European Accounting Review

ISSN: 0963-8180 (Print) 1468-4497 (Online) Journal homepage: http://www.tandfonline.com/loi/rear20

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To cite this article: Kay Blaufus, Jonathan Bob, Philipp E. Otto & Nadja Wolf (2016): The Effect of Tax Privacy on Tax Compliance – An Experimental Investigation, European Accounting Review, DOI: 10.1080/09638180.2016.1258319

To link to this article: http://dx.doi.org/10.1080/09638180.2016.1258319

European Accounting Review, 2016
http://dx.doi.org/10.1080/09638180.2016.1258319

The Effect of Tax Privacy on Tax Compliance – An Experimental Investigation

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(*Received: August 2015; accepted: October 2016*)

Abstract In this paper, we use a tax compliance game with a public good to investigate the impact of public disclosure on tax evasion behavior experimentally. Three different types of tax privacy are tested, ranging from complete privacy to full disclosure. We expect two different effects: first, a *contagion effect*, arising when an individual observes non-compliance of other individuals and therefore reduces her own tax compliance; second, a *shame effect* of increased tax compliance due to the anticipated shame of being declared a tax evader. Both these effects are supported by the experimental results. However, the shame effect reduces tax evasion only in the short run. The influence of shame diminishes over the course of the experiment with subjects observing the non-compliance of other participants. Thus, our results indicate that when the contagion and the shame effect are present the latter is not strong enough to override the former in the long run. Furthermore, disclosing tax information anonymously increases tax evasion compared to providing no information on tax evasion behavior. These observations are of particular importance for tax policy because public disclosure may lead to more evasion instead of less when supporting a crowding-out of the tax morale.

1. Introduction

Death is certain, but paying taxes is definitely not – at least, not for everyone. According to the Internal Revenue Service, the annual tax gap in the United States amounts to $406 billion estimated for the tax years 2008–2010, mainly due to underreported income (IRS, 2016). Non-compliance reduces both public revenue and the availability of public services and also discriminates against honest taxpayers (Alm, 2012). Therefore, fighting tax evasion is an important issue for policy agendas. A number of countries (e.g., Greece and New Zealand) publicly list tax evaders to combat tax evasion. Others (e.g., Finland, Iceland, Norway, and Sweden) disclose all tax return information. However, the majority of countries treat tax information confidentially.

The main reason to disclose tax compliance information publicly is to deter people from evading taxes by threatening them with the shame of being announced as tax evaders. In addition to the imposition of monetary penalties, shame should be effective as a non-monetary sanction. However, it is far from obvious that a strategy of tax publicity is a successful instrument for fighting tax evasion. Previous research has demonstrated that social norms have a considerable impact

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Paper accepted by Richard Sansing.

on tax evasion (Cullis, Jones, & Savoia, 2012). Individuals comply as long as they believe that compliance is the social norm (Alm, 2012). Gino, Ayal, and Ariely (2009) show that the observation of unethical behavior of another person is potentially contagious because it may change the social norms regarding dishonesty. Therefore, at the same time that publishing information could be a deterrent to tax evasion (via the shame effect), it could also destroy the social norm of compliance. This latter effect would be in line with a strand of literature that shows that taxpayers are only conditionally cooperative, that is, people are willing to comply as long as others do (e.g., Frey & Torgler, 2007; Traxler, 2010). Due to these potentially opposing effects – increasing shame on the one hand, risk of contagion on the other – the overall effect of public disclosure on tax compliance remains unclear.

Prior archival evidence on the effect of public tax disclosure is scarce and provides mixed evidence. Hasegawa, Hoopes, Ishida, and Slemrod (2013) use Japanese data where disclosure of both individual and corporate income tax information was mandatory from 1950 until 2004. These data show no evidence that companies reduced declared taxable income after the disclosure requirement was abolished in 2004. Bø, Slemrod, and Thoresen (2015) use data from Norwegian income tax statistics and report evidence that public disclosure of tax returns on the Internet increases reported income. Despite the usual concerns about external validity, an experimental approach has obvious advantages to study the effect of tax publicity: In both archival studies, taxable income must serve as a proxy for tax compliance because true evasion remains unknown. By contrast, in the controlled environment of a lab experiment tax evasion is fully observable. Moreover, only in an experiment we can manipulate tax privacy such that we are able to disentangle shame and contagion effects of tax publicity.

Our study investigates different levels of publicized tax evasion to determine whether tax disclosure leads to the hypothesized shame and contagion effects, and shows which of these two effects dominates as an overall behavioral response. We design a specific tax game with a baseline treatment of no public disclosure. Disclosure is varied in two ways. In one treatment, individual tax information is disclosed publicly in an anonymous manner where only the contagion effect may arise. In another treatment, public disclosure occurs by displaying the pictures of the participants next to their tax provision information, allowing both shame and contagion effects to take place.

Our experimental results confirm that tax disclosure leads to two opposing effects: shame and contagion. At the beginning of the experiment, the shame effect dominates, as in the first five periods shame reduces tax evasion by an average of 8.9 percentage points. This strong shame effect suggests that public punishment could be an effective deterrent in the short run. However, this shame effect decreases over the course of the experiment. In the last five periods, we find a significant contagion effect that increases tax evasion by 7.3 percentage points and fully compensates the shame effect. Thus, in the long run tax publicity could increase tax evasion if information is disclosed anonymously or could have at best no effect on evasion in the case of full public disclosure. Regarding tax policy, these findings imply that lawmakers should be cautious with implementing universal tax return publicity because more evasion could result due to motivational crowding-out of tax morale. In particular, we find a significant contagion effect in the presence of low audit probabilities. Thus, predominantly in countries with low tax enforcement the risk of contagion might be high. Moreover, besides institutional facts that moderate the effect of tax publicity, we observe that individual characteristics interact with the effect of tax publicity. Especially, the shame effect depends on the level of subjects' empathy. Subjects with high awareness of the feelings and emotions of other people (high empathy) are particularly prone to the shame effect. For these subjects, the shame effect prevails in the long run, that is, in the last five periods of the tax game.

The remainder of this paper is organized as follows. In the next section, we give a brief overview of prior tax evasion research with implications for our study. In Section 3, we derive the hypotheses and describe the tax game as well as the experimental design of the study. The results are provided and discussed in Section 4. We present additional analyses in Section 5 and Section 6 concludes this investigation.

2. Tax Privacy and Tax Evasion Research

The economic theory of tax evasion is primarily based on the work of Allingham and Sandmo (1972), which assumes that each individual maximizes expected utility after taxes, applying a certain audit probability and penalty level. However, it has been shown that actual tax compliance often differs from the predictions of this model, and the model has therefore been modified in several aspects (see for a review Pickhardt & Prinz, 2014).[1] With respect to tax publicity, the following two modifications to Allingham and Sandmo (1972) seem particularly important.

