

# **Reciprocal citizen – Cuts in public spending reduce voluntary contributions in a field experiment**

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## **Abstract**

Contributions to public goods, such as natural areas, are often made by private actors, as well as governmental agencies. Typically, the motivation of citizens to voluntarily contribute depends on the role of the government and wider motivational factors. An open question is how the motivation changes if the government decreases public spending. We are looking into this in an experiment in the Hague Forest in the Netherlands., which is a large forest in the center of an urban area. Using a field experiment, we ask citizens to perform a small task that generates funding for the forest. We find that, when highlighting that the government does less, the contribution goes down significantly: Surprisingly, this drop can be entirely attributed to frequent visitors, who are the most committed one. Also, we find that the money that is been offered for the task does not significantly affect the probability to participate. Our findings show that decreasing public spending may have unexpected repercussions on citizens motivation to voluntarily contribute. Generally, citizens are unwilling to compensate for such decreases. Even more striking, the probability that the most committed citizens contribute less is actually cut in half. Such behavior, which can be explained with citizens being reciprocal, may pose an additional cost on government policy. Overall, our findings urge governments to consider the effects of public policy on citizens motivations.

JEL: C93, Q26, H41, D03, D72,

Keywords: Field experiment, public good, intrinsic motivation, crowding out, reciprocity

## **1. Introduction**

Contributions to public goods, such as nature conservation are often a combination of private and public efforts (Andreoni 1990, Brekke et al. 2003, Rege 2004). Typically, voluntary contributions by citizens depend on the role of the government. In particular, an increase in public spending may crowd in or crowd out private contributions (Chan et al. 2002, Nyborg and Rege 2003a, Eckel et al. 2005). Crowding out may occur if citizens care about having the public good, and a provision by the government will reduce the individual incentives to contribute. However, if the intrinsic motivation is more complex, and an increase in public spending may signal the importance of the public good or individuals act reciprocally, public spending may actually crowd in private spending (Nyborg and Rege 2003a). An open question is to what extent these findings carry over to the opposite case, i.e. a decrease in public spending.

In the Netherlands, a new policy is implemented that implies less spending for natural areas out of the state budget and a larger role for private actors. While the policy has not rolled out yet, we have used the context for a field experiment. In *The Hague Forest* in the Netherlands, we test whether a decrease in public spending on maintaining the forest increases or decreases voluntary contributions from citizens. In our study, visitors are asked to perform a small online task at home. If the task is completed, a certain amount of money will be donated for the preservation of the forest. In half the cases (the treatment) we mention that the government considers decreasing public spending and highlight the importance of private contributions, which is in line with how the policy is covered in the media. In the control treatment no such remark was made. Our findings show that if a decrease in governmental spending is mentioned, the probability that citizens perform the task is significantly reduced, implying that less money is generated. This drop can be entirely contributed to citizens who

can be described as engaged, as they visit the forest very frequently (i.e. more than once a week). Perhaps surprisingly, we also find that the probability to complete the task does not depend on the amount of money donated to the forest.

*The Hague Forest* is situated amid the densely built city of The Hague. It offers tranquillity and the opportunity to experience nature and recreation for citizens and the benefits of *The Hague Forest* are available for the whole society. Hence, it has strong characteristics of a public good. In the Netherlands nature has been almost entirely financed by the national government. In de “National nature vision” (*Rijksnatuurvisie*) from 2014, a different funding structure of nature areas was proposed by the national government. The key idea is a devolution of financial obligations and responsibilities for provincial (rather than national) governments and a much stronger involvement of private citizens and companies. Overall, the *Rijksnatuurvisie* envisions a role of the government that is less active, both when it comes to management and funding of public forests. The policy shift goes hand in hand with hopes that private actors will compensate the drop of public spending, as articulated in the *Rijksnatuurvisie*. Hence, the success of the policy depends strongly on whether the motivation by citizens to contribute goes up or down. The key contribution of this paper to use this context for an experiment and test whether announced cuts in spending motivate visitors of the forest to contribute more or less to its provision.

