Who is More Honest in Tax Declaration Decisions, the Guilty or the Ashamed?

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Abstract. This work is to find the differences in tax compliance between two categories of people: the guilty and the ashamed. We divided the participants of tax payment experiments into different categories by a questionnaire, analyzing the data of the experiments. Results indicate that the ashamed exhibit a higher level of tax compliance than the guilty do with no public good and unaware of peer behavior. Additionally, we analyzed the reaction to public goods and peer behavior. Thus, the analysis indicates more discoveries: (1) the guilty improve the level of compliance under the mechanism of returning public goods linearly but decline when receiving fixed public goods; (2) returning public goods has no significant effect on the ashamed; (3) the guilty perform herd behavior following peer compliance; (4) peer behavior on tax compliance has little effect on the ashamed.

Introduction

Tax Compliance is Affected by Psychological Factors

Tax payment, the basis of the operation of national institutions, plays an important role in the distribution of income [1]. In general, paying taxes can not only serve public goods but also guarantee social fairness. However, tax evasion breaks the social equity.

Recently, experts have tried to analyze the factors which affect the behaviors of tax evasion or tax compliance in parameter setting or social psychology. For example, József Pántya and Judit Kovács’s experiment indicates that different tax systems lead to different level of tax compliance [2]. Allingham and Sandmo’s research finds that the methods of audit and punishment influence whether taxpayers declare their income honestly [3]. In addition, James ALM’s research reveals that neighbors’ tax payment has impacts on individual tax declaration decisions [4]. Furthermore, Li-Chen Hsu finds that high public goods returned can improve the level of tax compliance [5].

In general, exogenous factors which have been analyzed are sufficient, while the study of endogenous factors explained with the theory of psychology and sociology is still in need. Recently, James ALM finds that the United States has the lowest level of tax evasion over the fifteen countries investigated, which include another fourteen European countries [6]. His research indicates that some endogenous factors influence people’s tax compliance, such as individual tax morale. And in Pengfei Liu’s research on public goods return, the feeling of exchange equity influences tax compliance significantly [7]. There is a tendency of considering both exogenous and endogenous factors in tax compliance experiments.

The Guilty and the Ashamed

This paper focuses on two emotions. Guilt and disgrace are both negative emotions in daily life. Experts have tried to distinguish disgrace from guilt. Helene Flood Aakvaag claimed guilt is a tendency to feel bad about self while disgrace is a tendency to feel bad about a specific behavior [8]. In other words, if someone realizes that he takes the blame to something harmful for others, he will feel guilty, while disgrace emerges when a person is found doing something wrong by others.

Some sociologists define Guilty Culture and Shame Culture, dividing people into two categories: the guilty (the people who have more sense of guilt) and the ashamed (the people who have more
sense of disgrace). Evidence reveals the behavioral differences between the guilty and the ashamed. Zhang’s research indicates that both of the two emotions cause compensation behavior and escaping behavior, but disgrace only leads to escaping behavior significantly in confidential conditions [9]. By Zhang’s findings, we guess that the guilty would have a higher level of tax compliance than the ashamed did in confidential conditions, for the ashamed lacking compensation behavior.

The Structure of this Paper

The structure of this paper is as follow. In Section 2, we introduce the data that we analyze, including the summary of the experiments and the categorization of participants. In Section 3, we present the results of our analysis. In Section 4, we list the conclusions of this work.

Data

In this work, the data we analyzed derived from a series of tax payment experiments operated by our previous team from 2011 to 2012. They used the z-tree software which is developed by University of Zurich [10] in the laboratory. With analyzing the data, we compared the level of tax compliance between the guilty and the ashamed in order to find which category is more honest in tax declaration decisions. Higher declaration means higher tax compliance.

