they really benefited from our[1] existing resource overconsumption activities? What if they were ignorant about their place in the sequence of generations? Most likely, they would not agree with the way the current generation depletes natural resources respectively overuses the Earth's sink capacities. With his hypothetical thought experiment of deciding behind a *Veil of Ignorance*, John Rawls (1971) offers a procedure for deriving principles of distributive just, concerning both intra- and intergenerational resource distribution. Since Rawls's normative conclusions heavily depend on the assumptions how a rational individual is supposed to decide behind the *Veil*, we follow the approach of Norman Frohlich and Joe A. Oppenheimer (1990, 1992) and apply a similar experimental design to the intergenerational case: while Frohlich/Oppenheimer (1992) let groups of individuals unanimously decide between different *intra*-generational distributive norms, we created a sequential dictator game in which people could ex-ante agree how to distribute an available amount in a *generational sequence* of five players. Most groups unanimously agreed on equally splitting the money. Contrary to Frohlich/Oppenheimer's setup, in which the agreed on distribution was also realized by the experimenters as "external enforcers", we then let each player freely decide if she keeps the agreement or if she takes a different amount, potentially reacting to the previous players. We found that compared to a control treatment with no initial agreement, people tended to share more equally. Surprisingly, when the participants were, while bargaining, left ignorant about their later position in the dictator sequence, groups tended to distribute the money less equally compared to a setup in which everyone already knew his or her position during the agreement phase.

The remainder of this paper is structured as follows: in section 2, we argue how a counterfactual "bargaining with future individuals" situation may be realized as an experimental setup. That way, we can test the behavior of real individuals in a setting which approximates Rawls's *Original Position* in which people are ignorant to which generation they will belong. Section 3 first describes related intergenerational resource sharing experiments which all focus on the descriptive level. Then, we briefly explain Frohlich/Oppenheimer' experimental approach for deriving *intra*generational distributive norms in the lab. Our intermediate conclusion is that similar "intergenerational bargaining experiment" may contribute to the derivation of *inter*generational distributive norms. Section 4 describes our own experimental design and the hypotheses we test. Section 5 presents our results; section 6 concludes.

[1] Referring to the overproportional consumption levels of most current inhabitants the Western hemisphere.

2. Endogenizing (Intergenerational) Justice in the Economic Laboratory

2.1. Intergenerational Resource Sharing: an Inherently Normative Challenge

The widespread use of the term "environmental *problems*" (e.g., The Economist 2015, Australian Broadcasting Corporation 2015; Feess 2015) implies that "something is going wrong", that there is a mismatch between "Is" and "Ought". Climate change, biodiversity loss or the depletion of natural resources are considered *problematic* since they represent development paths against the interests of future individuals. Many of our current activities—leading to the aforementioned problems—have consequences reaching beyond the life-span of a human being. These long-term consequences in the end create a power asymmetry between current and future generations: the unborn cannot stop the now living from overproportionally utilizing natural resources (both as sources and sinks), and the members of the current generation are perfectly aware of this "Dictatorship of the Present". In a world in which people are to considerable extent self-interested, we can safely expect the present people to take advantage of this.

Since nothing can be done about the sequence of time, a real dilemma arises: those benefitting from their de facto decision making power—the currently living—are at the same time the only ones who can effectively change the way resources are used over time. In other words, the current generation must constrain itself. This implies three questions:

(1) Is there a way to let people *understand* the necessity of self-constraint?
(2) If so, can we expect this understanding to be strong enough such that people actually do constrain their consumption?
(3) How to determine the "fair" intergenerational resource consumption path which shall be realized via people's self-constraint, i.e. what is the normative ideal?

Although the third question seems to be totally different from the first and second one, the next subchapter illustrates how decision making behind the Rawlsian *Veil of Ignorance* (Rawls 1971, Rawls/Kelly 2001) addresses all three aspects simultaneously.

2.2. "Justice as Fairness": An Intergenerational Social Contract behind the Rawlsian Veil

Resource consumption paths which, as we suspect, overproportionally favor the currently living fail an important test which many ethical theories demand:[2] they are not generalizable. Assuming people were ignorant about their position in a chain of generations, they would be forced —out of pure self-interest—to develop a general perspective. This is basically the figure of Rawls's (1971) famous *Veil of Ignorance*. If someone does not know whether she will be born into, say, generation 1 or 1000, a person could never agree to a resource distribution scheme which allows those living in generation *T* to discriminate against those being born into generations later than *T*. At least in principles, this thought experiment should enable people to accept a generalizabe principle of intergenerational

[2] Most prominently, this is expressed in Kant's (1788) *Categorical Imperative*, but we find similar arguments in Adam Smith's (1790) *Impartial Spectator*, Rousseau's *Volonté Général* (1762), and more recent, the above mentioned Rawlsian approach, in Habermas's (1983) and Apel's (1988) *Discourse Ethics*, or James M. Buchanan's *Constitutional Economic Theory* (Buchanan/Tulluck 1962, Buchanan/Brennan 1985). Even inherently consequentialist theories like utilitarianism can be justified on grounds of a generalizable perspective, as John Harsanyi (1955) shows (see below).

justice (Rawls's *Just Savings Principle, JSP*), similar to the decision problem of the intragenerational case (leading, according to Rawls (1971), to the *Difference Principle, DP*).

