Multiple tax amnesties and tax compliance
(Forgiving seventy times seven)

By

Giovanni Mattiello

Università Ca’Foscari, Venezia

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Abstract

Tax amnesty’s effects on tax compliance is an important issue in tax evasion’s analysis. Some researchers claim that tax amnesties raise tax evasion rate. Although this seems to be true if a tax amnesty is anticipated by taxpayers, it needed to be seen if this happens after a series of tax amnesty has occurred. Because of tax evasion dynamics cannot be easily observed, some researchers on this topic use to perform laboratory experiments with people facing a virtual tax system, but with real money.

In this paper, using an experimental approach, we checked whether giving a series of tax amnesty to taxpayers lowers their compliance. Experiment’s data showed that the effect is not so significative and that gender, subject’s family environment and “bomb crater effects” play a more important role in explaining the determinants of tax compliance.
Introduction

Three things are certain in our life: death, taxes and that we will try to avoid both of them.

Avoiding taxes could lead to being caught and punished, but authority can forgive taxpayer’s evasion using tax amnesty. Tax amnesty lets taxpayer to declare evaded income keeping himself protected from further punishment by paying a low additional tax rate.

Among tax issues, tax amnesties are one of the hottest topics in Italian political debates about taxes, as well as in the rest of the world. This paper examines the role of tax amnesty on tax compliance using an experiment made in 2005 at the Economics Department of the University Ca’Foscari in Venezia, Italy.

This paper is articulated in three chapters. Chapter 1 focuses on the role of tax amnesties on tax compliance as pointed out in literature and with some anecdotal evidence. Chapter 2 reports a survey about tax amnesties empirical research. Chapter 3 includes our experiment: its design, its results and some considerations on the findings. Conclusions end this paper.

1 The effects of tax amnesties

A wide set of countries all over the world in the last decades has implemented some kind of tax amnesty on direct or indirect taxes. The main goal of an amnesty was to recover at least some of tax evaded.

The main point of a tax amnesty is the effect on further tax compliance. It is useful to distinguish short term effects from long term effects.

In the short term, offering a tax amnesty could raise the compliance rate by allowing emersion of taxpayers and taxable value from the shadow economy. If this happens, discovering taxable value or
unknown taxpayers can raise further tax compliance, as they cannot hide from imposition in the next fiscal year.

On the other hand, in the long term, tax amnesties might undermine the willingness of a taxpayer to fulfil his obligations with the State. Many factors could lead to these results.

First of all, by offering a tax amnesty the State renounces to recover concealed taxes using tax enforcement’s tools such as audits and penalties. Thus, taxpayers could make estimates that audit probability is less than what they thought. That would lead to less compliance.

To avoid that a tax amnesty might lead to lower compliance it’s absolutely important that taxpayers don’t anticipate a tax amnesty. If so happens, tax evasion rises.

An evidence of this factor is offered in table 1, which reports data from Veneto’s construction’s sector. It is easy to see that even if sales have grown by 10.39% from 2001 to 2002, declared income has fallen by 1.1%.

<table>
<thead>
<tr>
<th>Year</th>
<th>Δ income declared</th>
<th>Δ sales</th>
<th>Total income in % of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td>10.2%</td>
</tr>
<tr>
<td>2001</td>
<td>+5.6%</td>
<td>+18%</td>
<td>9.2%</td>
</tr>
<tr>
<td>2002</td>
<td>-1.1%</td>
<td>+10.39%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

Source: Agenzia delle entrate

According to Italian tax agency “Agenzia delle Entrate”, this should be the result of an anticipation of tax amnesty. In fact, declared income has lowered because taxpayers increased their deductions,

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1 Over-estimate of audit probability seems to be a world-wide general case. For the effects of uncertainty on audit probability on tax compliance, see Alm et al. (1992)

2 Veneto is an Italian region located in the north-east of the country.

3 Italian revenue service
forecasting that a tax amnesty would have occurred in the next year, and so that they could make the deductions claimed legal.

After a tax amnesty, an honest taxpayer could feel a sense of injustice, since that he sees that cheating behaviour has been forgiven by State. This could modify the way he relates with his own State. Thus, his willingness to be honest in his further tax reporting could be undermined.

