

## BEYOND PUNISHMENT: A TAX COMPLIANCE EXPERIMENT WITH TAXPAYERS IN COSTA RICA

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### **Abstract**

*Tax compliance experiments have been conducted with students and have focused on the effects of deterrence on tax compliance. However, important insights can be gained looking at alternative instruments. A main purpose of this paper is to conduct an experiment in Costa Rica not with students (exclusively) but with taxpayers, holding traditional factors, such as the probability of penalty and the fine rate, constant and thus analysing to which extent other factors as fiscal exchange, moral suasion, and positive rewards systematically influence tax compliance. Our findings indicate that these factors increase ceteris paribus the compliance rate.*

### **I. Introduction**

Since the theoretical work of Allingham and Sandmo (1972), tax compliance literature has flourished. Tax compliance behaviour has been studied theoretically, using field data and laboratory experiments. Experimental studies have strongly increased in the last 15 years. In the late 80s researchers, like Paul Webley mostly

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psychologist (see, e.g., Webley, 1987; Webley and Halstead, 1986; Webley, Morris and Amstutz, 1985; Webley, Robben and Morris, 1988 and Webley, Robben, Elffers and Hessing, 1991) contributed to the tax compliance literature. In the 90s, more and more economic researchers emerged, as James Alm (see, e.g., Alm, 1991, 1998; Alm, Jackson and McKee, 1992a, 1992b, 1992c; Alm, McClelland and Schulze, 1992, 1999) who strongly influenced the orientation of the tax compliance experiments.

Why is it useful to conduct tax compliance experiments? In laboratory tax experiments, researchers have the possibility to control tax reporting institutions (enforcement effort, tax rate, income level). This allows to accurately measure the influence of a specific effect. Furthermore, measurements of tax evasion and tax compliance involve some problems. It is difficult to obtain information about tax compliance behaviour. Even if data about tax evaders could be obtained, tax evaders' behaviour could be affected by specific circumstances, which are difficult to control. Experimental approach circumvents the problem of obtaining honest responses on illegal behaviour.

Many researchers have a sceptical view about tax compliance experiments. They argue that the artificiality of the laboratory setting makes it difficult to generalise results into real world. Certainly, one must pay attention and be careful when whispering tax experimental results in ears of the "princes". It is important to design an experimental environment close to the naturally occurring environment and therefore, as Alm, Jackson and McKee (1992a) argue, experimental setting must capture the essential properties of the natural setting and is a good opportunity to investigate behavioural reactions to policy changes.

Other researchers have doubts that students are a satisfactory sample for studies in tax compliance behaviour. It can be argued that students are not useless but the results should be interpreted carefully (see Webley, *et al.* 1991). On the one hand there is evidence that students' responses are not different from those of other subjects (see, e.g., Baldry, 1987). The argumentation would be that the cognitive processes in the experiment are not different between subject pools (see Alm, 1998). Gërxhani and Schram (2001) show in their cross-country experiments in the Netherlands and Albania the importance of subject pools. They used different groups as high school pupils, university students, high school teachers, university non-academic personnel and university teachers. They found, for example, that the aggregated group of Dutch pupils and students evaded taxes more often than the same group in Albania, and more often than teachers and personnel in both countries. Furthermore, Albanian university students over-report the income more often than the high school pupils. However, in their study it can be criticised that they also used specific subject pools and not general population distribution. First of all, many of the subjects in the experiments of Gërxhani and Schram (2001) do not pay taxes. Pupils might not be a good subject group to analyse tax compliance. In general, highly educated people working or studying in the education sector participated in the experiment. Thus, it might be difficult to draw general conclusions based on the used subject pools.

Our experiment has been conducted in Arenal, a small village in Costa Rica (in 1998, 2495 inhabitants, see INEC 2002, p. 36), with 'real' taxpayers with a greater job variation compared to the experiment by Gërkhani and Schram (e.g., teacher, housewife, cook, student, farmer etc.). Costa Rica is an interesting country to do experiments as it has been one of the most stable democracies in Latin America. The top marginal income tax rate is 25 percent, the average taxpayer's marginal is 0 percent. Any individual employed in Costa Rica pays a monthly withholding tax rate based on his/her salary. Thus, Costa Rica has not a self-filling system as Switzerland or the United States. Government expenditures in 1998 was 19.8 percent of the GDP. The index of economic freedom evaluates the fiscal burden in the year 2002 with a score point of 3.0<sup>1</sup>, which is around the average considering Latin and Caribbean countries (see Table A1 in the Appendix). The size of the shadow economy as percentage of GDP, depending on the measurement method varies between 23.2 and 34.5 (1989-1993). The average of Central and South America is between 36.4 and 43 percent (Schneider and Enste, 2000). The Competitiveness Index reports a tax evasion index of 2.53<sup>2</sup> (ranking position 43 out of 59 countries around the world, see World Economic Forum 1999, p. 244).

As we were doing an experiment with individuals from different backgrounds, we paid attention to the design being easy to understand. Thus, we have not conducted a laboratory experiment. This procedure is quite novel in the tax compliance literature. We do not find many experiments that work with real taxpayers. Furthermore, there are hardly any experiments conducted in Latin America.

## II. Beyond Deterrence

Tax compliance seems to depend upon numerous factors and is not only affected by deterrence and economic factors (for a survey, see Torgler, 2001, 2002a). While many experiments have focussed on the effect of deterrence factors as, e.g., fine rate, audit rate, more recent experiments put more stress on letting these deterrence factors constant and analysing to which extent other determinants matter (e.g., Bosco and Mittone, 1997; Torgler, 2001). Tax compliance experiments at first strongly motivated by theory, get an incentive to go beyond simple theoretical concepts based on the traditional deterrence factors and checked the relevance of social and institutional factors (for surveys, see Torgler, 2001, 2002a). Taxpayers may be driven by moral rules and sentiments. They might bear moral costs if they do not pay the taxes and act as free-riders. Elffers (2000) shows that it is a long way before a person becomes a tax evader. He defines three steps in the staircase to tax evasion: (i) taxpayers have to be seized by a will not to comply, (ii) not everyone with the inclination to evade taxes is able to translate the intention into action, and (iii) the staircase, where individuals can be found who feel inclined to evade taxes and check for the opportunity to do so. In this staircase

three standard economic theory comes into play and individuals evaluate the expected value of evasion.

Similarly, other researchers have argued that many individuals do not even think of tax evasion. Pyle (1991) criticises the assumption that individuals are amoral utility maximisers:

“Causal observation suggests that not all individuals think quite like that. Indeed, it seems that whilst the odds are heavily in favour of evaders getting away with it, the vast majority of taxpayers behave honestly” (p. 173).