2.3. Bargaining with the Unborn: Counterfactual Agreement in the Economic Laboratory

Strictly speaking, Rawls's *Theory of Justice* is not a contractarian approach: it lacks the bargaining element (Kukathas/Pettit 1990). Since all individuals are rendered identical behind the veil—being stripped of *all* idiosyncratic information—there is nothing to disagree upon. The decision of one person is as good as anyone else's. Of course, depriving people of *all* personal knowledge to that degree can only work in a thought experiment. But since Rawls's veiled decision makers are artefacts, Rawls need to formulate assumptions about how such a counterfactual individual is supposed to make decisions on distributional principles. Here, a crucial problem arises: *what* the individual is expected to finally decide in the *Original Position* (Rawls, 1971) strongly depends on the descriptive assumptions *how* the idealized person reasons. With respect to the choice of an intragenerational distributional principle, the controversy between John Rawls and John Harsanyi (1975, cf. Binmore 1989) shows that (implicitly) assuming different degrees of risk aversion—respectively presuming what weight people put on different states of the world—severely affects the normative conclusions. Consequently, positive assumptions about individual (decision making) behavior must be sufficiently "realistic", i.e. compatible with empirical findings. Otherwise, the normative conclusions derived from "veiled reasoning" are easily dismissed as arbitrary or forced by deliberately selecting the needed premises. One way to address this problem is by using economic experiments, as Norman Frohlich and Joe A. Oppenheimer (1990, 1992) did in order to settle—based on empirical grounds—the dispute between Rawls and Harsanyi on the "right" principle of intragenerational distributive justice (see subsection 3.2).

By the same token, we suggest investigating intergenerational distributional conflicts with the help of controlled laboratory experiments. Overall, we follow Frohlich/Oppenheimer's idea of creating an artificial situation "in-between" Rawls's purely hypothetical thought experiment and empirical testing. On the one hand, we thereby avoid problematic assumptions about individual decision making. On the other hand, the laboratory allows us designing a counterfactual situation which we cannot study empirically in "reality". In the below described experiment, we created a setup in which present and future generations could—counterfactually—agree on the sequential distribution of a finite, non-growing amount of money.

While Rawls, being mainly interested in the derivation of normative principles, assumes perfect rule compliance, the participants in our experiment were free to keep the agreement or not. This possibility is crucial for studying intergenerational distributional issues: if people had a well-working enforcement mechanism, we would rather study an intragenerational distributional problem. Before describing our experiment in more detail, the next section first of all presents the existing literature on intergenerational resource experiments, secondly summarizes the above cited Frohlich/Oppenheimer studies, and thirdly argues why applying the Frohlich/Oppenheimer approach to intergenerational resource sharing contexts closes a relevant, existing gap.

3. Related Literature and a Relevant Research Gap

3.1. *Inter*-generational Sharing of a Non-Renewable Resource: Descriptive Results Dictator Experiments

Many experiments modeling intergenerational distributive conflicts use a renewable resource stock and create a prisoners' dilemma incentive problem (e.g. Sadrieh 2003, Fischer/Irlenbusch/Sadrieh 2003, Ostrom 2006, Reeson/Nolles 2009, Janssen/Anderies/Joshi 2009, cf. Weimann 2006). The underlying ideas are that, first of all, many natural resources have the potential to regrow. Secondly, environmental problems arise due to externalities, and internalizing externalities requires collective effort. Since our focus lies on the power asymmetry between current and future generations, we want to abstract from both resource growth and strategic interaction problems. Hence, the most simple way to model the problem of the "Dictatorship of the Present (Generation)" is a dictator game involving a finite resource. As such, the two-person dictator game as developed by Kahneman, Knetsch and Thaler (1986) suffices to study how far one person abuses its temporal power over the other: the dictator decides first, leaving the next person with the respective consequences. But in an intergenerational context, each generation *t* finds itself in a "sandwich position" between the previous and the future generations: generation *t* can react to what those before it decided (being the powerless "receiving side"), and it decides the future of those coming afterwards (being the powerful "dictator"). To study this intermediate position, a dictator game therefore needs at least three positions. To our knowledge, the first and so far only experiment creating such a sequential three-person dictator setup was developed by Bahr and Requate (2013). They found that, compared to the two-person game, the first individual took less of the available amount, and that the second person is likely to *reciprocate* this behavior, i.e. leaving a substantial part of the received amount for the third person if the first player had acted altruistically, too. They conclude that this provides strong evidence for the *indirect reciprocity* hypothesis, as suggested by Wade-Benzoni (2002): non-overlapping generations obviously cannot directly interact, but they might establish a reciprocity rule where each generation *t* does for the next one what generation *t-1* had done for them. This basically is the argument Rawls makes when deriving his *normative* JSP: people *should* leave as much for posterity as they would have liked to receive from the previous generation. If every generation followed this rule, a *just* intergenerational contract would be established to the benefit of every generation, even if people behind the veil are not altruistic.[3] In a sequential dictator experiment with real individuals, though, the "enforcement" must come from the individuals themselves, as the problem description in section 2.1 suggest. Sadrieh (2003), using a sequential dictator game with a growing resource, indeed found that people left more to the following players than the pure self-interest *homo oeconomicus* model predicts and concluded that there is substantial intergenerational "warm-glow" altruism.