A tax amnesty can be a useful tool when a State decides to pass from a tax system to a different one, or to a higher level of tax enforcement. Tax amnesties could underline the transitions, and if accompanied by a commitment not to offer any other amnesty, the effect of a stronger enforcement could be a compliance level better than if tax amnesty has not occurred (Alm et al., 1990). It needed to be stressed that if an authority commits not to offer any further tax amnesty, the commitment must obviously be reliable.

2 Survey on tax amnesty

Even if tax evasion and tax amnesties are as old as taxes, issues related to tax evasion have captured the attention of economic research only recently. After the publication of the theoretical work of Allingham and Sandmo (1972) literature about issues related to tax evasion has grown. However empirical research on tax amnesties is not so widespread. This happens because it is difficult to isolate the effects of tax amnesties from the effect of other policies. For example, if tax amnesties, that some theory predict that decrease compliance, is followed by a stricter enforcement, that economic theory indicates as a factor that increase compliance, then the effect of the two policies are mixed in a way that it is impossible to study the effect of a single policy.

Hence, two major issues can be studied: the profitability of tax amnesties and the effect of tax amnesties in an experimental context.
Torgler and Schaltegger (2003) report the result of many tax amnesty that have been implemented in different countries, arguing that revenues have been largely less than expected. Tax amnesties are often less profitable than expected. It is interesting to note that one of the most successful tax amnesty on income tax, enacted in India in 1997, has been largely reclamized using famous Indian people, sportsmen, movie actors, advertisements on newspapers and televisions and short message shaped for Indian culture. This amnesties allowed Indian government to recover an amount of taxes as big as half of the fiscal revenue originated from income tax (Alm, 1998).

A tool used to study taxpayers’ behaviour is laboratory experiments. An experiment is a simulation of a tax system where participants receive a taxable income, declare income to an authority and face the consequences of their actions. The advantage of this tool is that it allows to analyse taxpayer behaviour isolating the effects of changings of main variables (i.e. audit probability, tax rate…). Experiments can create simple tax systems and modify single variables to test participants’ response. Moreover, they are replicable and they allow collecting a reliable set of data. The other side of the coin is that it is quite impossible to have a representative sample and that to get a wide set of participants can be expensive, since the participants are paid with real currency.

Alm et al. (1990) managed an experiment on tax amnesty that studied the effects of a single tax amnesty on further compliance. Even if the differences in the average compliance rate before and after the amnesty were statistically significative, the experiment showed that even 7 rounds after the amnesty there has not been significative change in the participants’ compliance rate. Other interesting result is that after the amnesty participants with high compliance rate or low compliance rate didn’t modify their behaviour, while the remaining part tended to reduce their compliance.

Torgler and Schaltegger (2003) focused on what happen when the participants can vote the introduction of a tax amnesty. They found that their participants refused the implementation of a tax amnesty and afterwards they raised their compliance rate. Furthermore, Torgler and Schaltegger (2003) noticed that religious people evaded less than other and politically right oriented people evaded more than others.
3 Experiment

3.1 Experiment’s design

Thirty-eight people participated to this experiment, 18 in control experiment and 20 in the experiment where tax amnesties were implemented. People have been recruited with advertisements attached in the department of economics of the Università Ca’ Foscari di Venezia. Participants were all students of economics.

The experiments had been divided in two parts: an introductive work and the part which involved tax reporting choices.

The first part consisted in inputting some data about mobility within Italian National Health System using a personal computer. Participants choose randomly a table to input. Each participant has been warned that his performance would have been tested using two criteria: speed and accuracy (every mistake would have cost 1 minute to add to the personal time). At the end of the whole experiment, according to speed and accuracy, a table has been made. The half of the participants with better performance received a higher conversion rate of the virtual payoff obtained in the second part of the experiment, but participants didn’t know their position in the table until the conclusion of the second part of the experiment.

Each information reported above has been given to every participant. Introductory work aimed to make participants feel entitled of the endowment that they received in the second part of the experiment, in other words to make they feel that the experiment dealt with tax reporting.

The second part of the experiment is about tax reporting. It is divided in rounds. In each round each participant received an endowment of 1000 virtual euros (&). Participants must declare their income to authority, making a declaration $0 \leq D \leq 1000$. On declared income, a 40% tax rate has been imposed.
Personal declarations could be audited with an 18.75%⁴ audit probability. If an audited occurred and participant’s declared income is 1000€ no further payment is required. If declared income is less than 1000€, meaning that the participant has evaded part or the whole income, the audited participant has to pay a fine of 100% evaded income, plus due tax.

