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Does the use of tax revenue matter for tax compliance behavior?

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HIGHLIGHTS

- Does tax-compliance depend on tax-revenue usage?
- Laboratory compliance experiment.
- Four treatment groups that differ w.r.t. tax-revenue use.
- Compliance likely to depend on tax revenue usage.

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ABSTRACT

This paper explores whether the usage of tax revenues affects tax-compliance behavior. I design a laboratory experiment in which subjects make tax-reporting decisions and are randomly assigned to treatments that differ in tax-revenue use. The results indicate that compliance depends on tax-revenue usage.

1. Introduction

Identifying the drivers of tax non-compliance is one of the key aims of governments across the world and is also at the center of the literature on tax evasion. This paper explores the relationship between tax usage and tax evasion and studies whether the nature of tax revenue spending affects compliance behavior. Given the difficulty of using observational data in this context, I address the research question in the framework of a standard tax evasion lab experiment. Subjects first receive an endowment which is subject to a tax, and they are then given a tax reporting decision. The novelty is that each subject is randomly assigned to one of four treatment groups that differ only in how the generated tax revenue is spent: (1) Tax revenue is equally *redistributed* among all subjects, (2) it goes to the experimenter's *research fund*, (3) it is donated to the *Red Cross*, (4) it is transferred to the *German federal budget*. These treatments mimic set-ups that are either used in the real-world or have been used in the experimental compliance literature.[1]

The results indicate that average compliance is higher in the groups in which tax revenue is spent for research and charity purposes, relative to the groups with redistribution and transfer to the government. For example, relative to the group with redistribution among subjects, compliance is about 40% and 35% higher in the Research and Red Cross groups, respectively. Despite being

[1] For example, Alm et al. (1992a) redistribute all tax payments among subjects, Fortin et al. (2007) transfer paybacks to scientific research funds, and Doerrenberg and Duncan (2014) donate tax revenues to the Red Cross. Generally, in order to improve realism subjects in most lab experimental compliance studies are informed about the use of their tax payments. In addition, taxpayers in the "real-world" are aware that their tax payments are spent in some way or the other and are not being "burnt". Given this real-world benchmark and the use of tax payments in most lab studies in the literature, I did not conduct a treatment in which tax revenues are simply burned.

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economically meaningful, these differences are not different from zero in a statistical sense. This paper therefore provides suggestive evidence that the recipient of taxes matters for compliance, but the data do not allow to reject the null hypothesis of no effect.

The paper contributes to the literature in several ways. First, it speaks to the general literature on the determinants of tax evasion (Alm, 2012 and Slemrod and Weber, 2012 for overviews), and adds to the understanding of how public expenditures affect compliance (Torgler, 2002 for an early overview). For example, Frey and Torgler (2007) and Torgler and Schneider (2009) use observational data to show that compliance is correlated with institutional quality, and Hallsworth et al. (2014) provide field experimental evidence that compliance depends on the salience of tax revenue use. Alm et al. (1993) and Lamberton et al. (2014) find in the lab that compliance increases if taxpayers can vote over the spending of tax payments. Alm et al. (1992) and Alm et al. (1992b) also use the lab and show that compliance improves if complying yields efficiency gains.[2] While the literature hence suggests that the use of tax revenues plays a role for compliance behavior, to the best of my knowledge, there is no study that explicitly tests if different recipients of tax revenue affect compliance.

Second, the paper benefits the methodological side of the large lab experimental literature on tax evasion (Torgler, 2002 and Alm, 2012 for overviews). It provides guidance for future experiments in that it shows that the choice of revenue recipient is likely to make a difference. Third, the paper speaks to the behavioral economics literature on pro-social behavior (i.e., paying taxes). Evidence from the field (e.g., Chetty et al., 2014) and the lab (e.g., Eckel and Grossman, 1996) shows that pro-social behavior depends on the benefit that people receive in return. My paper confirms these results by providing evidence that another type of pro-social behavior may also depend on the type of return (i.e., the type of recipient).

2. The laboratory experiment

2.1. Overview of the experiment

The lab experiment consists of one practice round and eight payoff-relevant rounds. Each round has two stages: In the first stage, subjects are endowed with a gross income, which is subject to a tax. In the second stage, all subjects make a tax reporting decision. To study the research question, I randomly assign subjects to treatment groups that differ w.r.t. to tax revenue usage (see Section 2.4).

