

How Non-binding Agreements Resolve Social Dilemmas

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- preliminary version -

Abstract

Because of their non-enforceability non-binding agreements (such as the Kyoto protocol) are frequently considered as cheap-talk by economists. In the context of social dilemmas it seems particularly straightforward that non-binding agreements will not inhibit free riding. This presumption is however not necessarily warranted: Under certain assumptions the contra intuitional can be shown, in the sense that there exists a rational for non-binding agreements in social dilemma games. Building up on this rational, we conducted a laboratory experiment, in order to investigate to what extend economic agents manage to use non-binding agreements to resolve social dilemma games.

Keywords: social dilemma games, strategic complements and substitutes, non-binding contracts, Kyoto protocol, experiment

JEL classification: C7, C92, D62, D72, D86

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1 Extended Abstract

A robust and intensively investigated stylized fact in experimental economics is the observation of excess cooperation early on in social dilemma games [Marwell and Ames (1979, 1980, 1981) and Schneider and Pommerhene (1981)] and erosion of cooperation without institutional enforcement or punishment [Fehr and Gächter (2000, 2002)] later on (Issac et al, 1984). To overcome the dilemma a number of institutions have been proposed [Falkinger (1996), Falkinger, Fehr et al (2000), Kosfeld et al (2006), Tyran and Feld (2006), Andreoni and Bergstrom (1996)] and any of the here mentioned institutions allow for coercion.

In many cases the option of a stick is not available or desirable. In such cases, where cooperation can not be enforced, non-binding agreement could however be reached or are reached in practice: Bi- or multilateral agreements in international law (e.g. free-trade agreements, tax treaties, Kyoto protocol on CO_2 -reduction (Kyoto Protocol (1998))) are among others maybe the most prominent areas of application.

Although frequently used, the attraction of non-binding agreements is astonishing from an economic perspective: Since deviance from cooperation is not at all sanctioned under non-binding agreements, it seems particularly straightforward that free riding will not be inhibited.

Should we therefore conclude that non-binding agreements are pure cheap talk? As shown by Piketty (1996) this presumption is not necessarily warranted, however, at least from a theoretical point of view. In this paper we elaborate on the model by Piketty (1996) and outline the rationale for non-binding agreements. The basic intuition is that, in an environment of strategic complements, agents may rationally commit to cooperative behavior in order to induce cooperation by the others. We design an experiment to investigate whether economic agents manage to use non-binding agreements to resolve social dilemmas without central enforcement. In the experiment we run two versions of a two-person social dilemma game, one where the actions of the players are strategic complements and one where they are strategic substitutes.

Both versions of the game have the same standard theoretical benchmarks and corresponding payoffs. Using those games as control treatments, the following three-step-mechanism treatment is implemented: (1) Non-binding agreement: The subjects vote over a non-binding contribution level. If the subjects reject the proposal by simple majority, they continue to play the social dilemma game. If the subjects accept the proposal, they move on to stage two. (2) Compliance: Subjects decide simultaneously whether or not to comply with the non-binding agreement. (3) Activity level: Subjects who have decided to comply with the non-binding agreement are committed. Subjects who have decided not to comply, individually choose their activity level. In the environment characterized

by strategic complementarity the mechanism treatment exhibits equilibria where (i) a non-binding agreement is accepted in step one, (ii) one of the two subjects complies with the non-binding agreement in step two, (iii) the other subject increases the contribution above the social dilemma game, and (iv) both subjects are better off as compared to the control treatment. No such equilibria exist in the mechanism version of the strategic substitutes game.