[3] In *A Theory of Justice* (1971), Rawls derived his intergenerational justice principle based on the assumption of "inter-family altruism". Since his veiled decision makers were otherwise assumed to be purely self-interested, Rawls revised his intergenerational principle in his later work *Justice as Fairness* (Rawls/XXX, 2001). There, he argued that people in the *Original Position* would agree on the JSP based on the following though: every generation would like to receive a certain stock of capital from the previous one. Hence, each generation is obliged to hand on the same amount of capital it would have liked to receive from its predecessors. Consequently, a certain, stable amount of wealth is to be bequeathed from one generation to the next (cf. Wolf, 2010).

None of the described studies explicitly addresses the question what actually constitutes an *intergenerationally fair* resource distribution scheme. Hence it is difficult to argue if a certain observed distributional pattern can be considered "acceptable" or not. The intuitive idea that a finite resource should be distributed equally seems appealing, but it remains an intuition. For it to become normatively convincing and morally binding, it must qualify as the result of an accepted decision making process—and potentially may be rejected by another distributive rule. An experiment trying to identify a fair distributional rule for an *intra*generational distributive problem is the above mentioned one by Frohlich and Oppenheimer (1990, 1992), presented in the next section.

3.2. Normative Theory in the Lab: *Intra*-generational Distributional Experiments Using the Rawlsian Veil

As presented in section 2.3, the experiment designed by Frohlich and Oppenheimer was motivated by a dispute between Rawls and Harsanyi on what (intragenerational) distributive principle an individual would choose behind the *Veil of Ignorance*. Rawls argued that the only meaningful rule can be the Difference Principle. Everything else, especially the utilitarian norm of maximizing (average) income, may justify the overriding of someone's basic rights for the sake of "the greater good". Hence, an individual ignorant of its own preferences and position in society must ensure that it is made as well of as possible under whatever circumstances may materialize. This logically implies the DP, or *Maximin Rule* in decision making terms. Harsanyi (1975), on the other hand, concluded that only considering the worst-off position is irrational since it forces people to let forgo large amounts of wealth, even if the improvement in the worst-off position is almost negligible. So the *Maximin Rule* is only an option for infinitely risk-averse people (*ibid.*). Rational, risk-neutral decision makers would opt for maximizing average income, implying the utilitarian distributional norm.

Logically, both conclusions cannot simultaneously be true. Which of the two is valid in the end depends on the right assumption about risk-preferences behind the veil. Although the veil is a theoretical construct, both Harsayni and Rawls argue with quasi-empirical assumptions about human decision making. Hence, as Frohlich and Oppenheimer (1992) conclude, one may empirically challenge both claims by setting up an experiment which approximates veiled decision making as well as possible. They therefore created an experiment in which five people unanimously had to agree on one distributional scheme out of four options, each having five different income levels. The schemes were constructed such that infinitely risk averse individuals would always choose one extreme scheme (highest minimum income, lowest average), while risk-neutral deciders would always opt for another extreme (lowest minimum income, highest average). The two remaining schemes offered intermediate options. After a group had made its decision, a lottery decided who would be allocated to which of the five income positions (*ibid*.).

In combination, the three elements "group", "unanimity", and "lottery" are supposed to approximate veiled decision making: the lottery creates a situation where an individual's position is driven by pure luck. Since people still may have individually different risk preferences and not all equally able to put themselves in a "veiled decision making situation", a discourse among several people should force them to take different possible perspectives during the discussion. Unanimity instead of some majority rule ensure that a generalizable consensus emerges even though the participants still

know their own preferences or social status outside the experiment, which most probably affect their decision making in the experiment.