The Summary of Experiments

In the experiments, receiving 1000 EC (Experimental Currency) per round (20 rounds in total), each participant only had to declare an income \( x \) (\( x \) could be any figure from 0 to 1000) on a computer independently and confidentially. Depending on the declared income \( x \), the computer deducted \( tx \) (\( t=0.4 \)) as a tax. Then the computer randomly audited \( p \) (0.20\(<\)p<0.25) of the subjects per round to see whether they declared their actual income in each round. If a subject was audited, he would not only pay off a tax of 1000\(t\) that should have been paid but pay a penalty which was as \( f \) times as the amount of evaded tax (\( f=1.5 \)). To avoid unwanted effects, the subjects did not know whether they were audited until all the rounds ended. Above all, the after-tax revenue \( \pi \) of a subject at the end of each round is as shown in Figure 1. It can be inferred that a subject will obtain 1000\((1-t)\) if he declares true income. And the revenue is positively correlated with the real revenue (Mean revenue \(\approx\) 40RMB).

For further analysis on effects of public goods return and peer behavior, we chose five groups (FLP, FHP, LP, RHE and RLE) of the subjects (150 subjects):

- **Part 1** (no public good in the 1st~10th rounds, and return public goods in the 11th~20th rounds):
  - a) FLP (26 subjects): return a low level of public goods fixedly (100 EC per round);
  - b) FHP (25 subjects): return a high level of public goods fixedly (400 EC per round);
c) LP (33 subjects): return public goods linearly (1/3 of tax) depending on the taxes all the subjects paid (including the part paid back because of audit);
   • Part 2 (inform the subjects at the end of each round that):
   d) RHE (33 subjects): inform each subject that a high proportion of the subjects do not declare true income;
   e) RLE (33 subjects): inform each subject that a low proportion of the subjects do not declare true income.

All the information presented above was known by each subject before the formal experiments. but the participants did not know the information retuned in RHE and RLE was false.

The Categorization of Participants

Overall, 150 participants (42.7% females) who are chosen were students from Beijing Normal University or Panjin Vocational-technical School. The participants were recruited from different majors (management and economics (44.0%), natural sciences and mathematics (24.0%), engineering (8.0%), arts and other social sciences (2.0%) and not record (22.0%)).

In this work, all the participants are divided into 3 categories (the guilty, the unobvious and the ashamed), according to two questions of the questionnaire attached to the experiments:
   • Q1: Would you feel guilty if you were a tax evader but not audited?
   • Q2: Would you feel ashamed if you were a tax evader and audited?

Q1 was to measure guilt of the subjects, while Q2 was to measure disgrace of the subjects. Each participant had to answer Q1 and Q2 after the experiments. Answers of the questions were five-point scales, ranging from (1) “Completely disagree” to (5) “Completely agree”.

And then we divided all the subjects into 3 categories (the guilty, the unobvious and the ashamed) by the two answers (figure a₁ towards Q1 and figure a₂ towards Q2):
   • if a₁>a₂, the subject belongs to the guilty (17 subjects, 11.3%);
   • if a₁=a₂, the subject belongs to the unobvious (41 subjects, 27.3%);
   • if a₁<a₂, the subject belongs to the ashamed (92 subjects, 61.3%).

For example, if a subject chooses (1) in Q1 and (3) in Q2, he (or she) will be categorized to the ashamed because 1<3. The summary of categorization is exhibited in Table 1.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of subjects</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>The guilty</td>
</tr>
<tr>
<td>FLP</td>
<td>4</td>
</tr>
<tr>
<td>FHP</td>
<td>3</td>
</tr>
<tr>
<td>LP</td>
<td>4</td>
</tr>
<tr>
<td>RHE</td>
<td>3</td>
</tr>
<tr>
<td>RLE</td>
<td>3</td>
</tr>
</tbody>
</table>

| In total | 17 | 41 | 92 | 150 |

As we speculate, the phenomenon in which the guilty is a minority fits our perception of current situation of Chinese society, since there is not a common religion around Chinese people.

Analysis and results

In this section, the levels of declaration of the guilty and the ashamed are compared. We analyze the data in two-independent-sample non-parametric test (Mann-Whitney test) to verify that the guilty and the ashamed have different levels of tax compliance.

In addition, there are three mechanisms of public goods return (FLP, FHP and LP) and the mechanisms of feeding back information about peer behavior (RHE and RLE). Our further task is to observe the differences in reactions to these mechanisms between the two categories of the subjects.
No Public Good and Unknown Peer Behavior

In the 1st~10th rounds of FLP, FHP and LP, the subjects faced the same experimental parameters with unknown peer behavior and no public good received from the computers.

