

# **Social Contract and distributive justice in a context of joint production: an experimental approach<sup>1</sup>**

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## **1. Introduction**

### ***The aim of the paper***

The aim of this paper is to provide experimental evidence of the influence that hypothetical and explicit agreement may have on individuals' conception of justice and its implementation in a context of joint production. The evidence we are seeking should support or undermine one crucial supposition of the normative theory of the firm as the product of a 'Hypothetical Social Contract', namely, that the principles of just distribution of cooperative surplus that would be unanimously agreed upon in a hypothetical impartial situation (behind a 'veil of ignorance'), are to function as normative principles in the actual context of joint production (the firm). According to this supposition, *ex ante* agreement is expected to influence *ex post* choice of distributive principles *via* internalization of a norm of justice – even in presence of strong incentives for individual non-compliance.

### ***The theoretical framework***

The theoretical framework of the paper is the Social Contract approach to Business and Economics Ethics –Keeley (1995), Dunfee (1991), Dunfee and Donaldson (1995), Donaldson and Dunfee (1999), Phillips (2003), Sacconi (2000, 2006, 2010), Luetge (2007), Ulrich (2008), Wempe (2005). According to Rawls's and Binmore's (2005) version of the contractarian argument, the hypothesis of a unanimous decision under a veil of ignorance represents the normative stance. Our approach applies this idea to the limited and voluntary contexts of free association for a joint profitable activity.

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### *The debate on distributive justice*

Our paper refers to the debate on justice that has a long tradition also in economics (for a detailed survey see Konow, 2003). It has been articulated around three main fairness ideals: strict egalitarianism, libertarianism and liberal egalitarianism (Cappelen et al. 2007). According to strict egalitarianism, no inequalities in wealth distribution should exist even when people contribute in diverse ways to the creation of wealth. Libertarianism stresses that individuals should be considered completely responsible for their contributions in generating wealth and a fair distribution should exactly mirror the different contributions. Liberal egalitarianism can be interpreted as an intermediate position as it argues that inequalities in wealth distribution should be allowed only if they arise from factors under individual control (Cappelen et al. 2007). Within this debate, many researchers have also considered how differences in talent, chance and effort may affect (perceived) fairness of wealth distribution and income.

According to Buchanan (1986), among luck, choice, effort, and birth, i.e. the four factors determining the distribution of claims on economic income and wealth, only differences attributable to birth may be considered at odds with common views of justice. Dworkin (2000) proposes a political theory where equality has a central role, but tolerates limited inequality that he argues would follow by allowing the consequences of individuals' choices to operate. In the Rawlsian egalitarianism (1971) a criticism of talent-based principles of justice is relevant. Since talents are the consequence of a morally arbitrary natural lottery, if the casual distribution of talents were reflected by the distribution of goods or rights, then, also the final distribution of resources and the associated social structure would be morally arbitrary (see also Sacconi, 2011). More specifically, according to Rawls, under the "original position", where individuals are under a "veil of ignorance" about their own talents, skills, tastes, or statuses in the society, individuals would unanimously choose a principle of distributive justice which maximizes the welfare of the worst-off individual in the society (the maximin principle). A completely different approach is proposed by Robert Nozick

(1974). According to the entitlement theory, if a person acquires a holding without breaking the principle of justice in acquisition, or in accordance with the principle of justice in transfer,<sup>2</sup> then s/he is entitled to the holding. Finally, among other approaches to the notion of distributive justice, a central role must also be recognized to the approach based on the concepts of capabilities and functionings proposed by Sen (1999). He proposes an idea of equality of opportunity to reach some essential conditions of “beings and doings” (such as being healthy, having self-respect etc.) independently from individual life plans.

### *The experimental literature on distributive justice*

The role of the experimental literature in this debate has been to analyze which of these visions of justice finds consensus among people and the role of talent, chance and effort in orienting individuals' choice.

An important part of experimental contributions (e.g. Leventhal and Michaels, 1971; Hoffman and Spitzer, 1985; Ruffle, 1998; Burrows and Loomes, 1994) essentially shows that individuals seem to perceive as fairer differences when they are based on skills or effort (for example related to quiz knowledge or search tasks) but not on luck. Other studies (e.g. Schokkaert and Lagrou, 1983; Kluegel and Smith, 1986; Overlaet, 1991) show that people reward individual contribution, but do not consider birth, brute luck<sup>3</sup>, and choices that do not affect productivity. In fact, in these studies respondents choose equal splits when the descriptions of education and position suggest they do not affect productivity, but opt for a greater contribution, and therefore a reward, when individuals exert greater effort. A recent paper by Cappelen et al. (2007) considers strict egalitarianism, libertarianism and liberal egalitarianism in order to study how it is possible to estimate simultaneously the prevalence of various fairness ideals and the degree of importance people attach

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<sup>2</sup> Nozick prefers the term “justice in holdings” instead of “distributive justice” that is not a neutral term: “Hearing the term “distribution”, most people presume that some thing or mechanism uses some principle or criterion to give out a supply of things” (Nozick 1974, p. 149).

