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# *Thou shalt not steal (from hard-working people)*
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Working papers

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## *An experiment on respect for property claims**

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**Abstract**

The institution of property is void without legal and social enforcement against theft. To address wasteful competition over resources, societies have long developed strategies that encompass -inter alia- behavioral traits, social norms and legal institutions to promote the respect and enforcement of property rights. On the other hand, a growing body of biological and ethological evidence suggests that several other animal species establish and respect some forms of property even in the absence of institutions. Would human beings respect others' property in the absence of institutions? Do people posses some innate sense of property, or do they respect property only because of legal and social enforcement? In this study, we explore this issue with a lab experiment that resembles a famous thought experiment proposed by Plato. As Plato sought to understand how one ought to behave when he or she is completely shielded by the consequences of his actions,we study whether people respect property once full anonymity is granted. In this experiment, we implement a Free-Form Dictator game where participants can both give and take up to five scratchcards from a passive counterpart that they have either previously bought outside the lab with their own money (legal treatments) or gained inside the lab via an effort task (effortful treatments). In conclusion to the experiment, evidence is provided of a (weak) sense of property. We also provide evidence that property in the lab is better established through an effort tasks than through the use of subject's own real property brought from outside the lab.

Keywords: property rights, dictator game, bully game, taking, stealing, anonymity, effort, scratchcards

JEL codes: C91, D23, K11, P14, P26

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*There is nothing which so generally strikes the imagination, and engages the affections of mankind, as the right of property; or that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe.* Sir William Blackstone, Commentaries on the Laws of England in Four Books, 2 vols. (1753)

*For all men believe in their hearts that injustice is far more profitable to the individual than justice, and he who argues as I have been supposing, will say that they are right. If you could imagine any one obtaining this power of becoming invisible, and never doing any wrong or touching what was another's, he would be thought by the lookers-on to be a most wretched idiot, although they would praise him to one another's faces, and keep up appearances with one another from a fear that they too might suffer injustice.* (Plato, The Republic - Book II 2.359a–2.360d (360 BC)

# 1 Introduction

A property right, as Sir William Blackstone put it, is void without the total exclusion of the right of any other individual in the universe". Although economists and legal scholars use the concept of property rights in different ways (see Merrill and Smith, 2001; Munzer, 2013; Hodgson, 2015) they both emphasize that the key to well functioning property rights is the enforcement of the *right to exclude* others[1] from enjoying the property. There are three main,often overlapping,ways to exclude interlopers. First, in a Hobbesian state of nature, aggressive behavior of the owner may induce all non-owners to defer to the owner. Secondly, legal institutions such as property law and criminal law deter non-consensual takings from the owner. In fact, theft is considered a crime in most societies[2]. Finally, social norms may also deter takings: theft is reprimanded in virtually all cultures and religions. The Bible's commandment which this paper's title derives from prescribes not to steal to Christians and Jews;[3] most other religions have prescriptions along the same lines[4].

Property rights depend on whether exclusion of others can happen. Non-property owners may accept such exclusion either because they are afraid of the owner's violence or because they are deterred by the law or,finally,because they have interiorized a form of voluntary respect for somebody else's property. A

[1]the words intruders, trespassers, interlopers will be used as synonyms to indicate those who interfere with the right of exclusion of the legitimate owner.

[2]Notwithstanding Proudhon's claim that "property is theft" (1840), also communist countries enforced severe laws against theft of public property. See for instance the 1932 Decree of the central government of the USSR: "On the protection of the property of state enterprises, collective farms, and cooperatives, and on the consolidation of public (socialist) property" Sobranie zakonov (Collection of Laws) 1932, N ° 62); reproduced in (Danilov et al., 2006).

[3]Following the tradition, the commandment against theft is the eight for Jews and Protestants and the seventh for Catholics

[4]Hinduism mandates punishment against thieves (Laws of Manu 9.263); Islam deters theft by prescribing hand's cutting (Quran 5:38); and Buddhism dictates the outcasting of the thief (Sutta Nipata 119-21) from communities. For Taoists, stealing is like "satisfying one's hunger with putrid food, or one's thirst with poison wine" as it leads to death (Treatise on Response and Retribution 5).

recent stream of literature in neuroscience focuses on the existence of "fundamental principles of property encoded in the human brain" (Stake, 2004). A growing body of evidence in natural science suggests the existence of a natural instinct for possession, which is common to other animal species as well. This instinct may be the result of evolutionary stable strategies used to coordinate the access to recourses such as food, shelter, tools and territory, all which pre-exist the establishment of formal institutions. Would people really respect property if they could be shielded by the legal and social consequences of their stealing? And if they do, what is it exactly that they respect? Is the formal legal entitlement sufficient to obtain such respect or is it the effortful act of building one's own endowment that drives the respect for property? These are the fundamental questions which we attempt to address within our lab research and this experimental paper.

Twenty five centuries ago Plato, while reasoning about justice and moral behavior in Book 2 of his Republic, presented through the dialogue between Socrates and Glaucon an experimental thought that has been since then known as the "ring of Gyges"[5]. Our research questions and experimental approach share many similarities with it. In this dialogue, Glaucon presents forth the idea that every man, once shielded from the consequences of his actions, would maximize his own gains even at the cost of the most outrageous negative consequences for others; exactly what Gyges demonstrates by wearing the ring. Justice, in the eyes of Glaucon, is only the result of a social construct, built on desire to maintain one's own reputation. Without legal nor social sanction, Glaucon suggests that ethical behavior would not exist. However, Socrates disagrees with this position, and the dialogue further develops on these diverging views of justice. In our experiment we let subjects "wear the ring of Gyges" by granting them full anonymity even vis-à-vis the experimenters; we then study whether under these conditions the subjects still respect other's property or whether they take advantage of their position.

Our experiment is built on a variation of the dictator game;we call it the "Free-Form Dictator", first introduced by List (2007) and Bardsley (2008). As opposed to the standard game where dictators can only give between 0 and $x$ tokens to the passive player, their design offers a symmetric action set and dictators can both give and take tokens (they allocate anything between $-x$ to $x$ token to themselves). The two papers showed that this simple variation is sufficient to crowd-out the inclination to give in the standard dictator game. Given their research question (why do some subjects give in the standard dictator game?), they were both satisfied with this result. However, the Free-Form Dictator is a very useful design to address our completely different set of research questions which concern the inclination of subjects to respect someone else's property and what determines this respect when legal and social norms are removed from picture. Our implementation of the free-form design envisages a number of other peculiar characteristics, all meant to resemble as closely as possible to a real situation of petty larceny. We revise them in detail in section 3.2. In particular, i) we do not use tokens nor money but scratchcards that

[5]This is the story: Gyges was a shepherd in Lydia, an historical kingdom located in modern Turkey. After an earthquake Gyges found in a cave a golden magical ring: once worn, the ring gave him the power to become invisible. He then arranged to introduce himself to the king Candaules's Palace. Once at the palace Gyges used his new power of invisibility to kill the king and seize the throne after having seduced the queen.

ii) have to be physically given to or taken from other's envelopes/wallets; iii) there is no role-reversal nor repeated interactions and the anonymity protocol is strongly emphasized. The final peculiar characteristics of our Free-Form Dictator concerns the legitimacy of the claim to the scratchcards which we manipulate as our source of treatment variation. In List and other previous works (Oxoby and Spraggon, 2008; Jakiela, 2011; Cappelen et al., 2013) a standard dictator game with windfall money is compared with treatments where the endowment is assigned based on an effort task. In our experiment, while we keep the strict anonymity protocol (our ring of Gyges) constant, we vary the origin of the passive player's claim to the endowment: we compare two "effortful" treatments where scratchcards are given to subjects as payment for their effort task to two "legal" treatments, where subjects are required to bring their own scratchcards from home in order to participate to the experiment.