As shown in Figure 2, the declaration of the ashamed (485.0~636.9 EC) is significantly higher than that of the guilty (273.6~524.3 EC, with p value<0.05) in the 1st~10th rounds. The guilty declare about 41% of income on average, 15 percent lower than the ashamed do. Obviously, the ashamed is more honest, opposite to the guess raised in Section 1.

By the experimental parameters, each participant gains the highest expectancy of the revenue only when he (or she) declares 0 EC. Thus, when a subject does not declare 0 EC, it is certain that some irrational factors prevent him or her from making a rational choice. The irrational factors can be the feeling of guilt and disgrace, which push people to declare true income. However, the computers do not release the names of tax evaders. Hence there is little disgrace that the evaders feel about. Thus, it is guilt that stimulates the participants to declare income honestly.

According to our guess, the guilty would have more psychological motivation to declare true income. But in fact, the ashamed declared more. There may be three causes:

(1) The defect of the experimental mechanism: Some participants realized that declaring less did no harm to others, since the tax they paid would not be returned. Declaring more or less had no impact on the revenue of others. Thus, the participants might experience no sense of guilt making a rational choice.

(2) Making a distinction between the experiments and reality: Clicking the mouse is quite different from dealing with the tax payment affairs. Some participants who would pay taxes honestly in reality might make a difference between the experiments and reality. So they evaded tax in the experiments.

(3) Distrust: Some subjects might disbelieve that we would keep evaders’ name a secret. If so, the ashamed would be stimulated to declare true income in the experiments.

It is uneasy to overcome all the imperfection of the experiments. But at least, it is necessary to make participants know that they would do harm to others if evading tax. And taking participants into their roles quickly is another effective approach. Trust with subjects is the basis of the experiments.

Public Goods Return

We wonder how different the guilty and the ashamed react when public goods returned. Initially, we guess that the guilty would improve the declaration with public goods returned, for the feeling of guilt from no contribution to the public. Theoretically, the guilty finally even declared much more than the ashamed do as the time goes on. Thus we compare the declared income in the 1st~10th rounds with that in the 11th~20th rounds, for the guilty and the ashamed of FLP, FHP and LP respectively.

According to the performance of all the subjects of FLP, FHP and LP, overall, there is no significant difference in the declaration either of the guilty or the ashamed from the 11th round, in which public goods begin to be returned (p value>0.05, in double-sample paired non-parametric test).
As shown in Figure 2, both the guilty and the ashamed keep the levels of their declared income as the same as the first 10 rounds, when there is no public good. To our surprise, the ashamed continue declaring more income than the guilty do, even without a tendency of approaching.

To find out the reasons why neither the guilty nor ashamed have no change faced with public goods, we compare the performance of both categories under different mechanisms of public goods return. In total, there are three ways to return public goods to each subject: (1) FLP (a fixed low level of public goods), (2) FHP (a fixed high level of public goods) and (3) LP (linear public goods).

As shown in Figure 3, only under the mechanism of LP do the guilty improve their declaration. With public goods returned fixedly, the guilty even decrease their declaration compared with the performance in the 1st–10th rounds. In other words, returning public goods fixedly cannot make the guilty improve their declaration but returning public goods linearly can.

![Figure 3. The extent of mean declared income change of FLP, FHP and LP from the 1st~10th rounds to the 11th~20th rounds.](image)

Note: A positive change indicates the subjects increase their declaration on average from a condition with no public good return to public goods return, while a negative change signifies a decrease of declaration.

What is the difference between the two mechanisms is that returning linearly makes the amount of public goods positively correlated with the taxes paid, while returning fixedly does not have such relationship. If a subject of LP evades tax, he (or she) will harm the interests of the collective, because the amount of public goods returned to each subject will be reduced. Hence the feeling of guilt generates from tax evasion under such treatment of returning public goods linearly. Oppositely, when the computers return fixed public goods, the subjects only regard the public goods as extra revenue. However, the ashamed does not change their decisions obviously when they begin to receive public goods, quite different from the guilty. Though the difference is what we expected, for little feeling of disgrace generates.