<sup>3</sup> According to Dworkin (1981), one should distinguish between brute luck and option luck. The latter is a matter of choice, for example it derives from deliberative and calculated gambles. The former is associated with risks not connected to deliberative gambles (see also Konow, 2003).

to fairness considerations in an experimental design in which participants have a stake in the outcome. Cappelen et al. (2007) show that subjects are motivated by considerable pluralism in the fairness ideals. Moreover, they show that liberal egalitarians and libertarians are the majority.

A recent contribution by Durante and Putterman (2009) analyzes the relative importance of different fairness preferences, risk aversion, and self-interest in determining support for redistribution. In the experiment proposed by Durante and Putterman (2009), subjects have the opportunity to fix a tax rate in order to redistribute resources initially allocated according to four different criteria: a) randomly; b) considering the average income birthplace; c) according to the performance on a knowledge quiz; d) according to the score on a computer-based game of skill (“Tetris”). The authors’ main goal is to study how support for redistribution changes according to various aspects: i) whether the subject who decides the tax rate is part of the group affected by it; ii) whether the subject has perfect information on his/her relative position in the distribution; iii) whether the initial distribution depends on task performance; iv) the cost of redistribution; v) the deadweight loss related to the taxation. The authors show that: i) a vast majority of subjects tend to tax in order to obtain more equalitarian distributions both when they are impartial observers (76.4%) and when they are affected by their choice but do not know their relative position in the payoff distribution under the four methods (79%); ii) both the cost of taxation and the deadweight loss associated with it affect redistribution; iii) when income is not certain, higher demand for redistribution is associated with risk aversion; iv) less redistribution is supported by subjects when the initial distribution is determined by task performance; v) around 34% of subjects decide not to maximize their payoffs when they have the opportunity to revise choices after having received information on payoff distribution under different criteria.

A recent paper by Becchetti, Degli Antoni, Ottone and Solferino (2011) contributes to the debate on criteria of fairness and distributive justice by carrying out an experimental study based on three characteristics: 1) different types of distributive criteria based on: performance in different tasks, luck and partial or full egalitarianism; 2) direct choice of allocation criteria; 3) different role in the

game: stakeholder or spectator before and after knowing the outcome distribution in relation to the different possible criteria that may be used to allocate resources. This paper shows that being spectators (no effect on personal payoffs) and, to a lesser extent, stakeholders without information on payoffs, induces participants to choose performance based criteria, after guaranteeing a minimal egalitarian base. Information about payoff distribution under different criteria reduces significantly such choice since most players opt for the criterion which maximizes their own payoff (and, by doing so, end up being farther from the maximin choice).

By analyzing fairness views about risk-taking and whether such views are based mainly on ex ante opportunities or on ex post outcomes, Cappelen et al. (2013) show that subjects tend to redistribute earnings ex post and to redistribute more when inequalities result from luck instead of from different choices.

### ***The experimental literature: a focus on Rawls' theory***

Rawls (1971) analyzes the selection of the preferred principle of distributive justice by means of a "thought experiment" in which rational and self-interested individuals choose in the "original position" the terms of contract for the setting up of society in relation to principles of distribution of wealth and income and the set of individual rights (see also Frohlich et al. 1987). According to Rawls, individuals who ignore their own talents, skills, tastes, or statuses in the society, as it is in the "original position" under "the veil of ignorance", would opt for a maximin rule which maximizes the welfare of the worst-off individual in the society.