Very much in line with the Glaucon prediction, we demonstrate that subjects in the lab, once shielded by the social and legal consequences of their action, largely engage in theft. However, takings are far from being maximal. We then show that the effort-based claim to the entitlement trumps the formal legal claim in inducing the (admittedly limited) respect for property that can be observed.

## 2 Literature Review

John Maynard Smith (1982) modeled the idea that property rights may emerge as the result of evolutionary stable strategies to coordinate the access to scarce resources within a framework universally known as the "Hawk & Dove" game. He describes this claim, *"defend aggressively when one is an owner and defer to the opponent when one is an intruder'*as the "Bourgeois-Strategy". Aggressive protection of the territory has been observed in many species , including baboons, damselflies, desert ants, Ozark zigzag salamanders, in some colonial spiders, many species of birds (See the literature cited in Stake, 2004 and Sherratt and Mesterton-Gibbons 2015), and in humans as well[6]. In a "Hawk & Dove" game, Gintis (2007a); Eswaran and Neary (2014) model how an *innate sense of property* rights may have emerged in humans and other animal species as well. With a Lockean fashion, labor expended on an object may create an innate psychological claim over the object as property. This claim leads the producer to develop a stronger preference for such object vis-à-vis an interloper who seeks to appropriate it. In a potential conflict over the attribution of this object these asymmetric valuations are reflected in the owner who have produced it being willing to expend more effort defending his claim relative to the non-owner. In the real world, laws and social norms concerning the protection of private property (Kandori, 1992; Posner, 2000; Zasu, 2007) back the innate sense of property -whether it exists- and this makes the disentangling of these effects difficult. In the lab however we can attempt to do just this.

Our experiment is based on a "free form" dictator game design. The term "free form" refers to the dictator's action set which extends from *giving X tokens to* (in our case they are 5 scratchcards) to *taking X tokens from* the passive player in increments of 1 token each. This design has been used in several recent experiments (List 2007; Bardsley 2008 but also Krupka and Weber, 2013;

[6]Pape (2003) makes the case that suicide attacks are very often carried out by persons who are trying to displace occupying invaders.

Khadjavi, orth). The original dictator game where subjects can only give is a workhorse of experimental economics and has been widely deployed in the study of the existence of social norms prescribing fair distribution. The noteworthy result of this literature is that -contrary to the self-interested payoff maximizing prediction- some subjects donate, following a distribution norm that prescribes to be generous in such a situation[7].

For the purpose of our work, it is worth to highlight a relevant result of this literature that concerns relation between giving behavior and the origin of the entitlement. Bergh (2008) notes that inclination to grant entitlements emerges clearly in experimental situations with unearned money (manna from haven) while there are strong entitlement effects in experiments where individuals earn their endowments (see for instance Cherry et al., 2002). Sharing is more common when the surplus is generated by chance and less common when it is generated by individual effort.

List (2007) and Bardsley (2008) introduced the free-form design to study whether the generous behavior observed in only-giving dictator games is the result of an experimental artifact. Both papers show that the introduction of the symmetric action set is sufficient to crowd-out the inclination to give of virtually all dictators. In fact, when dictators have the chance to take (as well as to give) they end up "stealing" quite a bit. List (2007) also observed that when people earn their endowment, they are less prone to give and, more importantly, less prone to take as well. While noting this latest point, List and other authors largely overlooked its implications. If earning the endowment indeed crowds out altruistic behavior, then we should expect more thefts to take place in the effort treatment, not less. Instead, more people defer to the opponent and pay homage to others' effort by leaving allocations unchanged. This behavior can hardly be squared into the social norms investigated by current research on dictator games, but it is easily explained by the presence of some form of interiorized respect for other's property.

Furthermore,Kench and Niman (2008) find that the observed taking behavior is influenced or "nudged when subjects earn their endowment and the stakes of the game change, but not when a social distance framing effect is imposed". Cappelen et al. (2013) use a large sample from the general population to confirm the robustness of the choice-set effect. Krupka and Weber (2013) also have a free form dictator treatment (they call it the bully game) which they compare to a standard dictator with only givings; as opposed to List & Bardsley, they keep the same payoff structure. They find that equal split (5,5) is much higher in the bully treatment (37%) than in the standard dictator (17%).

Another approach to study property through dictator games is to implement

[7]However the results are far less stable than in other paradigmatic games such as the ultimatum game or the prisoner's dilemma (Guala and Mittone, 2009; Engel, 2011).. Certainly generosity is praised in many cultures, but self-interest is regarded not only as legitimate but also as virtuous in present western market-oriented cultures (Fershtman et al., 2012). In fact, if any distribution norm ever exists, it is ephemeral and weak: which split of the endowment does exactly the norm prescribes? A survey conducted by Cristina Bicchieri and Jason Dana among college students on the normative expectations associated with DGs shows that i) about half of the respondents (56%) answered that no outcome can be said to be unfair; ii) when pressed to state what a fair outcome would be, 68% indicated the equal split, but 21% of the sample thought that keeping the whole sum was fair. Bicchieri (2006) concludes that there is a great deal of uncertainty on what is appropriate in the DG. See also Krupka and Weber (2013).

a game where only taking is possible. Notice that the dictator game with only givings, the dictator game with only takings and also the free form dictator are equivalent in terms of payoff structure: in all cases one party unilaterally decides the allocation of both players entitlements and a self-interested payoff maximizer dictator should always allocate all entitlements to himself. Several studies use the the only-taking dictator game design (Swope et al., 2008; Oxoby and Spraggon, 2008; Jakiela, 2011; Visser and Roelofs, 2011; Korenok et al., 2013) and they consistently find out that subjects in the taking treatments tend to leave the passive players with more than in the giving treatments. Korenok et al. (2013) explicitly compares the two payoff equivalent designs and ask whether "not taking" is equivalent to "giving". They find out that the payoff to recipients tends to increase as the amount the dictator must take to achieve a given payoff rises.

Take-only dictator games are also the baseline of another set of experiments which focus is however on detection mechanisms set-up on top of these criminal activities (seeHarbaugh et al. 2011; Bruttel and Friehe 2010; Rizzolli and Stanca 2012 and also Khadjavi orth who uses a free form dictator with a detection and punishment mechanism in case of takings). Pecenka and Kundhlande (2013) use a take-only dictator to study the impact of race and identity on taking behavior. Yezer et al. (1996) run a lost letter lab-in-the-field experiment in which letters containing 10 dollar notes and a fictitious owner address were randomly left in classes before lessons; the return rate of money was then measured.

Finally, there are a number of different games that imply, like the free form dictator we use, the possibility of taking away tokens from a counterpart; however, unlike the free form dictator game, they also imply some form of strategic interaction. The *power-to-take game* is a variation of the ultimatum game with takings (Bosman et al., 2005) and it has been used to obtain psychological insights on vengeance. The *moonlighting game* is an investment game with taking (Falk et al., 2008) that has been used to measure trust, vengeance and reciprocity. The *lost wallet game* has the first player deciding whether to take or return the wallet to the second player. The second player then decides whether to give a prize (Dufwenberg and Gneezy, 2000). Another workhorse of experimental economics is the public good game which has been studied also in its "negative" variant: the public bad game**.** There is an interesting analogy between the DG with taking and the public bad game: in both cases, the two games are equivalent from a strategic point of view. The literature on public good&public bad has been explained it in terms of framing (Sonnemans et al., 1998; McCarter et al., 2011). Finally, a number of experimental papers look at the institutional conditions that allow the rising and development of property institutions (Durham et al., 1998; Carter and Anderton, 2001; Duffy and Kim, 2005; Powell and Wilson, 2008; Kimbrough et al., 2010; Wilson et al., 2012; Jaworski and Wilson, 2013; Campos-Ortiz et al., 2012; Kimbrough, 2011; Kimbrough and Sheremeta, 2014).

