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A shared sense of responsibility: Money versus effort contributions in the voluntary provision of public goods☆

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ABSTRACT

A frequently cited argument against the use of market-based instruments to provide public goods is that they diminish our sense of responsibility to be good citizens. We report on a laboratory experiment exploring whether the choice of some to contribute money in lieu effort affects the voluntary contributions of those who continue to provide effort. Subjects complete lab tasks as a contribution to a public good – carbon emission reductions. These effort contributions decrease as peers accept an offer to contribute money instead of effort. However, the aggregate result masks significant heterogeneity. Those who choose not to buy out despite its expected profitability have no response to the treatment, while those for whom it would not be profitable to buy out register large reductions in effort contributions. The magnitude of these responses increases in the share of the group accepting the buyout, suggesting that is the act of peers buying out – rather than the introduction of monetary incentives – that drives the effect.

1. Introduction

A frequently cited argument against the use of market-based instruments to provide public goods is that by diminishing our sense of responsibility to be good citizens, these mechanisms may ultimately reduce voluntary contributions. For example, many environmental interest groups oppose the use of emission permit trading systems (cap-and-trade) to control air pollution despite their cost effectiveness (Heal, 2007). Two related but distinct objections to market-based instruments have been noted. First, it has been argued that by changing pollution from a sin against nature, remedied only by personal atonement, into a commodity that can be bought and sold with no special social consequences, market-based instruments may weaken our resolve in dealing with environmental challenges. A second aspect which may reduce the shared sense of responsibility and sacrifice is the fact that these market-based mechanisms allow some to contribute money in lieu of effort. If some choosing to contribute money instead of effort causes others to reduce their voluntary effort contributions, it presents a challenge for policymakers as the market's efficiency gains arise from those with a high opportunity cost of direct effort choosing monetary contributions instead.

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In this paper, we focus on this second objection to market-based instruments. We report on results of a laboratory experiment designed to explore the hypothesis that an individual's voluntary effort contributions to the public good is affected by the contribution vehicle – personal effort versus money – used by her peers.

This hypothesis has a long history in political philosophy (Rousseau, 1762), and has more recently been articulated in the context of environmental policy by Sandel (2012). Circumstantial evidence does suggest that individuals differentiate between money and effort contributions to the public good, even when they ultimately result in the same level of overall provision. For example, environmental activist Al Gore was widely criticized when a think tank revealed that his personal estate required twenty times as much electricity as a typical household. Gore declared his lifestyle carbon neutral because he purchased offsets to his polluting activities, but many viewed this gesture as insufficient. According to the president of the think tank, "If he [Gore] is going to be a spokesman for global warming, he has to be willing to make the same sacrifices [as those unable to afford offsets]" (Humphrey, 2007). The clear implication was that Gore would be a more sympathetic advocate if he reduced the size of his carbon footprint by lifestyle changes rather than by financial transaction.[3]

Whether some contributing money in lieu of effort translates into reduced contributions from those who continue to supply effort is an open question. While we are aware of no previous study that tests for a causal effect, previous results lend support to the conjecture. For example, previous experiments have documented conditional cooperation in the provision of public goods, whereby a subject's voluntary contribution to the public good is increasing in the contribution of others (Fischbacher et al., 2001). If individuals effectively discount monetary contributions relative to equivalent effort contributions, then observing reduced effort contributions when peers contribute money could be interpreted as a form of conditional cooperation. The previous studies do not, however, focus on this distinction between money and effort contributions. In other contexts, experiments have examined the general issue of whether people differentiate between money and equivalent time or effort, finding mixed results (Brüggen and Strobel, 2007; Ellingsen and Johannesson, 2009; Vilares et al., 2011). None of these studies focuses on public goods provision. Finally, there is an extensive literature in economics and psychology focused on measuring the crowding out of intrinsic motivation when explicit rewards (markets or monetary incentives) for performance are introduced (e.g., Gneezy and Rustichini, 2000; Frey and Jegen, 2001). None of the studies examines how the behavior of peers – specifically their decision to buy their way out of making direct contributions to public goods – affects a person's motivation.

To test whether voluntary effort contributions are affected by the contribution vehicle chosen by peers, the institution we study is a buyout option. In an environment where participation, but not effort, is enforceable, we allow individuals to contribute money in lieu of effort. In our experiment, subjects complete simple lab tasks. In some rounds, task performance is rewarded with carbon-emission reductions (a public good), where more tasks completed leads to larger reductions. That is, we ask subjects to make effort contributions to the public good. In other rounds, task performance is rewarded with a cash payment, where subjects receive a piece rate per task completed. In our main treatment, we introduce the possibility of buyouts in later emission-reduction rounds: subjects can pay a fee (used to purchase emission reductions) that relieves them of the responsibility to complete tasks for emission reductions and allows them to continue to work for cash payments. We test for the effect of peer buyouts by comparing the number of tasks completed by treatment-session subjects who do not buy out to the number of tasks completed by subjects in control sessions in which no buyout option was available.

Our hypothesis is that peers *choosing* to contribute money in lieu of effort leads to a reduction in the effort contributions of those who continue to contribute effort. To test this hypothesis, it is necessary to have a laboratory environment where: (i) subjects have the choice whether to buy out; (ii) within a group, there are both subjects who do and do not buy out; and (iii) the number accepting the buyout varies across groups. To capture the spirit of the efficiency objectives of market-based mechanisms, we seek a setting where those with the highest opportunity cost of effort find the buyout most attractive. We achieve these goals in our fair-buyout treatment: we offered the buyout to all at a price that both replaces the average effort and is likely to be acceptable only for those with the highest outside-option earnings.

When choice determines who buys out, however, those who do not buy out (and thus the group to which we compare control subjects) is not a random sample. If those accepting the buyout would have been those with the highest effort contributions, then a reduction in average effort contributions, relative to the control group, could be explained by composition effects. While we present evidence that the effect identified in this treatment is not due to selection, we also conduct a second treatment where a profitable buyout option is only offered to a random subset of subjects. While perhaps less realistic, the comparison between treatment subjects not offered the buyout and control subjects is unaffected by selection. However, subjects reducing effort contributions in this case might be reacting to a perceived unfairness in not being offered a profitable buyout opportunity.

In both treatments, peers electing to buy out reduces the number of emission-reducing tasks completed by subjects who do not buy out (relative to the number of tasks completed by control subjects). However, the aggregate result masks significant heterogeneity across individual responses. Those who do not accept the fair buyout despite its expected profitability have no response to the treatment while those for whom it would not be profitable to buy out register large reductions in task performance. Further, the effect depends on the act of peers buying out as opposed to just the introduction of the

[3] Similarly, the Mid-Atlantic Regional Council of Carpenters came under fire for outsourcing shifts on their picket lines (Alexander, 2007). Food cooperatives are another example. The oldest and largest in the U.S. requires each member to contribute 2.75 hours every four weeks, resulting in "a feeling of being a member-owner that one cannot get from merely investing one's money." (https://www.foodcoop.com/nonmember, accessed 24.04.17.)