Experimental contributions have been designed in order to verify the Rawlsian theory with respect to subjects' decision to opt for the maximin rule and the role of the veil of ignorance in determining this choice. The existing evidence is mixed. Frohlich et al. (1987) shows that under the veil of ignorance, subjects overwhelmingly opt for a principle aimed at maximizing the average income with a floor constraint, i.e. they agree on a principle which is a compromise between those proposed by Harsanyi (to maximize the average income of the society) and Rawls (the maximin

rule). Bond and Park (1991), drawing on a design similar to Frohlich et al. (1987) in a cross-country experiment find partial support for Rawls' theory of justice only with respect to Korean subjects. By using interviews and considering subjects' propensity to improve the life expectancy of the unfortunate short-lived individuals at the cost of doing so in terms of reduced life expectancy for the fortunate ones, Anderson and Lyttkens (1999) find that Rawls's prediction that everybody would prefer to improve the situation of the worst-off in society is refuted. By contrast, Brickman (1977) finds support for subjects' decision to significantly opt for maximizing the situation of the worst-off individual in the society when acting under the veil of ignorance with respect to a situation without the veil. Moreover, studies where subjects choose as impartial spectators instead of under a veil of ignorance seem to support the preference for the maximin rule, both when the choices concern differences in needs (Yaari and Bar-Hillel, 1984) and in income distributions (Michelbach et al., 2003).

### *Impartial agreement and experimental literature*

Despite the ever-growing literature on experimental games aimed at investigating non-selfish economic behavior, social preferences and the importance of social norms in understanding players' preferences and behaviors (for example: Levine 1998; Fehr and Schmidt 1999) and the experimental literature on distributive justice previously discussed, only a few contributions (Faillo, Ottone and Sacconi, 2008; Sacconi and Faillo, 2010) focused on the importance of an impartial agreement under the veil of ignorance in affecting players' behavior with respect to non selfish-behavior and conformity with principles of justice that have been agreed. Both Faillo, Ottone and Sacconi, (2008) and Sacconi and Faillo, (2010) are based on the so-called Exclusion Game in which only some players – the strong players - are in charge of taking decisions concerning the allocation of a social surplus, while the weak players have no voice and their payoff depends completely on the strong players' decision. In both the previous contributions, before playing the Exclusion Game, subjects are given the opportunity to agree on a non-binding rule concerning the division of the surplus between strong and weak players. In both the experiments, in the absence of an ex-ante

impartial agreement the large majority of subjects behaved in a selfish way. In both the experiments almost all groups agreed on the equal division rule and an high degree of compliance with the selected rule is observed.

### ***The novelty of our contribution***

In our experimental design, subjects are paired and have to perform an individual task having different time limits. The joint product generated in the task must be divided between the two subjects in the pair according to a criterion of distributive justice to be chosen among 5 criteria (1.“Pure equal split”; 2.“One gets all”; 3.“One gets what he/she has produced”; 4.“What you get does not depend on random allocation of working time”; 5.“Divide according to productivity”).

Participants have the opportunity to agree on the distributive justice principle before performing the task and under the veil of ignorance on the time limit. After the removal of the veil and after having performed the task, they may opt for complying or not to the agreed principle.

Depending on the treatment, subjects can agree on the principle through different bargaining procedures, one consisting of a series of offers and counter-offers and the other allowing subjects to enter into a relation through a chat.

Our design analyzes the effect of the Rawlsian veil of ignorance and of the agreement on the decision of subjects to opt for different distributive criteria. The analysis of the effect of an impartial agreement (under the veil of ignorance on the means of production, i.e. the time limit) on individuals' conception of justice and its implementation in a context of joint production in a real effort experiment makes the present contribution particularly innovative with respect to the existing literature.

## **2. The experimental design**

For the design, we draw upon the experimental literature on *dictator game with taking* (List, 2007; Bardsley, 2008). With some modification, a dictator game *with production and taking* can

plausibly represent the typical corporate situation in which participants assets and resources differ, while the joint surplus can possibly be assigned/appropriated regardless of individual contribution. That is, the participant who invests the most is not guaranteed to get the most.

The experiment consists of a two-person *dictator-game*, and includes two phases:

Phase 1 - an *ex ante* decision under the veil of ignorance;

Phase 2 - an *ex post* decision whether to comply with the agreed principle.

The principle over which individuals have to decide is a ***distribution rule*** of the aggregate product of the two players that form a ‘society’. This is the standard decision in classical *dictator* game, except in this case, the distribution rule is specified as a distinct principle of justice (for example ‘libertarian’ if the rule implies each gets the product of her own work; ‘egalitarian’ if the rule implies the total output is divided equally, etc.). The distribution rules available to subjects are described in the appendix. Moreover, subjects could always opt for any combination of percentages indicating a division of the aggregate product. If an agreement is achieved, the players proceed to the production phase. In the production phase (*ex post*) subjects are randomly assigned an endowment (time) and they perform a task; afterwards, they are informed about their own and their partner’s production, productivity, and other relevant data, and then they have the option to enact the principle chosen/agreed in phase 1, or any other distribution rule. The key feature of the experimental design is that in the phase of production subjects are endowed with different means of production. This will be done by assigning subjects different time limits to perform an analogous task. A player will be assigned a time limit equal to 6 minutes, the other player a time limit equal to 10 minutes. Subjects are aware of their personal contribution to the total social income to be distributed.