Declarations have been made sending anonymous e-mail messages to researchers, and round result is also communicated anonymously to each participant using e-mail. Since each participant picked randomly an e-mail account before the starting of the second part of the experiment, and researchers didn’t know each participant’s account, anonymity has been granted.

The tax system designed is such that individual neutral to risk would evade the whole income. To observe this fact, let D be the income declared by a participant to tax authority. Expected utility of the taxpayer, given the assumption about his risk preferences, is

\[
EV = 0.1875 \times [1000 - 1000 \times 0.4 - (1000 - D)] + 0.8125 \times (1000 - 0.4 \times D)
\]

since

\[
\frac{\delta EV}{\delta D} = 0.1875 - 0.8125 \times 0.4 = 0.1875 - 0.325 = 0.1375 < 0
\]

a risk neutral participant would evade the whole income.

It has been told to the participants that collected taxes are used to finance a research on mobility within Italian National Health System. Participants were not allowed to communicate each other and each participant was not able to see neither other participants' computer screen nor their keyboards.

To avoid income effects on declaration⁵, the money earned by each participant is calculated considering only some rounds, randomly drawn among the 22 rounds. Participant’s payoffs in those

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⁴ This percentage has been chosen for operative reason, and is about the same used in many experiment about tax evasion. As explained later in the text, every participant had an e-mail account, to whom a number was assigned (from 1 to 16). Every round 3 numbers were picked up. Those number determined audited participant. hence, the probability of being audited has been 3/16=18.75%.

⁵ As the money earned grows, a subject might modify is attitude toward risk. For example a subject who sees that after some rounds he has earned for sure 15€ might start to evade more because he becomes more risk seeking. On the other side he might become more honest because he feels satisfied with what he has, and so he might feel no need to cheat, which for some people is supposed to comport at least a little cost. Whatever of these effects prevail, the problem is that income effect introduces a strong influence on compliance that keeps from isolating amnesties effects.
rounds are summed up and then converted in euros using the rate resulting from the work done in the first phase.

All these information had been written on the instruction sheets that had been given to each participant and participants were allowed to consult the instructions whenever they wanted. Instructions have been written using fiscal terms. Before the starting of the second part of experiment, researchers answered to some participants’ questions in a loud voice.

The goal of this experiment is to find whether a series of tax amnesties lowers tax compliance or not. In other words we would like to verify

**Hypothesis: A series of tax amnesties lowers average tax compliance**

This hypothesis is tested in the second part of the tax amnesty experiment (AE experiment). The second part is divided in 22 rounds. At the beginning of the round each participant must declare to the authority his income. After he has made declaration he received an e-mail where is written his round’s payoff, if he has been audited and the endowment in & for the next round. Starting from round nine, a series of tax amnesties has been offered to every participant. More specifically, an amnesty has been given in rounds 9,10,12,15,17,19,20,21. Each participant received the communication of the existence of amnesty only after his declaration. Amnesty worked only for round’s declaration, in other words had no effect on declaration made in rounds before the one where amnesty was announced. The same type of amnesty has been offered to each participant in the same rounds.

The structure of the amnesty is the following: participant who wanted to adhere to the amnesty must declare at least 150& of tax evasion. On declared evasion a 60% tax rate is imposed (40% original tax rate + 20% amnesty rate). Using tax amnesty keeps away the possibility of being audited. For those who didn’t use amnesties the original rules were applied.
At the end of the experiment information about single participant such as religiosity, political orientation, family attitude about tax evasion and gender had been collected\(^6\). Data collected were used as variables in a regression which has been used to understand some dynamics about participant tax compliance in AE.

### 3.2 Results

Table 2 reports the average compliance rates for people participating to control experiment (CE) and for subjects to whom tax amnesties had been offered (AE).