First, Erard and Feinstein (1994) account for moral sentiments (particularly guilt and shame) and empirically show that sentiments can be important determinants of compliance. In line with this approach, Dulleck et al. (2016) find in an experimental setting moral costs (which they measure using subjects' heart rate variability) to be positively correlated with tax compliance. According to Markel (2001, p. 2179) shame can be defined as 'the emotion one feels when subjected to public degradation, whereas guilt is the emotion one feels after consciously becoming aware of wrongdoing over which one feels responsible'. Kirchler (2007) notes that 'anticipated shame becomes [. . .] a cost factor in evaluating one's likely advantages and disadvantages of tax evasion'. In a similar vein, Erard and Feinstein (1994) assume in their model that individuals experience utility-reducing shame when they evade taxes and are audited. Anticipated shame reduces the benefits of evasion and decreases its occurrence. If publicity increases shame, tax disclosure could help to reduce evasion.

Second, Traxler (2010) incorporates tax morale, as internalized social norm of tax compliance, into the Allingham and Sandmo (1972) standard model. Taxpayers are assumed to conditionally cooperate because their level of evasion depends on others' compliance. The results imply that strategies that increase belief in high compliance levels reduce tax evasion. Consequently, publishing information about actual tax evasion could alter the belief in a high compliance level and thus destroy the corresponding social norm. This effect would conform to the observation of the contagion effect of unethical behavior in Gino et al. (2009) or the widely discussed broken window hypothesis (Wilson & Kelling, 1982) for which there is also experimental evidence in the context of tax compliance (Lefebvre, Pestieau, Riedl, & Villeval, 2015).

Hence, tax publicity might simultaneously trigger two opposing effects: the shame effect and the contagion effect. The sum of the overall effect of tax publicity is theoretically unclear; therefore, its positive or negative impact is open for empirical investigation. Despite its great societal importance, direct evidence on the effects of tax privacy is scarce. To our knowledge, there exists neither a theoretical study that incorporates both these effects simultaneously nor an empirical study of public tax disclosure that evaluates the relative strength of the contagion and the shame effect on tax compliance. However, besides the already cited archival studies of Hasegawa et al.

[1]One important economic extension is the interactive theory developed by Graetz, Reinganum, and Wilde (1986) and Reinganum and Wilde (1986) which models a tax compliance game in which the audit probability is determined endogenously. Prior accounting research used this game to study, for example, the effects of tax uncertainty (e.g., Beck & Jung, 1989) and of signals regarding the individual's taxable income (e.g., Sansing 1993; Mills & Sansing, 2000) on tax compliance. Still, in our experiment we implement an exogenous audit probability as this simplifies the analysis and allows us to focus on the proposed shame and contagion effects.

(2013) and Bø et al. (2015), Perez-Truglia and Troiano (2016) conduct a field experiment in which they sent letters to tax delinquents in three states of the United States to measure repayment rates depending on different information levels on shaming penalties, financial penalties, and peer comparisons. They only find a shame effect for those tax delinquents who owe smaller debt amounts. Additionally they do not find a crowding-out of intrinsic motivation to pay taxes if information is given on the peer's tax debts which is most likely caused by the one-shot design of their experiment.

Moreover, there are the following three experimental studies on the effects of public tax disclosure. Using a between-subject one-shot tax compliance game, Bosco and Mittone (1997) examine the effect of tax audit publicity on tax evasion. Subjects earned taxable income in a real-effort task and subsequently decide how much taxes to evade given a uniform tax rate and audit probability. In their experimental treatment of tax publicity (versus full tax anonymity), subjects are informed in advance that the audit process is public (or not). The findings show, however, no deterrent effect of tax publicity. Rather, a positive effect of tax audit publicity on evasion is observed suggesting that subjects in this experiment do not link feelings of shame with being announced as tax evader.

Laury and Wallace (2005) investigate the impact of tax confidentiality experimentally in a between-subjects design. Subjects are informed about the tax rate, the (exogenous) audit probability, and the relevant fine. Individuals decide how much of their provided income they report to the tax authority under two different treatments. In the first treatment, full confidentiality is warranted. In the second treatment, only partial confidentiality is used with 25% of the subjects' decisions being disclosed to all other participants. However, all decisions are anonymous as they cannot be traced back to the actual person making the decision. The results show that reported income is typically higher under the partial confidentiality treatment; however, this difference is significant only in 5 out of 20 periods. Moreover, when controlling for demographic variables (particularly gender, marital status, student of economics, raised in Northern America) the treatment effect becomes insignificant. By and large, the results of this study are ambiguous.

Coricelli, Joly, Montmarquette, and Villeval (2010) use a within-subjects design to study the impact of tax publicity on compliance. Subjects, in groups of eight players, decide individually how much income to declare. The declared income is subject to a uniform tax rate. Again, taxpayers are informed about audit probability and fines. The treatment variable is the publication of a picture of the subjects. In half of the trials, if an audit reveals that a player underreported his income, a picture of the detected evader is displayed on all the group members' screens. Results show that tax publicity reduces both the number of evaders and the amount of tax evaded. Here, the risk of being 'named and shamed' as an evader diminishes the probability that an individual will evade taxes by 8.2%.

Overall, evidence on the effect of tax publicity is rare and the data available are ambiguous. While Laury and Wallace (2005) find only a weak effect from tax publicity and Hasegawa et al. (2013) as well as Bosco and Mittone (1997) find no deterrent effect from tax publicity, the results of Bø et al. (2015) and Coricelli et al. (2010) indicate that abolishing tax privacy laws could increase tax compliance. Moreover, the consequences of different sorts of tax publicity are unclear. For example, the weak results of Laury and Wallace (2005) could be due to the anonymous form in which tax return information is announced in these studies. It can be expected that anticipated shame is no deterrent once participants remain anonymous. If, however, a person can be identified by the other participants – for example, by displaying photos of the subject as in the experiment by Coricelli et al. (2010) – shame should be exacerbated. This might explain why, in contrast to Laury and Wallace (2005), Coricelli et al. (2010) find a strong positive effect between disclosure and compliance.

Interestingly, neither Laury and Wallace (2005) nor Coricelli et al. (2010) implement a public good or any refund of taxes. This neglects the fact that public good games provide a standardized opportunity for studying social interactions within groups (Frey & Torgler, 2007). Outside of such a public good context, externalities may not arise; hence, there is no need for social norms (Huck, Kübler, & Weibull, 2012). This possibility raises the question of whether these experiments underestimate the contagion effect.[2] Conditional cooperators do contribute as long as others contribute, but without a public good context, there is neither a necessity nor an opportunity to cooperate. Without a direct public good context, it is unclear whether participants perceive their payment of taxes as contributions to a public good or simply as a cost. If one's own income is not affected by the decisions of other group members, rules of reciprocity or conformity seem less important. Therefore, the contagion effect loses its bite. To answer the question concerning tax compliance and publicity, we conduct a tax experiment that is designed to investigate the responses to different levels of tax publicity in a public good context. Only this allows us to draw conclusions about whether tax publicity leads to a shame or a contagion effect, and which of the two effects dominates overall contributions.