Consequently, our discoveries indicate that it is not public goods change the decisions of the guilty but the way to return public goods. Evidence reveals that only returning public goods linearly stimulates the guilty improve the tax declaration and any way of returning public goods has no effect on the ashamed.

**Peer Effect**

In order to find more difference in tax payment decisions of the two categories, we choose the mechanisms of feeding back false information about peer behavior to participants and observe how different the reactions of the guilty and the ashamed have with receiving the information. After the participants chose the declaration in each round, each of them would receive a message: $r$ of the participants declared less than their true income in this round. Introduced in Section 2, in RHE, $r$ is higher than the actual proportion, while in RLE, $r$ is lower than the actual proportion. Thus, in the experiments, the subjects of RHE would have a false impression that there were a very high
proportion of the subjects evading tax, while the subjects of RLE would be impressed that there was a very low proportion of the subjects choosing to evade tax. In fact, the designers did not change the level of tax compliance directly, but changed the impressions of the subjects on the level of tax compliance among all the subjects depending on feeding back the false information on peer behavior.

We guess that the guilty would have different declaration when peer behavior is different, while the ashamed would have similar declaration which was not affected by peer behavior.

As shown in Figure 4, the results verify our guess.

RHE: The guilty keep a very low level of mean declared income through all the 20 rounds (Mean=165.0 EC). Even the highest level (in the twelfth round) is just half of the true income. Meanwhile, the mean declared income of the ashamed has a gradual trend of reduction (from 814.3 EC to 403.6 EC, reducing about 21.6 EC per round). Comparing the declared income of the two categories, we find that the declared income of the ashamed is significantly higher than that of the guilty (p value<0.01, in double-sample paired non-parametric test).

![Figure 4. Mean declared income of the guilty and the ashamed of RHE and RLE.](image)

RLE: Both the guilty and the ashamed have a gradual reduction in the amount of declared income. The guilty reduce 26.3 EC per round on average, which is a little quicker than that of the ashamed, the reduction of whom is 13.2 EC per round on average. Comparing the declared income of the two categories, we find that the declared income of the ashamed is significantly higher than that of the guilty (p value<0.05, in double-sample paired non-parametric test).

Hence we find that peer behavior has significant effects on the guilty but not the ashamed in tax declaration decisions. Herd behavior and peer pressure are obviously performed by the guilty. In RHE, when the guilty know that lots of subjects choose to evade tax, they keep a low level of declaration. We guess it is because herd behavior makes illegal behavior not so guilty. However, in RLE, the guilty obviously have a higher declaration than in RHE. The change may come from peer pressure. When the guilty know that there is a small number of subjects evading tax, a large number of subject who declare their true income bring potential pressure to bear on the guilty. They will feel guilty if they behave differently from the majority. As for the ashamed, their declaration is not obviously affected by peer behavior, for the similar tendency of the two lines of the ashamed in Figure 4. And the decreasing trend of the declaration can be explained that the subjects were more and more rational in the experiments.

**Conclusions**

This work indicates that the ashamed have higher tax compliance than the guilty do with no public good returned and unaware of peer behavior.

In addition, further discoveries are as follows:
• The guilty improve the level of compliance under the mechanism of returning public goods linearly but decrease when receiving fixed public goods;
• Returning public goods has no significant effect on the ashamed;
• The guilty perform herd behavior obviously following peer compliance;
• Peer behavior on tax compliance has little effect on the ashamed.

Through the whole work, it is certain that this paper analyzes tax compliance issues from a new perspective, which is based on categorization of people from differences in cultural and psychological attributes. We verify different categories of people have different behavior in tax declaration decisions and different reactions to public goods return and peer behavior.

However, some problems are found as well. Firstly, more applicable methods to categorize subjects wait to be found in further researches. Secondly, when designing tax payment experiments, designers are supposed to consider the balance between simplicity and reality, for example, adding the mechanism of linear public goods return. In fact, the main purpose of paying taxes is to be returned public goods. Thirdly, that the sample size is too small is another deficiency of this work. Further study is in need in the future.

References