Uncertainty resolution in tax experiments: Why waiting for an audit increases compliance

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ABSTRACT

Tax compliance in a between-subjects experiment was higher when the uncertainty about the occurrence of an audit was not resolved until three weeks after participants had filed their tax returns than in a control treatment with immediate uncertainty resolution. Results have important implications for experimental tax research where providing immediate feedback whether participants are audited is common practice.

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1. Introduction

With the rise of behavioral economics laboratory experiments became common practice in the field of tax research. First experimental results on tax compliance were published by Friedland et al. (1978), followed by innumerous others. Whereas internal validity may be maximized by choosing the experimental approach, external validity of its results is frequently criticized (for some points of this discussion see Alm, 1991). One obvious difference to the real taxpayers' situation is that in experiments tax audits typically occur either directly after participants have completed their tax reports, or not at all. In real life, however, the period of time when audits may occur is much longer (see also the dynamic formal model by Andreoni, 1992) – for instance three years in the U.S. and seven years in Austria.

The literature on intertemporal choice (for a review see Frederick et al., 2002) allows for two competing hypotheses on how such a delay of a tax audit could affect taxpayers' compliance. On the one hand, the fine for tax evasion may be discounted to some degree. In fact, several formal tax models have already incorporated some form of discounting (e.g., Eisenhauer, 2006; Petersen, 2004). Discounting the probable but uncertain fine in the future would reduce the costs of tax evasion, whereas the extra gain from evasion may be consumed immediately without depreciation. Consequently tax evasion might seem particularly tempting if the time lag between the tax report and audit is large. On the other hand, there is empirical evidence for a preference to bring-forward unpleasant events to minimize the dread experienced while waiting (Badia et al., 1966; Cook and Barnes, 1964; Loewenstein, 1987). Since taxpayers have no impact on the timing of an audit, they have to adopt another strategy to avoid such negative feelings. The simplest is to file an honest tax return. In other words anticipating the dread that would accompany the taxpayer if she cheats in her tax return may let her waive the extra gain from evading taxes.

This two-sided prediction was tested in an experiment consisting of two parts with three weeks time in between.

2. Experimental design and procedures

The experiment was conducted at the Computable and Experimental Economics Laboratory (CEEL), University of Trento, Italy. Overall, 21 female and 31 male students (age: $M = 20.94$, $SD = 2.27$) participated.

Two experimental conditions were implemented. However, in the first part of the experiment all participants had to complete 10

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crossword puzzles on their computers and were remunerated with 20 Euro. All instructions were provided on the computer screens and additionally read aloud by the experimenter. After earning their income, participants were informed that they had to pay 30% taxes (i.e., 6 Euro) and with $p = 1/6$ their tax payments will be audited. In case of an audit, tax evasion would be fined with a penalty of twice the evaded amount after paying back the remaining tax due. The amount of taxes participants were willing to pay was to be put in an envelope. Participants themselves marked their envelopes with a personal code. Thereby their tax payments were assignable to them as a person, but nevertheless their anonymity was ensured. Before paying their taxes, however, participants received detailed information about the audit process they were about to go though. Depending on the experimental condition, the audit process was as follows.

In the *Immediate Audit Condition* ($n = 25$), participants were audited in the first part of the experiment, immediately after handing in the envelope with their tax payment. Participants left the laboratory one by one, passed their envelope to a second experimenter waiting at a table outside of the room. The second experimenter threw a dice to decide if the envelope would be opened and the tax payment would be checked.

In the *Delayed Audit Condition* ($n = 27$) participants paid or evaded their taxes in the first part of the experiment, but the uncertainty about the occurrence of an audit was not resolved until three weeks later in the second part of the experiment. As in the other condition participants passed their envelopes to the second experimenter outside of the laboratory, but for them the first part of the experiment had ended here.

Participants in both conditions were reminded how important it was that they would return for the second part of the experiment. To ensure this, however, they were asked to leave their student books as a deposit for the whole duration of the experiment. Participants were informed about the necessity of this procedure and signed agreement forms before they registered for the experiment.

After three weeks participants from both conditions returned to the laboratory individually during a given time period on a prescheduled day. While at this part of the experiment participants in the *Immediate Audit Condition* solely completed a questionnaire on their socio-demographic data, participants in the *Delayed Audit Condition* went through the same audit process as the other participants did three weeks before. Afterwards they reported demographic data. Finally, all participants were thoroughly debriefed and got back their student books from the experimenter.

3. Results

Our data analysis follows a two phase decision process model on tax behavior. We assume that taxpayers choose whether to comply or evade first, and then decide how much of the tax liability they want to evade. Accordingly, in the first step of our analysis tax compliance is treated as dichotomous variable. Regardless of the experimental condition, 23 of 52 (44%) participants honestly paid their tax due. Whereas in the *Immediate Audit Condition* 7 of 25 (28%) participants honestly paid their taxes, in the *Delayed Audit Condition* 16 of 27 (59%) participants did so ($\chi^2(1) = 5.14$, $p = .02$, *odds ratio* = 3.74). In the second step of the analysis honest participants were excluded. The remaining 29 participants paid on average $Md = 2.00€$ ($IR = 4.00€$) regardless of the experimental condition. Participants in the *Immediate Audit Condition* paid less taxes ($Md = 0.00€$; $IR = 3.00€$) than participants in the *Delayed Audit Condition* ($Md = 4.00€$; $IR = 3.00€$; *Mann–Whitney U* = 53.5, $z = -2.13$, $p = .03$, $r = -.40$).

4. Discussion

Tax compliance was higher if the uncertainty whether one's tax return would be audited was not resolved until three weeks after the compliance decision. It seems that in our experimental setting anticipating the dread while waiting for a probable audit had stronger impact on tax compliance than discounting the probable fine. Note, however, that announcing the exact date of the uncertainty resolution might have made this event more salient than it would be in real life. Hence in reality both mechanisms might be at work and additional considerations made by taxpayers may change the story completely. If taxpayers, for instance, expect an increase in future income (or if they expect a tax amnesty), they could use tax evasion to transfer future wealth to the present (Andreoni, 1992; Eisenhauer, 2006).

Implications for experimental tax research or for tax policy should be drawn carefully before our observations are well replicated. In particular, replications in different cultural contexts seem to be important, because Italy – where the present experiment was carried out – together with Greece is among the countries with the highest shadow economy (Schneider, 2005). Due to their lack of tax morale Italians' tax behavior may therefore correspond stronger than others' with our experimental paradigm, which models tax compliance as a decision under risk.

For the practice of tax experiments an effect of audit delays could have two consequences. At best, a time lag between filing the tax returns and the audit could simply shift average compliance without affecting the main results, but in the worst case interactions with the experimental treatments could arise. Similar problems may arise in other areas of behavioral economics: for instance it seems to be a common experimental practice to link the participants' actual payment to their behavior in only *one* of the rounds played, by randomly selecting one period at the end of the experimental session (for examples of this method in ultimatum games see List and Cherry, 2000, in public goods games see Cookson, 2000, in studies on decisions under risk see Thaler and Johnson, 1990). In such experiments the uncertainty if one's choice results in the optimal outcome is not resolved until the end of the experimental session. Hence, as in our experiment, anticipated dread or savoring while waiting for the uncertainty to be resolved may influence participants' behavior.

For tax policy such an effect would mean that it might be advisable to pronounce the potential time lag between one's tax return and an audit. It should be noted, however, that if shaping of taxpayers' behavior is a motive behind audits and fines, a closer timing of the tax return and punishment should be chosen (c.f., Mittone, 2006).

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