Overall, with 85 groups from the U.S., Canada, and Poland, the results were quite clear (*ibid.*): an overwhelming majority of 77.8% agreed on maximizing average income provided there was a minimum income (to be specified by the group). Harsanyi's unconstrained average maximization found only the support of 12.3% of the groups. Rawls's maximin rule was only chosen once (1.2%), the remaining 8.6% agreed on maximizing the average subject to a maximum range between highest and lowest income. Even in a setting where income was not determined by a lottery, but by individual effort, the participants still mostly opted for average maximization constrained some minimum income (Frohlich/Oppenheimer 1990). Consequently, Frohlich and Oppenheimer (ibid.) concluded that from a normative perspective, neither Rawls's nor Harsanyi's distributional principle can be recommended, since both failed to receive substantive support in an idealized bargaining situation.

3.3. (Veiled) Intergenerational Bargaining in the Laboratory: Toward an Normative Intergenerational Theory

In the vein of the Frohlich/Oppenheimer experiments, many other authors used individual veiled decision making or multi-person bargaining setting to study numerous aspects playing a role for intragenerational justice (Konow (2003) still provides the most comprehensive overview of empirical justice research). To our knowledge, no one so far extended experimental veiled bargaining to intergenerational context. In general, veiled bargaining may contribute to the formulation of normative principles. Especially in the intergenerational context, experiments allow simulating counterfactual situations where, for example, agreements with future generations can be approximated.[4]

4. Experimental Setup and Predictions

4.1. First Adaptation Steps of Frohlich/Oppenheimer to Intergenerational Resource Sharing

Given the fundamental differences between intra- and intergenerational distributional choices, our technical design must be different from the 1992 Frohlich/Oppenheimer setting in some central aspects. Roughly speaking, we combine Bahr and Requate's consecutive dictator game with an initial veiled bargaining step. So on the one hand, we include the "Rawlsian veil" element, by letting people first of all decide on a distributional rule. On the other hand, our enforcement mechanism must look different to reflect the intergenerational problem. For Frohlich/Oppenheimer's setups, the "external enforcement" of the chosen scheme by the experimenters is a reasonable assumption. In reality, a society may enforce, although imperfectly, certain intragenerational distributional rules. As argued in section 2, it is exactly this lack of enforcement which creates the challenge in the intergenerational

[4] At least when the preferences and interests of future individuals can be expected to be sufficiently similar to those of the current generation, from which the representing agents have to be recruited. For the satisfaction of basic needs like food, shelter and freedom from violence, the assumption of similar preferences through time seems sufficiently plausible. Hence, the more general the problem investigated—like having certain general resources available to satisfy one's need—the more scope there is for counterfactual bargaining experiments (compare to Rawls's (1971) *primary goods* argument).

case. Hence, rule enforcement lies entirely in the hands of the deciding current generation, i.e. people can freely choose how much of a resource they want to take for themselves as in Bahr/Requate (2013).

This brings us to the next difference. While Frohlich/Oppenheimer conducted a "horse race" between competing theories, we ran a classic causality test, addressing the question if an initial social contract induces more sharing, and if leaving people ignorant about their later position during the contracting stage has an effect. But by the design of our setup, people also elicited their normative ideal and in most cases came to a consensus within their group. Given that there was a non-growing finite amount to be shared among a finite number of people, not surprisingly, equality was the predominant norm (see section 5). This simple, but endogenously derived benchmark then allowed us to see how much an initial veiled bargaining step enabled a group to actually achieve their own set normative ideal.

4.2. Baseline, Unveiled and Veiled Bargaining Setup

As argued above, for us the simplest way to model an intergenerational distributional conflict seemed a sequential Dictator Game, similar to the setup employed by Bahr/Requate (2013). We decided to augment the chain to five generations, in which each generation is represented by one single player to abstract from collective interaction problems within a generation. The reason to use more than the minimum of three sequential players was that with five people, we model a generational sequence which exceeds those generational chains many people are experienced with: the interfamily sequence of children, parents, and grand-parents. Although the anonymous interaction via computer screens should prevent people from making this analogy, we wanted to make sure that the sequence resembled one including the interests of generations not yet born. Since nowadays, in industrial countries women are on average between 25 and 30 years old when their first child is born (CIA 2015a), and live expectancy approaches 90 years in many developed countries (CIA 2015b), a five generation sequence implies that the last generation for sure is a future one.