Frey (1999) uses the expression ‘ipsative possibility set’ (p. 196) and shows that there are taxpayers who do not even search for ways to cheat at taxes. Long and Swingen (1991, p. 130) argue that ‘some individuals are simply predisposed NOT to evade’. Experiments indicate that there are individuals who always comply, that is, a certain compliance exists even without (low) penalties and audits.

The presented model of Elffers (2000) reduces the significance of coercive instruments to resolve the social dilemma of tax payments. His conclusion (‘policy advice’) is to try to prevent people from reaching the final step of the staircase. Thus, the instrument of deterrence is not the only instrument to make individuals comply. It can even be contra-productive, as Frey (1997) points out. Increasing monitoring and penalties for noncompliance, individuals notice that extrinsic motivation has increased, which on the other hand crowds out intrinsic motivation to comply with taxes. If the intrinsic motivation is not recognised, taxpayers might get the feeling that they can as well be opportunistic.

## 2.1 Fiscal exchange

Alm, McClelland and Schulze (1992) suggest that compliance occurs because some individuals *value* the public goods their tax payments finance. If the amount individuals receive from a given tax payment increases, their compliance rate rises. Individuals then pay taxes to receive government services even when there is no risk to be detected or punished. Positive actions by the state are intended to increase taxpayers’ positive attitudes and commitment to the tax system and tax-payment and thus compliant behaviour (e.g., Smith, 1992; Smith and Stalans, 1991). Spicer and Lundtstedt (1978) as well as Smith (1992) hypothesise that taxpayers will feel cheated if they believe that their tax burden is not spent well. If the government acts trustworthily, efficiently, and in correspondence with taxpayers’ preferences, taxpayers might be more willing to comply with the taxes. On the other hand, perceived unfairness increases the incentive to act against the tax law, as psychological costs are reduced. The relationship between taxpayers and government can be seen as a relational contract or psychological contract, which involves strong emotional ties and loyalties, based on an exchange between the government and the taxpayers in both directions. Such a psychological tax

contract can be maintained by positive state actions. With World Value Survey data from Europe and North America Torgler (2002b, 2002c) found that trust in government significantly improves tax morale.

## 2.2 Moral suasion

Economists are generally sceptical about the effects of moral suasion. We find some studies in the field of monetary or environmental economics. Many years ago, Breton and Wintrobe (1978) analysed the relationship between central and commercial banks. They point out that the techniques of moral suasion “allow the central and commercial banks to exchange views on the current economic situation and, develop a common view of the economy” (p. 214). And Baumol and Oates (1979) stresses that

“voluntary compliance does have several significant and useful roles to play and (...) some of our colleagues have been a bit too ready to reject it out of hand” (p. 283).

Experiments can be used to analyse rather undeveloped areas as moral and social sentiments, social norms etc. In the early stages, Schwartz and Orleans (1967) carried out an interesting field experiment. Their approach was to determine the effects of moral appeals and threats of punishment on behavioural compliance with the tax laws. They found that moral appeals had a much stronger influence than punishment threats. These findings were important to focus the attention on different potential compliance factors. However, since then, little work has been done to analyse the relevance of moral appeals. In line with Schwartz and Orleans, McGraw and Scholz (1991) analysed the effects of moral suasion on tax compliance. People watched a video where it was applied to social responsibility. Researchers could not find a larger increase in income reporting compared to the control group.

In the last years we find tendencies in the tax compliance literature that researchers stress moral considerations. Andreoni, Erard and Feinstein (1998) argue in their tax compliance survey that adding moral factors into tax compliance models is an undeveloped area and Erard and Feinstein (1994a) have integrated honesty in a tax compliance model. In Erard and Feinstein (1994b) they formalised the impact of guilt and shame and incorporated it into taxpayers' utility function. Roth, Scholz and Witte (1989) identify moral commitment as important determinants that affect tax compliance. Erard and Feinstein (1994b) point out:

‘One important reason why the conventional expected utility model of tax compliance overpredicts the prevalence and extent of tax evasion is that compliance behavior is assumed to be motivated solely by financial considerations, whereas in reality many taxpayers are influenced by a variety of other feelings, which we will call moral sentiments’ (p. 74).

If moral sentiments or moral commitments play an important role in the degree of tax compliance, it might be interesting to analyse to which extent moral suasion can influence moral sentiments and thus the degree of co-operation. Surprisingly, tax compliance literature has rarely analysed the effects of moral suasion on tax compliance. What we find is an analysis of the effects of information and complexity on tax compliance (for a survey, see Torgler, 2002d). However, there is a lack of economic models incorporating information that do not start with the assumption that individuals have well defined preferences. Even Gary Becker (1996) argues that values can no longer be treated as exogenous preferences and stresses the power of endogenous preferences as an extension of the utility-maximising approach, serving to unify often neglected aspects as habitual, social or political behaviour, addiction, emotions as love and sympathy etc. And Bowles (1998) states:

“If preferences are affected by the policies or institutional arrangements we study, we can neither accurately predict nor coherently evaluate the likely consequences of new policies or institutions without taking account of preference endogeneity” (p. 75).

One policy might be to influence individuals' preferences using moral suasion. In the political process this instrument is often used. Frey and Kirchgässner (1994) point out that politicians often try to create an anti-inflation-mentality to reduce the expectations about inflation and thus to reduce the costs of disinflation. In general, economists are rather cautious regarding the effects of moral suasion. Frey and Kirchgässner (1994) give two examples (p. 404). Petrol enterprises, as e.g., Shell (e.g., in Switzerland and in the United States, see also Baumol and Oates, 1979, p. 289) in the 70s have made large marketing campaigns to use unleaded gasoline despite its slightly higher price. However, after a short time a drop in sales of unleaded petrol has been observed. Shell's unleaded gasoline “Shell of the Future” reached only 5 percent of sales (Baumol and Oates, 1979). The governor of Oregon used large propaganda expenses and his personality to reduce the electricity consumption. After a reduction of two percent in the first month, no reaction was observed in the following months. The authors point out that moral suasion does not work in situations where individuals or institutions such as firms are under strong competitive pressure. In line with Baumol and Oates (1979), Frey and Kirchgässner (1994) are more optimistic about the effects of moral suasion in a state of emergency. They argue that in many countries moral appeals to the voluntary blood donating in an emergency situation were very successful:

“Happily, experience suggests that, in these instances, circumstances for effective voluntary cooperation are likely to be the most favorable” (Baumol and Oates, 1979, p. 283).