To sum up, in phase 1 subjects placed in an ‘original position’ –where they know they are going to participate in a rewarding task, but do not know whether their means of production would be high (10 minutes time) or low (6 minutes time) – have to choose a “principle of justice” (distribution rule). If they are able to agree, they proceed to the second phase. In phase 2, after knowing their



endowment as well as their individual contribution to the social product they would actually apply a distribution rule (the one agreed behind the veil, *or any other*) acting as a dictator. The decision in phase 1 will allow us to compare individual decisions under a veil of ignorance with the results of previous experimental research around this same question (Frohlich *et al.* 1987, 1990, Farina and Grimalda 2011), and with game theoretical models (Binmore 2005, Sacconi 2010, Moreno-Garrido and Rodríguez-Lara 2012) that partly capture Rawls's intuition about distributive decisions in such situation –an intuition that may be labeled *liberal egalitarianism*. The second phase would help us clarify whether the selection of a distribution rule behind a veil of ignorance helps people to *actually behave* more justly (Cfr. Cappelen *et al.* 2010).

The research is designed to include three different treatments, depending on the design of phase 1:

- 1) ***No social contract***. In this treatment phase 1 is suppressed. Subjects simply are assigned endowments, informed about production and asked to make a decision in the role of dictator. It is a control treatment.
- 2) ***Bargaining***. In this treatment, the social contract is the result of a bargaining process between the players.
- 3) ***Agreement after deliberation***. Players use a chat to discuss what principle to agree to. This allows subjects to give reasons why a principle should be chosen (Cappelen *et al.* 2010; Sunkin & Salmon 2013).

Our working hypothesis springs from recent results in experimental economics. According to this research, in *dictator with taking* most subjects take from others, a behavior in contradiction with the standard explanation of common results in ordinary *dictator game*. One possible reason for this behavior may be that in most experimental research the quantity to be distribute is simply given by the researcher, unrelated to effort, merit, need, or any other distributive criterion commonly used in social life. By introducing random endowment and a task, we expect to elicit *some* of the social conceptions of justice in the subjects. This conceptions will be put to a test by the experimental

design, since the *implementation* context (in which players play *dictator*) allows for unpunished self-serving behavior.

Our tentative hypothesis are, therefore, **(1)** that subjects considering participation in a potentially rewarding joint venture tend to agree on principles of justice that are identical –or analogous– to a ‘*liberal egalitarian*’ principle, as defended by J. Rawls: that is, mixed principles that keep track of both the randomness of endowment allocation (and include ‘compensation’ for the unlucky player) and the effort (merit) displayed by each player, tend to be selected; and **(2)** that agreement on

principles increases the level of compliance, even in presence of a strong incentive not to comply. We will argue that the confirmation of these hypotheses would be supportive of the contractarian foundation of organizational ethics. Additionally, we will argue for the necessity of actual bargaining and deliberation mechanisms in order to elicit higher levels of compliance among organization members (*stakeholders*).

### **3. Preliminary findings.**

Our preliminary findings, based on the “No social contract” and the “Bargaining treatment” seem to support our hypotheses. We run 8 sessions at the University of Granada. A total of 160 subjects took part in the experiment until now. Our preliminary analysis reveals that:

- 1) The large majority of subjects (57.5%) in the Bargaining treatment agree on the rule according to which each player obtains what s/he has produced through his/her activity during the first 6 minutes; what is produced by the player who has 10 minutes of time in the last 4 minutes is divided at 50% among the two individuals (we named this rule: “What you get does not depend on random allocation of working time”; see the appendix for the description of distribution rules) (see Table 1 and Figure 1);

[TABLE 1 ]

[FIGURE 1]

2) 48% of subjects comply with the distributive rule on which they agreed through the bargaining procedure (see Figure 2), i.e. they confirm *ex post*, the rule on which they agreed *ex ante*. This results in a higher percentage of subjects choosing the “What you get does not depend on random allocation of working time” rule in the Bargaining treatment (42.67%) than in the No social contract treatment (19.12%).

[FIGURE 2 ]

3) In the Bargaining treatment, a large majority of subjects comply with the rule chosen *ex ante* even though this is not the choice which maximize their personal payoff in the game.