In *Treatment 1* (TR1), our baseline setup, we invited student participants to the laboratory facilities of our faculty, usually in sessions of 20, or 25 individuals.[5] The participants were randomly seated in front of computer screens, unable to see each other since we separated all participants by blinds. Then the computer (we implemented the setup using *z-tree* (Fischbacher 2007)) randomly formed groups of five. All participants were informed on the computer screens about the following rules:

> Player 1 receives an amount of 2000 points, each point worth 1 Euro-Cent. Player 1 then can keep between 0 and the total of 2000 points. The remainder is automatically passed on to player 2. Player 2—knowing how much the first player kept—again can keep as much as she or he likes from the received amount (if larger than zero). The remainder is passed on to player 3. The third player then is informed about the amounts taken by player 1 and 2, and, if something is left, decides how much to take from the rest. For player 4, the situation is analogous to that of players 2 and 3. Player 5 receives the number of points left by players 1 to 4.

[5] Although we always "overbooked" our sessions, sometimes a substantial part of the invited participants did not show up. In such case, we had to work with 15 or even 10 subjects only, forming 2 or 3 parallel groups. Additional students received, as declared in advance, the show-up fee, and then left.

After an automated test of understanding, all groups played the sequence as described and in the end were informed how the 2000 points had been distributed in their group. Afterwards, every participant filled in a questionnaire. Apart from the usual individual socio-economic background data, we also asked each participant what according to him or her would have been a fair distribution, i.e. how they would have allocated the points to all five players to generate a *fair* outcome , and why they would choose this distribution. Finally, each individual received his or her payout: 4 Euro for participation and 1 Euro-Cent per point taken respectively received.

Treatment 2 (TR2) differed from TR1 the following way: before distributing the 2000 points, the members of each group could agree on a specific distribution. Therefore, a five minute chat took place before the actual distribution game. The chat was anonymous, but all participants were informed which position they would take in the distribution game. In the instructions, we told all participants that they can, but don't have to, agree on a distribution, and that in the end, each player decides on her own if she keeps the agreement or not. *Treatment 3* (TR3) was identical to TR2 with one relevant exception: we did *not* inform people about their position in the game sequence before the chat. This information was revealed only at the beginning of the distribution sequence.

4.3. Hypotheses and Tests

From a normative-theoretical perspective, the interesting question is of course if people share the amount differently in TR1 and TR3. But directly comparing TR1 and TR3 is misleading since there is not only the (potential) veil effect: communication—with our without veiled individuals—is likely to induce more sharing on its own. Therefore, in line with the results from Ledyard (1994), Blount (1995), Rankin (2003), Sally (2005), Yamamori et al. (2007), and Andreoni/Rao (2011), there is reason to expect that the pre-play chats increase people's willingness to share, even if the agreement is only "cheap-talk". Hence, we implemented TR2 as an intermediate treatment to capture potential communication effects: a difference between TR1 and TR2 then would be attributable to chatting as such, and a difference between TR2 and TR3 would stem from suppressing the information about one's position during the agreement stage.

Before formulating our hypotheses more formally, we need to define the parameters we compare among treatments and justify their choice. For this, we first have to formulate a hypothesis what a fair distribution of the given 2000 points is.

> **Hypothesis 1:** In the questionnaires, people state that distributing the 2000 points equally is the fair distribution.

This hypothesis seems plausible to us since people do not have to fulfil any task to gain a certain amount, and the position in which they end up is imposed randomly on them. In line with the results of Bearden (2001) and more general, equity theory (cf. Fehr/Schmidt 1999, Bolton/Ockenfels 2000; for a discussion how equity concerns may affect distributional choices in veiled decision making experiments, see Wolf/Lenger 2014), there seems no reason to discriminate between different individuals, implying that everyone should receive an identical share.

> **Conclusion from Hypothesis 1:** The normative benchmark for comparing the distributions from TR1 to TR3 is how far the groups realize an equal distribution.

Consequently, we use the Gini-index to measure the degree of equality realized in a group. Additionally, we investigate if the average of points of players 1 and 5 is different in TR1, TR2, and TR3.

Hypothesis 2: Communication induces more sharing. Hence, the Gini-coefficient in TR2 and TR3 is smaller than in TR1. As well, player 1 should on average take less in TR2 and TR3 compared to TR1, and player 5 receive more in TR2 and TR3 compared to TR1, respectively.

Hypothesis 3: Leaving people during the chat ignorant about their later position induces more sharing. Hence, the Gini-index for TR3 should be lower than for TR2. Player 1 should keep less in TR3 than in TR2, and player 5 correspondingly more in TR3 than in TR2.

This last hypothesis is derived from the idea that in a situation of ignorance, people should employ the reasoning suggested by Rawls; everyone should take into consideration the possibility to end up in the least powerful position and correspondingly understand that it is unfair to exploit a more powerful position just because a player was allocated into it by chance.