2.2. Overview of a round

Endowment. Subjects receive an exogenous endowment, which constitutes their pre-tax "gross income", in the first stage of each round (as in e.g., Alm et al., 1992a and Fortin et al., 2007). Four endowment levels were chosen and randomly assigned to the eight rounds: 65 ECU (13 EUR) in rounds 2 and 6, 58 ECU (11.60 EUR) in rounds 3 and 4, 51 ECU (10.20 EUR) in rounds 5 and 7 and 44 ECU (8.80 EUR) in rounds 1 and 8. These endowments are relatively high, especially considering that mostly students participated and the sessions lasted about 45 min. The levels and order of endowments is the same for all subjects in all sessions and treatments.

The tax reporting decision. Subjects' gross incomes are subject to a tax rate of 30%. However, subjects in all treatments are faced with a tax reporting decision in the second stage of each round. This reporting stage follows good practice in the lab experimental evasion literature. Subjects are first informed about their gross income in this round and are then asked to indicate an amount between zero and their true gross income for tax purposes. There is an exogenous probability of 10% that their reporting decision is audited, and in the case of an audit all underreported income is detected and a penalty is due. Subjects are informed about the tax system parameters in the instructions and the screen also reminds them before each round. They are informed after each period whether their tax reporting decision was audited or not.

Net income. The final income subjects receive in each round, i.e., a round's "net income", depends on whether the reporting decision is audited or not. If it is not audited, subjects earn their gross income minus taxes paid on reported income. In case of an audit, a subject has to pay the true tax liability plus a penalty that equals twice the evaded amount. Net income Y_i^{net} of subject i hence is:

$$Y_i^{net} = \begin{cases} = G(1-\tau) - 2\tau(G - R_i) & \text{with probability p} \\ = G - \tau R_i & \text{with probability } (1-\text{p}) \end{cases} \quad (1)$$

where G is the exogenous gross income (endowment) that does not vary between subjects, R_i is the amount reported for tax purposes in this round, τ is the tax rate of 30% and p is the exogenous audit probability of 10%.

Tax payment and total tax revenue. Tax payment of each subject i in a round is denoted with t_i and can then be written as:

$$t_i = \begin{cases} = \tau G + 2\tau(G - R_i) & \text{with probability p} \\ = \tau R_i & \text{with probability } (1-\text{p}). \end{cases} \quad (2)$$

The total tax revenue, that is used depending on the treatment status, is the sum of tax payments from all subjects in that round and session.

2.3. Final payment

Subjects' final pay-off is based on the net income of one round, which is randomly selected by the computer. This payment structure avoids wealth effects, satiation, and unreliable decisions once subjects have achieved a target pay-off (e.g., Blumkin et al., 2012). The payoff-relevant round is the same for all subjects within one session. The net income for the selected round is converted from Experimental Currency Units (ECU) to EUR using the exchange rate of 5 ECU for 1 EUR. In the group with redistribution among subjects, revenue of the payoff-relevant round is split equally among all subjects and added to the final payment. Subjects in all groups additionally receive a show-up fee of 2.50 EUR. See Section 2.6 for pay-off statistics. The amount of tax revenue that is spent depending on the respective treatment is also based on the selected round.

2.4. Treatment groups

The flow of each round is identical for all subjects. To identify how the usage of tax revenue affects evasion, I employ a between-subjects design in which each subject is randomly assigned to one of four treatment groups that differ w.r.t. tax revenue use. The usage of tax revenue is made salient to the subjects by indicating it in an extra section labeled "Use of tax revenues" in the instructions as well as on the screen during the reporting decision. The treatment groups are described in the following:

(1) *Redistribution*:

Tax money generated in this group is equally redistributed among all subjects in one session. Subjects are informed that

[2] Alm et al. (1992b) compare compliance between treatments where tax revenue is simply "burned" and redistributed among all subjects. However, redistribution comes with an efficiency gain in their experiment, and it is therefore not definite whether the observed increase in compliance is caused by the fact that tax revenue is used for a purpose or by the increase in efficiency.