De Alessi (1975, p. 127) argues that individuals are more generous toward each other after a disaster. Such a situation changes individual utility function toward more “community feeling”. Baumol and Oates (1979) mention two examples from New York City. In September 1970 hospitals had a blood shortage. The response to a strong appeal for voluntary donations was so high that donors were willing to stand in line up to 90 minutes to donate blood. The appeals during a period of water shortage in the 60s achieved a reduction of water consumption between 4 and 6 percent. Frey (1997) points out that such a behaviour is a manifestation of intrinsic motivation. He states:

‘Economists should acknowledge that the motivation structure of individuals is more complex than in their traditional model. Once they accept that behaviour is not solely motivated by extrinsic motivation, they must become aware that their cynicism has considerable cost by damaging environmental moral (...) What is proposed is a partial rehabilitation of moral appeals in environmental policy – without giving up incentive instruments’ (p. 65).

Baumol and Oates (1979) stress that moral suasion should be used under specific circumstances, otherwise it can undermine voluntarism. It is interesting to notice that India’s tax amnesty 1997 was quite successful (additional revenue of 100 billions of rupees), as the state had engaged two private marketing enterprises to conduct a marketing campaign (based on moral suasion) to increase tax compliance.

However, some researchers have seen the importance to clarify this topic. Hasseldine (2000) stresses that moral appeals could help to frame tax compliance as a positive act. A very interesting study has been made by Blumenthal, Christian and Slemrod (2001). They have worked together with the Minnesota Department of Revenue and analysed the impact of moral persuasion on voluntary income tax compliance with a field experiment. They built two groups of 20,000 taxpayers where each group received two different treatment letters. Furthermore, they created a reference group of 20,000 people that received no letter. One letter described the way the revenue is spent and included the following statement: ‘So when taxpayers do not pay what they owe, the entire community suffers’ (p. 129). The second letter had the following statement: ‘Although some taxpayers owe money because of minor errors, a small number of taxpayers who deliberately cheat owe the bulk of unpaid taxes’ (p. 129). The authors point out that the intention was to communicate that tax compliance is very high and thus common among the taxpayers. Thus, both letters had the effect that tax morale costs of not complying increase. They used the difference-in-difference approach with data for the tax years 1993 and 1994. Compliance behaviour has been measured by the income reported or the tax paid and was compared with the reference group (no communication). They found that the average compliance from those who received the first letter was \$220 higher compared to the control group (0.08 percent of average income). However, the coefficient was not statistically significant. Similar, the percent of income reporting was not statistically significant in letter

two. Thus, this study did not find a significant effect of moral appeals. In a second step, Blumenthal *et al.* (2001) conducted a multiple regression in which they used the treatments as dummy variables to check other variables. The results indicate that people with greater opportunities to evade or avoid taxes (e.g., self-employees) are less susceptible to normative appeals. Interestingly, the authors also found that homeowners who might be more connected to the community are positively susceptible to letter 1 and negatively to letter 2.

### 2.3 Positive rewards

It might be interesting to focus on a different tax policy strategy than punishment to increase tax compliance: working with rewards. Rewards could be more effective than punishments for eliminating undesired behaviour or for motivating (see e.g., Nuttin and Greenwald 1968). There is only one theoretical study published in the *Public Finance Quarterly* by Falkinger and Walther (1991) that analysed the possibility of pecuniary rewards as an economic incentive for taxpayers to be honest. In their model a taxpayer who is investigated has to pay a penalty for the evaded tax and receives a reward for the paid tax. The authors show that on the one hand a mixed penalty-reward system improves the taxpayer's position and on the other hand does not lower the tax revenues of the government. Thus, introducing rewards coupled with an increase of the penalty constitutes a welfare improvement. The work of the authors shows that the analysis of positive rewards might be an important topic in the tax compliance literature which is just at its beginning:

'It is surprising that up to the present neither theoretical tax-evasion analysis nor the practiced policy against tax evasion has taken into account the possibility of a mixed penalty-reward system' (Falkinger and Walther, 1991, p. 77).

Alm, Jackson and McKee (1992a) have used experiments to analyse the effects of positive inducements upon tax compliance behaviour. They designed: i) a lottery treatment where subjects who were checked and found to be fully compliant for the current and the previous four rounds could enter in a lottery in which the chances of winning were 1 in 25, ii) a fixed reward session where fully compliants received a reward of 2 token, iii) an audit reduction. The results indicate that positive inducements have a significant and positive impact on compliance. However, although i) and ii) have the same expected value, the lottery session had the largest effect on compliance.

### III. Experimental Design

The 37 subjects in our experiment are volunteers from Arenal, a small village in Costa Rica. All subjects participated for the first time in an experiment. Each

session lasted about 40 minutes and they earned between 5 and \$15, depending on the amount of money they declared. It was not allowed to communicate with each others. We did not use fictive tokens as currency but real money. Tax compliance experiments have been criticised for being conducted with students. Thus, we carried out the experiment in Arenal with taxpayers having different professions. Furthermore, to reduce artificiality, individuals received real money in an envelope and from this money they had to give back a certain amount, similar to taxes. For simplicity, we conducted only one round.

In all experiment sessions we had a basic structure. People received an assigned income. They were informed that they had to pay back 1/3 of the amount. They had to decide how much they were willing to pay back to us. This decision was taken anonymously. Other participants could not see how much a person decided to pay back (see the Appendix for the experiment instructions).

People were well informed about the punishment parameters fine rate and audit probability. With this we wanted to control possible effects or bias based on uncertainty. They were confronted with a simple experiment based on neutral terms which helps to mask the context of the experiment, increase the control over subject preferences and avoid making subjects invoke different mental scripts (see Alm, 1998). In addition to the experiment, subjects also completed a post-experimental questionnaire (see Appendix). The questionnaire helps to get further control variables. Each treatment group was divided into two sub-groups. These two sub-groups received different amounts of money, 3,000 Colones (around 9 Dollars) and 1,500 Colones<sup>3</sup>. Four treatments have been made: 1) a control group, 2) a fiscal exchange group, 3) a moral suasion group, and 4) a positive rewards group. The degree of compliance in group two through four is compared with the control group.

The audit process followed a random procedure, with the probability of 1/6 to be audited. After the declaration, for every envelope a die was thrown. If the 6 was drawn, the envelop was checked for noncompliance. The drawing of the dice was done by a neutral personal. Before the experiment started, participants were informed that they could observe the drawing process. This helps to produce a certain procedure transparency. The fine was 500 Colones (low income group) and 1,000 Colones (high income group) and thus was not dependent upon the amount a person did not declare. In the next subsections we are going to explain shortly the structure of the different sessions.

### **3.1 Fiscal exchange/moral costs treatment**

Exchange equity refers to the perceived fairness between what taxpayers receive from the government in exchange for their paid taxes. Positive actions by the state are intended to increase taxpayers' positive attitude and commitment to the tax system, the tax-payment and thus compliant behaviour.

Thus, we considered a treatment in which a public good is provided. To analyse the recognition of government services, consumers' surplus derived from govern-

ment provision of the public good was 2. The resulting amount was then redistributed in equal shares to the members of the group<sup>4</sup>. To prevent framing effects, subjects were not informed that the surplus multiplier was a result of the state's efficiency. We would predict that higher surplus multipliers lead to higher tax compliance.