5. Results

In March, May and June 2014, 120 students from all faculties of the University of Freiburg participated in the study. Our sample comprised 49,5% female students; 59% of all participants were enrolled in a natural science, mathematics, or engineering program, the remaining 41% were mostly students of social sciences (including economics) and humanities.

For TR1, TR2, and TR3, the following average amounts of points were realized:

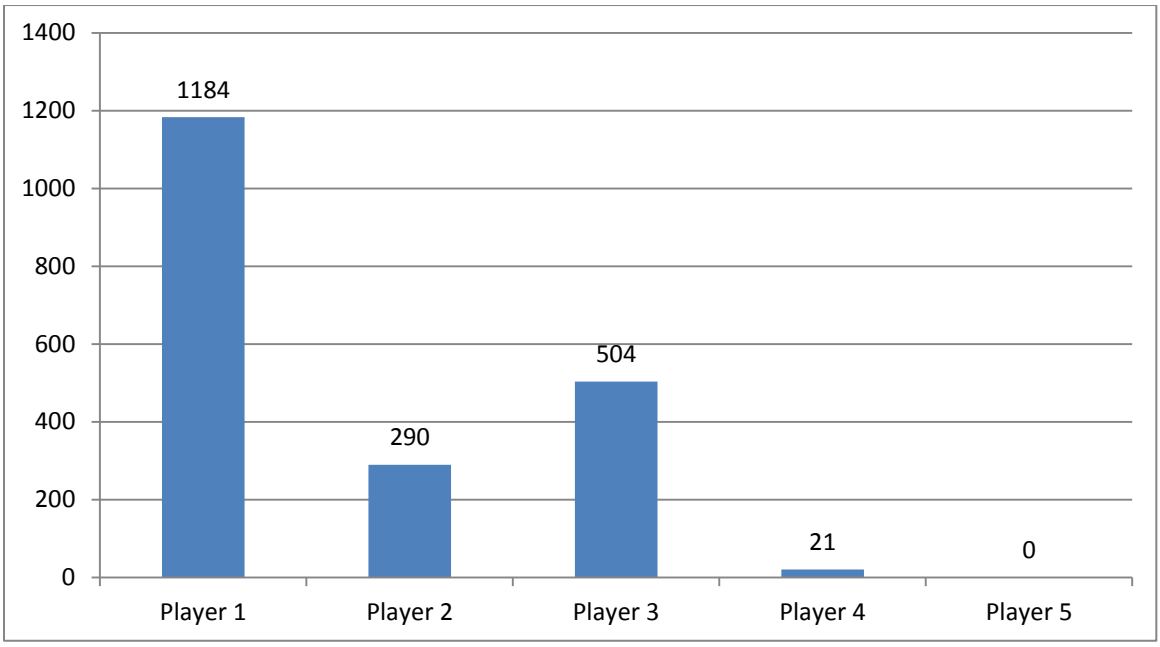

Figure 1: Amount of points kept respectively received by player 1 to 5, Treatment 1 (no bargaining). Distance to 2000 points total due to rounding. Source: own compilation.

