



Understanding the nature of cooperation variability

Toke R. Fosgaard^a, Lars Gårn Hansen^{a,*}, Erik Wengström^{b,c}

^a University of Copenhagen, Department of Food and Resource Economics, Rolighedsvej 25, 1958 Frederiksberg C, Denmark

^b University of Copenhagen, Department of Economics, Øster Fairmagsgade 5, 1353 København K, Denmark

^c Lund University, Department of Economics, Box 7082, S-220 07 Lund, Sweden



ARTICLE INFO

Article history:

Received 13 September 2013

Received in revised form 11 July 2014

Accepted 15 September 2014

Available online 22 September 2014

JEL classification:

D03

D64

H41

C72

C93

Keywords:

Framing

Public goods

Internet experiment

Simulation

Heterogeneous sample

ABSTRACT

Our paper investigates framing effects in a large-scale public good experiment. We measure indicators of explanations previously proposed in the literature, which when combined with the large sample, enable us to estimate a structural model of framing effects. The model captures potential causal effects and the heterogeneity of cooperation behavior. We find that framing only has a small effect on the average level of cooperation but a substantial effect on behavioral heterogeneity explained almost exclusively by a corresponding change in the heterogeneity of beliefs about other subjects' behavior. The impact of changes in preferences and game form misperception is on the other hand negligible.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Cooperation between people is not only decisive for human welfare, but also a malleable endeavor where the reasons for success or failure can be elusive. We know that people's behavior responds to economically irrelevant changes in the description of the decision situation (see for instance: Andreoni, 1995a; Sonnemans et al., 1998; Park, 2000; Cubitt et al., 2011a, 2011b; Dufwenberg et al., 2011; Fosgaard et al., 2011; Ellingsen et al., 2012; Cappelen et al., 2013), but it is less clear what mechanisms drive the situational variability of cooperation. Some studies have investigated to what extent cooperation preferences are context dependent (Brewer and Kramer, 1986; McCusker and Carnevale, 1995; Weber et al., 2004; Goerg and Walkowitz, 2010; Iturbe-Ormaetxe et al., 2011) while other studies focus on how context influences beliefs about others' cooperation behavior (Sonnemans et al., 1998; Dufwenberg et al., 2011; Ellingsen et al., 2012). Finally, yet another set of studies have explored context-specific misperceptions of the incentive structure (Ferraro and Vossler, 2010; Fosgaard et al., 2011). However, one limitation of the previous studies is that they typically study one determinant at a time.

Our goal is to evaluate the relative importance of *all of the determinants* previously documented as being important, *within the same study* to determine their relative importance. We do this by conducting a large-scale experiment which measures cooperation in public good games in two distinct, but economically equivalent, contexts: framing the cooperation decision as *taking* from a public good vs. *giving* to a public good (Andreoni, 1995a). We measure the level of cooperation along with the main determinants: preferences, beliefs, and misperception of game incentives. This makes it possible for us to identify and estimate a structural model that decomposes the framing effect into parts which are explained by framing induced changes in each of these determinants and a residual unexplained effect.

We find that changes in beliefs about others' behavior are a major determinant of framing effects on cooperation. In comparison, changes in cooperation preferences and misperceptions—though present—have negligible effects. We also identify a sizable framing effect that is not transmitted through any of these mechanisms. Another finding of our study is that the relatively small framing effect on mean contributions masks substantial shifts in the underlying distribution. This has not been reported previously in the literature, presumably because of limited sample sizes. More specifically, framing has a significant effect on the heterogeneity of cooperation levels and we find that essentially all of this effect can be explained by increased heterogeneity in beliefs.

* Corresponding author.

These results contribute to our understanding of cooperation variability specifically but may also have implications for related basic issues in economics. One such issue is whether human preferences are robust to contextual changes (Camerer and Thaler, 1995; Levitt and List, 2007), while another is the importance of changes in beliefs about other people's behavior (Nyarko and Schotter, 2002; Battigalli and Dufwenberg, 2009; Fischbacher and Gächter, 2010). Finally, our findings may be relevant for the discussion on the relationship between limited cognition and behavior (Köszegi and Rabin, 2008a, 2008b; Bernheim and Rangel, 2009; Chou et al., 2009; Cason and Plott, forthcoming). The connection between these basic issues and cooperation has been a lively research topic during recent decades.

The remainder of this paper is organized as follows. The next section introduces our conceptual model and Section 3 outlines our experimental design. In Section 4 the experimental results are reported and Section 5 presents our model estimations and how we disentangle the choice determinants. The decomposition of the determinants is presented in Section 6 while Section 7 concludes the paper with a discussion of our findings.

2. Our conceptual model

The conceptual model that we use to guide our study is illustrated in Fig. 1. Its core is suggested by Fischbacher and Gächter (2010). We extend their model to accommodate misperception and framing.

When cooperating about the production of a public good, Fischbacher and Gächter argue that subjects formulate a *contribution strategy* based on their conditional *cooperation preferences*. The contribution strategy states the subjects' preferred contribution conditional on different levels of contributions made by other subjects.¹ Subjects then determine their actual *contribution* to the production of a public good by combining their *contribution strategy* with their *belief* about other subjects' contributions.