**Table 2 Average declared income in control experiment (CE) and amnesty experiment (AE)**

<table>
<thead>
<tr>
<th>Round</th>
<th>Average declared income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CE</td>
</tr>
<tr>
<td>1</td>
<td>852.8</td>
</tr>
<tr>
<td>2</td>
<td>794.4</td>
</tr>
<tr>
<td>3</td>
<td>799.4</td>
</tr>
<tr>
<td>4</td>
<td>769.2</td>
</tr>
<tr>
<td>5</td>
<td>700.3</td>
</tr>
<tr>
<td>6</td>
<td>689.5</td>
</tr>
<tr>
<td>7</td>
<td>782.1</td>
</tr>
<tr>
<td>8</td>
<td>706.0</td>
</tr>
<tr>
<td>9</td>
<td>750.0</td>
</tr>
<tr>
<td>10</td>
<td>816.7</td>
</tr>
<tr>
<td>11</td>
<td>741.7</td>
</tr>
<tr>
<td>12</td>
<td>604.4</td>
</tr>
<tr>
<td>13</td>
<td>580.6</td>
</tr>
<tr>
<td>14</td>
<td>711.1</td>
</tr>
<tr>
<td>15</td>
<td>601.7</td>
</tr>
<tr>
<td>16</td>
<td>674.5</td>
</tr>
<tr>
<td>17</td>
<td>627.8</td>
</tr>
<tr>
<td>18</td>
<td>666.7</td>
</tr>
<tr>
<td>19</td>
<td>630.9</td>
</tr>
<tr>
<td>20</td>
<td>627.8</td>
</tr>
<tr>
<td>21</td>
<td>637.3</td>
</tr>
<tr>
<td>22</td>
<td>641.2</td>
</tr>
</tbody>
</table>

\(^6\) Each participant has been told to indicate his mass attendance beyond particular events like weddings, funerals etc… Family’s opinion about tax evasion is measured by and index ranging from 1 to 5 (5= absolutely condemned). Political orientation is measured by an index ranging from 1 to 7 (1= extreme left, 7=extreme right)
We analysed the results using three ways: analysing single graphics, matching AE and CE average reported income graphics and performing a Mann-Whitney test to check if the set of average income declared after the first amnesty has occurred (rounds 10-22) is statistically different form the one which includes the data related to rounds 1 to 9, in other words the rounds before the first tax amnesty.

As figure 1 and 2 show, both CE and AE showed a slight tendency of a decrease of compliance rates as round’s number increases. Looking at both graphics, it seems that average compliance rate tends to lower after round 11. It is interesting to notice that in AE experiment two amnesties had been offered before round 11, hence it is clear that amnesties surely don’t have an immediate impact on compliance rate, since the first amnesty had been offered in round 9. This result has been founded also by Alm et al. (1990) in their experiment\(^7\).

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\(^7\) The authors however have not emphasized this result.
The first difference that CE and AE show is participant behaviour in the second half of the experiment: whilst subjects in CE tend to assume a more stable behaviour on average, in AE participants’ behaviour tend to be erratic. In other words, in CE average declared income as rounds goes by tend to assume a value of about 630-640&, while in AE there seems not to be stabilization.

Graphic representations of the data collected are given in Figure 1 (CE) and figure 2 (AE).

It could be possible that the behaviour of the participant to the amnesty experiment is due to the will to match a probably anticipated tax amnesty. It seems more likely that after an amnesty participant thought that there wouldn’t be one in the next round, so they declared more income. However, those are only hypothesis: we have no certain data about this issue.

It must be said that the immediate effect of tax amnesty on average compliance rate is not univocal: sometimes after a tax amnesty average declared income rose, sometimes it lowered. For example after the first amnesty compliance rate fell from 71,7% to 69,9%, but immediately after the second tax amnesty that has occurred, compliance rate raised from 69,9% to some 73,9%. Considering all the rounds that followed each amnesty, in three times compliance rate fell, but in five times it rose.
The average compliance rate increases after amnesty amounts to 77.95%, while the average decrease has been 51.28%. What is sure is that tax amnesties didn’t cause a dramatic fall of compliance rate. In order to give more evidence to this statement two Mann-Whitney test have been performed: the first has been made using the compliance rate set founded before the first amnesty (rounds 1-9) and the one including all the rates resulting in rounds (10-22), the second comparing average compliance rate in CE for rounds 10-22 and the same variable in same period in AE. Although the probability that average compliance rates before amnesties are originated by the same distribution that originates average compliance rate after amnesties is low (p=0.03844; Mann-Whitney test), hence there seems to be a difference in behaviour before and after the first amnesty, there’s no significant difference between the compliance rate in rounds 10-22 in CE and the ones registered in AE in the same rounds (p=0.7583; Mann-Whitney test). In other words compliance rates after amnesties are not statistically different from those registered in control experiment. Note also that average compliance rate for rounds 1 to 9 in CE is significantly higher than the one registered in rounds 1 to 9 in AE. Hence, the reduction in compliance has been bigger in control experiment than in amnesty experiment. Given those facts, we can say that amnesties, generally speaking, did not lower sensibly average compliance rate, but they made participants’ behaviour less stable.

