No. 50 may 2010

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Research Paper Series
Thurgau Institute of Economics and Department of Economics
at the University of Konstanz

Member of

thurgauwissenschaft

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THURGAU INSTITUTE
OF ECONOMICS
at the University of Konstanz

A Note on the Impact of Law Enforcement Design on Legal Compliance*

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This Version: July 2013 | First Version: May 2010

Abstract

This exploratory note presents experimental evidence on whether the design of law enforcement impacts legal compliance. The experiment varies both the enforcer's identity and the usage of the fine revenue. The data show no differences in compliance across treatments.

Keywords: norm compliance, law enforcement, experiment.

JEL-Classification: C91, K42

*We would like to thank Kate Bendrick, Gerald Eisenkopf, Urs Fischbacher, Simeon Schudy, Verena Utikal, and Natalie Zimmer and participants of the ESA world meeting in Zurich for very helpful suggestions. Financial support was provided by the Fritz Thyssen Foundation.

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1 Introduction

The sanctioning of disobedience is usually understood as the price for non-compliance (Cooter 1984). It is widely held that potential offenders do not care about who puts a price on disobedience or why there is a price on it (Polinsky and Shavell 2007). This manifests itself in the literature on corruption where the individual who pays an officer to remain silent about his breaking of the law is indifferent between paying the bribe to the officer and paying the monetary sanction to the law enforcement authorities (Buccirossi and Spagnolo 2006). This reasoning culminates in the argument that corruption is not detrimental to legal compliance as long as the expected bribe does not undercut the expected sanction (Polinsky and Shavell 2001). In the same vein, the calculus of potential offenders is modeled as being unaffected by the government's objective, be it seeking rents or maximizing social welfare (Garoupa and Klerman 2002).

This paper presents results from an experiment testing if there is an effect of characteristics of law enforcement such as corruption on the decision to comply with a legal norm. In our experiment, participants decide whether or not to steal from others. We modify two different law enforcement parameters across treatments in a 2-by-2 design. First, the identity of the controlling authority is either a specific person or a neutral random mechanism. Second, the beneficiary of the fine for detected wrongdoing is either the harmed party or the enforcing person. We find that neither the identity of the enforcer nor the use the fine is put has an effect on the share of non-compliant subjects across treatments.

The paper at hand is related to different contributions in the literature. There are many studies focusing on social norm compliance (see, e.g., Fehr and Gächter 2000). Our interest is directed towards compliance with legal norms. Schildberg-Hörisch and Strassmair (2012) seek to test the deterrence hypothesis and find that compliance need not be monotonous in the level of the expected sanction. Except for different compositions of the expected sanction with respect to the level of the fine and of the detection probability, they are not interested in the design of law enforcement. Gneezy and Rustichini (2000) find that introducing a monetary fine may increase the occurrence of fined behavior in a field study. In our study, the sanctioning is a given, whereas the organization of law enforcement gains center stage. Tyran and Feld (2006) allow for the endogenous imposition of sanctions and find that this may transmit information

about expected behavior. In our setting, law enforcement is exogenously given. We think that this better represents how people usually perceive enforcement systems.

2 The Experiment

2.1 Design

Participants interact in groups of three. In each group, three different roles, A, B, or C, are assigned to the participants. We are interested in player B's decisions. Initially, both player A and B are endowed with 10 points, while player C's endowment is 5 points. Thus, the initial distribution of points within a group of three roles is $(a, b, c) = (10, 10, 5)$. Next, player B decides whether or not to take 5 points from player A. If B decides to steal, the distribution is $(a, b, c) = (5, 15, 5)$. Stealing may be detected and sanctioned. Irrespective of the treatment, the detection probability is equal to 25 percent. If B steals from A and is detected, B pays a fine of 10 points. At the end, all players receive full feedback and there is no repetition. The payoffs are such that a risk-neutral player B prefers stealing to not stealing. Stealing implies an expected payoff of 12.5 $(3/4 \cdot 15 + 1/4 \cdot 5)$ which is more than the certain payoff of 10 if player B does not steal.

We test the effect of four different variants of norm enforcement on norm compliance. In treatment RA, a (R)andom mechanism decides whether player B is controlled or not, and the fine paid by player B is used to (over-)compensate player A, yielding a distribution of points of $(a, b, c) = (15, 5, 5)$. In treatment CC, the fine paid by player B is used to enrich player C, yielding a distribution of points of $(a, b, c) = (5, 5, 15)$, and player C is responsible for control of player B. The remaining two treatments are "intermediate" control treatments denominated CA and RC. We use these treatments to disentangle potential effects of our two treatment variables.

