



How laws affect behavior: Obligations, incentives and cooperative behavior



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ABSTRACT

Laws and other formal rules are 'obligations backed by incentives'. In this paper we explore how formal rules affect cooperative behavior. Our analysis is based on a series of experimental public good games designed to isolate the impact of exogenously requested minimum contributions (obligations) from those of the marginal incentives backing them. We find that obligations have a sizeable effect on cooperative behavior even in the absence of incentives. When non-binding incentives are introduced, requested contributions strongly sustain cooperation. Therefore, in contrast with cases in which incentives crowd-out cooperative behavior, in our experiments obligations and incentives are complementary, jointly supporting high levels of contributions. Moreover, we find that variations in obligations affect behavior even when incentives are held constant. Finally, we explore the behavioral channels of the previous results, finding that people's beliefs about others' contributions and the willingness to cooperate are both called into play.

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1. Introduction

Formal rules and public policies play a fundamental role in regulating people's daily interactions. Traditionally, economists have studied the design of optimal rules and laws by focusing on their enforcement and on designing optimal incentives. By focusing almost exclusively on the role of incentives, economics literature neglected a crucial aspect that is usually taken into account by legal scholars interested in developing good laws: laws and formal rules are "obligations backed by incentives".¹ The obligation part of a formal rule consists in the behavior the rule states people should maintain, and the incentives part relates to the consequences for maintaining or violating the requested behavior.² Legal theorists and social psychologists³ suggest that laws are effective in regulating people's behavior not only through the enforcement structure,

but also in what they ask of people, or signal.⁴ Under this perspective, the normative content of the rule can activate people's motivation and can induce compliance as the material incentive enforcing the rule itself. Moreover, by stating formally how people should behave, formal rules provide a focal point that helps people coordinate. If we think to compliance with law as a public good, this effect is likely to be crucial in the presence of conditional co-operators (Fischbacher and Gaechter, 2010), because in such a situation a public good game is equivalent to a coordination game (Camerer and Fehr, 2002). Understanding the interaction between incentives and obligations (the content of the norm) is thus crucial for developing public policies. In this work we experimentally study how obligations work and how they interact with incentives in affecting human behavior. In particular we explore the following questions:

- (i) How do obligations per se affect cooperative behavior?
- (ii) How do non-binding incentives per se affect cooperative behavior?

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¹ See Raz (1980).

² Typically, a formal rule is a statement such as: "you ought to . . . and then you will get . . ." (or "you ought to . . . or else you will pay . . ."). In this sentence, incentives are captured by the "and you will get/or else you will pay . . ." part, and obligations by the "you ought to . . ." component.

³ See Tyler (1990).

⁴ See Kahan (1997), Cooter (2000) and McAdams (2000), Croson (2009). In economics, the theoretical work by Bar-Gill and Fershtman (2004) and Bowles and Polania-Reyes (2012) explore the possibility that laws affect behavior by driving the evolution of preferences. Van der Weele (2012) explores and develops a model of the signaling power of legal rules.

- (iii) How do obligations and non-binding incentives interact with each other?
- (iv) What are the channels through which obligations and non-binding incentives affect behavior?

Our analysis is based on a series of linear public goods experiments⁵ in which we independently vary the intensity of incentives and the level of obligations. Obligations are introduced in the form of a minimum contribution: “a minimum contribution of X tokens to the public good is required from each individual”. Incentives are implemented as probabilistic punishments for contributions below the minimum and probabilistic rewards for contributions above the minimum. The incentive schemes are structured in such a way that not contributing to the public good remains the dominant strategy for payoff-maximizers. Thus, our incentive structure is non-binding and marginal payoffs are independent of the minimum contribution. Hence, if we observe any difference in results across treatments with different minimum contributions, this cannot be attributed to the effect of incentives on payoffs, but its justification should be sought elsewhere.

The overall picture emerging from our experimental results is as follows. The introduction of an obligation in the absence of incentives leads to an increase in the provision of the public good. This means that the introduction of a rule, even if not enforced, positively affects people’s propensity to cooperate. Instead, the introduction of non-binding incentives without an obligation does not significantly affect contributions. When obligations and incentives are combined, cooperation is strongly reinforced: the joint effect of incentives and obligations on contributions is significantly more positive than the impact of obligations alone. This means that obligations and incentives are complementary, jointly supporting high levels of contribution. This last aspect is particularly relevant: this means that, when combined with an obligation, incentives crowd-in reasons for behavior other than a material self-interest in sustaining cooperation.⁶

In order to provide a behavioral interpretation of these results, we analyze the possible channels driving cooperation. We find that obligations affect behavior through two channels: (i) given beliefs about the behavior of others increase people’s willingness to contribute, and (ii) they increase people’s beliefs concerning the contributions of others. Since most participants are conditional co-operators, both these effects raise the contribution to the public good. Non-binding incentives per se do not affect individuals’ beliefs and preferences. Instead, when combined with obligations, they strongly reinforce the impact of obligations through both channels.