This study is rooted in literature on the voluntary contribution to public goods in a domain where its provision could be a private or public task and depends on the agreement between the government and private actors (Bergstrom et al. 1986, Nyborg et al. 2006). In particular, the motivation of citizens to contribute strongly depends on the implicit contract between the government and the public about who should be responsible for these tasks (Nyborg and Rege 2003a). This raises the question what happens if the government reduces their tasks and less is spent on nature – as is the case in *The Hague Forest*? In principle, less

governmental spending may increase or decrease the motivation of citizens to contribute voluntarily. Nyborg and Rege (2003) sketch several theoretical possibilities. If citizens can be described as homo economicus, the contribution to the public good would always be zero, irrespective of what the government does. If citizens hold altruistic preferences that are sufficiently strong, a decrease in spending may crowd in voluntary contributions by citizens. It has been shown that government donations to the public goods, funded by lump-sum taxes, should crowd out private donations dollar-for-dollar. The argument is compelling in its simplicity: Since an individual cares only about the final allocation between private and public consumption, he or she should be indifferent to whether the allocation results from voluntary private contributions or from an involuntary tax transfer. Hence, by the same reasoning a reduction in spending should crowd in private contributions. This effect will be even stronger if the policy is perceived as a sign of trust from the government to responsible citizens (Frey et al. 1996, Frey and Jegen 2001, Frey and Stutzer 2006). On the other hand, it would also be possible that a decrease in governmental spending reduces voluntary contributions, especially if the policy is perceived as a signal that maintenance of nature areas is a rather unimportant task. Moreover, the government changes the implicit agreement on who is responsible for certain tasks within a society. Voluntary contributions to public goods typically is a reciprocal act: citizens are willing to do their duties provided that everyone does his share (Sugden 1984, Nyborg and Rege 2003a). In principle, reciprocal relationships may not occur between individuals, but also between private individuals and the government. Indeed, governments often capitalize on reciprocity to increase the motivation of citizens to contribute to public goods. Examples here are tax-advantages for charitable giving or a mechanism where the government matches a certain amount of privately generated funds by public funds (Fack and Landais 2010). Interestingly, while these mechanisms increase the

marginal returns of contributing to a public good, they also invoke reciprocity to encourage contributions.

To sum up, a decrease in public spending may crowd in or crowd out public spending. The latter may be especially the case if citizens act reciprocally and the cut in governmental spending may be perceived as an abrupt deviation from how tasks have been traditionally divided between the public and private domain. Whether the net effect on voluntary contribution is positive or negative is essentially an empirical question and the main purpose of this study. We designed our experiment to account that contributions may depend on the size of the marginal returns of voluntary contribution and the role of government. The remainder of the paper is organized as follows. Section 2 explains the design and procedure of the experiment. Section 3 shows the results, while section 4 gives a brief conclusion and discussion of our findings.

## **2. Design of the experiment**

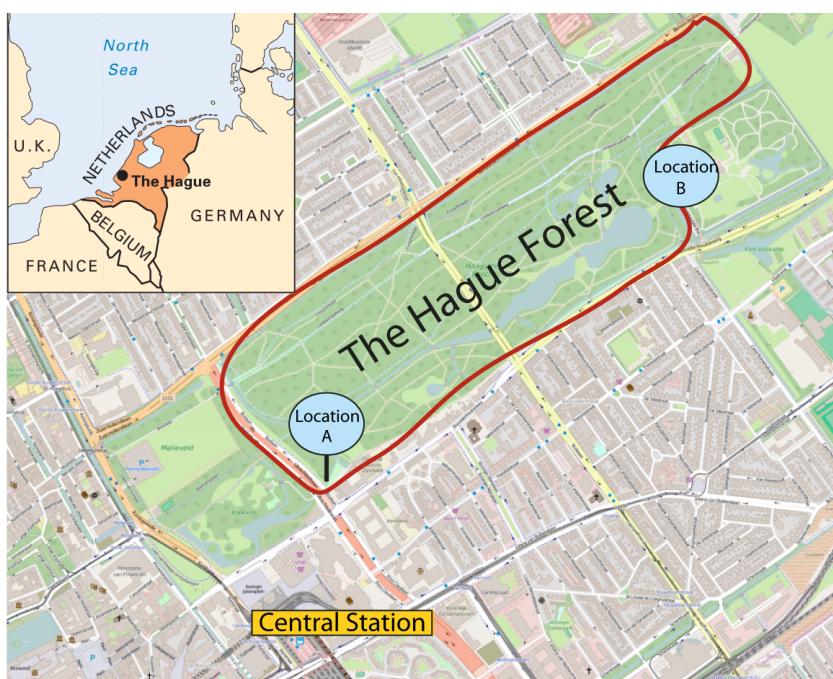
The purpose of the experiment is to examine the motivation of citizens to contribute to nature conservation. In particular, two research questions are investigated. First, to what extent depends the citizens' willingness to contribute voluntarily to a public good on whether the government decreases public spending on the same task. Second, we analyse whether the willingness to contribute to a public good depends on the marginal return of the contribution. Specifically, we test whether the willingness to contribute depends on how much money is generated for the public goods.

