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Clean up your own mess: An experimental study of moral responsibility and efficiency☆

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ABSTRACT

Although market-based environmental policy instruments feature prominently in economic theory and are widely employed, they often face public resistance. We argue that such resistance may be driven by moral responsibility, where citizens prefer to tackle the environmental problems that they have caused by themselves, rather than delegating the task to others by means of a market mechanism. Using a laboratory experiment that isolates moral responsibility from alternative explanations, we show that moral responsibility induces participants to take inefficient actions that reduce the earnings of the whole group of participants. We discuss the implications of this finding for the design and implementation of environmental policies.

1. Introduction

There is a long-standing tradition in economics emphasizing the merits of market-based policies, such as pollution taxes and tradable permit schemes, as a means to curb environmental externalities and limit the over-use of exhaustible resources (Baumol and Oates, 1988). By providing incentives to reduce pollution or resource use, these policies are generally more efficient in economic terms than traditional command-and-control measures, such as product or performance standards. Hence they offer the possibility of yielding better economic outcomes for everyone, that is, Pareto improvements.

In recent decades, these theoretical insights have made their way into policy making. Tradable quotas are frequently employed to ensure sustainable management of fisheries (Arnason, 2012). Pollution taxes, for example on transport fuels, are applied throughout the OECD as well as in numerous developing countries (OECD, 2015). To date, 40 countries and over 20 cities, states, and regions have introduced a price on carbon emissions, either in the form of taxes or in the form of tradable permit schemes (World Bank et al., 2016). In addition, voluntary offset mechanisms to compensate for individual emissions have become popular, particular in OECD countries (World Bank et al., 2016).

Nevertheless, market-based environmental policies, such as emissions trading schemes, have repeatedly faced criticism from various sides. In economics, such criticism has pointed out that emissions trading schemes are likely to face real-world constraints (e.g. related to monitoring requirements and the definition of baselines on how emissions would evolve in the absence of the scheme) that may lower their environmental effectiveness (Wara, 2007; Schneider and Kollmuss, 2015) and economic efficiency (Michaelowa and Jotzo, 2005; Krey, 2005). More fundamental criticisms have been raised by philosophers, climate scientists, environmental activists, and the Church (see for example Caney, 2010 and Page, 2011 for discussions of such criticisms). These types of criticisms often rely on a moral critique equating the trading of emission permits with the medieval practice of paying money to be cleared from one's sins, as put succinctly in the Earth Island Journal (Smith, 2009):

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'Congress's new cap-and-trade scam would put the Church's indulgence scheme to shame.'

In his book 'Storms of my Grandchildren', the prominent climate scientist Hansen (2010) expresses a similar concern:

'A successful new policy cannot include any offsets.[i.e., emissions trading] […] The public must be firm and unwavering in demanding "no offsets", because this sort of monkey business is exactly the type of thing that politicians love and will try to keep. Offsets are like the indulgences that were sold by the church in the Middle Ages'.

A related argument sees carbon offsets that are used to compensate for greenhouse gas emissions as a way to ease one's conscience without changing behavior. As George Monbiot (2006) writes in "The Guardian":

'*Our guilty consciences appeased, we continue to fill up our SUVs and fly round the world without the least concern about our impact on the planet … it's like pushing the food around on your plate to create the impression that you have eaten it*'.

The Catholic Church has also taken a critical stance on emissions trading, most notably in Francis's (2015) widely discussed encyclical 'Laudato Si':

'The strategy of buying and selling "carbon credits" can lead to a new form of speculation which would not help reduce the emission of polluting gases worldwide. This system seems to provide a quick and easy solution under the guise of a certain commitment to the environment, but in no way does it allow for the radical change which present circumstances require. Rather, it may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors'. (Para. 171)

These statements capture the two types of criticisms of emissions trading established by Page (2011). First, emissions trading may fail to bring about long-term behavioral change required for successful climate change mitigation and undermine intrinsic incentives for environmentally friendly behavior. Second, it may violate non-consequential objectives of justice and fairness (see also Caney, 2010).