3. Hypothesis Development, Experimental Protocol, Variable Measurement, and Sample Characteristics

3.1. Hypothesis Development and Experimental Design

We adapt a standard public good game with repetition in order to analyze tax evasion behavior in groups. In each session, individuals are randomly assigned to a group consisting of $N = 5$ group members. These are informed that the composition of their group remains the same over all 15 periods. In each period, each group member receives an endowment y of 1000 cents (10 euros). Implementing a tax rate τ of 30%, subjects are told that from these 1000 cents, they should pay 300 cents taxes into a public good.[3] However, subjects are free to pay any amount of taxes (T_i) between 0 and 300 cents to the public good. The sum of all group members' tax payments is multiplied by a multiplier m of 1.5. This multiplier measures the marginal productivity of the public good. The public good is distributed equally among the N group members. Without tax audits, the subject's payment per period would result in:

$$\pi_i = y - T_i + \frac{m}{N}\sum_{i=1}^{N} T_i, \tag{1}$$

with $T_i \epsilon [\ 0,\ \tau y]$. We choose the parameters $m = 1.5$ and $N = 5$ such that the marginal payoff of a contribution to the public good is negative ($\mathrm{d}\pi_i/\mathrm{d}T_i = -1 + 0.3 < 0$). Thus, under standard assumptions the individual strategy of payoff maximization is full evasion, that is, to contribute nothing to the public good and declare no taxes. By contrast, the collectively efficient strategy is to contribute the full amount of taxes to the public good because the tax payments are multiplied by a marginal productivity of the public good amounting to $m = 1.5 > 1$.

In contrast to standard voluntary contribution games, we implement tax audits. Subjects are audited with a probability p. Before each decision on the level of tax payments, subjects are informed about this period's audit probability. This probability is the same for each subject within

[2] In contrast to Laury and Wallace (2005) and Coricelli et al. (2010), Bosco and Mittone (1997) redistribute taxes in their experiment. However, due to their one-shot design it is impossible to examine a potential contagion effect.

[3] Following the recommendation of Alm (1991, 2010), we describe the game in neutral language to avoid subjects using individual scripts when interpreting loaded terms (i.e., instead of the term 'tax,' we use the term 'fee').

that group, but the occurrence of an audit itself is determined individually. Thus, there might be periods, in which no, all, or only some subjects are audited. If a subject is audited and she has evaded taxes, she has to pay the evaded taxes plus a fine f which amounts to half the evaded amount. Neither the back taxes nor the fine are paid into the public good. Hence, the expected payoff under tax audit considerations is:

$$\pi_i = y - T_i + \frac{m}{N}\sum_{i=1}^{N} T_i - p(\tau y - T_i)(1+f). \tag{2}$$

Assuming a risk-neutral subject and payoff maximization, the expected marginal utility of tax payments amounts to:

$$\frac{\mathrm{d}\pi_i}{\mathrm{d}T_i} = -1 + \frac{m}{N} + p(1+f). \tag{3}$$

In all periods, we choose $p < (1 - m/N)/(1+f)$ such that $\mathrm{d}\pi_i/\mathrm{d}T_i < 0$ hold. Therefore, under standard assumptions risk-neutral subjects should fully evade taxes. After every tax decision, subjects are informed on whether they have been audited or not. Additionally, they receive an overview on their own tax payment and on possible back taxes and fines.

The level of additional information varies depending on the experimental treatment: In a between-subjects design, we implement three treatments that differ in their degree of tax privacy. In our baseline treatment (No Information treatment), subjects are only aware of their own tax evasion decisions, but do not receive any information about the group member's choices. This setting reflects tax privacy in pure form as no information about tax evasion is spread. Due to the missing information on individual evasion of other group members, there is no potential for a contagion effect in the baseline treatment. In the second and third treatments, there is no tax privacy: all subjects are directly informed about the individual behavior of their group members after each period – everyone knows if taxes are evaded and to what extent. The difference between treatments two and three is the type of publication. In the second treatment (Partial Information treatment), subjects are presented anonymously through numbers (1–5 in each group). As there are 10–15 subjects in each session, participants neither know which participants are allocated to their group nor which number belongs to which subject. Hence, participants are only informed about the tax evasion of a subject number in their group. This treatment corresponds to the partial confidentiality treatment in Laury and Wallace (2005). Feelings of shame should not arise under the anonymous disclosure used in this treatment. However, because subjects are provided with information regarding the individual behavior of the other subjects, a contagion effect could result. By comparing the No Information and Partial Information treatment, we can identify if contagion affects evasion and formulate Hypothesis 1 accordingly:

Hypothesis 1: Tax evasion is higher under partial than under no information on group members' previous tax evasion decisions.

In the third treatment (Full Information treatment), photos of subjects are paired with each subject's tax behavior.[4] These photos are presented at the beginning of the experiment to introduce the group and after each tax evasion decision. This treatment is equivalent to the picture treatment in Coricelli et al. (2010). Due to individual disclosure, both shame and contagion effects can be expected. By comparing the Partial and the Full Information treatment, we can identify whether anticipated shame increases tax compliance. Thus, we formulate Hypothesis 2 based on an assumed shame effect as follows:

[4]These pictures were taken before the experiment inside the laboratory. After the experiment was finished, all photos were deleted in the presence of the participants.

Hypothesis 2: Tax evasion is lower under full than under partial information on group members' previous tax evasion decisions.

From theory, it is unclear whether the shame or contagion effect predominates when ceding tax privacy. Thus, by comparing the No Information treatment with the Full Information treatment where both effects could be present, we test their relative strengths under the following hypothesis:

Hypothesis 3: Tax evasion under full information differs from tax evasion under no information on group members' previous tax evasion decisions.

3.2. Experimental Protocol

The experiment was conducted in 20 sessions at the computerized experimental laboratory of the Leibniz University of Hanover. After entering the laboratory, subjects are randomly assigned to their group. The subjects remain in the same group and in the same experimental treatment throughout the experiment. In the beginning of the Full Information treatment, sessions' subjects are informed that we will take a photo of each participant (which will be deleted at the end of the session), and none denied this request. After being seated, subjects are given instructions (see Appendix A)[5] and as much time as they require to understand the procedure. Only after all subjects confirm that they fully understand the experimental instructions and do not have any remaining questions does the tax game begin.