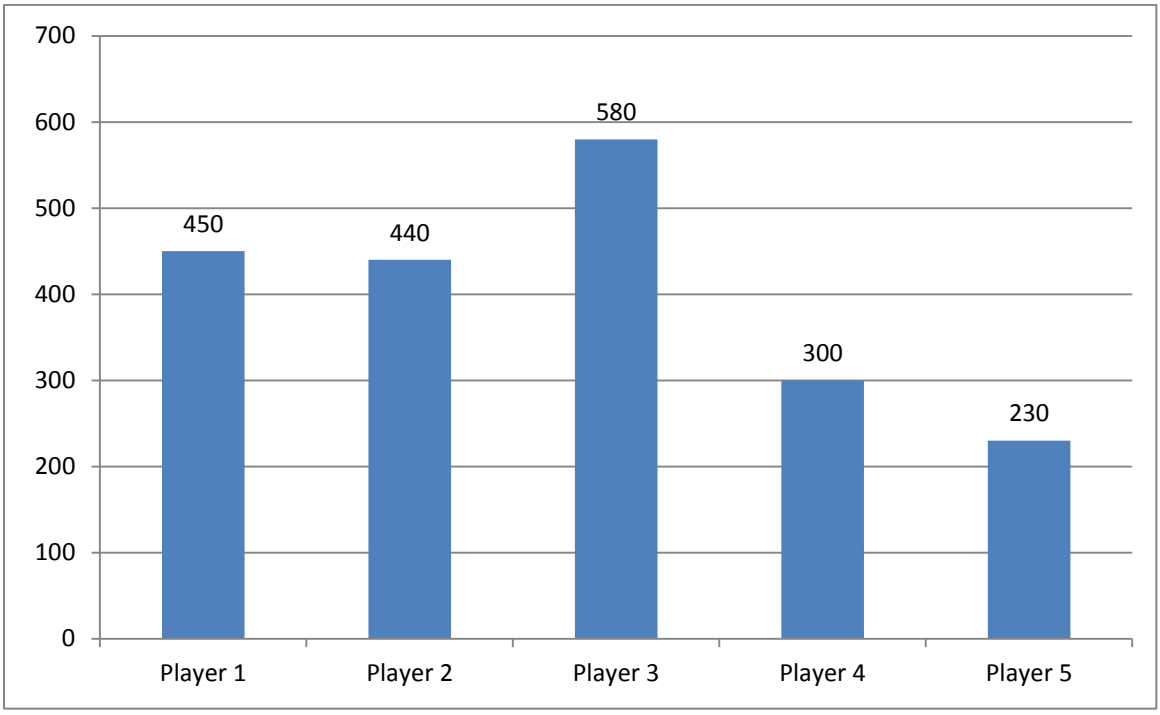

Figure 2: Amount of points kept respectively received by player 1 to 5, Treatment 2 (unveiled bargaining). Source: own compilation.

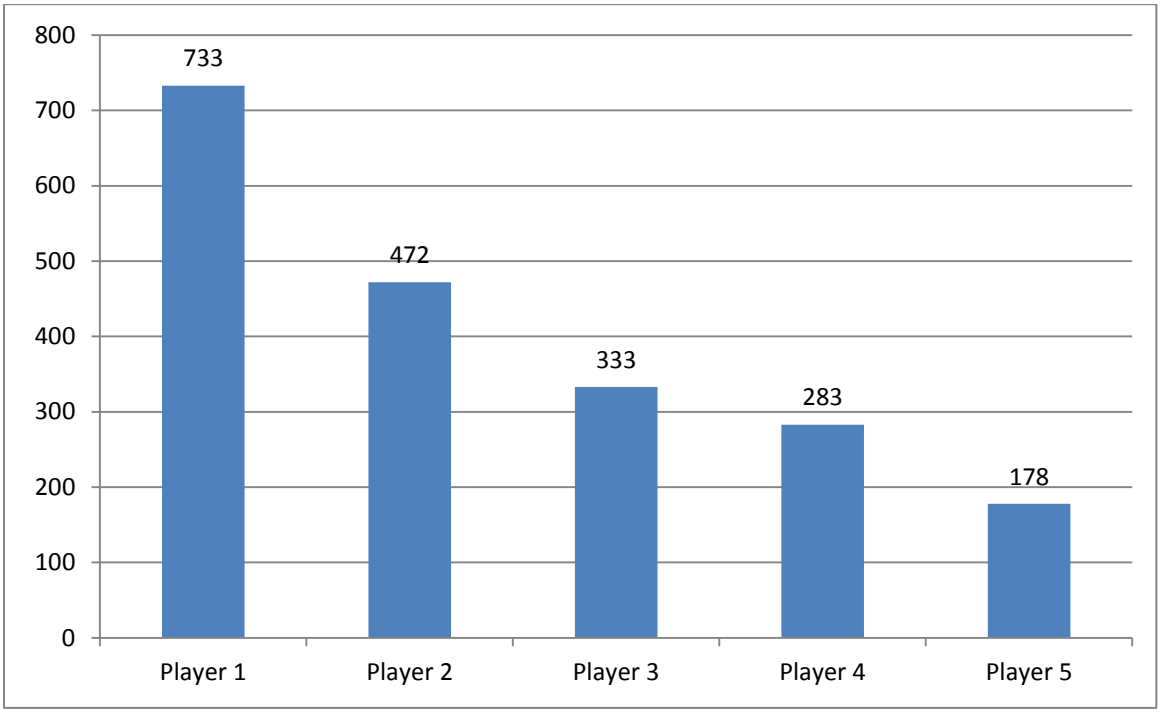

Figure 3: Amount of points kept respectively received by player 1 to 5, Treatment 3 (veiled bargaining). Difference to 2000 points total due to rounding. Source: own compilation.

Table 1 presents the relevant figures for discussing hypothesis 2: Gini-coefficient values, and the amounts received by players 1 and 5.

Treat-ment	*Gini-Coeffizient*	*Amount Player 1*		*Amount Player 5*	
		Absolute (€)	*Share of Total Amount (%)*	*Absolute (€)*	*Share of Total Amount (%)*
1	0.57	11.84	59.2	0	0
2	0.17	4.50	22.5	2.30	11.5
3	0.26	7.33	36.7	1.78	8.9

Table 1: Gini coefficient values, amounts taken by player 1 and amounts received by player 5 for treatments 1, 2, and 3. Source: own compilation.