To answer these questions we conducted a controlled field experiment in *The Hague Forest*. Visitors of the forest were approached with the request to participate in a survey on the perception and use of the forest. Questions were partly socio-demographic and partially

concerned the Hague Forest itself (e.g. "how often do you visit the forest?", "what is your prime motivation to visit the forest?", "how satisfied are you with the maintenance of the forest?"). The visitors were also asked to complete an online survey about the experience in the forest after having visited the forest and received the invitation to participate with a log-in code. If the online-survey was completed a certain amount of money was earned and donated for the maintenance of the forest, for example for maintenance of pathways and benches. The invitation to participate in the online survey differed in two ways in the category "money" and "government". Regarding money, the amount of money varied per treatment, as 1, 10 and 20 euros were donated. In a control group no money was offered. So there were four different treatments in the category of "money". In the category "government" the treatment group received an invitation in which the following sentence was added: "The government support for the management of nature and landscape will be under pressure the coming years. Therefore, it is important to involve citizens and businesses more in financing maintenance of nature areas." In the control group, no such remark was made. In total there were  $4 \times 2 = 8$  different treatments and each participant was given a randomly selected treatment. Our measure for contribution to the public good is whether or not the online survey was filled in or not. Investing time and effort to generate money is certainly not the same as donating money, but we argue that it is a very useful measure for voluntary contribution for several reasons. First, it requires no contribution on the spot, so the respondent is not triggered to give any socially desirable response or serve any experimenter demand effect. Second, answering the questions in the online survey will take some time and effort and therefore serves as a good proxy for contribution for the public good. Third, the contribution is only made at home, so the effect of our intervention has to last for a long time.

## **2.1 Experimental procedure**

Two sites located at entrances of the forest were selected for the experiment (see Figure 1). The first location (A) is situated at the “Boslaan”, near major office buildings and The Hague Central Station. The second location (B) is located on the “Bezuidenhoutseweg” on the other side of the forest, closer to residential areas. These two sites were chosen to provide a broad representation of all visitors of the forest. The team of interviewers consisted of four students from Wageningen University working in teams of two or three. On 14 different days between December 2015 and February 2016, visitors were approached and requested to participate in our study.



