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What is fair? An experimental guide to climate negotiations ☆

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ABSTRACT

International commitments to reduce emissions must be negotiated between countries in a manner considered to be fair or equitable. While the burden-sharing principles commonly advocated in climate negotiations reflect different views of what constitutes a fair way to distribute the abatement burden, their use can also be strategically motivated to legitimise a specific bargaining position. In this context, using a threshold public good game with a climate change framing, real monetary incentives and drawing on a sample of individuals from the United States, the European Union, China, India and South Africa, this multi-country study examines the degree to which the use of burden-sharing principles reflects material self-interest. In an initial treatment, participants, who represent the country of which they are a national, choose between various burden-sharing principles. In a subsequent treatment, drawing from Rawls' veil of ignorance, participants are unaware of which country they represent and are randomly allocated to a country after making their decision. A comparison of participants' choices across these two treatments indicates that the use of the historical and future polluter-pays rules by American and Chinese participants is consistent with material self-interest, or, in other words, self-interested use of burden-sharing principles.

1. Introduction

Climate science indicates that a significant reduction of greenhouse gases is needed to reduce the risk of catastrophic climate change. Multilateral climate change negotiations, such as the United Nations Framework Convention on Climate Change (UNFCCC), and international environmental agreements, such as the Kyoto Protocol, are mechanisms through which to coordinate a global response to climate change. In this collective action problem, no single country can unilaterally provide the public good of mitigation and no supranational authority exists to enforce cooperation (Lange et al., 2010). Furthermore, countries are incentivized to free-ride given that while there is a private cost associated with mitigation, the benefits are shared equally between all countries (Brekke and Johansson-Stenman, 2008). In this setting, where voluntary

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cooperation across countries is needed to reduce emissions, climate negotiators must reach consensus on emission-reduction targets that are considered by the majority to be fair or equitable (Ringius et al., 2002).

While choice of burden-sharing principle purportedly reflects negotiators' fairness ideals, because the application of different equity principles translates into different financial costs, reduction obligations and carbon entitlements,[2] and as negotiators are directed by domestic politics and sentiment, the use of equity principles likely also reflects economic or material self-interest (Ringius et al., 2002). In this context, several studies provide evidence of a *self-serving bias* – where individuals' judgements of what is fair are often aligned with their own self-interest (Babcock et al., 1996, 1997; Babcock and Loewenstein, 1997; Brekke and Johansson-Stenman, 2008). This self-serving bias is of particular interest in the context of multilateral climate change negotiations where, as multiple burden-sharing principles can conceivably be advocated by a particular country, there is room for self-interested use of burden-sharing principles within a large set of legitimate equity arguments (Ringius et al., 2002). In this way, negotiators may use legitimate-sounding burden-sharing principles in a self-serving way. For example, to prevent their country being assigned a legally binding reduction target or, at the very least, to minimise the target (Lange et al., 2007, 2010).

Against this background, we test whether an individual's assessment of which equity principles are "fair" is derived from material self-interest or, alternatively, a genuine (intrinsic) sense of fairness. In other words, we examine the extent to which individuals' choice of equity principle reflects material self-interest. The question of whether individuals use equity principles in a self-serving way is important in the context of multilateral climate negotiations where the equity principle that an agent adheres to will likely affect or shape the negotiating process (and by extension, the negotiation outcome).

In the public good game reported here, participants of different nationalities choose between various equity principles, where each equity principle denotes a specific public good contribution. More specifically, the cost rankings of the respective equity principles (in terms of their associated public good contributions) differ across regions. For example, while the historical polluter-pays rule is most costly for developed countries (specifies the largest contribution to the public good), it is least costly for developing ones. In an initial treatment, when selecting an equity principle, players are aware of their own payoff functions (as well as those of the other players). The contribution of the current study stems from a second treatment, where, while again choosing between the various burden-sharing principles, participants do so from behind a veil of ignorance (Rawls, 1971) where they no longer know which payoff function is applicable to them. As such, the second treatment strips away all considerations other than fairness.

The burden-sharing principles incorporated into the experiment are some of those most commonly found in the literature and advocated in climate negotiations, namely, the egalitarian rule (equal per capita emissions), the polluter-pays rule and the sovereignty rule (equal percentage reduction of current emissions) (Lange et al., 2007, 2010; Cazorla and Toman, 2000; Winkler et al., 2001; Ringius et al., 2002).[3]

The experiment draws on a sample of university students and what are referred to as "practitioners". The term practitioner refers to those individuals who frequently engage with climate change related issues – for example, academics and researchers, individuals from non-governmental organisations and government officials. Students, on the other hand, are considered to be more representative of the general public.

In the context of mitigation, because the financial cost associated with each equity principle differs among regions, self-interested use of burden-sharing principles necessitates that different regions support different equity principles to different degrees (Lange et al., 2010). As such, in terms of the experiment design, in order to identify self-interest, both these elements (different regions and differential costs) were incorporated. Specifically, five regions are included in the experiment, namely the United States (US), European Union (EU), China, India and South Africa (SA); and each group consists of a national from one of these regions. Furthermore, the cost rankings (in terms of contributions to the public good) of the equity principles differ among the regions included in the experiment (for example, the historical polluter-pays principle prescribes a larger public good contribution for the US and EU relative to China, India and SA).

In the first treatment, when selecting an equity principle, participants represent their respective regions (for example, the payoff function for the US is applicable to the American participant). In the second treatment, where the veil of ignorance (Rawls, 1971) is introduced, players are randomly allocated to a region *after* making their decision – in other words, players are not aware of which payoff function is applicable to them.

Building on the design of Milinski et al. (2008) and Tavonia et al. (2011), the experiment is designed as a provision point (threshold) public good game. In terms of the structure of the game, participants are provided with an endowment that is to be allocated between a public good or private account, where allocations to the public good are framed as mitigation. When the groups' total public good contributions equal or exceed the provision point, which is framed as the threshold for dangerous climate change, public good contributions are multiplied by some factor and divided equally among the players. The setup is thus equivalent to a continuous public good game (Croson and Marks, 1998). In terms of the experiment framing, participants are told that because there are no borders in the atmosphere, a reduction in emissions by one country

[2] Also referred to as the "*right to emit*" (Winkler et al., 2001).

[3] The Ability to Pay rule, whereby wealthier countries are responsible for a greater share of the abatement burden (Winkler et al., 2001) is also frequently cited in both the literature and negotiations but is omitted from this design. As the experiment was conducted online, in the interests of keeping the design as cognitively simple as possible, the number of equity principles incorporated into the experiment was limited. Equity principles that emphasised fairness considerations as well as generated the largest payoff variation across all players were prioritised for inclusion.