Each experimental session consists of 15 periods. Screenshots of the different stages of the experiment are provided in Appendix B.[6] At the beginning participants have to answer six comprehension questions correctly in order to proceed with the actual experiment. If they do not answer the questions correctly, a window pops up that explains the right answer. Additionally, subjects are invited to raise their hands and ask the experimenter questions about obscurities. Thereby, we intend to ensure that every participant really understands the experimental design. Afterwards, subjects are presented photos of all five group members (including their own picture) at the beginning of the first period in the Full Information treatment. At the beginning of each period and, hence, before any decision is to be made, subjects in all treatments are informed about the current audit probability.[7] Furthermore, they are presented other decision parameters such as their endowment, the demanded tax and the fine rate. At the same screen, they are asked to enter their chosen contribution to the public good, hence making their tax evasion decision. After deciding about their tax payment, subjects enter the information stage. In the No Information treatment, subjects are only informed on whether they are audited or not and the resulting penalty payments. Yet, they are neither given any information about the group members' tax payments nor about their share of the public good or the period's overall payment. However, information on the group members' tax payments and the participant's share of the public good was presented to participants in the Partial Information treatment. In addition to this information, participants in the Full Information treatment are also presented the respective photos of their group members. Hence, every participant can see who has contributed which amount to the public good. At the end of each period, participants are asked four questions about their feelings in the previous period. Thereby we measure emotions, such as joy, anger, guilt, and shame. At the end of the experiment, participants are given an overview on the outcomes of every single

[5] All appendices are provided in the Online Supplemental Material.

[6] Note that we run a second experiment right after this experiment. However, as both experiments are completely independent of each other, we only present the relevant instructions and screenshots.

[7] We provide an overview on the audit probabilities and respective evasion rates for each period in Table 4 in Appendix E.

period, so that also participants in the No Information treatment finally receive information on their share of the public good.

After finishing this experiment, we measure individual risk aversion using incentivized lottery decisions based on the procedure of Holt and Laury (2002). These paper-based lottery decisions are displayed in Appendix C. Finally, we asked the participants to answer a computer-based questionnaire that seeks information regarding demographic variables including age, gender, and faculty. An extract of the full questionnaire is given in Appendix D. After finishing the questionnaire, participants separately are called forward to the experimenter to anonymously receive their experiment's payoff.

3.3. Variable Measurement

We measure our *dependent variable*, TAX EVASION, as ratio of the declared tax payments to the demanded tax payment. This dependent variable expresses the percentage of the actual demanded taxes that is not declared. Thus, a TAX EVASION of zero indicates that the subject pays all of the demanded taxes, and a TAX EVASION of 100 denotes that this subject does not pay any taxes.

The three tax treatments serve as *independent variables*. The dummy variable FULL INFORMATION (PARTIAL INFORMATION, NO INFORMATION) amounts to one if a subject is assigned to the Full Information (Partial Information, No Information) treatment and zero otherwise. Thereby, the contagion effect is calculated as the difference between the TAX EVASION in the Partial Information treatment and the No Information treatment. The shame effect is calculated as the difference between the TAX EVASION in the Partial Information treatment and the Full Information treatment.

$$\text{Contagion effect}_t = \text{TAX EVASION}_t^{\text{Partial Information}} - \text{TAX EVASION}_t^{\text{No Information}} \quad (4)$$

$$\text{Shame effect}_t = \text{TAX EVASION}_t^{\text{Partial Information}} - \text{TAX EVASION}_t^{\text{Full Information}} \quad (5)$$

As *control variables*, we use the exogenously given AUDIT PROBABILITY and socio-demographic variables, such as AGE, gender (MALE), and RISK AVERSION. We measure RISK AVERSION as the number of risk-averse choices (lottery A) in the incentivized Holt/Laury's (2002) lottery task. Moreover, we use a faculty dummy, ECONOMICS AND MANAGEMENT, which is one if the subject studies at the Faculty of Economics and Management and zero otherwise. In additional tests, we use more controls such as subjects' EMPATHY, CONTRIBUTION OTHERS (measures how many cents the other group members paid into the public good on average), and PERIOD (denotes the number of the particular decision periods from 1 to 15).

3.4. Sample Characteristics

A total of 265 students (120 females and 145 males) participated in 20 sessions in the computer-based experiment which was organized and recruited with the software hroot (Bock, Baetge, & Nicklisch, 2014) and programmed and conducted using the software z-Tree (Fischbacher, 2007). The subjects were 23.2 years on average, and 43% studied in the Faculty of Economics and Management. Subjects show an average risk aversion of 6 points whereby zero points indicate no risk aversion and 10 points indicate very high risk aversion. Hence, on average subjects are slightly risk-averse. We find no significant differences in the individual characteristics between the treatments. The subjects earned €15.24 on average in approximately 100 minutes (approximately €9.14 per hour), with a range from €8.60 to €20.50.

4. Results

4.1. Descriptive Statistics

An overview of the tax evasion results is given in Figure 1 and Table 1. Over all 15 periods, tax evasion is higher if individual information is disclosed anonymously. In the No Information treatment, the average tax evasion across all 15 periods is 27.6%, whereas it amounts to 29.7% in the Partial Information treatment. This overall difference in average tax evasion is highly significant[8] and in line with the expected contagion effect (Hypothesis 1). However, the size of the difference is rather small (about two percentage points). In contrast, in the Full Information treatment tax evasion is strongly significantly lower with an average of 22.0%. This confirms a strong shame effect (Hypothesis 2), which is large also in economic terms (about eight percentage points). Moreover, with respect to Hypothesis 3, the shame effect seems to dominate the contagion effect as there is a significantly lower tax evasion in the Full Information treatment compared to the No Information treatment.

Nevertheless, it can be argued that contagion takes time to develop as contributions in public good games only diminish over repetitions, whereas shame might affect behavior more strongly in the beginning periods as afterwards people might get more used to the feeling. To follow-up this argument, the experimental results are investigated separately for the beginning periods and the final periods, and Figure 1 also shows average tax evasion for the first and the last five periods of the experiment. In the first five periods we expect shame causing lower tax evasion in the Full Information treatment. Indeed, tax evasion is only 12.6% in the Full Information treatment, whereas it is 25.1% in the No Information treatment and 21.1% in the Partial Information treatment. Tax evasion is significantly lower in the Full Information treatment, but there is no significant difference between the No Information and the Partial Information treatment. Hence, we do not find a contagion effect, but a strong shame effect for the first five experimental periods. In contrast, this observation is reversed for the last five periods with a strongly significant contagion effect, and clearly confirming Hypothesis 1 here. Tax evasion in the Partial Information treatment exceeds tax evasion in the No Information treatment by 6.6 percentage points. In line with Hypothesis 2, we also find a significant shame effect by comparing tax evasion in the Partial Information treatment and in the Full Information treatment. However, the results reveal that the shame effect diminishes over time: While it is 8.53 percentage points in the first five periods, it is only 5.75 percentage points in the last five periods. Consequently, we do not find a significant