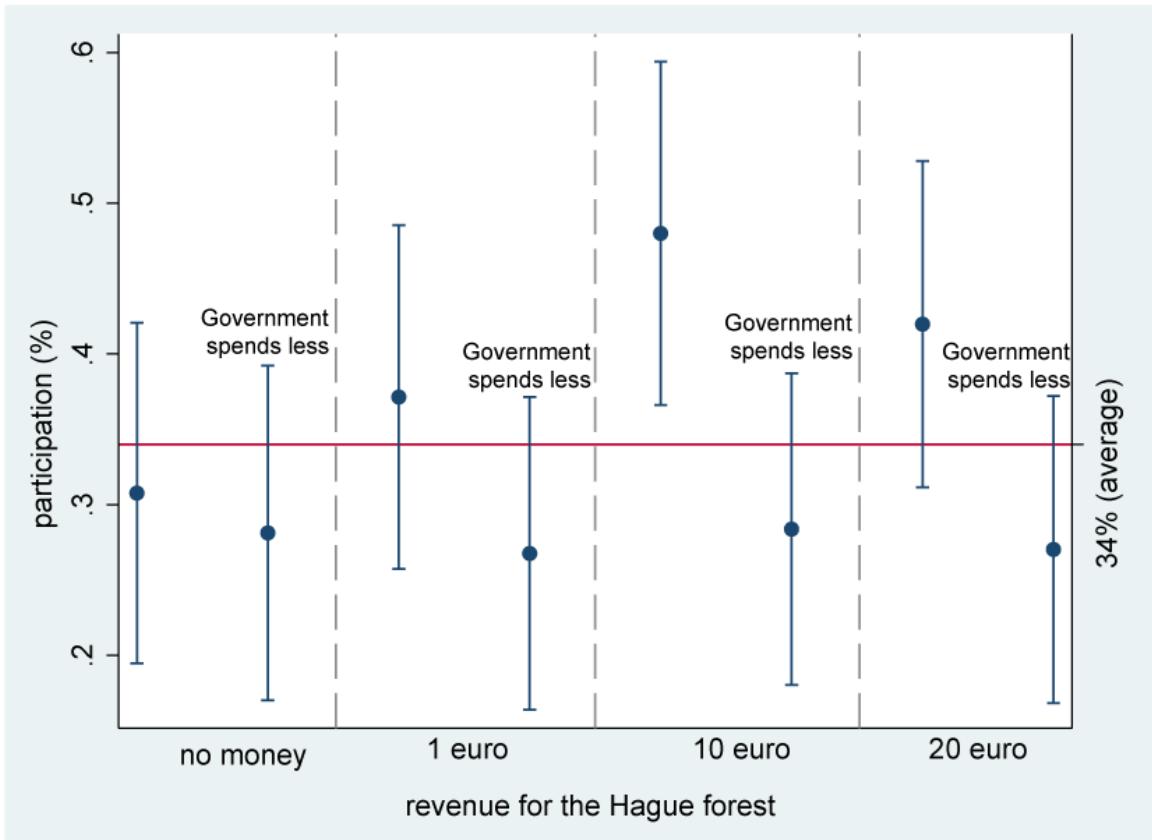
**Figure 1.** Map of the study site in The Hague.

The survey comprised 14 questions, of which the first 10 questions were about the visit and the involvement of the respondent in *The Hague Forest* and finally there were four questions asked about the background of the respondent. Finally, the respondent was invited to answer a questionnaire online, which was the experiment. Each respondent could win a sum of money

as an extra incentive to complete the online questionnaire. These sums were 300, 200 and 100 euros. The treatments were distributed randomly. When people arrived in a group everyone was interviewed individually and each individual received the same treatment to prevent people from being aware that they were part of an experiment. The text of the invitation was read aloud by the interviewer after the invitation was handed out. In this way, the interviewer ensured that all relevant information has been understood. Respondents got the chance to ask questions if something was unclear. Finally, interviewees were thanked for their voluntary participation.

### **3. Results**

The willingness to complete the online survey depends on i) the role of government, ii) and how much money is contributed to the Hague forest (see figure 2). We find that the chance of completion of the online survey is significantly lower if it was stressed in the invitation that the government might reduce spending [ $\chi^2 (1,574) = 9,702$ ,  $p = 0.002$ ]. This suggests that reduction in government spending actually crowds out private contributions. Furthermore, we find that the amount of money earned for the does does not significantly affect the probability to fill in the survey [ $\chi^2 (3,574) = 2.706$ ,  $p = 0.439$ ]. This suggests that people are not stimulated primarily by money to do contribute to the public good. There is, however, an interaction between these two effects. More people are (weakly) more inclined to fill in the online survey if money is paid, but only if the role of government is not emphasized [ $\chi^2 (1,291) = 2.889$ ,  $p = 0.089$ ]. In addition, the gap between the treatment and control increases, as the amount of money increased.



**Figure 2.** The participation to complete the online-survey and generate money for *The Hague Forest*. The left bar shows the control group (with no reference to the government). The right bar shows the treatment (which mentioned that the government may cut funding). The results show how participation depends on whether the completion of the online-questionnaire yielded 0, 1, 10, or 20 euro for *The Hague Forest*. On average, 34% of all participants completed the task.

These results also emerge when the relationship is estimated using regression analysis (Table 1). Indeed, we find that the money has no significant effect on the likelihood that people participate in the survey. If the respondents have received information that the funding for management and maintenance of nature and landscape in the coming years is under pressure, the number of people that fill in the online survey decreased significantly (Table 1, column 1).