# 3 Experimental Design

In order to test our hypotheses we have used a novel design which tries to reproduce a genuine property situation in the lab as closely as possible. Subjects

own 5 scratchcards, and our treatment variation concerns the origin of the entitlement: it comes either from **outside-the-lab as** individuals bring their own scratchcards from home (we call this treatments LEGAL) or it is generated **inside-the-lab** as subjects gain their 5 scratchcards endowment via an effort task (we call this treatments EFFORTFUL). We first illustrate the procedure (the original instructions are in the Appendix A) and then highlight the main features of this design.

In all treatments, subjects start with 5 scratchcards of 1€ value each[8] as the ones depicted in figure 7 of Appendix B. In the EFFORTFUL treatments the scratchcards are given to subjects by the experimenter as a payment and in the LEGAL treatments they are brought from outside the lab. The two treatment manipulations are the following:

1. **LEGAL treatments:** Individuals bring their own scratchcards from home. When the experiment begins, they have personally exchanged 5€ of their wealth for 5 scratchcards. This wealth can have different origins: it can be the result of past salaries, inheritance, found treasure or even stolen property. Indeed all methods of property acquisition can originate the entitlement claim. What matters is that once the subjects come to the lab, they have a legal claim over the entitlement that is fully legitimate and enforceable.

2. **EFFORTFUL treatments:** Subjects gain their 5 scratchcards endowment via an effort task conducted in the lab right before the allocation decision must be taken;this procedure establishes the entitlement to property.

A further treatment manipulation concerns the show-up fee which varies between 5€ and 10€. This manipulation was carried out in order to keep track of one important feature of our design. In the LEGAL treatments subjects pay 5€ of their own money to buy the scratchcards necessary to participate in the experiment. Thus, they would start with a negative show-up fee of 5€. Therefore, if we confront LEGAL&10 with EFFORTFUL&5 we assess the effect of the source of property keeping the net show-up fee constant. The effect of the manipulation of the show up fee can be assessed by comparing LEGAL&10 vs. LEGAL&5 and EFFORTFUL&10 vs. EFFORTFUL&5.

The experiment was run at the CESARE Lab at LUISS University in Rome from November 2013 - May 2014. Recruitment was conducted via ORSEE (Greiner, 2015). Invitation email contained the request for subjects to bring 5 scratchcards with the specified characteristics. The same invitation email was sent out for all treatments, however once the EFFORTFUL sessions were filled, we communicated to these subjects that the scratchcards were no longer necessary and that they could sell them to us in case they had already bought them[9].

[8]These scratchcards are produced and sold by Lottomatica in hundred of thousands of bars and shops all over the country. There are many type of scratchcards; at the time of the experiment these were the ones available on the market: Sette e mezzo (maximum win 7000€, expected value 0,54€) Portafortuna (maximum win 10.000€, expected value 0,59) , Tris e Vinci (maximum win 10.000€, expected value 0,60) Mini Cruciverba d'Oro. (maximum win 10.000€, expected value 0,57)

[9]This was done in order to avoid sample selection biases resulting from sending out different invitation emails. Furthermore notice that there is no difference in the percentage of show-

| | 10€ | 5€ |
|---|---|---|
| LEGAL | LEGAL10<br>they bring the scratchcards,<br>they are paid 10€ | LEGAL5<br>they bring the scratchcards,<br>they are paid 5€ |
| EFFORTFUL | EFFORTFUL10<br>they gain the scratchcards,<br>they are paid 10€ | EFFORTFUL5<br>they gain the scratchcards,<br>they are paid 5€ |

Table 1: Matrix of of treatments

### 3.1 Instructions & Protocol

Subjects gather in front of the lab where a person, associated with the laboratory but with no direct relation with the experimenters, identifies subjects and send them one by one into the lab. In the LEGAL treatments she also checks whether subjects have brought the scratchcards with them. Once in the lab, each subject i) is paid directly the show-up fee of €5 [€10], ii) must pick a colored envelope from a bag iii) must put his scratchcards inside the envelope, and iv) is assigned a seat in random order. The envelope can be either orange or blue and contains five pieces of paper (same size and consistency of the scratchcards) five stickers and an allocation table as in Figure 1.

| Ticket Number | | | |
|---|---|---|---|
| 1 4253647 | | | |
| 2 4325566 | | | |
| 3 4435365 | | | |
| 4 46756907 | | | |
| 5 43525895 | | | |
| B | T5WQ4Y | A | 57PKGK |
| | | 1 4325347 | |
| | | 2 5363456 | |
| | | 3 6457457 | |
| | | 4 97098985 | |
| | | 5 12324134 | |

Figure 1: The AllocationTable

At each desk the subject finds paper instructions, a pen and a privacy box as the one in Figure 6 of Appendix B. The privacy box offers more privacy when subjects take their allocative decision later in the experiment.

Once all subjects are seated in the lab, instructions are read aloud once, and then the experiment begins. In the EFFORTFUL treatments, the experiment begins with subjects performing a slider task following Gill and Prowse (2012). They must set 200 sliders in less than 35 minutes and gain one scratchcard for

ups in the different treatments and this confirms that no sample selection bias took place even after we sent out the second email communicating that the scratchcards were no longer necessary.

every 40 sliders completed. In the LEGAL treatments, this phase is skipped, as subjects start the experiment with their own scratchcards. Subjects invent a six digit code that identifies them throughout the experiment. They write down this code on the five stickers and attach the stickers to each of their scratchcards. Subjects also write the scratchcards' serial numbers on the upper left quadrant of the allocation table as in Figure 1. Next, the experimenter assigns with the toss of a coin either role A (active dictator) or role B (passive player) to either holders of the blue or orange envelopes. All of B's envelopes are then collected and each one of them is randomly assigned to one of all subjects with role A (Subjects A from now on). Subjects A take the allocation table out of the B's' envelopes, and they write their own scratchcard codes on it in the lower right quadrant (see Figure 1) as well as their own invented code. The scratchcards as well as the paper placeholders are taken out of the envelope inside the privacy box. At this point, each subject A has to decide whether to give and/or to take,if any,scratchcard out of B's envelope. Notice that the scratchcards can be given as well as taken at the same time (they can be in other words exchanged). Each scratchcard taken/given from/to B's envelope must be replaced with a paper placeholder (or another A's scratchcard) so that, in the end, B's envelope will contain exactly 10 pieces of paper (either scratchcards and/or paper placeholders). Subjects are required to mark which scratchcards are taken and which are given on the allocation table, which must also be inserted into B's envelope. Once this is done, subjects A close B's envelope and the experimenter collects them into a black bag. After shuffling the bag, the experimenter inspects B's envelopes one by one, keeps the allocation table (which constitute the experimental observation) and puts the pieces of papers (either scratchcards and/or paper placeholders) into a white envelope and writes B's code on it. In the meanwhile, all A subjects put their ten scratchcards and/or paper placeholders into a white envelope on which they write their invented code. All white envelopes are then put on a table outside the lab where they are picked up by subjects at the end of the experiment.