3.3 Single participants’ behaviour

Among the twenties that constituted the set of participants to AE, three subjects maintained a constant behaviour, declaring always the same income. The three participants declared respectively all the income, no income and 80% of his income. Each of them did not adhered to any tax amnesty.
Table 3 reports the result of Mann Whitney test performed confronting declaration made by each participant before and after the first amnesty, in order to test the effect of amnesties on single subjects.

Significant variations had been observed for 6 participants. However, participant 8 changed remarkably his behaviour in round 8, so his changing is not due to tax amnesties. Participant 15 did the same.

It is interesting to notice that compliance rate lowered especially for the most honest participants. This could have happened because of amnesties diminished the value of an honest behaviour, or maybe because they changed the expected value of tax evasion. It needs to be stressed that is not possible to know for sure why it happened.

<table>
<thead>
<tr>
<th>participant</th>
<th>p-value (Mann-Whitney)</th>
<th>Evasion rate (%)</th>
<th>Significant change?</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1.0000</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>20</td>
<td>0.7894</td>
<td>1.72727</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>0.0177</td>
<td>7.13636</td>
<td>Yes (5%)</td>
</tr>
<tr>
<td>16</td>
<td>0.0194</td>
<td>8.18182</td>
<td>Yes (5%)</td>
</tr>
<tr>
<td>3</td>
<td>0.2167</td>
<td>11.0909</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>0.8674</td>
<td>12.4545</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>0.0033</td>
<td>17.9545</td>
<td>Yes (1%)</td>
</tr>
<tr>
<td>13</td>
<td>1.0000</td>
<td>20.0000</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>1.0000</td>
<td>24.5500</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>0.3673</td>
<td>28.6364</td>
<td>No</td>
</tr>
<tr>
<td>11</td>
<td>0.5478</td>
<td>31.3636</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>0.5258</td>
<td>35.9091</td>
<td>No</td>
</tr>
<tr>
<td>18</td>
<td>0.0008</td>
<td>40.0000</td>
<td>Yes (1%)</td>
</tr>
<tr>
<td>8</td>
<td>0.0101</td>
<td>46.8182</td>
<td>Yes* (5%)</td>
</tr>
<tr>
<td>5</td>
<td>0.9468</td>
<td>50.6818</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>0.1018</td>
<td>52.6045</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>0.8412</td>
<td>53.8636</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>0.4229</td>
<td>66.8182</td>
<td>No</td>
</tr>
<tr>
<td>15</td>
<td>0.0056</td>
<td>78.1818</td>
<td>Yes* (1%)</td>
</tr>
<tr>
<td>10</td>
<td>1.0000</td>
<td>100.0000</td>
<td>No</td>
</tr>
</tbody>
</table>

Confidence level in brackets.
* Probably not due to tax amnesties

Talking with participants after the experiment it seemed that majority of people that showed the highest compliance rate has been “more honest” for moral reasons. Hence, it could be that
amnesties affected the willingness to follow personal moral constraints, due to the lack of reward of an honest behaviour that amnesties imply, resulting in an increase of tax evasion among the more honest part of taxpayers.

AE experiment showed also the rather obvious positive relationship between the evasion rate and the absolute number of tax amnesties used: those who used more tax amnesties obviously must be those who needed them. However there seems not to be a relationship between relative number of tax amnesties used and evasion rate. This means that cheaters don’t tend to use more amnesties than more honest taxpayers if they have chance, nor they made less use of that tool.

3.4 Effectiveness of work and tax compliance rates

Another important issue is the relationship between the performance in the first part of experiment, the small work, and the compliance rates in the second part of experiment. No clear evidence had emerged about the existence of a link between performance in the first part and compliance in the second part.