With respect to our hypotheses, we found the following results:

Result 1: Analyzing the questionnaires showed that 84% of all participants considered the equal split of 400 points per person the fair distribution. This figure is robust throughout participants of all treatments. This data largely confirms hypothesis 1.

Result 2: Given that the Gini-index value of TR1 is far larger than the values of TR2 and TR3, there is no reason to reject the hypothesis that communication induces more equal sharing. Concerning the amount taken by player 1 in TR1, TR2, and TR3, we used—since our residuals were non-normally distributed and heteroskedastic—a bootstrap model, in which we controlled for gender, socio-economic background ("high/medium/low income class"; we used the categorization suggested by Lenger/Schneickert/Priebe 2012) and subject of studies.

Model 1	B	Bootstrap				
		Bias	Std. Error	Sig. (2-tailed)	BCa 95% Confidence Interval	
					Lower	Upper
(Constant)	1319.32	5.76	340.51	.01	365.00	1877.74
Treatment 2	-586.77	-6.85	313.05	.11	-1256.34	44.36
Treatment 3	-483.58	-5.27	287.67	.12	-1110.59	123.05
Female	435.81	-13.02	222.69	.07	76.54	822.65
Low Income	-494.57	15.03	232.47	.06	-987.71	-39.44
High Income	-317.84	-9.60	281.89	.27	-920.92	220.58
Humanities and Social Sciences	-50.92	1.63	204.94	.77	-445.50	305.71

Table 2: Regressing the amount taken by player 1 and controlling for gender, socio-economic background ("income"), and study program (natural sciences/engineering/medicine vs. social sciences/humanities), the results show that player 1 takes significantly fewer points in TR2 and TR3 compared to TR1. Source: own compilation.

The results suggest that the difference between TR1 and the other two treatments is significant on a 10% level only. Given that our data base is rather small, we consider this as a first trend in line with hypothesis 2. Of course, we need to generate more data for a final conclusion.

Result 3: A similar bootstrap model in which we compared only TR2 and TR3 results for players 1 and 5 respectively shows that we have to reject our hypothesis that TR3 induces even more equal sharing that TR2.

Model 2	B	Bootstrap				
		Bias	Std. Error	Sig. (2-tailed)	BCa 95% Confidence Interval	
					Lower	Upper
(Constant)	572.43	-4.66	175.41	.10	400.00	816.55
Treatment 3	135.36	-5.68	145.56	.43	-127.59	435.69
Female	388.78	10.58	275.47	.20	24.70	1219.11
Low Income	-273.76	22.42	212.84	.29	-823.08[b]	114.84
High Income	-111.60	2.15	238.45	.67	-828.40	300.00
Humanities and Social Sciences	-7.03	4.26	155.13	.95	-309.32	304.09

Table 2: Regressing the amount taken by player 1 (TR2 and TR3 only) and controlling for gender, socio-economic background ("income"), and study program (natural sciences/engineering/medicine vs. social sciences/humanities), the results show that player 1 takes significantly fewer points in TR3 compared to TR2. Source: own compilation.

Similar regressions for player 5 confirm what the histograms suggest: also for player 5, the amount in TR2 and TR3 is significantly larger than in TR1, and in TR2, player 5 receives a larger significantly larger amount than in TR3.

Additionally, we were surprised to find that the Gini-index for TR2 is even lower than for TR3, suggesting that if there is any trend, then one suggesting that the "Rawslsian" treatment even performs worse concerning its ability to make people share more equality, i.e. more fair, than in the "unveiled setting" TR2.

6. Discussion and Outlook

Out data suggests that contrary to our expectations, a Rawlsian setup in which people shall agree on a specific distribution from a veiled perspective fails to induce more "fair sharing". As expected, communication seems to have an effect, although we need to increase out data base to see if we can confirm our findings on a more reliable significance level. Even more surprising for us is the result that TR2 tended to create more equal shares than TR3. Again, more data is needed to see if this

trend stabilizes. If so, this might be the case because people consider TR3 more of a "lottery of live" in which one may—or may not—end up in the worst position, while in TR2, the worst-off individual (in terms of bargaining power) is real and identifiable.

Overall, we think that the presented design shows how intergenerational bargaining experiments may provide a way to investigate normative aspects of intergenerational resource sharing. Of course, it is necessary to augment the "model economy" by established elements like a growing resource, a stock of artificial capital, or other features which play an important role in intergenerational resource utilization. In order to make a relevant difference to existing studies in this field, an "intergenerational social contract" should always play a key role. That way, the promising Rawlsian approach of an intergenerational veil can be employed in counterfactual experimental setting, shedding light on the question what resource utilization paths can be considered fair, since they pass the generalization test.

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