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Social preferences can make imperfect sanctions work: Evidence from a public good experiment



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ABSTRACT

Sanctions are often so weak that a money maximizing individual would not be deterred. In this paper I test the hypothesis that imperfect sanctions may nonetheless serve a forward looking purpose if sufficiently many individuals are averse against advantageous inequity. Using a linear public good with centralized punishment, I find that participants increase contributions even if severity had been insufficient to deter a profit-maximizing individual. The more an individual is averse against exploiting others, the less it matters whether punishment was deterrent.

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1. Introduction

Elinor Ostrom compressed decades of fieldwork into just five principles. If these principles are respected, chances are that the commons can be preserved. Her final two principles are vigilance and graduated sanctions. Communities who have tried to do away with sanctions entirely have usually not been successful. But many successful communities have frequently had recourse to mild sanctions (Ostrom, 1990). In other areas of social life, sanctions are also frequently imperfect. Crime often goes unnoticed. For instance in most parts of the US, prostitution is a crime. Yet the risk for a prostitute to be arrested has been estimated to be as low as 1:450 (Levitt and Venkatesh, 2007). The police do often not have enough resources to investigate petty crime. Criminal sanctions are rarely so severe that the expected value of committing crime becomes negative. Likewise, as a rule tort only entitles the victim to compensation. If there is only a small risk that the victim will not sue, or will not win in court,¹ the expected loss from being sued is below the expected gain from tortious behavior. In this paper I model and experimentally test one reason why imperfect sanctions might not be pointless: a sufficient fraction of

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¹ And if the perpetrator's gain is a mirror image of the victim's loss.

the addressees might hold social preferences. Sanctions might help stabilize the willingness of inequity-averse individuals to do what is in society's best interest.

This is of course not the only reason why imperfect sanctions may help govern behavior. Individuals may not simply compare the gain from deviation with the expected loss from a sanction. They may expect additional social sanctions, like scorn from their peers. They may have moral compunctions. They may consider the socially undesirable act as detrimental to self-esteem. They may be risk averse and therefore weigh the prospect of the sanction more heavily than its expected value. In repeated interaction, initially mild sanctions may serve an educational purpose, and they may signal to loyal members of the community that society cares.

I do not mean to say that such alternative explanations are immaterial. All I want to show is that social preferences provide one consistent explanation for the governance effect of imperfect sanction. Sanctions that would be too weak to deter individuals who straightforwardly maximize their utility from non-social preferences may suffice to deter individuals holding social preferences, even if their disutility from outperforming others is small. Imperfect sanctions extend the domain of cooperation to individuals who do not care strongly about others, but who are also not immune to the detriment they inflict on others. For such individuals, even imperfect sanctions deter.

I proceed in two steps. I develop a simple model, derived from the canonical formalization of social preferences in [Fehr and Schmidt \(1999\)](#). This model demonstrates that, under ideal circumstances, sanctions are not a precondition for cooperation. Yet this presupposes that all individuals involved are strongly averse against exploiting others, and know all others are. In that case, all they need to end up in the efficient equilibrium is a coordination device. Yet often conditions are not that ideal. At least some members of the group in question may not hold social preferences that are sufficiently pronounced, or preferences of other group members may be uncertain. In that case, society need not shift to the opposite extreme and deter everybody, including selfish individuals. It may suffice to back up weak social preferences by imperfect sanctions.

To test whether social preferences make imperfect sanctions instrumental, I use one experimental standard design that has been at the origin of this theoretical model, the linear public good. I entrust an additional anonymous participant with the right to punish the four active members of the current group. With considerable frequency my experimental authorities indeed mete out imperfect sanctions. I also administer a standard test of social preferences ([Liebrand and McClintock, 1988](#)). Using this information, I find that the more participants have disutility from advantageous inequity the less it matters for their reactions to punishment whether punishment had been deterrent.

The remainder of the paper is organized as follows. Section 2 explains how I contribute to the literature. Section 3 develops the hypothesis. Section 4 presents the design of the experiment. Section 5 reports results. Section 6 concludes with discussion.

2. Existing knowledge

This paper aims at bridging two literatures: the relatively small experimental literature on the effectiveness of imperfect sanctions, and the considerably richer theoretical literature on social preferences.

There is, of course, an extensive literature on the effects of a punishment option on contributions in a linear public good (for recent summaries see [Balliet et al., 2011](#); [Chaudhuri, 2011](#)). This literature shows that contributions are sensitive to manipulations of the severity ([Ambrus and Greiner, 2011](#); [Casari, 2005](#); [Egas and Riedl, 2008](#); [Nikiforakis and Normann, 2008](#)) and of the certainty of punishment ([Grechenig et al., 2010](#); [Sousa, 2010](#)). Punishers react to the opportunity cost of punishment ([Carpenter, 2007](#)). Yet only few papers have explicitly investigated the beneficial effect of sanctions that are too weak to deter a participant determined to maximize payoff.

[Tyran and Feld \(2006\)](#) manipulate the expected value of sanctions in a public good. They impose a norm of full contribution. In their exogenous treatments, this norm is either not sanctioned at all, it is enforced by a deterrent sanction, or by a mild sanction that would not deter a money maximizing agent. In their endogenous mild treatment, group members can vote for mild sanctions. In their endogenous severe treatment, they can vote for severe sanctions. They do not find a significant effect of exogenously imposed mild sanctions, while mild sanctions chosen by majority vote have a beneficial effect. They explain the difference by a commitment effect, which translates into a higher willingness of conditional cooperators to make substantial contributions. [Putterman et al. \(2011\)](#) give participants in a linear public good the opportunity to vote for imperfect sanctions. But most of their groups quickly move toward perfect deterrence. The focus of [Markussen et al. \(2013\)](#) is on preferences for central vs. decentral punishment. But they allow both forms of punishment also to be non-deterrent. If non-deterrent sanctions are imposed exogenously, they are less effective than if group members have introduced them at free will. But they are not pointless.

Most publications on public good experiments do not derive their hypotheses about the effect of punishment from formal behavioral theory. In principle, a case could be made for punishment reacting to perceived intentions (for models of intentions see [Dufwenberg and Kirchsteiger, 2004](#); [Falk and Fischbacher, 2006](#); [Rabin, 1993](#); from an evolutionary perspective see [Carpenter et al., 2004](#)), to violations of exogenous norms ([Andreoni and Bernheim, 2009](#); [Dufwenberg et al., 2011](#)), or to violations of efficiency ([Charness and Rabin, 2002](#); [Engelmann and Strobel, 2004](#)). Yet to the extent the effects of punishment have been modeled, all papers have assumed that punishers are motivated by inequity aversion ([Bolton and Ockenfels, 2000](#); [Fehr and Schmidt, 1999](#)).

[Markussen et al. \(2013\)](#) conjecture that the effect of imperfect sanctions might result from some participants holding social preferences. [Thöni \(2011\)](#) uses inequity aversion to explain antisocial punishment. [Gürerk et al. \(2010\)](#) hypothesize

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