It has been observed in AE that the better is the performance in the first part, the lesser is tax compliance in the second part. Among 20 participants to that experiment the upper half by work’s performance had registered an average compliance rate of about 52.3%, while the 10 with worse performance showed a compliance rate of some 78.87%. On the other hand, in CE the average compliance rate for the top nine in work’s table is 74.58%, while for the 9 lowest is 65.48%

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8 The relative number of amnesties used is the ratio amnesties used/ number of periods with evasion for more than 150&. Note that even in case of evasion less than 150& a subject could use amnesty, but in order to simplify analysis this case has not been considered.
3.5 Regression

Given that tax amnesties seemed not to be so significant in affecting tax evasion, we would like to find the determinants of tax compliance in the tax amnesty experiment. We do this performing an OLS regression of declared income by participant $i$ in round $j$ on some variables. To see if compliance decreases proceeding with the rounds we consider as first variable (T) round number $j$ (assuming values from 1 to 22). A second variable (PC) is introduced to see if tax amnesties have immediate effects on compliance and it indicates if declaration has been made after an amnesty has been proposed (0=no 1=yes). A third variable (A) is useful to see if participant declared less or more income after being audited. We expected that, even if audit probability was not influenced by precedent audits, in other words is constant and the same for all participants, after being audited (0=no 1=yes) in the previous round a participant declared less income (bomb crater effect\textsuperscript{9}). If so happens, coefficient must be negative. The fourth variable (S) is another dummy variable. It is useful to test if after the first amnesty declared income tends to decrease. Variable’s value is 0 if declaration has been made in round from 1 to 9, and is 1 if it has been made in rounds 10 to 22. The fifth variable indicates participant gender (0=female 1=male). The sixth variable (POL) indicates political orientation (From 1 to 7; 1=extreme left 7=extreme left), the seventh (REL) measures frequency of religious celebration attendance beyond particular occasions (1 to 6; 1=never 6=everyday), used as a proxy variable of participant religiosity. The eighth one (FAM) indicates participant perception of his family’s opinion about tax evasion (1 to 5; 1=absolutely tolerated 5=absolutely condemned).

The regression equation hence is

$$R_{i,j} = \alpha_0 + \alpha_1 T_{i,j} + \alpha_2 PC_{i,j} + \alpha_3 A_{i,j} + \alpha_4 S_{i,j} + \alpha_5 SE_i + \alpha_6 POL_i + \alpha_7 REL_i + \alpha_8 FAM_i + e_{ij}$$

Results are reported in table 4.

\textsuperscript{9} “... troops under heavy enemy fire hide in the craters of recent explosions, because they believe it highly unlikely for two bombs to fall exactly in the same spot at short time-distance” (Guala and Mittone, n.d, page 9)
Regression shows that no variable related to amnesties, such as PC and S, is significant to explain declaration made by participants in tax amnesty experiment, nor there’s a strong evidence of a trend of decreasing of declared income through time.

**Table 4 Explaining tax compliance using OLS regression**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coefficient</th>
<th>Standard Dev.</th>
<th>t-value</th>
<th>t-prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1,1442</td>
<td>171,27</td>
<td>-0,007</td>
<td>0,9947</td>
</tr>
<tr>
<td>Round</td>
<td>-8,1811</td>
<td>4,3781</td>
<td>-1,869</td>
<td>0,0624</td>
</tr>
<tr>
<td>Declared after an amnesty</td>
<td>62,861</td>
<td>38,953</td>
<td>1,614</td>
<td>0,1073</td>
</tr>
<tr>
<td>Declared the round after being audited</td>
<td>-94,929</td>
<td>40,597</td>
<td>-2,338</td>
<td>0,0198**</td>
</tr>
<tr>
<td>Declared in round 10(\leq j \leq 22)</td>
<td>-16,359</td>
<td>59,108</td>
<td>-0,277</td>
<td>0,7821</td>
</tr>
<tr>
<td>Gender</td>
<td>-293,05</td>
<td>29,549</td>
<td>-9,917</td>
<td>0***</td>
</tr>
<tr>
<td>Political orientation</td>
<td>75,574</td>
<td>20,589</td>
<td>3,671</td>
<td>0,0003***</td>
</tr>
<tr>
<td>Religiosità</td>
<td>-28,991</td>
<td>15,374</td>
<td>-1,886</td>
<td>0,0600</td>
</tr>
<tr>
<td>Participant’s family degree of condemnation of tax evasion</td>
<td>159,27</td>
<td>26,145</td>
<td>6,092</td>
<td>0***</td>
</tr>
</tbody>
</table>

\(R^2=0,301443\) \(F(8,431)=23,248\) \([0,0000]\)

Significance level: **5%; ***1%

A significant variable is the one that indicates if a declaration has been made the round after an audit took place. Regression shows clearly that after an audit declared income falls. This is interesting to notice since audited subjects are chosen by independent bernoullian draws, hence the probability of being audited is constant.