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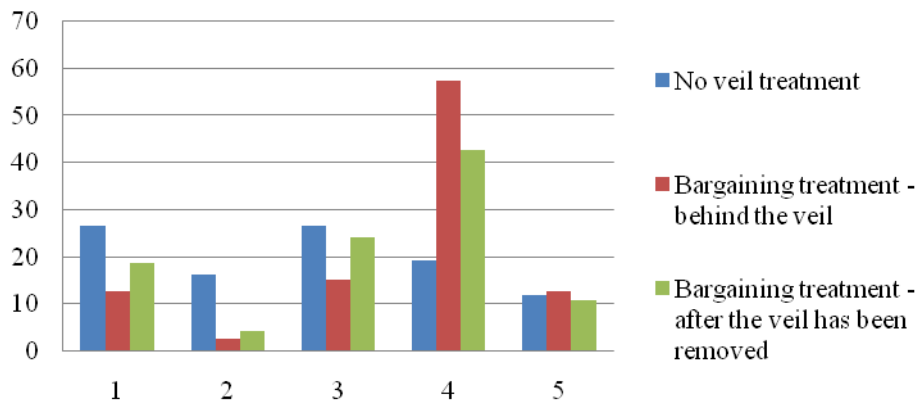
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## Tables and figures

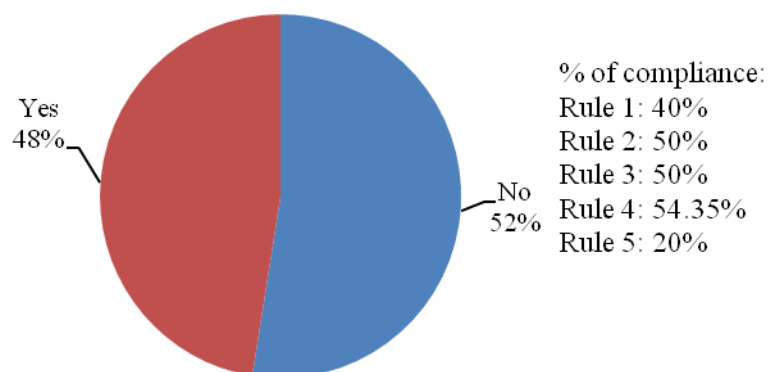
Table 1. Choice of the rule.

Rule	Rule chosen in the No veil treatment (%)	Rule chosen in the bargaining treatment after the veil is removed (%)	Rule chosen in the bargaining treatment behind the veil (rule on which subjects agree) (%)
1	26.47	18.67	12.5
2	16.18	4	2.5
3	26.47	24	15
4	19.12	42.67	57.5
5	11.76	10.67	12.5

**Fig. 1 Rules chosen across treatments (%)**



**Fig. 2 Compliance with the rule**



## Appendix – THE DISTRIBUTIVE RULES

### **RULE 1: Pure equal split.**

Each individual obtains exactly the half of the total product generated through the activity performed by the two individuals.

*Example:* A produces X in 10 minutes; B produces Y in 6 minutes. Both A and B obtain:  $(X + Y)/2$

### **RULE 2: One gets all.**

The individual who is extracted obtains all the total product generated through the activity performed by the two individuals.

*Example:* A produces X in 10 minutes; B produces Y in 6 minutes. The one who is randomly selected (50% of probability to be selected) obtains  $X + Y$ , the other subject obtains 0.

### **RULE 3: One gets what he/she has produced.**

Each individual obtains exactly what s/he has produced through his/her activity.

*Example:* A produces X in 10 minutes; B produces Y in 6 minutes. A obtains X, B obtains Y.

### **RULE 4: What you get does not depend on random allocation of working time.**

Each individual obtains what s/he has produced through his/her activity during the first 6 minutes; what is produced by the individual who has 10 minutes of time in the last 4 minutes is divided at 50% among the two individuals.

*Example:* A is given 10 minutes and produces X in the first 6 minutes and K in the remaining 4 minutes, so A's total production is  $X + K$ ; B is given 6 minutes and produces Y. A obtains  $X + K/2$ , B obtains  $Y + K/2$ .

### **RULE 5: Divide according to productivity.**

If the ratio between the productivity of A and B is R then A's payment is equal to  $R \times B$ 's payment, under the condition that the sum of the two payments must be equal to the total product.

*Example:* A is given 10 minutes, and B is given 6 minutes. If the productivity of A is twice the productivity of B then the final payment of A is twice the payment of B.