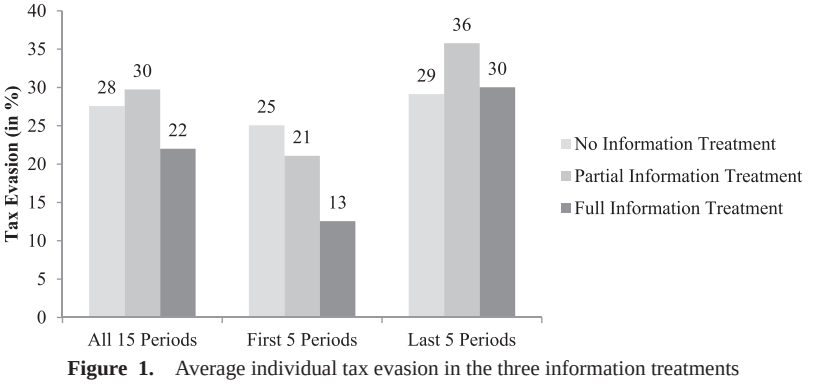

Figure 1. Average individual tax evasion in the three information treatments

[8]We run pairwise Mann–Whitney *U* tests to test the difference's significance. The results including the *p*-values of all tests in this section are presented in Table 1.

Table 1. Descriptive statistics on tax evasion (in %)

Panel A: Contagion effect

	No Information treatment ($N = 85$)			Partial Information treatment ($N = 95$)			*p*-Value		
	All periods	Periods 1–5	Periods 11–15	All periods	Periods 1–5	Periods 11–15	All periods	Periods 1–5	Periods 11–15
TAX EVASION	27.58 (36.85)	25.07 (34.39)	29.13 (38.92)	29.74 (36.79)	21.09 (31.23)	35.77 (40.66)	.007	.266	.005

Panel B: Shame effect

	Full Information treatment ($N = 85$)			Partial Information treatment ($N = 95$)			*p*-Value		
	All Periods	Periods 1–5	Periods 11–15	All Periods	Periods 1–5	Periods 11–15	All Periods	Periods 1–5	Periods 11–15
TAX EVASION	22.00 (34.49)	12.56 (25.45)	30.02 (39.67)	29.74 (36.79)	21.09 (31.23)	35.77 (40.66)	$< .001$	$< .001$	.006

Panel C: Contagion and shame effect

	Full Information treatment ($N = 85$)			No Information treatment ($N = 85$)			*p*-Value		
	All periods	Periods 1–5	Periods 11–15	All periods	Periods 1–5	Periods 11–15	All periods	Periods 1–5	Periods 11–15
TAX EVASION	22.00 (34.49)	12.56 (25.45)	30.02 (39.67)	27.58 (36.85)	25.07 (34.39)	29.13 (38.92)	$< .001$	$< .001$	.964

Notes: Values shown for TAX EVASION are means with standard deviations in parentheses. Panel A analyzes the contagion effect by comparing tax evasion measures of the No Information and Partial Information treatment. Panel B analyzes the shame effect by comparing tax evasion measures of the Full Information and Partial Information treatment. Panel C analyses the aggregate of contagion and shame effect by comparing tax evasion measures of the Full Information and No Information treatment. The numbers *N* below the treatment denotes the respective number of subjects in this treatment. All measures are analyzed for all periods and the first as well as the last five periods. The *p*-values present the difference's significance of the respective comparison and are calculated using pairwise Mann–Whitney *U* tests.

difference between the No and the Full Information treatment in the last five periods. Thus, in contrast to Hypothesis 3, in the last periods, we find no effect of full public tax disclosure on tax evasion suggesting that the contagion effect fully compensates the shame effect in the long run.

In sum, descriptive results point towards a shame effect which exists throughout all periods but diminishes over the course of the experiment. Additionally, a contagion effect is observed in later periods which compensates the shame effect, so that tax evasion is not higher anymore under No Information when compared to Full Information.

4.2. Multivariate Analysis

As noted in Section 3.4, a total of 265 students participated in 20 experimental sessions comprising 15 periods each, resulting in $265 \times 15 = 3975$ observations. However, these observations are not independent of each other for mainly two reasons. First, the 15 decisions made by an individual are not independent as this individual might use a specific tax evasion strategy or exhibit learning effects. Second, the decisions of other group members influence the individual tax evasion behavior in later periods (at least in the Partial and Full Information treatment where information about the behavior of the other players is provided). If the other group members behave collectively efficient and evade no taxes, the single participant might also contribute to

the public good. However, if the other group members behave individually rational and evade taxes to a large extent, only highly altruistic or purely intrinsically motivated participants will still contribute to the public good. As to account for these two characteristics of the experimental data, we use two different tests.[9] First, we run random-effects panel regressions on subject's level and cluster on group level to exploit the panel structure of our data and to account for group dependent decisions.[10] Second, we use multilevel mixed effects linear regressions to account for more levels of dependence. With this model, we can exploit the panel structure and account for both levels of dependence: individual and group. The random-effects panel regression is represented by the following equation:

$$\begin{aligned}\text{TAX EVASION}_{it} = \alpha + \beta_1\ \text{NO INFORMATION}_i + \beta_2\ \text{FULL INFORMATION}_i \\ + \sum_{k=1}^{l} \beta_k\ \text{Controls}_i + \varepsilon_{it} + u_i,\end{aligned} \tag{6}$$

where $i = 1, \ \ldots, \ 265$ and $t = 1, \ldots, 15$. As described in Section 3.3, we measure tax evasion as a metric variable which denotes the evaded taxes as the percentage of what is maximal possible. The Partial Information treatment serves as reference because both, the contagion effect and the shame effect, can be measured as the difference of the Partial Information treatment to one of the respective other two treatments. Hence, the coefficient of NO INFORMATION β_1 expresses how much tax evasion varies between the treatments No Information and Partial Information. A negative coefficient denotes that tax evasion is lower in the No Information treatment, that is, the existence of the contagion effect. Likewise, a negative coefficient of FULL INFORMATION β_2 reveals a lower tax evasion in Full Information than in the Partial Information treatment which identifies the existence of the shame effect. Additionally, we control for the influence of the audit probability's level and social demographic variables, such as age, sex, subjects' field of study, and risk aversion.