The surplus multiplier is not only an indicator of state efficiency. Participants could dislike the idea that a subject might suffer because of tax evasion, which reduces the total yield and so leaves less money for redistribution. Thus, with the surplus multiplier, subjective moral constraints are introduced. The underlying idea is that a taxpayer is not only interested in her/his own welfare, but also concerned about societies' welfare.

Thus, it can be predicted that taxpayers who get more favourable exchanges will become less distressed, will have higher moral costs of tax evasion and report more income than taxpayers with less favourable exchanges.

### **3.2 Moral suasion treatment**

One of the main problems in the analysis of moral suasion with experiments is the way moral suasion is integrated in the design. There might be a difference between the intended message delivery and the way people interpret this normative communication (see Bardach, 1989). Thus our intention was to communicate it short and clear. We did not use a long letter as in the field experiment of Blumenthal, Christian and Slemrod (2001). It is difficult to control to which extent people react to letters. Letters might give way to different interpretations and therefore reduce the control mechanism of experiments. We used the following statement:

*Although we will not be able to find out who among you might have been dishonest we want to point out that we greatly appreciate your behaving honestly and paying back the whole amount we have asked you for.*

As we have done only one experimental round we would predict that moral suasion has a positive effect on tax compliance.

### **3.3 Positive reward treatment**

In the positive reward session, a subject audited and found to be fully honest received a reward of 500 Colones in the low income group and 1,000 Colones in the high income group. Such a reward can also be seen as a compensation for the burden of investigation which the taxpayer has to pass if s/he is audited (see Falkinger and Walther, 1991). We would expect that a positive reward would increase tax compliance.

### 3.4 Modelling the incentive structure in the different sessions

#### 3.4.1 Control group

We are going to start with the basic structure and thus with the control group. An individual  $i$  receives an amount of  $Y$  Colones. A subject has to give back  $Y/3$  of the amount. However, the subject can decide to keep between  $Y$  and  $Y/3$  Colones and thus to return between 0 and  $Y/3$  Colones. Each subject decides to be honest (H) or not honest (NH). Non honesty means that a subject does not pay back anything. The expected utility of *not being honest*  $E(U(nh))$  for each individual is

$$E(U(nh)) = (1 - p)Y + p(Y - f) \quad (1)$$

where:

$Y$  is the received income  
 $p$  is the probability of detection and  
 $f$  the fine rate

The first part of the equation indicates the utility level if the taxpayer escapes detection, the second part, if the taxpayer is caught and punished. If we simplify equation (1) we obtain the following equation:

$$E(U(nh)) = Y - pf \quad (2)$$

The expected utility of being honest ( $E(U(h))$ ) is:

$$E(U(h)) = Y - Y/3 \quad (3)$$

An individual will have the incentive not to be honest if :

$$Y - pf > Y - Y/3 \quad (4a)$$

$$pf < Y/3 \quad (4b)$$

Equation (4b) indicates that it depends on the audit probability, the fine rate and the amount to pay back whether a subject is honest or not. If we integrate our design factors into condition (4b) (for income one:  $p = 1/6$ ,  $f = 500$ ,  $Y/3 = 500$ , for income two:  $f = 1,000$ ,  $Y/3 = 1,000$ ) we find that not being honest is the dominant strategy.

#### 3.4.2 Fiscal exchange group

Equation (1) and equation (3) have changed the following way:

$$E(U(nh)) = (1 - p)(Y + msG) + p(Y - f + msG) \quad (5)$$

$$E(U(h)) = Y - Y/3 + ms(G+Y/3) \quad (6)$$

where  $m$  is the surplus multiplier,  $s$  the individual's share of the group fund and  $G$  the amount the other group subjects have paid back,  $ms(G)$  is the amount someone who was not honest receives from the redistribution,  $ms(G+Y/3)$  the amount someone receives from redistribution if s/he is honest. Equation (7) results from a simplification of equation (5).

$$E(U(nh)) = Y - pf + msG \quad (7)$$

Compared to equation (2) we have an addition of the term  $+ msG$ . Thus an individual will have an incentive not to be honest if:

$$Y - pf + msG > Y - Y/3 + ms(G+Y/3) \quad (8a)$$

$$pf - msG < Y/3 - ms(G+Y/3) \quad (8b)$$

$$pf < Y/3 - ms(Y/3) \quad (8c)$$

Condition (8c) shows that not only the audit probability, the fine rate and the amount to pay back influence subject's behaviour but also the surplus multiplier and the share each person receives from the group fund. In our treatment design we have set the following conditions:  $m = 2$ ,  $s = 1/8$ . The surplus multiplier in our case should be c.p. higher than 6.67 to create the incentive to be honest. Thus, also in this setting or model it is the dominant strategy not to comply.

### 3.4.3 Moral suasion group

Traditional economics would use the same model we have used in the control group arguing that moral costs have no effect on tax compliance. However, it could be argued that moral suasion 'activates' our moral costs of not complying. People may not be comfortable with dishonesty. In order to consider this argument, the utility function in equation (1) could be expanded with a new factor  $d$ , which measures the disutility of not being honest. But it can also be argued that moral suasion does not 'activate' moral costs, but 'enforces' the moral costs of not complying. This would mean that we multiply the factor  $d$  with a factor  $a$  which measures the efficiency of the moral suasion. Moral suasion can have the intention to enforce tax compliance ( $a > 1$ ), like in our design. On the other hand appeals could have the intention to convince people not to pay their taxes ( $a < 1$ ) and thus to reduce moral costs. Such a situation could, for example, happen if people are unhappy about the way the state treats taxpayers. If we see moral suasion as an enforcement mechanism, the expected utility of *not being honest*  $E(U(nh))$  for each individual would have the following structure:

$$E(U(nh)) = (1 - p) Y + p (Y - f) - ad \quad (9)$$

Thus, an individual will have the incentive to comply if :

$$pf + ad > Y/3 \quad (10)$$

However, the problem of such a modelling is that moral costs are not directly observable. It is thus difficult to have an idea about the degree of  $d$ . There is the risk of modifying  $d$  to make it fit the observations.

#### 3.4.4 Positive reward group

In the positive reward session someone receives a reward if s/he is audited and found to be honest. The expected utility of being honest ( $E(U(h))$ ) in equation (3) changes as follows:

$$E(U(h)) = Y - Y/3 + pR \quad (11)$$

where  $R$  is the reward. An individual will have the incentive to be honest if:

$$pf + pR > Y/3 \quad (12)$$

In our design structure it would still be rational not to comply. The reward must be of more than 2,500 Colones in the low income group to create the incentive to be honest.