We extend this core model because a number of studies have found that many subjects *misperceive* the incentives to contribute to the production of a public good (Andreoni, 1995b; Houser and Kurzban, 2002) and in our own recent study (Fosgaard et al., 2011) we show that framing can substantially affect the level of this misperception.

Our conceptual model allows for five main paths through which framing can affect contributions. The paths are directly related to the types of framing effects that have been suggested in the prior experimental literature:

- a) *Framing effects through beliefs*: Sonnemans et al. (1998), Dufwenberg et al. (2011) and Ellingsen et al. (2012) have suggested that framing effects on people's beliefs are an important mechanism behind framing effects on contribution behavior. In our model, framing can affect beliefs directly (arrow 1 in Fig. 1).
- b) *Framing effects through cooperation preferences*: This effect reflects a shift in the subjects' underlying preferences for cooperation caused by the change in framing. The effect is captured by arrow 4 in Fig. 1. The existence of such an effect is supported by McCusker and Carnevale (1995) and Iturbe-Ormaetxe et al. (2011) who argue that subjects have reference dependent utility and are loss averse, and that framing affects the reference point. Another piece of support is Van Dijk and Wilke (2000) who suggest that subjects' 'focus' on personal and group outcomes may shift. For our purpose, we argue that if subjects have reference dependent or 'focus' dependent utility functions (e.g. exhibit loss aversion) and these are affected by framing, we should find a significant effect from framing on contribution strategies when controlling for changes in misperception.
- c) *Framing effects through misperception*: Ferraro and Vossler (2010) and our own previous contribution (Fosgaard et al., 2011) suggest

that it is meaningful to distinguish between subjects' underlying cooperation preferences and subjects' *misperception of the incentives of the game* (e.g. the extent to which subjects correctly understand which contribution strategy maximizes their own vs. group income). Ferraro and Vossler manipulate whether contributions are labeled donations or investments, and find that this affects the degree to which their subjects contribute to a public good played with computers (a proxy for confused contributions). In Fosgaard et al. (2011), we find that give/take framing has important effects on subjects' perception of the game and that this explains most of what looks like framing effects on the underlying contribution preferences.² Arrow 3 in Fig. 1 captures the framing effect on contributions that comes from such misperception driven differences in cooperation strategies. We also allow misperception to influence contributions via beliefs (arrow 2).

d) *Unexplained framing effects*: Finally, we allow for framing effects which work through other mechanisms than those proposed above (arrow 5). Introducing this unexplained effect allows us to evaluate how much of the systematic variation that framing induces is explained by the explicitly modeled mechanisms and helps avoid evaluation bias. From the outset, we have designed our experiment to identify the central mechanisms suggested in the literature. Therefore, the concrete components of any unexplained effect are unknown to us and can only be subject to speculation.

In conclusion, the model presented in Fig. 1 incorporates elements which are in the literature suggested as core mechanisms through which framing affects contributions. As such, the model does not add any new elements, but rather it attempts to structure the existing elements and their interactions. One thing that the model does illustrate is the danger of investigating framing effects with an incomplete model. If omitted explanatory variables are not controlled for in the analysis, an estimated framing effect may become biased, because it may pick up effects which work through the omitted variables. Note also that the model *only* captures different mechanisms that can transmit a *change* in framing into a *change* in contributions. We do not try to explain subjects' baseline cooperation levels, only how these may change because of changes in framing.

The idea of our experiment (we report the *Experimental design* in the following section) is to generate sound indicators for the key variables in Fig. 1, for a large subject pool that we randomly allocate to two different frames of the public good game. With this data, we then estimate the causal effects (the arrows) indicated in Fig. 1, including the supplementary unexplained framing effect which captures framing effects that are not explained by our conceptual model.

The effects of misperception on contribution strategies found in our experiment (the part of arrow 3 between 'frame' and 'contribution strategy') have been reported in our prior paper Fosgaard et al. (2011). In the present paper we extend this by also modeling the effect this has on subjects' contributions (the rest of arrow 3) and (for the first time) report results from this experiment on framing effects through preferences (arrow 4) and beliefs (arrows 1 and 2). Then we incorporate all these results into a comprehensive model allowing us to estimate the relative importance of the different determinants of framing effects on contributions.

3. Experimental design

3.1. General outline of the experiment

We conducted an artefactual field experiment over the Internet in the summer of 2008.³ Naturally, running the experiment over the Internet

¹ The strategy indicates the subject's preferred contribution if others on average contribute nothing, if they contribute 1 dollar, etc.

² This result is consistent with Cason and Plott (forthcoming) who show that misperceptions of the incentives of the game can cause framing effects in preference elicitation tasks.

³ See http://www.econ.ku.dk/cee/ILEE/ILEE_home.htm for a detailed description of the experiment platform. The platform has been used for numerous studies on different topics; see, e.g. Thöni et al. (2012).

Download English Version:

<https://daneshyari.com/en/article/7370165>

Download Persian Version:

<https://daneshyari.com/article/7370165>

[Daneshyari.com](https://daneshyari.com)