While we can only consider two dimensions, subject and period, and account for the third dimension by clustering on group level in the random-effects panel analysis, the advantage of multilevel modeling is that we can consider all three levels of dependence. Thus, multilevel modeling recognized that we have *i* subjects making *t* decisions and are divided into *j* groups. The estimation model is presented in Equation (7). Note that both equations only differ in error terms. In both models u_i is the subject-specific effect and ε_{it} or ε_{ijt} are the corresponding equation error terms. However, Equation (7) also considers the group-specific random-effect v_j. The dependent

[9]In addition, we have used a dependent variable which measures the average group evasion level in a random-effects linear regression. The main results here (not reported) are overall the same. However, using group averages makes us lose information that we are able to exploit with the random-effects panel regression and mixed effects model: First, the influence of socio-demographic variables is not included when analyzing on group level. Second, we are neither able to analyze individual feelings of shame nor social empathy due to the group level variable. Third, we are not able to analyze the behavior of Full Evaders and Non-Evaders on subject level. Fourth, we are not able to analyze the influence of the other group members' contributions on individual tax evasion decisions separately. Therefore, we decided against the usage of group evasion as dependent variable.

[10]We cluster on group level and do not also cluster on individual level as for nested two-way clustering one only clusters at the highest level of aggregation, see Cameron, Gelbach, and Miller (2012). Although both tests might appear equivalent, we present both models as there are some cases in the robustness analysis where the mixed-effects modeling's iterations do not receive concavity. As we are not able to present results for these cases, the random-effect regression's results serve as analyses' basis.

Table 2. Regression results for tax evasion (in percent) of random-effects panel clustered by groups and linear mixed effects models ($N = 265$)

	(1) All periods Random-effects	(2) All periods Mixed-effects	(3) Periods 1–5 Random-effects	(4) Periods 1–5 Mixed-effects	(5) Periods 11–15 Random-effects	(6) Periods 11–15 Mixed-effects
FULL	− 8.108**	− 8.095**	− 8.873**	− 8.868***	− 6.141	− 6.107
INFORMATION	(4.119)	(3.708)	(3.490)	(3.161)	(4.458)	(4.098)
NO	− 2.736	− 2.760	3.531	3.521	− 7.306**	− 7.347*
INFORMATION	(3.369)	(3.714)	(3.068)	(3.167)	(3.701)	(4.104)
AUDIT	− 1.601***	− 1.601***	− 1.248***	− 1.248***	− 1.690***	− 1.690***
PROBABILITY	(0.075)	(0.035)	(0.082)	(0.061)	(0.080)	(0.053)
AGE	− 0.412**	− 0.433*	− 0.273	− 0.278	− 0.468**	− 0.536*
	(0.193)	(0.253)	(0.206)	(0.247)	(0.223)	(0.283)
MALE	2.323	2.350	2.034	2.057	2.814	2.561
	(2.242)	(2.280)	(2.258)	(2.256)	(2.542)	(2.549)
ECONOMICS AND	4.032*	3.591	3.971*	3.758	3.721	3.070
MANAGEMENT	(2.405)	(2.415)	(2.173)	(2.365)	(2.901)	(2.698)
RISK AVERSION	− 3.581***	− 3.649***	− 3.253***	− 3.304***	− 3.803***	− 3.864***
	(0.989)	(0.700)	(1.015)	(0.691)	(1.023)	(0.782)
INTERCEPT	98.769***	99.849***	80.668***	81.179***	107.368***	109.718***
	(9.348)	(8.341)	(10.209)	(8.287)	(9.875)	(9.353)
Observations	3975	3975	1325	1325	1325	1325
Prob. > chi^2	< .001	< .001	< .001	< .001	< .001	< .001

Notes: Models 1, 3, and 5 show results of random-effects panel regressions and are clustered on group level. Models 2, 4, and 6 present results of linear mixed effects regressions. In all models the metric measure TAX EVASION serves as dependent variable. Models 1 and 2 analyze TAX EVASION over all periods, whereas models 3 and 4 (5 and 6) only tests for the first (last) five periods. The PARTIAL INFORMATION treatment serves as reference treatment as the difference between FULL (NO) and PARTIAL INFORMATION treatment measures the shame effect (contagion effect). AUDIT PROBABILITY (AGE) is measured in percent (years). MALE (ECONOMICS AND MANAGEMENT) is a dummy variable and takes the value one if the subject is male (studies at the Faculty of Economics and Management) and 0 otherwise. RISK AVERSION is measured according to Holt and Laury (2002) and denotes the number of risk-averse decisions on a range from 0 to 10. Robust standard errors in parentheses.
*** $p < .01$.
** $p < .05$.
* $p < .1$.

and independent variables are identical to the random-effects panel regression.

$$\text{TAX EVASION}_{ijt} = \alpha + \beta_1 \text{ NO INFORMATION}_i + \beta_2 \text{ FULL INFORMATION}_i + \sum_{j=1}^{k} \beta_j \text{ Controls}_i + u_i + v_j + \varepsilon_{ijt}. \quad (7)$$

The results of the random-effects panel analyses and the linear mixed effects model are presented in Table 2 for the metric measure TAX EVASION as the dependent variable.

Models 1, 3, and 5 present the results of the random-effects analysis, whereas models 2, 4, and 6 present the mixed effects regressions' results. In models 1 and 2, we analyze tax evasion behavior over all periods, whereas we only consider the first (last) five periods in models 3 and 4 (5 and 6). Besides the treatment dummies and audit probability, we additionally test the control variables presented in Section 3.3. In line with Hypothesis 2, Table 2 reveals a shame effect which is significant over all periods as well as for the first five periods. Thereby, model 1 and (model 2) shows that TAX EVASION decreases by 8.1 (8.0) percentage points for all periods if public disclosure is not anonymous and by 8.9 percentage points for the first five periods alone. Moreover, in line with Hypothesis 1, we find a contagion effect analyzing

the last five periods. TAX EVASION is 7.3 percentage points lower if there is no information on the tax evasion of others (models 5 and 6). Regarding our control variables, AUDIT PROBABILITY and RISK AVERSION influence TAX EVASION most decisively. Model 1 and 2 reveal that an audit probability's increase of 1 percentage points decreases tax evasion by 1.6 percentage points. Moreover, higher risk aversion consistently decreases tax evasion behavior.[11]

In order to analyze whether the contagion effect is significantly higher than the shame effect or vice versa (Hypothesis 3), we run Wald tests after each regression. Hereby, we test whether the two coefficients of the No Information and Full Information treatment differ significantly. Analyzing both effects over all periods, we do not find that the shame effect significantly exceeds the contagion effect (Wald test in the random-effects panel regression: p-value = .1603; Wald test in the mixed effects panel regression: p-value = .1621). However, in the first five periods the shame effect significantly outweighs the contagion effect (Wald test in the random-effects panel regression: p-value < .0001; Wald test in the mixed effects panel regression: p-value = .0001). For the last five periods, we again find no difference between both effects indicating that the contagion effect fully compensates the shame effect in the long run (Wald test in the random-effects panel regression: p-value = .7903; Wald test in the mixed effects panel regression: p-value = .7688). Thus, we can only confirm Hypothesis 3 for the beginning periods where the shame effect outweighs the contagion effect, but have to reject it for the final and for all periods.