The paper is structured as follows. Section 2 provides a review of the related literature. Section 3 reports the experimental design and behavioral predictions. Section 4 describes and comments on the results. Section 5 provides some concluding remarks.

⁵ The choice to carry out our experimental investigation in a public good setting is motivated by the fact that formal rules, and in particular legal rules, are often set by legislators and governments with the specific objective of overcoming social dilemmas (e.g. free riding in income tax compliance, common pool resource management, traffic behavior, or environmental regulation) by aligning private incentives to the common good.

⁶ From this point of view, this study contributes to a burgeoning literature in behavioral economics aiming to provide us with a greater understanding of the psychological effects of incentives (see among others Benabou and Tirole, 2003, 2006; Bohnet et al., 2001; Falk and Kosfeld, 2006; Falk et al., 2005, 2006; Fehr and Falk, 2002; Fehr and Schmidt, 2002; Fehr and List, 2004; Frey and Jegen, 2001; Gneezy and Rustichini, 2000a,b; Kube and Traxler, 2009; Van Der Weele, 2012; Galbiati et al., 2013).

2. Literature review

Our study relates to several strands of the literature. First, there is extensive literature developed in the last decade on the effects of institutions in the provision of public goods. In particular, our study relates to the literature focusing on exogenously imposed institutions. Falkinger et al. (2000) examine a mechanism for public good provision in which rewards and sanctions are imposed to players who contribute to the public good more and less than the average. The authors demonstrate experimentally that the mechanism is an effective tool to implement efficient contribution levels. Andreoni (1993) presents an experimental test of the proposition that government contributions to public goods, funded by lump-sum taxation, will completely crowd-out voluntary contributions. The author finds that crowding-out is incomplete and that subjects who are taxed are significantly more cooperative.

Another strand of literature focuses on the crowding-out/crowding-in effects of incentives. Fehr and Falk (2002), Frey and Jegen (2001) and Bowles and Polania-Reyes (2012) provide excellent surveys of the topic. Our paper complements this literature by showing the crowding-in effect of incentives to the public good, when these are coupled with obligations. Our results show that incentives and obligations are complementary, and mutually sustain the effect of the other in enhancing cooperation, while when “mild” incentives are used alone they are ineffective. Another contribution of our paper is to further the research on analyzing the channels of this effect. Most papers in this field are not able to single out the channels of the treatment effects (i.e. the effects of introducing incentives or changing institutions). For example, a much cited paper (Gneezy and Rustichini, 2000b) showed that a fine for picking up children late from a day-care center actually increased late-coming but could not document the channel through which fines induced more late coming. By eliciting participants’ beliefs and conditional contributions, our experimental design can show how obligations and incentives affect the behavioral motivations of behavior experimental subjects.

Our work also relates to the literature in legal scholarship on the Focal Point Theory of (Expressive) Law (McAdams, 2000; McAdams and Nadler, 2005). According to this theory, laws can be used to coordinate expectations on a beneficial equilibrium. In an experiment by Bohnet and Cooter (2005), penalties for choosing the inefficient strategy in a coordination game induce more people to choose the efficient strategy. Our experimental results go in a similar direction by showing that the basic components of formal rules (obligations and incentives) complement each other by inducing conditional cooperators to increase their contributions to the public good. A further strand of legal literature that relates to our paper is that on “expressive law” (e.g. Kahan, 1997; Cooter, 2000). The idea herein is that laws express the reigning norms in a society, and can discipline people by showing them what the majority of people deem (to be) ‘appropriate’. Funk (2007) reports field results in line with this intuition. Using a Swiss panel data, she finds that the legal abolishment of the voting duty significantly decreased the average turnout, even though the fines for not voting have only been minimal. Our results on obligations sustain this intuition and our analysis of conditional contribution schedules shows that the willingness to contribute to the public good can be “anchored” to the level of obligations.

In a recent paper related to ours, Tyran and Feld (2006) run an experiment that compares the effects of endogenously and exogenously introduced ‘mild’ or ‘non-deterrent’ sanctions in a public good game. In the endogenous treatment, the subjects vote on whether to introduce the sanction. The authors show that endogenous sanctions are more effective in raising contributions than exogenously implemented sanctions. The interpretation of this result is that endogenous sanctions signal that there are many

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