As pointed out before, declared income strongly depends on participant gender: males showed the tendency to evade more than female. Table 4 reports the extreme high significance of gender
variable and the negative effect on compliance when it assumes the value 1. No significative sign of
influence of frequence of religious celebration participation on tax compliance has been registered.
From a political view, participant right oriented tended to declared more income.
One of the strongest result is the influence of participant belief of his family attitude about tax
evasion. Regression shows that the more a participant believed that evasion is condemned in his family, the less he evaded in tax amnesty experiment.

3.6 More on gender and bomb crater effect

As pointed out in some other tax evasion experiments, in AE men cheated more than women. 
Average tax evasion rate for males has been about 49,35%, while females’ tax evasion rate has been about 16,13%. This could be explained by difference in attitude towards risk noted by many researchers. For example Eckel and Grossman (2003) reported many situations where is reported that men tend to assume a riskier behaviour: for example, “men are more likely to engage in risky behaviour, such as gambling” (Eckel and Grossman, n.d., pag. 3).

Also CE showed that men cheated more than women: male’s average evasion rate has been 37,8%, while female one has been 24,93%

Another experiment that we performed with the same tax structure, but without any amnesty offered gave the same evidence. 16 students participated to this experiment that lasted 13 rounds: the average male tax evasion rate has been 41,8%, the female one 22,43%.

Bomb crater effect has been observed in many experiments\(^\text{10}\) we performed with the same tax system but without an amnesty. Table 5 reports how subjects changed behaviour after being audited. First column considers any changing in behaviour, while second column considers only changing on income declared for more than 300\& out of 1000\&.

\(^{10}\) The first control experiment that we performed, the one cited above, lasted only 13 rounds. Due to his short number of rounds that made it unuseful as control experiment, a new control experiment has been performed (CE). However, to study the existence of bomb crater effect we included also data from that experiment, since its structure is the same of CE
Table 5 Bomb crater effect

<table>
<thead>
<tr>
<th>Declared income after audit</th>
<th>Whatever change</th>
<th>Changings more than 300%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>47</td>
<td>28</td>
</tr>
<tr>
<td>No change</td>
<td>40</td>
<td>71</td>
</tr>
<tr>
<td>Higher</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>101</td>
</tr>
</tbody>
</table>

Table 5 shows that, considering whatever variation, about 47% of declarations made the round after the one where subject has been audited is for less amount, while only about 14% of the times income declared improved after an audit. Moreover, considering variations of income declared bigger than 300% we noticed that about 28% of the times income declared has been lower the round after an audit took place, while only 2% of the times declared income improved. Chi-square test confirms that we can reject hypothesis that after an audit an increase of declared income is as likely as a decrease or no significative changing. (p-value<0.001).

Hence, the effect of an audit is an increase of tax evasion. It must be noticed, however that audit probability was fixed and perfectly known by every participant.

Conclusions

Tax amnesty is a widely used tool used by many States to raise tax income. However, reality shows that they are usually not so effective to do so. This experiment has been designed to test whether giving multiple tax amnesties could lower tax compliance. Results showed that this doesn’t clearly happen.
The experiment showed that among the variables considered the most important are the fact of being audited the round before, taxpayer gender and the family’s opinion about tax evasion.

First variable suggests not using random schemes of auditing, and that a government has to keep his eye on audited taxpayer. However the result is given by a situation of knowledge by each participant of the probability of the audit probability, a very unlikely situation in a real context.

Second factor, gender effect, gives some (extravagant) indication to the government that wants to implement an effective policy. The advice would be to focus more on male taxpayers that seem more likely to evade than on female ones.

The role of risk aversion in tax reporting behaviour has been widely discussed. The gender effect found in these experiments is a strong argument to defend the role of risk aversion in taxpayer’s choice.

The most relevant factor in this experiment seems to be the indication that taxpayer is influenced by the affective environment where he/she lives. Family environment seemed to play a crucial role in determining subject’s honesty. To implement educational program in the school in order to educate future taxpayers on the need to pay taxes could be a very useful policy.

Moreover, talking with participants after the experiment, the kind of public good seemed to play an important role as incentive to be honest.

Those considerations indicates that if somebody wishes to study tax evasion, he must surely consider audits’ deterrence effects, but also that it is necessary to go beyond audit probability and penalties, looking for educational factors, moral factors, and reciprocity between taxes and goods received.
References


11 Last access data reported for internet links are in Italian time (GMT +1)