With this, the core part of the experiment is over; all subjects remove the privacy box from the table and turn on the computer where they fill-in an incentivized questionnaire which include:

- An incentivized elicitation of B's belief's about A's action
- An incentivized elicitation of A's beliefs about B's belief about A's action [10]
- A BDM (Becker-DeGroot-Marschak) procedure to elicit all subjects evaluation of the scratchcard[11]
- An incentivized elicitation of A's beliefs elicitation about B's evaluation[12]
- A Trolley dilemma to identify deontological types [13]

[10] Subjects' payment for their beliefs about other's choice and beliefs is equal to $1€ - 0.10|x|$ where $x$ is the distance between the actual value and the stated one

[11] Subjects were endowed with 1.5 euros and could offer a price for a single scratchcard ranging from 0 to 1.5.

[12] Subjects' payment for their beliefs about other's bids and beliefs is equal to $1.5€ - 0.10|x|$ where $x$ is the distance between the actual value and the stated one

[13] see Edmonds et al. (2014) for a review of the literature on the trolley dilemma

- An incentivized SVO (Social Value Orientation) survey to determine subjects' attitude toward pro-sociality (see Murphy et al. 2011)

Subjects are then paid for the incentivized questionnaire (no inference on their action can be done from this payment) and once they exit the lab they pick up their envelope containing (if any) the scratchcards.

## 3.2 Features of our design

**Symmetric action set.** The experimental design is based on a Free-Form Dictator used first by List (2007); Bardsley (2008). As much as the only-giving dictator game may create a demand effect in the direction of giving, the only-taking behavior may generate "too much" taking. Indeed, the choice of the free-form design was taken in order to alleviate such demand effect.

**Anonymity.** As taking the other's subject endowment is, in fact, a crime, a great deal of attention has been paid in granting full anonymity to the subject's actions in the lab. Subjects, recruited online via ORSEE (**?**),were identified before entering the lab by a person who later did not take part in the experimental procedure. Once in the lab, subjects had to invent a 6-digit code which was later used to match their decisions with the questionnaires collected on the computers and to identify payments. The experimenter paid only the incentivized questionnaires; the show-up fee and the remuneration for the effort task, paid in scratchcards were handed to subjects before the allocative decision by the dictator. Subjects took their allocative manipulation within the privacy box (see Figure 6). Receipts were signed at a distance from experimenters' eyes and were cast into a box together with all other receipts. Granting robust anonymity to the dictator allows detection for the genuine respect for property net of all reputational, social and legal concerns that might otherwise drive such a decision.

**Tangibility.** In most lab experiments involving the free form dictator (with the exception of Jakiela (2011)), the allocative decision is usually taken via computer software: subjects take virtual tokens that are later converted into money and then paid cash at the end of the experiment. To us, this seemed rather different from the reality of many property situations involving movable and tangible objects. In reality, potential thieves have to take their allocative decisions manipulating with their hands, someone else's tangible property. For this reason, our protocol prescribes dictators to physically open victim's envelopes containing their tangible belongings (five scratchcards) and, in case they decide to take the belongings, to physically remove this property and hide it into his or her own envelope. On the relevance tangibility may play see (Hoffman et al., 1994; Mazar et al., 2008; Reinstein and Riener, 2012; Uhlmann and Zhu, 2013).

**Saliency of taking choice.** Some previous experiments had dictators taking the allocative decision multiple times in a limited time span, and in some other experiments the dictator was taking such decision about someone else's property while somebody else in the lab was taking the very same decision about his or her own property. Both characteristics seem to be at odds with a genuine property situation whether the chance to respect somebody else's property of one particular object is taken only once, and very rarely under the threat that someone else is taking the very same decision about dictator's property. For this reason, we implemented a one-shot design where half of the subjects in the lab

| Treatment | Date | Sessions | Subjects (Observations) |
|---|---|---|---|
| LEGAL10 | Nov 28, 2013 | 3 | 70 (35) |
| EFFORTFUL5 | Feb 27, 2014 | 3 | 62 (31) |
| LEGAL5 | April 14, 2014 | 2 | 46 (23) |
| EFFORTFUL10 | May 29, 014 | 2 | 48 (24) |

Table 2: Sessions

played as dictators while the other half were passive players. This choice made our design quite expensive, as two subjects must go through the experiment for each observation collected.

**Medium of transfer.** In previous experiments, people had to take their allocative decision over money or over tokens which later were transformed into money. However, money represents a peculiar form of property, as it is just designed to facilitate transfer of wealth among parties. When one thinks about an archetypal property situation it usually involves some form of moveable property different from cash. For this reason we decided to use scratchcards instead. Each subjects put a sticker with his or her own invented code on each scratchcard in order to anonymously mark their scratchcards. Furthermore, as any lab experiment, subjects were paid for their presence in the lab. This payment was in cash based both on a fixed show-up fee and on the results of an incentivized questionnaire. Such payments were given at the end of the experiment.. Another advantage of using scratchcards for the core of the experiment was to keep the allocative decision as separate as possible from the compensation in cash obtained at the end of the experiment.

**Legitimacy of ownership.** Our experimental manipulation concerns the origin of property. Previous experiments envisaged manna-from-heaven endowments and sometimes endowments built through some real effort task in the lab. While we kept the latter choice for our EFFORTFUL treatments, we had to our knowledge, for the first time,subjects to bring their own property from outside the lab. In this way we can compare whether property is more respected when its origin is rooted in recently spent effort in the lab (EFFORTFUL treatments) vs when the origin is older and possibly coming from very different sources of property (LEGAL treatment)

# 4 Results

We conducted 10 sessions with a total of 226 subjects (see Table 2). 51% were male, the average age was 21.7 years, 98% were Italian, and on average they took part in 2.19 experiments in the past.

## 4.1 Subjects A's choices

Subjects A had the possibility to choose whether to give some/all scratchcards to subjects B, to take some/all scratchcards from B, or to keep their 5 scratchcards. Figure 2 reports the distribution of subjects A's net payoffs (number of scratchcards in As' envelope after their choice). Some descriptive statistics are shown in table 3. What emerges quite clearly is that, in every treatment,

| Treatment | Obs | Mean final payoff | Median | Std. Dev. | Min-Max | % of net donors |
|---|---|---|---|---|---|---|
| LEGAL10 | 35 | 7.74 | 8 | 2.27 | 0-10 | 8.6 |
| LEGAL5 | 23 | 8.43 | 10 | 1.90 | 5-10 | 0 |
| EFFORTFUL5 | 31 | 7.29 | 7 | 2.11 | 4-10 | 6.5 |
| EFFORTFUL10 | 24 | 7.62 | 7 | 2.37 | 1-10 | 8.3 |

Table 3: Treatment statistics

the majority of subjects A take a positive amount of scratchcards from subjects B's envelopes (net payoffs greater than 5 scratchcards). Considering all the treatments, 67.2% (76 subjects) take a positive amount of scratchcards and give nothing, while only 3,5% (4 subjects) give some scratchcards while taking nothing from subjects B. This is in line with Cherry et al. (2002). 28 subjects (24,7%) both take and give scratchcards, but on average the difference between the scratchcards taken and the scratchcards given is of 1.10. The remaining 5 subject (4.4%) neither give nor take scratchcards and they keep their initial endowment of 5 scratchcards (see Figure A in the Appendix for detailed data on individual choices).