## IV. Experimental Results

The data evaluation will be done with traditional statistical methods, taking into account the small number of observations. First of all, Table 1 presents the results of the descriptive analysis.

TABLE 1  
TAX COMPLIANCE RATE IN THE DIFFERENT GROUPS

Group	Tax Compliance (in %)		
	Mean	N	Std. Deviation
1	57.50	8	43.01
2	85.00	8	35.05
3	90.00	8	19.27
4	100.00	13	0.00
Total	85.41	37	30.42

As we can see, our control group (group 1) has the lowest tax compliance. The highest tax compliance rate can be found in the positive reward session followed by the moral suasion session and the fiscal exchange treatment. It seems that the norm of reciprocity in the degree of tax compliance is followed by taxpayers where the government creates positive rewards or a fiscal exchange. The more the governments in exchange for an adequate tax price provide public services corresponding to taxpayers' preferences, and the more they honour honesty, the more taxpayers are willing to comply.

In general, the compliance rate is surprisingly high in the treatment groups 2, 3 and 4. It cannot be argued that the stakes that could be earned in our experiment in Costa Rica were so low that people had no incentives to opt for profit. Furthermore, it is interesting to notice that the moral suasion group had a higher compliance rate than the fiscal exchange session and that nobody in the positive reward session tried to evade, although the model indicates that it would be rational not to be honest. These findings are in line with many other experiments done with students which indicate that the compliance rate is higher than the expected utility model would predict. Such results motivate to expand the traditional expected utility theory we have used in equation (1) and to check the relevance of other theories. Schnellenbach (2002), for example, integrates the concept of cognitive dissonance into traditional neoclassic models. He assumes that psychological costs resulting from cognitive dissonance are considered by a taxpayer *ex ante* in his/her marginal choice of tax evasion. This opens the possibility that effects from the political-economic process can have an impact on tax evasion.

Interdependencies among the observations have been avoided using an appropriate design, where people participate only once in a specific group. This allows us to use independent sample methods. Evaluations of experiments often use nonparametric tests as it can be risky to presume that errors are normally distributed. Davis and Holt (1993) point out that experimental data has often a non-normal structure. Siegel and Castellan (1988) point out that a nonparametric statistical test specifies only very general conditions and none regarding the specific form of the distribution from which the sample was drawn. To test whether there is a significant difference between the treatment groups and the control group regarding the tax compliance rate, a Wilcoxon-Mann-Whitney test is often used in experiments. However, many experiments disregard that this test assumes that the distributions are the same, implying that the variability or variance of the distribution are equal (see Siegel and Castellan, 1988). Some researchers have shown that the Wilcoxon-Mann-Whitney test is not always appropriate, showing that its real level is highly sensitive to the combination of differently sized samples and different population levels of dispersion. On the other hand, the robust rank-order test is less sensitive to changes in distributional assumptions than the Wilcoxon-Mann-Whitney test (see Feltovich, 2003; Zimmerman, 1987; Zimmermann and Zumbo, 1993a, 1993b). Looking at our data set it makes sense to test the hypothesis, without assuming that the underlying distributions are the same, because the groups may differ in terms of variability. Therefore, a robust rank-order test has been used which was developed by Fligner and Pollicello (1981).

The null hypothesis would be that the tax compliance rates in the treatment groups are as in the control group. As with values as large as  $U$  the probabilities associated with the occurrence of the null hypothesis being true may not be determined by the normal distribution in the first three groups (8 observations), we use the tabled distribution for small sample sizes offered by Siegel and Castellan (1988). The robust rank-order test statistic  $U$  focussing on the differences between group 1 (control group) and 2 (fiscal exchange group) is 1.031. References to the table in Siegel and Castellan<sup>5</sup> show that the probability of obtaining a sample value of  $U$  as large as 1.031 when  $H_0$  is true exceeds 0.10 (critical value 1.295). Thus, the hypothesis  $H_0$  cannot be rejected<sup>6</sup>. On the other hand, analysing group 1 and 3 (moral suasion) shows a  $U$  value of 2.191 which is beyond the critical value of  $\alpha = 0.10$  but does not reach the value of  $\alpha = 0.01$  (2.954). Thus, we may reject the hypothesis  $H_0$  that there is no difference between group 1 and group 3. As the group 4 (positive rewards) has the highest compliance rate (100 percent), it can be supposed that there is a significant difference between group 1 and group 4.

Thus, the results indicate that positive incentives seem to be a good instrument to enhance tax compliance. The relatively strong effect of moral suasion is surprising. However, one important question regarding the effect of moral suasion is not analysed with such an experiment. Does moral suasion have sustainable influence over time? It might create a certain enthusiasm which gradually fades out over time. There are quite a few arguments against a long term effect of moral suasion on attitudes and behaviour. Contrary to Schwartz and Orleans (1969), McGraw and Scholz (1991) did not find any effect of normative communication on tax compliance. As Blumenthal *et al.* (2001) point out, an explanation for this could be that the time between experimental manipulation and tax filing deadline was longer (over three months, compared to one month in the experiment of Schwartz and Orleans).

Now we are going to analyse differences in the tax compliance rate regarding the control variables. Table 2 presents the results.

We do not find a strong difference between female and male. The tax compliance rate is a bit higher for female. This corresponds to the empirical findings from the World Values Survey (see Torgler, 2002b). The compliance rate for people with a higher income was lower (76.32 %) than for those who received the lower income (95.00%). The result is interesting as we have not used a progressive taxation, which produces the effect that higher income subjects realise a higher dollar return by evading. The empirical findings in the tax compliance literature are mixed. Some report a negative (e.g., Friedland *et al.*, 1978) others a positive relationship (e.g., Spicer and Becker, 1980; Jackson and Jones, 1985). Looking at the education, the highest compliance rate has been found by persons with a University degree. It is difficult to evaluate the results regarding the different confessions, as most of the participants are catholic. The small number of protestants or individuals without a confession had on average a higher tax compliance than catholic inhabitants. A stronger difference can be found using the variable 'religious denomination'. People who defined themselves as religiously active had a higher tax compliance than inactive individuals. Torgler (2002e)

TABLE 2  
FURTHER VARIABLES

		Tax Compliance (%)		
		Mean	N	Std. Deviation
Gender	Male	83.00	10	33.35
	Female	86.30	27	29.89
	Total	85.41	37	30.42
Income	1500	95.00	18	12.95
	3000	76.32	19	38.90
	Total	85.41	37	30.42
Education	Primary school	84.50	20	31.37
	Secondary school	82.00	10	38.24
	University	92.86	7	12.54
	Total	85.41	37	30.42
Confession	No religion	100.00	3	0.00
	Catholic	80.74	27	34.41
	Protestant	96.00	5	8.94
	Total	84.57	35	31.09
Religious	No	79.00	10	39.57
	Yes	87.31	26	27.21
	Total	85.00	36	30.75
Married	No	86.36	11	26.93
	Yes	85.00	26	32.28
	Total	85.41	37	30.42

obtained similar results analysing the World Values Survey. In many countries, the degree of church attendance has a positive effect on tax morale. There is almost no difference between married and unmarried individuals. Studies in the tax compliance literature have found that in the United States noncompliance is more common and of greater magnitude among married taxpayers (see Clotfelter, 1983; Feinstein, 1991). On the other hand, married people in the United States (see Torgler, 2002c) and in Europe (see Torgler, 2002b) have a higher tax morale than singles.