Hence, there appears to be a strong presumption that monetarily compensating for an environmental externality is not morally equivalent to changing one's behavior to avoid the externality, even if both courses of action result in identical outcomes. This raises the question of *why* people object to such compensation-based mechanisms. In this study, we hypothesize that people may have a preference to 'clean up their own mess,' that is, prefer to personally eliminate environmental externalities they are responsible for. For example, they may feel responsible for their or their country's role in climate change, and would prefer to directly fight climate change by reducing their own emissions. As a result, people may consider it immoral to buy their way out of this responsibility, even if doing so would result in a Pareto improvement. In this study we refer to such a motive to adopt behavior that is morally recommended or socially desirable as a 'moral responsibility.'[1] This moral responsibility can be understood as a preference for cleaning up (environmental) externalities that one is responsible for, instead of delegating the task to someone else.

While the aforementioned quotes of environmental activists and the Church are suggestive of moral responsibility, they are not conclusive. For example, they may also reflect a lack of understanding of the benefits of market mechanisms (as argued by Nordhaus, 2015), or the view that the assumptions of economic models demonstrating the superiority of trading schemes do not hold. To separate these alternatives from moral responsibility, we use a laboratory experiment. This allows us to eliminate potential confounding factors and directly identify the role of moral responsibility.

[1] We use the term in a broad sense that does not distinguish between conventions, social norms, or moral obligations (see Southwood, 2011 for a detailed discussion).

In the experiment, we let some of our participants engage in a real-effort task that involves throwing chickpeas into a bowl. Very few chickpeas hit their target, leaving a large number of chickpeas on the floor (an externality), for which these participants are responsible. We then ask the participants to either clean up the chickpeas themselves or delegate the cleaning task to another participant. We construct the experiment such that delegation is Pareto optimal. However, moral responsibility may push participants to clean up themselves, creating a trade-off between efficiency and moral responsibility.

We then isolate moral responsibility from other explanations using a control treatment where a third party is responsible for the chickpeas on the floor. In our main treatment, 60% of participants decided to clean up their own chickpeas, even though this was economically inefficient. Importantly, this is significantly higher than the 30% of people cleaning up in the control treatment. This implies that participants in the experiment are willing to accept real losses in return for behaving in a morally responsible way, even if the result is economically inefficient.

To our knowledge, we are the first to present direct experimental evidence of a revealed preference for personally cleaning up an environmental externality (i.e., the chickpeas) instead of delegating the task to someone else, which we refer to as a moral responsibility. In the experiment, moral responsibility comes with a substantial cost, reducing economic efficiency (i.e., total payments) by approximately 20%. These results suggest that market-based policies may be met with opposition when they contradict what is considered morally responsible behavior. Our results therefore shed light on behavioral constraints that may affect the optimal design of environmental policies.

2. Literature review

Understanding the effects of different policy instruments that can be employed to mitigate externalities has been a central concern in public economics and particularly in environmental economics. One strand of the literature on efficient policy design focuses on the differences between market-based and command-and-control measures (Fischer et al., 2003; Goulder et al., 2016). A second strand of investigation concerns the question of whether to prefer quantity- or price-based mechanisms to regulate pollutants such as carbon emissions (Weitzman, 1974; Pizer, 2002; Hepburn, 2006). Even though there is general agreement in this literature that market-based instruments should be preferred over command-and-control policies, none of these contributions discusses the role of moral responsibility.

Various policy instruments have been studied with the help of laboratory and field experiments (e.g., Ambec et al., 2014). An important example is the literature on market design in emissions trading (see Cason, 2010 for a survey) that uses laboratory experiments to study different trading rules, such as discriminatory pricing (Cason, 1995). In connection with this, field experiments have been employed to develop and test specific policy instruments for consumers' responses to social information (Allcott and Rogers, 2014) and for consumers' biases (Allcott and Taubinsky, 2015). In contrast, our experiment does not aim to simulate a specific market environment or test a specific policy. Instead, we use a stylized setup to isolate an aspect that could be crucial for the social acceptance of market-based policies, namely a moral responsibility to clean up an externality one is responsible for.

Minimizing environmental externalities can also be thought of as a special case of a public good or common pool problem. Public good games and common pool problems have been studied extensively in experimental economics (e.g., Isaac and Walker, 1988, Andreoni, 1988, 1995a, b; for surveys see Ledyard, 1995 and Chaudhuri, 2011). These experiments demonstrate that collective action problems may be less severe than expected under the assumption of self-interested agents. In particular, the experiments demonstrate that many people are willing to give up some of their own payoffs in order to help another participant, to decrease inequality among participants, or to repay earlier actions