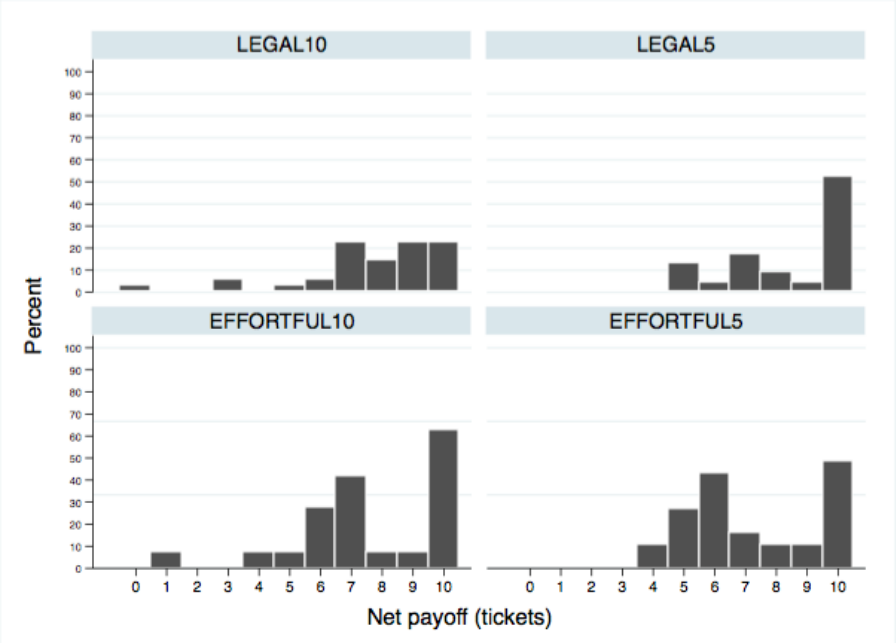


Figure 2: Subjects A's net payoff (scratchcards) across treatments

On average 2,73 scratchcards are taken by each subject A, that is to say 56% of the maximum taking. As a comparison, in their Labour treatments List (2007, Treatment 4) sees only 20% of all potential taking takes place and in Cappelen et al. (2013, Treatment 4) the mean taking is 24%.

**Result 1**: *Once full anonymity is granted stealing becomes predominant*

This result seems to give reason to Glaucon's claim that moral behavior (in our case this would amount to respecting others' property) is largely dictated by the fear of social and legal sanctions.

## 4.2 Treatment effects

The treatment effect we wanted to test concerns the origin of the property entitlement. As opposed to List (2007); Cappelen et al. (2013),none of our treatments envisage manna from heaven. Instead we compare claims over entitlement that are legally determined outside the lab (LEGAL) with claims established through an effort task inside the lab (EFFORTFUL).

As shown in Table 3, subjects in the EFFORTFUL treatments take more, on average, than those in the EFFORTFUL treatments, even in using the Mann-Whitney test we can conclude that only the difference between LEGAL5 and EFFORTFUL5 is statistically significant (z=2.01; p-value = 0.04).

Looking at the the distributions of net payoff across treatments one can observe that the two EFFORTFUL treatments distributions are both bimodal, with a pick on 10 and high frequencies of choices closer to 5, corresponding to high respect for property. When we focus on the proportion of subjects who have a high respect for property and in particular on the decision to take at maximum one scratchcard (figure 3)[14], we observe that this proportion is higher in the EFFORTFUL treatments, even if we find a statistically significant difference when we compare the OUSIDE10 with EFFORTFUL5 (two tails test of proportions using a dummy variable which takes value 1 if the net payoff is not greater than 6 and 0 otherwise: z=2.72; p-value=0.006) and LEGAL5 with EFFORTFUL5 (z=2.36; p-value=0.01). The manipulation of the show-up fee seems to affect subjects' choices only in the two inside treatments, leading to an increase in the proportion of subjects who respect property, even if the difference between the two treatments is only weakly statistically significant (Two tails test of proportions: : z=1.44; p-value=0.15).

If we focus on pooled data, ignoring, for the moment, the manipulation of the show-up fee, we find that the proportion of those who respect property increases from 17.2% to 40% when moving from LEGAL to EFFORTFUL treatments (figure 4) and this difference is statistically significant (test of proportions: z=2.38; p-value=0.007).

**Result 2**: *The proportion of subjects who respect property is higher in the Inside treatments.*

This result can be easily squared into the Lockean tradition that sees labour as the root of property rights. Following Locke individual effort makes private property legitimate and moral and individual property rights are promoted only insofar as they promote *workmanship* and the role of labour in advancing society's welfare (Henry, 1999).

[14] A subject can end up with a surplus of one scratchcard (she takes one scratchcard from B) either by giving nothing and taking one scratchcard from B or giving $n$ scratchcards and taking $n+1$ scratchcards.


Figure 3: Proportion of subjects respecting property

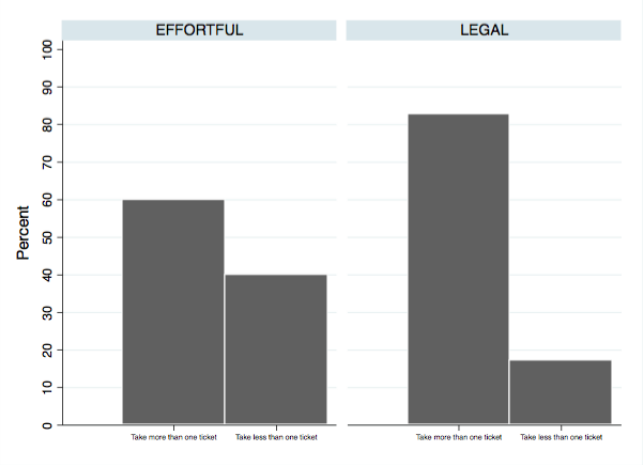


Figure 4: Source of property and proportion of subjects respecting it

| Treatment | Obs. | Mean Net Payoff | Mean A's second order belief | Mean B's first order belief |
|---|---|---|---|---|
| LEGAL10 | 35 | 7.74 | 8.45<br>(1.76) | 8.40<br>(1.01) |
| LEGAL5 | 23 | 8.43 | 8.21<br>(2.02) | 7.87<br>(1.89) |
| EFFORTFUL5 | 31 | 7.29 | 8.13<br>(1.82) | 7.54<br>(2.14) |
| EFFORTFUL10 | 24 | 7.62 | 8.29<br>(1.98) | 7.41<br>(1.69) |

Table 4: Choices and Beliefs

### 4.3 Beliefs and social norm about the respect for property

Once subjects A had made their choices about the allocation of scratchcards, the experiment was over and we collected several measures via some well-known incentivized techniques. These include B's belief's elicitation about A's action and A's belief's elicitation about B's belief about A's action. First and second-order beliefs cast light on the dominant social norm. In each pair of subjects, subject B was asked to guess A's decision about the amount of scratchcards allocated to her/him (first order B's belief). Then subject A was asked to guess B's beliefs about his or her (A's) choice (A's second order belief).

Table 4 reports the mean of both subjects A's and subjects B's beliefs (expressed in terms of A's final net payoff). Subjects A's second order beliefs are highly correlated with their actual choice.[15]. The data on B's beliefs are particularly interesting, as B seems to be aware of the fact that, in general, subjects A's respect for property is low. Bs seem to anticipate also what happened in their particular treatment. In fact, on average, subjects B's expectations about A's choices are not statistically different from subjects A's actual choice. In addition, Bs' expectation are not different, on average, from As's second order expectations, with exception of treatment EFFORTFUL10 in which subjects B's expect A's would take less (2.41 scratchcards) than what A's think they will expect (3.29 scratchcards) (Mann Whitney test: z=2.11, p=0.03). All this suggests the emergence of a shared social norm according to which, in general, taking is admitted, and more taking is admitted when subjects do not earn their scratchcards in the lab. We can then put forward our third result.