Hence, except the fact that we do not observe a significant shame effect in the last five periods, multivariate analyses support the results that we obtained in the bivariate analysis in Section 4.1. Tax publicity results in two opposing effects: shame and contagion. However, the shame effect diminishes over time[12] and is, in the long run, not strong enough, to overcompensate the contagion effect. Note that these results are not affected by the experiment's property that tax evasion is actually bounded between 0 and 300 cents (0 and 100 percent). First, we conduct a two-sided censored random-effects Tobit type I panel model. Second, we analyze decisions in which no taxes are evaded (Non-Evaders) using random-effects logit panel regressions and mixed effects logistic models. The results (not reported) are in line with our previously presented results.[13]

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[11]We run all of the presented regressions again using different control variables, such as period, income or whether the subject studies in a bachelor degree's program. We also used another measure as variable for risk aversion. Instead of considering the number of risk averse decisions, we determined the first crossover point according to Holt and Laury (2002). The results remain unchanged. We also analyze to what extent the contribution of other group members influences personal tax evasion decisions. Hence, we calculate the mean contribution of the other four group members per period and run all regressions again separately for each treatment including this variable. The regressions' results reveal a negative correlation between the group members' contributions and personal tax evasion behavior if tax information is disclosed.

[12]We have also analyzed how the feeling of shame develops over time. After subjects have received all their relevant and available information on the period's decisions and outcome, they are asked to state on a 7-point scale (with 1 = 'Does not apply at all' and 7 = 'Fully applies') whether they were a bit ashamed by themselves in front of their group members (measuring SHAME). We run a random-effects panel regression for the Full Information treatment for those subjects who evade taxes with SHAME as the dependent variable and TAX EVASION, PERIOD as well as the control variables presented in Section 4.2 as independent variables. In line with the observed behavior, we find that SHAME significantly decreases over time. The feeling of shame is greatest in early periods and decreases when social norms are adjusted if group behavior suggests that tax evasion is acceptable and common. Therefore, the shame effect only predominates in the first periods, but is outweighed by the contagion effect in later periods.

[13]If we solely consider decisions, in which tax evasion amounts to 100% (Full Evaders), we do not observe any treatment effects. Thus, subjects who are predisposed to fully evade are not influenced by shame punishment.

5. Additional Analyses

In this section, we present additional analyses to test whether the shame and contagion effect are affected by the level of audit probability, and to what extent emotional empathy influence tax evasion decisions.

5.1. The Influence of Audit Probability on Shame and Contagion Effect

To investigate whether the observed effects of tax publicity depend on the institutional settings, we investigate whether shame and contagion effects can be observed for all audit probabilities or whether they only occur for certain audit levels. In order to conduct these analyses, we assign audit probabilities of 5%, 10%, and 15% to the group of low audit probabilities, these of 20%, 25%, and 30% to medium audit probabilities, and these of 35%, 40%, and 45% to high audit probabilities.

For these three groups of audit probabilities, we again run separately random-effects panel regressions and multilevel mixed effects linear regressions and present the results in Tables 5–7 in Appendix E. We find the shame effect for all three audit probabilities' clusters, but only observe it in the first five periods. However, the contagion effect, which we observe (as expected) only in the last five periods, depends on the audit probability. We measure the contagion effect solely for the low audit probabilities' cluster. These findings indicate that particularly in low enforcement environments where governments must rely on voluntary tax compliance subjects may be prone to contagion effects caused by tax publicity. Moreover, regardless whether we consider periods with low, medium, or high audit probabilities, the shame effect is not strong enough to outweigh the contagion effect in the long run.

5.2. The Effect of Emotional Empathy on Tax Evasion

In this section, we analyze in how far emotional empathy correlates with tax evasion decisions. In the post-experimental questionnaire, we ask 11 questions on emotional empathy.[14] We use 7 out of 33 questions from Mehrabian and Epstein (1972) as well as 4 out of 14 questions from Davis (1980). On a 5-point scale subjects are asked to denote whether they 1 = totally agree with the empathy statement or whether they 5 = totally disagree. To control whether subjects constantly only click at a certain point at the scale, these questions measure empathy positively as well as negatively. As totally disagreeing with an empathy statement means clicking five points, we had to convert the answers on questions that measure empathy positively (e.g., 'The people around me have a great deal of influence on my mood') in order to account for empathy. Finally, we added all 11 questions' values to generate the variable EMPATHY.[15]

We analyze whether differently empathic individuals react differently to group behavior in the long run. Thus, we use a median split to divide subjects into two groups. All subjects whose empathy is above the median are categorized as having HIGH EMPATHY. All other subjects are categorized as LOW EMPATHY. For these two groups, we run pairwise Mann–Whitney *U* tests to analyze whether we find the contagion and/or the shame effect in the first five periods and in the last five periods. The results are presented in Table 3 and reveal a significant shame effect but no contagion effect in the first five periods independent of the empathy level, thus confirming Hypothesis 2. Moreover, we find that the shame effect outweighs the contagion effect in the short term (Panel C, confirming Hypothesis 3). Furthermore, the results for the last five periods show a

[14]The post-experimental questionnaire is displayed in Appendix D.

[15]We also add EMPATHY as further individual control variable and rerun the random-effects panel regressions and multilevel mixed effects linear regressions as in Section 4.2. The obtained results remain unchanged.

Table 3. Descriptive statistics for tax evasion (in %) in the first five and last five periods separated by the empathy level

Panel A: Contagion Effect

	Periods 1–5				Periods 11–15			
	High empathy		Low empathy		High empathy		Low empathy	
	No Information treatment	Partial Information treatment	No Information treatment	Partial Information treatment	No Information treatment	Partial Information treatment	No Information treatment	Partial Information treatment
TAX EVASION	24.03	19.21	26.18	22.93	28.96	33.52	29.31	37.97
	(2.39)	(1.87)	(2.33)	(2.16)	(2.70)	(2.53)	(2.64)	(2.74)
p-Value	.978		.132		.029		.060	
No. of Subjects	44	47	41	48	44	47	41	48

Panel B: Shame Effect

	Periods 1–5				Periods 11–15			
	High empathy		Low empathy		High empathy		Low empathy	
	Full Information treatment	Partial Information treatment	Full Information treatment	Partial Information treatment	Full Information treatment	Partial Information treatment	Full Information treatment	Partial Information treatment
TAX EVASION	11.27	19.21	13.71	22.93	24.96	33.52	34.51	37.97
	(1.74)	(1.87)	(1.75)	(2.16)	(2.66)	(2.53)	(2.73)	(2.74)
p-Value	$< .001$		.001		.001		.448	
No. of Subjects	40	47	45	48	40	47	45	48

(*Continued*)