This result is robust towards including age and gender variables (Table 1, column 2). Further, neither the location within *The Hague Forest* did not matter, nor whether participants live in the Hague, or where interviewed during the weekday or in the weekend. What made a difference, though, is whether respondents visited the forest more often. Participants who visit the forest at least once a week (about half of our sample), have completed our survey significantly more often. This is intuitive, because frequent visitors have a stronger intrinsic motivation to generate money for the forest and also to participate in our study. When interacting the treatment with whether or not citizens have been visiting the forest frequently, we find that the lower contribution in the treatment condition can be entirely contributed to the frequent visitors. While – consistent with what one would expect – frequent visitors are more inclined to fill in the survey, this effect is entirely wiped out if money is at stake. We also find that non-frequent visitors are not actually contributing less if money is at stake. Hence, the crowding out effect is entirely due to frequent visitors (Table 1, column 4).

Table 1: Main regression results (probit model)

	(1)	(2)	(3)	(4)
<b>participate</b>				
Amount of money	0.00651 (0.00667)	0.00643 (0.00683)	0.00851 (0.00693)	0.00926 (0.00695)
Government	-0.337*** (0.109)	-0.299*** (0.112)	-0.284** (0.113)	-0.0284 (0.164)
Age		0.00908** (0.00365)	0.00886** (0.00375)	0.00795** (0.00378)
Gender		0.137 (0.111)	0.146 (0.113)	0.142 (0.113)
Frequent visitor			0.261** (0.123)	0.494*** (0.164)
Residence Den Haag			0.0164 (0.137)	0.0202 (0.137)
Location			0.00627 (0.134)	-0.000465 (0.134)
Weekend			-0.145 (0.134)	-0.155 (0.135)
Frequent*Government				-0.490** (0.227)
Constant	-0.312*** (0.0935)	-0.850*** (0.222)	-0.926*** (0.257)	-1.004*** (0.261)
<i>N</i>	574	552	551	551
Pseudo R <sup>2</sup>	0.0146	0.0246	0.0357	0.0423
LR $\chi^2$	10.70	17.39	25.20	29.84
<i>p</i> > $\chi^2$	0.00474	0.00162	0.00144	0.000467

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

#### 4. Conclusion and Discussion

Individuals often feel responsible for maintaining public goods, while the government tends to play a central role in maintaining public goods through policy and taxation as well. This study is rooted in literature on the voluntary contribution to public goods in a domain where it is not so clear whether provision should be a private or public task (Bergstrom et al. 1986, Nyborg et al. 2006). The motivation to contribute almost always depends on the role of the government (Nyborg and Rege 2003a). What happens if the government reduces spending of tasks that have been traditionally in the public domain? This is exactly what is currently discussed in the Netherlands, as well as many other countries. The theoretical predictions

whether cuts in public spending crowd in or crowd out voluntary contributions is ambiguous, and depends on the complex motivational structure of citizens (Frey 1997, Nyborg and Rege 2003a, Nyborg and Rege 2003b, Ostrom 2005, Nyborg et al. 2006, d'Adda 2011, Richter and van Soest 2012). Therefore, the question whether citizens increase or decrease governmental contribution if governments reduce spending is essentially an empirical one. The key contribution of this paper to use this context for an experiment and test whether announced cuts in spending motivate visitors of the forest to contribute more or less to its provision. Our study suggests the citizens will not compensate for any spending cuts the government may do on natural areas. In fact, we find that such spending cuts may crowd out initiatives by private citizens if the message is stressed that the government will take a smaller role. This is bad news for those who hope that less public spending will stimulate voluntary contributions by citizens which may (partially) compensate for any cuts. Even more concerning, this effect is due to citizens who visit the forest the most frequently and may have the highest intrinsic motivation to contribution. Secondly, we find that the willingness for citizens' action does not depend primarily on money. This suggests that extra governmental stimuli (tax deduction of gifts) will not stimulate citizens. The good news is that the willingness of citizens to participate voluntarily is considerable – 34% of the respondents participated in the online survey, although it did not pay off for them immediately. So the government does not have to provide extra stimuli for the provision of public goods. However, a government that tries to shift more tasks to citizens is on a walking on a slippery road. This is especially true if citizens with high intrinsic motivation are expected to do more. Instead, it is important that the government shows to be a reliable partner in a reciprocal relationship with citizens.

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