In general, the interpretation of the results has to be made with some caution as the number of observations are quite small which leads to a limitation of a robust statistical evaluation. However, it can be concluded that the alternative strategies to influence tax compliance which go beyond the traditional deterrence

policy cannot be neglected. Furthermore, it is interesting to notice that taxpayers do not behave as free-riders, but are willing to comply. Thus, it seems that *tax morale* is important for a satisfactory explanation of tax paying behaviour.

## V. Conclusions

### 5.1 Limitations of the experiment

#### 5.1.1 *Inter-temporal aspects*

A general limitation of this experiment is the fact that only one round has been considered. The experiment has therefore a static design. However, it can be supposed that the decision to evade or not is rather a dynamic than a static problem, because taxes are paid regularly every year and today's decisions might have an impact on the way taxpayers behave or are treated by the tax administration in the future. Furthermore, repetitions help to control learning effects during an experiment. It allows to understand the environment and, depending on the game structure, how other subjects behave. In general, Alm (1998) criticises that inter-temporal aspects have obtained only little attention in the tax compliance literature. He points out that evolutionary game theory seems to be a promising instrument to analyse dynamic aspects of tax compliance. Recently, experiments have taken into account more sophisticated econometric models (e.g., random-effect tobit regressions, duration models) to control for time-specific effects (see, for example, Torgler, 2002f, 2003a; Torgler, Schaltegger and Schaffner, 2003; Alm and McKee, 2000).

In our experimental design there could be a dynamic adaptation, where agents modify their behaviour according to past experiences. In the fiscal exchange group, for example, the redistribution sum is an indication of how compliant other taxpayers in the group are. If the redistribution sum decreases, individuals notice that many others evade taxes which crowds out intrinsic motivation to comply. Evasion is a signal that intrinsic motivation is not recognised, and taxpayers get the feeling that they can as well be opportunistic. Thus, the intensity of moral constraints depends on how widespread evasion behaviour is in a group. The social constraint might be very small if tax-paying individuals perceive themselves to be in a minority. People who previously paid taxes might get angry, which reduces the moral costs of evasion and increases the incentive to engage in tax evasion. Thus, individuals could react emotionally and very strongly to perceived changes next to them. This experiment is certainly not able to catch aspects such as reciprocal or conditional behaviour.

The moral suasion treatment does not give clear results on whether moral appeals could help frame tax compliance as a positive effect over time. The theoretical considerations in Section II show that moral suasion works in emergency situations, but the positive effects tend to decay over time. This might be an interesting point to analyse in a multi-period experiment.

Furthermore, it might be interesting to see the effects of positive rewards over time. In an experiment over several periods, more subjects get into the situation of obtaining positive rewards. Thus it might be interesting to check whether on average these individuals behave more compliantly over the following rounds compared to other individuals.

However, many experiments which lasted more than one round found similar results as the one obtained in this experiment. Alm, McClelland and Schulze (1999) found that 54 percent of individual decisions were at the extremes. Alm, McClelland and Schulze (1992) and Alm, Jackson and McKee (1992c) found even a rate of more than 60 percent. Torgler (2003b), Alm, McClelland and Schulze (1992) point out that most individuals follow a cut-off rule in their compliance behaviour and Alm, Jackson and McKee (1992a) show that a subject's behaviour is quite consistent throughout the twenty-five rounds, which indicates that subjects

“determine their best strategy and then repeat this behaviour throughout the sessions” (p. 322).

Alm and McKee (2000) report that subjects were unable to coordinate on the payoff-dominant Nash equilibrium referring to other general experimental studies with the same results (see Cooper, DeJong, Forsythe and Ross, 1990; and Van Huyck, Battalio and Beil, 1990).

### 5.1.2 *Number of observations*

However, interpretations of our findings should be made with some caution. Although we find many experiments with less participants than ours, the sample size is very small. To get robust and convincing findings, the experiment should be replicated. Furthermore, a small number of observations leads to limitations of the statistical tests and does not offer the possibility to use more sophisticated instruments, as multiple regressions. These would allow to control for many factors, such as socio-demographic and socio-economic variables which are interesting when we work with “real” taxpayers instead of students.

In general, experiments offer a good instrument to analyse possibilities and limitations of alternative theories. As experiments with taxpayers instead of students are lacking, cross-country studies with an experimental design as the one presented here, might be interesting.

## 5.2 **Interesting insights**

### 5.2.1 *Working with real taxpayers and real resources*

Our experimental setting with ‘real’ taxpayers in Costa Rica, a Latin American country, is novel. Most of the experiments have been done with students. This has been criticised by some researchers. As we worked with average taxpayers we made our experiment short, clear and understandable, in order not to make

subjects bored or confused. We have put much effort in explaining the instructions thoroughly. However, we have avoided to give examples which could lead to anchors and thus influence the way people act in the experiment. A quite novel framework was also to give individuals the designed income not as a fictive amount but in cash. This procedure induces a higher realism of the experiment and thus a higher external validity.

### *5.2.2 There is a lack of evidence regarding the effects of strategies beyond punishment*

Whereas much work in the tax compliance literature has concentrated on standard factors as audit, penalty, and tax rate, in our design we tried to evaluate alternative policy instruments. Thus, this paper helps to fill out the gap of empirical evidence in the tax compliance literature focussing on the question to which extent it helps to give a “carrot for compliance” instead of a “stick for noncompliance”. To compare the effects of the instruments it was important to include them all in one experiment. A main purpose of this experiment was to hold these traditional factors constant, and to analyse to which extent other factors, as fiscal exchange, moral suasion, and positive rewards systematically influence tax compliance. Our findings indicate that these factors *ceteris paribus* increase compliance rate. Thus, these policy instruments could merit further development in the tax compliance research agenda.

### *5.2.3 There is a lack of evidence about tax compliance in Latin America*

Many experimental and empirical evidence about tax compliance comes from the United States. Thus, little is known about general tendencies of tax compliance in Europe, Asia and especially in Latin America (for Latin America, see, for example, Torgler, 2003a, 2003c; Torgler, Schaltegger and Schaffner, 2003). Thus, this experiment’s focus on Latin America reduces such shortcomings and helps to check whether some effects might be independent of cultural environments. Similar to other studies, we do not observe the tendency that individuals behave opportunistically.