**Result 3:** *A general expectation of low respect for property characterizes all the treatments. More taking is expected in LEGAL treatments.*

In addition to eliciting subjects' beliefs, we have run a BDM procedure to elicit subjects evaluation of the scratchcards (see section **??** of the Appendix) and within each pair of subjects, subject A was asked to guess the bid of subject B.

Neither A's nor B's average willingness to pay differs across treatments [16] (see table 5). Also A's beliefs about B's willingness to pay do not differ across treatments. Subjects A's WTP is correlated with their beliefs about B's

[15]The only exception is treatment LEGAL5 in which Spearman rho=0.38 and =0.10

[16]We observe only a week statistical difference between A's WTP in LEGAL10 and A's WTP in EFFORTFUL 10 (Mann Whitney: z=1.70 p-value=0.9)

| Treatment | Obs. | Mean A's WTP for the scratchcard (€) | Mean B's WTP for the scratchcard (€) | Mean A's expectation about B's WTP (€) |
|---|---|---|---|---|
| LEGAL10 | 35 | 0.79 | 0.71 | 0.75 |
| | | (0.52) | (0.47) | (0.38) |
| LEGAL5 | 23 | 0.60 | 0.69 | 0.75 |
| | | (0.45) | (0.64) | (0.28) |
| EFFORTFUL5 | 31 | 0.62 | 0.67 | 0.69 |
| | | (0.46) | (0.55) | (0.56) |
| EFFORTFUL10 | 24 | 0.60 | 0.57 | 0.78 |
| | | (0.42) | (0.47) | (0.29) |

Table 5: Willingness to pay for the scratchcard and beliefs (standard deviation in parenthesis)

WTP in all the treatments except in EFFORTFUL5 (Spearman's rho =0.16, p-value=0.45).

**Result 4:** *Neither Subjects A's willingness to pay for the scratchcard nor subjects A's beliefs about Subjects B's willingness to pay for the scratchcard vary across treatments.*

Result 4 highlights that the respect for property rooted into the recognition of others' effort,when existing,is independent of neither subjects' own evaluation of the entitlement they could potentially steal nor of their belief about the other's evaluation.

## 4.4 Social value and ethical orientation

One may wonder whether the existence of the respect for property is mainly driven by interiorized social norms or other known moral attitudes. In order to uncover whether the respect for property is linked to some psychological traits we have thus collected data using well-studied questionnaires in experimental psychology and experimental philosophy. This is the SVO (Social Value Orientation) incentivized questionnaire to determine subjects' attitude toward pro-sociality (see Murphy et al. 2011) and two variations of the trolley dilemma used to identify deontological types (Edmonds et al., 2014). We then used these measures as controls in our regression analysis.

On the basis of subjects' choices in the SVO task, we can categorize them in four types:

- Competitive: tries to maximize the difference between own payoff and others payoff.
- Individualist: maximizes own payoff, ignores payoff of others.
- Cooperative: tries to maximize joint payoff.
- Altruistic: tries to maximize others payoff.

In all the treatments the vast majority of subjects A belong to the Individualist type[17]. The distributions are not statistically different across treatments [18];

[17]The distributions of subjects B's social value orientation follow the same pattern

[18]The only weakly statistically difference is observed between EFFORTFUL10 and LEGAL10 (Pearson's Chi squared (3 d.f. )=6.28, p-value=0.09)

| | Competitive | Individualistic | Cooperative | Altruistic | TOT |
|---|---|---|---|---|---|
| LEGAL10 | 10.00 | 81.43 | 5.71 | 2.86 | 100 |
| LEGAL5 | 10.87 | 80.43 | 8.70 | 0 | 100 |
| EFFORTFUL5 | 4.84 | 85.48 | 4.84 | 4.84 | 100 |
| EFFORTFUL10 | 18.85 | 60.42 | 14.58 | 6.25 | 100 |

Table 6: Distribution of subjects A's social value orientations (percentages)

| | Consequentialist |
|---|---|
| Treatment | A |
| LEGAL10 | 75.71 |
| LEGAL5 | 76.09 |
| EFFORTFUL5 | 80.65 |
| EFFORTFUL10 | 81.05 |

Table 7: Percentage of consequentialist subjects A

Using the answers to the two Trolley dilemmas we classify a subject's ethical attitude as consequentialist if she or he decided to pull the lever in the first dilemma and to "push the fat man" in the second dilemma (see Table 7). In all the treatments the vast majority of subject A can be classified as consequentialist; we do not observe any statistical difference among treatments with regard to the proportion of consequentialist subjects.

To investigate the determinants of subjects A's choices we estimate a probit regression model, considering only the choices made by subjects A, where the dependent variable assumes value of one if the subjects take a maximum of one scratchcard (net payoff not greater than six) and zero otherwise. The main regressors are the three dummies EFFORTFUL5 (equal to 1 if the subjects is in the EFFORTFUL5 treatment and 0 otherwise), LEGAL5 (equal to 1 if the subject is in the LEGAL5 treatment) and LEGAL10 (equal to 1 if the subject is in the LEGAL10 treatment).

We check also for the effect of second order beliefs (variable A'S BELIEFS), scratchcards' evaluation (BDM), beliefs about subject B's evaluation (A'S BELIEFS BDM), as well as social and ethical orientation (INDIVIDUALIST[19] and CONSEQUENTIALIST). The control variables are GENDER, AGE, EXP (experience with experiments) and MAJOR. The results are reported in Table 8

The results of the estimation confirm the significant effect of the task when the show up fee is equal to five euros: the probability of taking less than two scratchcards increases when moving from LEGAL5 to EFFORTFUL5 (difference between the $\beta_{O5}$ and $\beta_{O10}$the variable EFFORTFUL). The estimation confirms also the weak effect of the manipulation of the show up fee only in the EFFORTFUL treatments: the probability of taking less than two scratchcards decreases moving from EFFORTFUL5 to EFFORTFUL10 (coefficient $\beta_{I5}$of the variable EFFORTFUL5). The correlation between A's second order beliefs and her choice is also confirmed (variable A'S BELIEFS)

Coming to the assessment of the impact of Subject A's social value and

[19]In the following regression this is a dummy variable. The results are the same if we use instead the standard continuous absolute SVO measure.

| | Probit |
|---|---|
| EFFORTFUL5($\beta_{I5}$) | 0.79* |
| | (0.43) |
| LEGAL5($\beta_{O5}$) | -0.43 |
| | (0.46) |
| LEGAL10 ($\beta_{O10}$) | -0.33 |
| | (0.42) |
| A'S BELIEFS | -0.15* |
| | (0.08) |
| BDM | 0.18 |
| | (0.37) |
| A'S BELIEFS BDM | 0.49 |
| | (0.40) |
| INDIVIDUALIST | 0.11 |
| | (0.41) |
| CONSEQUENTIALIST | -0.49 |
| | (0.37) |
| GENDER | -0.12 |
| | (0.31) |
| AGE | 0.01 |
| | (0.07) |
| EXP | -0.12 |
| | (0.08) |
| MAJOR | 0.11 |
| | (0.33) |
| Constant | 0.02 |
| | (1.77) |
| $\beta_{I5}$- $\beta_{O5}$ | 1.22*** |
| | (0.45) |
| $\beta_{O5}$+$\beta_{O10}$ | -0.10 |
| | (0.82 |
| Log-likeliood= -48.98; Chi squared (12) =22.47**; Number of Obs= 100. | |

Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Only subjects A are considered. The dependent variable takes a value of 1 if subjects takes a maximum of one scratchcard from subject's B envelope (net payoff not greater than six). EFFORTFUL5: dummy variable taking value 1 if the subject is in the EFFORTFUL5 treatment and 0 otherwise; LEGAL5= dummy variable taking value 1 if the subject is in the LEGAL5 treatment and 0 otherwise; LEGAL10: dummy variable taking value 1 if the subject is in the LEGAL10 treatment and zero otherwise . A'S BELIEFS= Subject's A (second order) beliefs about what B thinks is her (A's) choice. It is expressed in terms of A's net payoff and takes values between 0 (give five scratchcards) and 10 (take five scratchcards); BDM: subejct's willingness to pay for the scratchcard, takes values between 0 and 1.5; A'S BELIEFS BDM: Subject A's beliefs about B's willingness to pay for the scratchcard, takes values 0 and 1.5 euros. INDIVIDUALIST: dummy variable taking value 1 if the subject's social value orientation has been classified as individualist and zero otherwise; CONSEQUENTIALIST: dummy variable taking value 1 if the subject has been classified as consequentialist on the basis of her choices in the two trolley dilemmas; GENDER: dummy variable taking value 1 if the subject is a female; AGE: age of the subject (years); EXP: number of experiment in which the subject has been involved in the past; MAJOR: dummy variable taking value 1 if the subject is a student of a Management or Economics program.

Table 8: Determinants of subject A's choice

ethical orientations on his or her decision to steal, we can observe that INDIVIDUALIST and CONSEQUENTIALIST coefficients are not significant, and this rules out his or her explanatory power in this respect.

**Result** 5: *Subjects' social value orientation (the vast majority of subjects A are individualists) does not explain their behavior with respect to property*

**Result** 6: *Subjects' deontological orientation (the vast majority of subjects A have consequentialist ethical attitudes) does not explain their behavior with respect to property*

We deem these two observations particularly important as they highlight that the respect for property determined by the effortful claim on the entitlement is a novel behavioral trait that our experiment uncovers and that is unrelated with social preferences or deontological preferences.

# 5 Discussion and Conclusions

We have gone to a great deal of effort to reproduce a situation of crime in the lab. In our free form dictator game, an active subject is matched with a passive player and each is endowed with five scratchcards. Under full anonymity (even from the experimenter) the dictator can decide whether to i) *defer to the opponent* and leave the allocation of scratchcards unchanged or ii) alter the de-facto allocation by giving some or all of his own scratchcards to the passive player or iii) alter the de-facto allocation by taking some or all of the passive player's scratchcards. Furthermore scratchcards can also be exchanged; there is no legal sanction nor social enforcement mechanism. The absence of any strategic interaction rules out other more subtle mechanisms of endogenous enforcement. Our implementation of the dictator game is peculiar because we do not use tokens nor money but scratchcards that must be physically stolen or given from other's envelopes/wallets and furthermore, in our LEGAL treatments, the scratchcards have been procured directly by subjects outside the lab. The decision that subject A faces closely resembles a petty larceny type of crime and mimics a broad category of crimes: indeed every crime where someone forces an un-willful transaction (see Fletcher, 1985). Certainly, the crimes that Gyges perpetrated to gain control of Candaluse's throne belong to this category. Plato developed his thought experiment to derive normative implications on how moral behavior ought to be. Less ambitiously, we used the intuitions of his thought experiment to assess positively whether the respect for property often observed in reality is grounded in people's moral attitudes, or whether it is simply the result of social and legal institutions. In our experiment, subjects shielded from the consequences of their actions largely engage in stealing (as Glaucon would have predicted) although very often they choose not to take the maximum possible amount (as Gyges would have probably done). Furthermore, we have learned that the respect for others' property is greatly boosted by the recognition of others effort: some dictators defer to the opponent and avert taking, but only when they have been witnesses of the opponent's effort that has generated the endowment at stake. This might be all of what we find of the "innate sense of property" hypothesized by Eswaran and Neary (2014) and Gintis (2007b) and that should be embedded into the bourgeois-strategy in the context of evolutionary games à-la Hawk and Dove (Smith, 1982). The question of what drives

subjects to respect property seems to have one single simple answer: the source of the endowment must be others' effort. The decision to respect property does not seem to be related to any other variable we can control, for including subjects' second order beliefs, their evaluation of the scratchcard, nor their social value orientations scores or their deontological attitudes.

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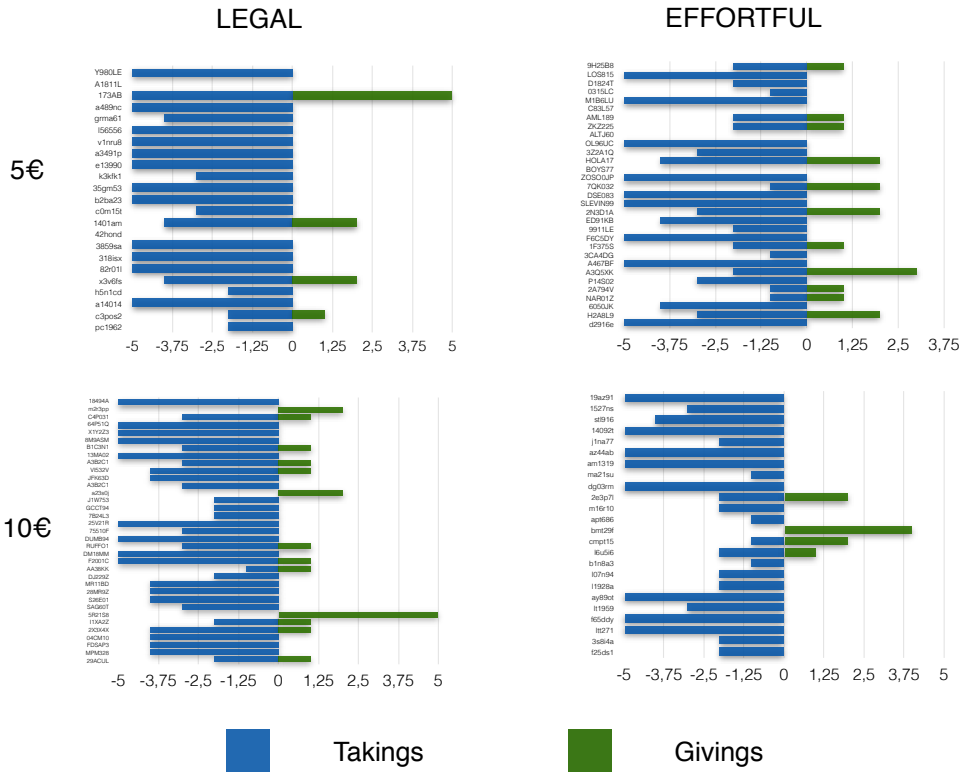



Figure 5: Individual choices in each treatment. For each subject (identified by the invented personal code on the vertical axis) we can see both the scratchcards given and those taken. Our experimental design in fact allowed subjects to both give and take at the same time.

# A Individual choices


Figure 7: Types of 1€ scratchcards that could be used in the experiment

# B Pictures

Figure 6: The privacy box used to allow more privacy in allocative decisions

# C Instructions

## Introduction

This experiment, followed by a questionnaire, will last approximately an hour and a half. The experimental protocol we adopt does not allow us to provide false or misleading information. The experimenters are committed to grant complete anonymity for the duration of the experiment. If in doubt about the experimental procedures, please do not hesitate to ask for clarification. In this experiment, some participants will be asked to take some decisions. These decisions will remain completely anonymous, meaning that neither the participants nor the experimentalists will be able to discover the name and surname of the person who made the decisions. The interaction between the participants is managed through the use of a personal code that will be created by you in the course of the experiment.