Table 3. Continued

Panel C: Contagion and Shame effect

	Periods 1–5				Periods 11–15			
	High empathy		Low empathy		High empathy		Low empathy	
	Full Information treatment	No Information treatment	Full Information treatment	No Information treatment	Full Information treatment	No Information treatment	Full Information treatment	No Information treatment
TAX EVASION	11.27	24.03	13.71	26.18	24.96	28.96	34.51	29.31
	(1.74)	(2.39)	(1.75)	(2.33)	(2.66)	(2.70)	(2.73)	(2.64)
p-Value	< .001		< .001		.229		.268	
No. of Subjects	40	44	45	41	40	44	45	41

Notes: Values shown for TAX EVASION are mean values with standard deviations in parentheses. Panel A analyzes the contagion effect by comparing TAX EVASION of the No Information and Partial Information treatment. Panel B analyzes the shame effect by comparing TAX EVASION of the Full Information and Partial Information treatment. Panel C analyses the aggregate of contagion and shame effect by comparing TAX EVASION of the Full Information and No Information treatment. All analyses are run for the first and last five periods and are presented separately for the two empathy level groups: HIGH EMPATHY and LOW EMPATHY. The *p*-values present the difference's significance of the respective comparison and are calculated using pairwise Mann–Whitney *U* tests.

shame effect for subjects with a high empathy level (Hypothesis 2), whereas we find a contagion effect for both empathy level groups confirming Hypothesis 1. We do not find a significant difference between both effects in the long run, thus rejecting Hypothesis 3 in the last periods. These findings are replicated using random-effects panel regressions and multilevel mixed effects linear regressions. Thus, intrinsic factors such as social empathy also affect tax evasion and lead to a different behavior in the long run. Whereas subjects with low social empathy adapt to egoistic group behavior and increase tax evasion at the end of the experiment, subjects with high social empathy still feel shame and therefore pay their taxes more truthfully.

6. Conclusions

To determine the effect of tax privacy on tax compliance, we designed a tax game with tax privacy as the treatment variable. Tax privacy ranged from full confidentiality to full publicity, combining the different experimental forms of tax publicity from Laury and Wallace (2005) and Coricelli et al. (2010). Theoretically, two opposing effects – a contagion effect and a shame effect – can occur in response to public disclosure. We investigated these two effects under three different levels of tax privacy in a repeated public good game.

In the baseline treatment of no information, subjects neither receive any information on others' tax payments nor their individual share of the public good. Hence, no kind of tax information is disclosed. In the Partial Information treatment, individual tax information is publicly disclosed in an anonymous manner. The only difference from the baseline treatment of full tax privacy is that the individual behavior of the other subjects in one's group is made public. Because subjects remain anonymous in this treatment, a shame effect is not expected, and the only impact on tax compliance is to result from the contagion effect. In contrast, in the full information treatment, complete public disclosure of all individual information is employed: tax evaders' photos are shown together with their contributions, which potentially introduces a shame effect. This shame effect can arise only in the full information treatment where each subjects' contributions are known and publicly linked to that subject.

Overall, shame is an effective deterrent, but most strongly only in the beginning of the experiment. The feelings of shame seem to diminish over the repetitions of the tax game. This could be due to getting used to the feeling of shame which makes it less salient or simply because subjects observe the non-compliance of other participants. Together with an overall strongly increasing contagion effect in the partial information treatment, this stresses that the pure observation of deviant behavior could destroy the social norm of compliance and lead to one's own non-compliance. It describes a crowding-out effect of intrinsic motivation to pay taxes under partial or full information about the other people's behavior. In the last periods of the experiment, we do not observe any significant difference between the treatments with full tax privacy and full tax publicity. Thus, in the long run the shame effect appears to be too small to override the contagion effect when both are present simultaneously. If tax information is disclosed anonymously, we find a significant increase in non-compliance once contagion takes effect in the repeated public good game with information about other player behavior.

These findings are particularly important in tax policy, as public disclosure could lead to more, instead of less, evasion. Especially in countries with low tax enforcement regimes the risk of negative contagion effects caused by tax publicity may become important as contagion effects are particularly pronounced under low audit probabilities. However, quantitative predictions are difficult to make because tax compliance behavior appears to strongly depend on the common tax morale within a country. Tax compliance must also be seen as only one social norm in a system of social norms in a country which depend on each other and also on the perceived

benefits from compliance. Because a system of social norms typically has multiple equilibria, to a large extent the previous history and also chance determine where the system settles (Cooter, 1998). Moreover, our experimental results come with the following limitations. First, while Alm, McClelland, and Schulze (1992) do not find any impact from terminology used (loaded vs. neutral) on tax compliance, other studies provide some evidence that subjects are more compliant in a tax, as opposed to a neutral, context (Baldry, 1986; Durham, Manly, & Ritsema, 2014; Wartick, Madeo, & Vines, 1999). This could potentially influence the relative strength of the different effects. Second, the shame effect could also be more effective in natural settings where long-term economic consequences are often the case. In particular, publicly deviating from a social norm could have different effects on firms than on individuals, with various side effects in the first case in the long run. If the market penalizes deviant behavior of firms, as demonstrated by Hitz, Ernstberger, and Stich (2012) in an accounting enforcement context, a 'name and shame' mechanism could be more effective. However, the work of Coricelli et al. (2010) stresses that it is possible to account for emotions in the laboratory and individual emotions must always be seen as the main driver of a shame effect. There is no obvious reason why emotion should be less powerful in the laboratory, but personally critical financial consequences can naturally increase fear in the tax evasion decision. The broader theoretical question here concerns the impact an initiative might have on social behavior where the motivational crowding literature (i.e., Benabou & Tirole, 2006; Bolle & Otto, 2010) stresses the importance of the current state when predicting potential future changes.

In contrast to Laury and Wallace (2005) and Coricelli et al. (2010), tax publicity can lead to higher tax evasion in the case of anonymous disclosure. This strong difference to the results of our study might be due to the missing public good context in these studies, which leads to an underestimation of the contagion effect. Outside a public good or redistribution context, there exists neither a necessity nor an opportunity to cooperate. Within the standard literature on cooperative behavior, the effects of tax publicity remain ambiguous with no sustained effect of copying positive behavior, as can be observed, for instance, in a fundraising context (Andreoni & Petrie, 2004). Besides the negative impact of shame on tax evasion, there is an opposing contagion effect that might, at least in the long run, fully compensate the shame effect resulting from making individual behavior public.

Acknowledgements

We thank Richard Sansing (editor), an anonymous reviewer as well as Friedel Bolle, René Fahr, Martin Fochmann, Axel Möhlmann, and seminar participants at the Freie Universität Berlin, University of Göttingen, University of Hannover, and University of Paderborn for their helpful comments and suggestions.

Supplemental Data and Research Materials

Supplemental data for this article can be accessed on the Taylor & Francis website, doi:10.1080/09638180.2016.1258319.

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