### *5.2.4 The results show that there is no tendency towards free riding*

It is interesting to notice that the contribution measured as the degree of tax compliance is substantial. There is no tendency towards free riding. Thus, these results are difficult to reconcile with the standard *homo economicus* model. They go in line with a lot of other experimental findings on tax compliance which show that the traditional expected utility theory does not perform well to explain the high degree of compliance behaviour (for a survey see Torgler, 2002a), and clearly show that introducing other factors that go beyond simple enforcement has an impact on tax compliance. Thus, it might be interesting to search for al-

ternative theories, such as the prospect theory (see Kahneman and Tversky, 1979), going beyond the traditional expected utility theory. Alm (1998) points out giving an overview on the tax compliance literature that:

“it is unlikely that a single unifying theory of tax compliance can ever be devised, one that incorporates the incredible variation in individual behavior exhibited by the many analyses of taxpayer compliance, one that explains the behavior of all individuals at all times, or even one that explains the actions of the same person at all times. Perhaps our research should still be devoted to the pursuit of such a holy grail. More important, however, our research needs to recognize that a “theory” of taxpayer compliance must really consist of a “full house” of theories, each explaining the behavior of different individuals at different times. Any tax administration must also recognize that it must address this “full house” of behaviors in devising policies to ensure compliance” (p. 49).

## Notes

- <sup>1</sup> The index of fiscal burden measures the burden a government imposes on its citizens. The following variables have been integrated in the index: top income tax rate, tax rate that an average taxpayer faces, top corporate tax rate and government expenditures measured as a percentage of GDP. To get the index, the scores of the income tax rate and the corporate tax rate are measured separately and then averaged to get a single taxation score. The final score for the fiscal burden is the averaged scores for income and corporate taxation and for government expenditures. The scores go from 1 to 5. The higher the rate, the higher the fiscal burden (see O’Driscoll *et al.*, 2002).
- <sup>2</sup> The index is based on the Executive Opinion Survey conducted each year by the World Economic Forum, measuring the perceptions of 4,000 leading business executives in 59 countries. The question regarding tax evasion was: Tax evasion is minimal (1 = strongly disagree, 7 = strongly agree).
- <sup>3</sup> The amount of 1,500 Colones was divided into 1\*500 Colones coin, and 10\*100 Colones coins. The amount of 3,000 Colones was divided into 1\*1,000 Colones bill, 1\*500 Colones and 15\*1,000 Colones coins.
- <sup>4</sup> Other authors have also implemented multipliers. Alm, McClelland and Schulze (1992) found that surplus multiplier increases the average group compliance in a non-linear way. The results of Alm, Jackson and McKee (1992c) indicate that the average compliance is always higher in the presence of the public good. However, the introduction of fiscal uncertainty in the presence of a public good lowers the average compliance rate relatively to the base case. In a laboratory experiment over 12 rounds Torgler (2002a) has shown that, beside the positive effect of exchange and moral costs which have the tendency to increase tax compliance, there might be a reverse effect. If the redistribution sum decreases, individuals notice that many individuals evade taxes which can crowd out intrinsic motivation to comply with taxes. Evasion is a signal that intrinsic motivation is not recognised. Thus, taxpayers get the feeling that they can as well be opportunistic. This feeling and reaction could increase with the surplus multiplier. Therefore, the net tax compliance effect is not clear.
- <sup>5</sup> See also the tables of Fligner and Pollicello (1981) or Feltovich (2003).
- <sup>6</sup> As the sample size of both groups is lower than 12, a special sampling distribution table has to be used. As the sample size increases, the distribution of  $\bar{U}$  approaches that of the unit normal distribution (see Siegel and Castellan, 1988).

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## APPENDIX

TABLE A1

INDEXES OF ECONOMIC FREEDOM 2002 IN LATIN AND CARIBBEAN COUNTRIES

Country	Fiscal Burden	Government Intervention	Property Rights	Regulation	Black Market
The Bahamas	1.50	2.00	1.00	1.00	2.00
Dominican Republic	1.50	1.00	4.00	4.00	3.50
El Salvador	2.00	1.00	3.00	2.00	3.50
Guatemala	2.00	1.00	4.00	4.00	4.00
Paraguay	2.00	2.00	4.00	4.00	5.00
Haiti	2.00	3.00	5.00	5.00	5.00
Peru	2.50	2.50	4.00	4.00	3.50
Honduras	2.50	3.00	3.00	4.00	4.00
Ecuador	2.50	2.00	4.00	4.00	4.00
Venezuela	2.50	3.00	4.00	4.00	4.00
Chile	3.00	1.00	1.00	2.00	1.50
Argentina	3.00	2.50	3.00	3.00	3.50
<b>Costa Rica</b>	<b>3.00</b>	<b>2.50</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>
Belize	3.00	2.00	3.00	3.00	3.00
Colombia	3.00	3.00	4.00	3.00	3.50
Uruguay	3.50	2.00	2.00	3.00	3.00
Bolivia	3.50	2.00	4.00	4.00	4.50
Panama	3.50	3.00	4.00	3.00	3.50
Brazil	3.50	3.00	3.00	3.00	3.50
Nicaragua	3.50	2.00	4.00	4.00	4.00
Cuba	3.50	5.00	5.00	5.00	5.00
Barbados	4.00	3.00	1.00	2.00	2.00
Trinidad and Tobago	4.00	2.00	2.00	3.00	2.50
Jamaica	4.00	2.00	3.00	3.00	3.00
Guyana	4.00	3.00	3.00	4.00	4.00
Suriname	4.50	4.00	3.00	4.00	5.00
<b>Total Average</b>	<b>2.98</b>	<b>2.40</b>	<b>3.23</b>	<b>3.38</b>	<b>3.58</b>

Notes: Source O'Driscoll *et al.* (2002). The scales run from 1 to 5, 1 = institutional or consistent set of policies that are most conducive to economic freedom, 5 = least conducive (p. 59-77).

The **Fiscal Burden** of government encompasses: income tax rates, corporate tax rates, and government expenditures as a percent of output. **Government Intervention**: measures i) government consumption as a percentage of the economy, ii) government ownership of business and industries, iii) share of government revenues from state-owned enterprises and government ownership of property and iv) economic output produced by the government. **Property rights** factor examines i) the freedom from government influence over the judicial system, ii) commercial code defining contracts, iii) sanctioning of foreign arbitration of contract disputes, iv) government expropriation of property, v) delays in receiving judicial decisions and vi) legally granted and protected private property. The variables of the factor **Regulation** are: i) licensing requirements to operate a business, ii) ease of obtaining a business license, iii) corruption within the bureaucracy, iv) labor regulations, such as established work weeks, paid vacations, and parental leave, as well as selected labor regulations, v) environmental, consumer safety, and worker health regulations and vi) regulations that impose a burden on business. **Black Market** integrates: i) smuggling, ii) piracy of intellectual property in the black market, iii) agricultural production supplied on the black market, iv) manufacturing supplied on the black market, v) services supplied on the black market, vi) transportation supplied on the black market and vii) labor supplied on the black market.