The person who was in charge of welcoming and identifying you outside the lab is not associated with the experiment, nor with the subsequent data analysis. At the end of the experiment, we ask all participants to complete a questionnaire. The instructions for the questionnaire will be provided at the end of the experiment. Note that the survey is completely independent of the decisions taken in the experiment.

The payment for the experiment has occurred while entering the lab. There will be no further payments for the experiment. The questionnaire will instead be rewarded with a payment that does not depend in any way on the decisions taken in the experiment and in particular it does not provide any compensation for the gains or losses during the experiment.

It is forbidden to communicate with the other participants for the entire duration of the experiment. Please turn off your mobile phone (not only the ringtone) and keep it off for the duration of the experiment. Those whom do not respect these rules will have to leave the laboratory.

If you have questions to ask, at any time, raise your hand. An experimenter will reach your location and will respond privately.

## The Experiment

Each participant is paired with another anonymous participant in the lab. One of the two participants will be assigned the role of participant A, and the other will be participant B. Some of you have already taken a red envelope and others have a grey one. After reading the instructions the experimenter will toss a coin in order to to assign roles A and B. If the toss lands on heads,, those participants with red envelopes will be assigned role A and those with the grey envelope will be assigned role B. If the toss lands on tails, roles will be reversed (who has the grey envelope will play A and who has the red envelope will play B). On your table you will find a privacy box, a white envelope, and a pen. The colored envelope that you received at the entrance should contain the following things:

- The five scratchcards.
- Five cardboards the same size of the scratchcards.
- The allocation table.
- Five paper stickers.

If any of these items are missing from you envelope please raise your hand.

You'll have to invent a 6 digit (letters and numbers) code and write it on the 5 stickers that you will then attach to your 5 scratchcards. The experimenter will collect participants B's envelopes and deliver them randomly to participants A (one envelope for each participant A). Participant A can then decide whether to give 1-5 scratchcards of his or her own to participant B, to take 1-5 scratchcards from participant B, or whether to leave things unchanged. If the participant decides to give his or her scratchcards to participant B, he or she must remove the scratchcards from his own envelope and put them in B' envelope. If he or she wants to take the scratchcards from B, he or she will have to take them from B's envelope and move them into his or her own envelope. Any scratchcard removed from any envelope must be replaced with an equal number of cardboard pieces.

Once the participants are done with their choices, the experimenter will collect Bs' envelopes from As; he or she will open them one by one, take note of the number of scratchcards available, and put their content inside a new white envelope indistinguishable from any other and on which he or she will write B's personal code (he or she will read this code on the allocation tale inside the envelope itself). Also, all As will put their scratchcards and cardboards in a white envelope on which they will write their own invented code. All white envelopes (A and B) will be placed on a table outside the laboratory. Once the experiment is over, all participants leaving the lab will pick-up their own white envelopes.

We will play now, in detail, each step of the experiment. You do not need to memorize the procedure. The experimenter will describe each step, and you can always refer to the instructions. If there are no questions, we can proceed with the experiment.

## Phases of the experiment

1. Open the colored envelope and extract its content (scratchcards, allocation table and stickers).

2. Invent a 6-digit code (uppercase letters and numbers) avoiding obvious sequences and dictionary words. At the same time it must be a code that you can remember. If you feel like it, you may take a note of the code on the paper provided.

3. Write this same code on all five stickers

4. Stick the 5 labels on the back of each scratchcard.

5. The experimenter flips a coin to assign the two roles (A and B).

6. Participants A should write: "A" on the first column of the allocation table under their own scratchcards' numbers. Their invented code in the second column and "B" in the third column.

7. Participants B must write "B" in the first column of the allocation table under their own scratchcards' numbers their invented code in the second

column and "A" in the third column.

| Ticket Number | |
|---|---|
| 1 4325347 | |
| 2 5363456 | |
| 3 6457457 | |
| 4 97098985 | |
| 5 12324134 | |
| A T54Y | B |

8. Participants B must put all the material (table, scratchcard, and cardboards) in their colored envelope.

9. One of the experimenters collects both the colored and white envelopes from participants B and distributes randomly the colored envelopes to participants A.

10. Participants A have to store their scratchcards and cardboards into the privacy box that ensures confidentiality while making a later decision.

11. Participants A have to put B's colored envelope in the privacy box; they have to open it and remove its content.

12. Participants A have to write down the number of his or her scratchcards on B's table ( NOT B's numbers on A's table) as follows.

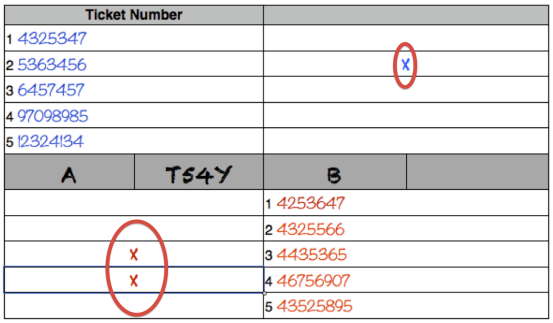
13. The participants will have to write their own invented code the fourth column of the table B.

| Ticket Number | |
|---|---|
| 1 4253647 | |
| 2 4325566 | |
| 3 4435365 | |
| 4 46756907 | |
| 5 43525895 | |
| B T54Y | A |
| | 1 4325347 |
| | 2 5363456 |
| | 3 6457457 |
| | 4 97098985 |
| | 5 12324134 |

14. Participants will have to decide whether to give some of their scratchcards (1 to 5), to B, or to take some of B's scratchcards (1 to 5) or leave things unchanged. Scratchcards taken or given must be replaced with an equal number of cardboards. If A decides to take a certain number of B's scratchcards, he or she must replace these cards with an equal number of cardboards in B's envelope. If A decides to give some of his or her own scratchcards to B he will have to replace these cards with cardboards in their own envelope. In this way all the envelopes have the same weight and aspect regardless of their content. After the envelope is sealed it will be impossible to infer A's choice from the outside. This is the only decision

to be made in the experiment. Participants A will leave the lab with what he put in his envelope. Participants B will leave the lab with an envelope whose content depends on A's choice.

15. Participants will have to take note of the scratchcards that have been given and/or taken on the table B (In the example below subject A has decided to give its second scratchcard with serial number 5363456 to subject B and take from him or her the third and fourth scratchcard with serial 4435365 and 46756907).




16. Once completed, table B must be returned in B's colored envelope along with the scratchcards. The envelope must be closed. It will then be removed by the experimenter before been delivered to B.

17. A will put the remaining stuff (table, scratchcards and/or paperboards) into the white envelope and write his or her own code outside it.

18. When B's envelopes are ready, one of the experimenters will collect them.

19. The envelopes are inspected by the experimenter. For each of B's colored envelopes, he or she removes the allocation table, puts the content in a new white envelope and writes the invented code on its outside.

20. A's white envelopes are collected by the experimenter.

21. All white envelopes are placed on a table outside the lab. At the end of the session, participants can collect the envelopes with their own code.

At the end of the experiment, you will be asked to complete a questionnaire and will be given further instructions. Remember that filling in this questionnaire is an independent activity, and it does not provide any kind of compensation related to the number of scratchcards taken or given in the experiment. After completing the questionnaire, you can leave the laboratory and pick up your envelope.