## A2. ORIGINAL INSTRUCTION SHEET

### 1. *Instructions for Group 1 (control group)*

*(page one)*

#### **Grupo 1**

Muchas gracias por su participación en este experimento. En la mesa usted encontrará un formulario y un cuestionario.

El formulario da información sobre:

1. Su ingreso asignado (1,500 Colones ó 3,000 Colones)
2. El monto que usted nos debe devolver:
  - 500 Colones ó 1,000 Colones
3. La exactitud con la cual les estaremos controlando
4. El monto del castigo si nos enteramos que usted no se ha comportado correctamente:
  - 500 Colones ó 1,000 Colones

En el formulario usted puede decidir que monto nos quiere devolver. Su decisión es anónima. En el sobre grande usted encontrará también junto con el formulario 3 tiquetes numéricos que les van a brindar la seguridad de que la devolución del dinero es anónima.

Además encontrará 2 sobres con los siguientes nombres: “ENTREGA” y “PERSONAL”.

El experimento funciona de la siguiente manera:

1. Por favor rellene primero el formulario y el cuestionario.
2. Usted debe tomar ahora su decisión y meter el formulario, el cuestionario y el dinero que nos quiere devolver en el sobre “ENTREGA”. El dinero, con el que usted quiere quedarse, por favor depositarlo en el sobre “PERSONAL”.
3. Meter un tiquete en el sobre “ENTREGA” y un tiquete en el sobre “PERSONAL”.
4. Depositar los 2 sobres en el sobre grande.
5. Guarde el tercer tiquete, con el cual usted puede retirar su dinero. Por favor no lo muestre a nadie.

Después, por favor deposite el sobre en la caja de su grupo, es decir INGRESO 1 o INGRESO 2, y regrese a su lugar hasta que todos los participantes hayan depositado sus sobres.

*(page two)*

### **Formulario**

Con la entrega de cada formulario jugaremos a los dados. Si aparece el número 6 revisaremos su formulario detalladamente.

Si decide entregarnos menos de lo requerido, usted tendrá el riesgo que nos demos cuenta de este delito. Solamente en el caso que nos enteremos de este fraude, tendrá que pagar una multa de 500 Colones ó 1.000 Colones.

Su ingreso personal es de 1.500 Colones ó 3.000 Colones.

De mi ingreso recibido devuelvo el siguiente monto:

..... Colones

Instructions for group 2, 3 and 4: Equal, but with a supplementary part in the declaration sheet

#### *Supplementary Part:*

##### Group 2

También debe saber, que el monto total que usted nos ha devuelto, será duplicado y repartido igualmente entre todos los participantes.

##### Group 3

Como no es posible averiguar quién de ustedes se ha comportado deshonestamente, les queremos recordar que apreciaríamos muchísimo si usted se comportara honestamente y nos devolviera el monto que le estamos solicitando

##### Group 4

Si al examinar su formulario nos damos cuenta, que usted ha entregado el monto requerido, le daremos una propina de 500 Colones ó 1.000 Colones.

**CUESTIONARIO****Participante:**

Sexo:  masculino  femenino

Edad: .....

Estado civil:  soltero(a)  
 casado(a)  
 divorciado(a)  
 viudo(a)

Religión:  católica  
 protestante  
 otra religión  
 sin religión

¿Practica usted activamente su religión?  sí  no

¿Cuántas veces por mes participa en actividades religiosas? .....

Nacionalidad: .....

Profesión: .....

Estudios:  primaria  
 secundaria  
 universitaria

a) ¿Qué cree usted, cuántos participantes se comportarán honradamente (en %)?

..... %

b) ¿Se lamentaría usted si otro participante se comportara deshonestamente?

(1 = de ninguna manera) 1 / 2 / 3 / 4 / 5 (5 = muchísimo)

### A3. TRANSLATION OF THE INSTRUCTION SHEET

#### Group 1

Thank you for participating in this experiment. On your table you will find a form and a questionnaire. The form contains the following informations:

- a) the income assigned to you (1500 Colones or 3000 Colones)
- b) the amount you will have to pay back (500 Colones or 1000 Colones)
- c) how exactly you are going to be controlled
- d) the amount of the penalty if we find out that you have not been honest (500 Colones or 1000 Colones)

You have to decide and indicate in the form how much you are prepared to pay back to us. You take your decision anonymously. In the big envelope you will find, besides the form, three tickets which will guarantee your anonymity when collecting your money. Further you will find two envelopes with the following labels: "Payment" and "Personal".

The experiment will go as follows:

1. First fill in the form and the questionnaire, please.
2. Make your decision and put the form, the questionnaire and the money you are going to pay back to us in the envelope labeled "Payment". Please put the money you want to keep for yourself in the envelope labeled "Personal".
3. Put one ticket in the envelope labeled "Payment" and one in the envelope "Personal".
4. Put the two small envelopes in the big one.
5. Keep the third ticket you need to collect your money, and do not show it to anybody.

Put the envelope in the box marked with your group's number (e.g., "Income I" or "Income II"), go back to your place and wait until everybody has handed in the envelopes.

**FORM**

**Participation number:**

For every form handed in we are going to cast a die. If we cast a 6, we are going to check the form.

If you decide to give less than requested, you risk being caught. In this case (only if you are caught) you have to pay a fine of 500 or 1000 Colones.

Your personal income is 1500 Colones or 3000 Colones.

I herewith pay back the following amount out of my income:

..... Colones

*Supplementary Part:*

Group 2

You should further know that the whole amount paid back to us will be doubled and distributed in equal shares among all participants.

Group 3

Although we will not be able to find out who among you might have been dishonest we want to point out that we greatly appreciate your behaving honestly and paying back the whole amount we have asked you for.

Group 4

If in a check we find out that you have regularly paid the amount requested, you will be rewarded with an extra payment of 500 Colones or 1000 Colones.

### Questionnaire

**Participation number:**

Sex:  male  female

Age: .....

Marital status:  single  
 married  
 divorced  
 widowed

Religion:  catholic  
 protestant  
 other confession  
 without a confession

Do you actively practice your religion?  yes  no

How often do you attend religious services these days? .....

Nationality: .....

Profession: .....

Education:  Primary school  
 Secondary school  
 University

a) What do you think, how many of the other participants will evade taxes? (in %)?

..... %

c) How much do you regret that some of the other participants have decided to evade their taxes?

(1= not at all) 1 / 2 / 3 / 4 / 5 (5 = a lot)