We implement player C's responsibility for detection as playing a hide-and-seek game with player B: player B and player C see four different pictures and both simultaneously select one of the pictures. Control of player B takes place if the picture selected by B is the same as the

one selected by C. The picture series was pretested to come close to uniform distribution such that detection probability is 1/4.[1] The four pictures were shown on both players' computer screens from left to right in random order, independently drawn for both players.

2.2 Procedures

The experiment was computerized using z-tree (Fischbacher 2007). Overall, 342 subjects participated in the experiment, one third of them as player B. Each subject participated in only one of the treatments. Thus, we receive a total of 114 independent observations, 29 in CA, RA, and RC, 27 in CC. Subjects were students within various fields of study at the University of Konstanz, recruited via ORSEE (Greiner 2004). The experiment took place in *Lakelab*, the laboratory for experimental economics at the University of Konstanz. Sessions lasted about 40 minutes. The experimental currency was points, with each point converted into 1 euro after the experiment. On average, participants earned 8.33 euros in the experiment. Before the experiment, subjects received written instructions about the experiment.[2]

3 Behavioral Predictions

We expect that the different designs of law enforcement as implemented by our treatments will elicit different kinds of behavior. Regimes RA and CA give more emphasis to the negative consequence of stealing, as they implement a compensation of the victim of detected wrongdoers. Moreover, the purpose to which fine revenue is put presumably lends law enforcement in RA and CA more legitimacy (see, e.g., Tyler 2006). This should yield a lower level of stealing than in treatments RC and CC.

As regards the distinction with respect to the influence on detection, we expect that player C's influence on detection will be considered as less legitimate than a purely random procedure. It may be that subjects perceive it as unjust should player C use the regime to enrich himself. In addition, the perception of being controlled by a "mean" enforcer may question acceptance

[1] See Bruttel and Friehe (2013) for the detailed procedure how we determined the pictures.

[2] See the appendix for an English translation of the instructions.

of the norm and thereby legal compliance. We thus think that compliance is likely to be higher if detection is random than if player C is involved in the enforcement process. When participants have a self-serving bias regarding their performance in the hide-and-seek game, this yields a similar prediction. However, the feeling of "enforcers are after me" might also imply an overestimation of the detection probability, which may increase compliance. Therefore, we have no directional ex-ante hypothesis with respect to the reaction of norm compliance.

4 Results

As can be seen in Table 1, in the three treatments RA, CA, and RC, 76 percent of players B decide to steal points from player A, 85 percent of the players B do so in CC. The differences in proportions are qualitatively small and far from being statistically significant according to a Fisher Exact Test. Thus, we do not find any treatment effect.

Enforce \ Fine	Received by A	Received by C
Random	22/29	22/29
Hide & seek	22/29	23/27

Table 1: Share of thieves.

Table 4 summarizes the choice frequencies of the four symbols in the hide-and-seek game. Although we carefully pretested the action labels in order to have players C almost perfectly randomize, control by player C occurred actually less often (in 11 percent of the cases) than under the random control mechanism (24 percent) in this experiment. We do not think that this difference in detection risk was expected by our participants. If so, the behavioral effect may have counteracted with a possible treatment effect: A lower risk of control should make players B steal more in the "C controls" treatment. This means, if the randomization had worked properly, players B might have stolen *less* when being controlled by player C instead of a random mechanism.

	1	2	3	4
B	0.23	0.21	0.36	0.20
C	0.18	0.21	0.36	0.25

Table 2: Frequency distribution of choices.

5 Discussion

This note investigated the impact of law enforcement design on legal compliance and detection avoidance. The treatments differ in the enforcer's identity and the use to which fine revenue is put. We find no effect of any of the two treatment variations on the degree of compliance.

We think that the findings from the experiment will most likely not generalize to the field. In retrospect, we identified several aspects of the design which may all have worked against potential treatment effects, summing up to the observed null effect. For example, subjects may have perceived their decision in the experiment as simple lottery play, in particular as there was no earnings stage and player C did not choose to be a rent-seeking enforcer, but was randomly assigned that role. Furthermore, stealing as a binary decision potentially masks treatment differences with respect to the intensity with which subjects make their decision. Finally, when the victim of disobedience received the fine, he is in our design ex post better off than if he was not harmed at all, which may work against the perception that the experimental legal system involving the compensation of victims is just (despite the fact that he is undercompensated in expected terms).

It goes without saying that optimizing legal compliance is very important for welfare. Accordingly, we contend for more research on this issue. Our exploratory findings and the identified drawbacks of the specific design may help future research to develop approaches being able to identify the aspects of law enforcement which improve compliance.

Appendix: Instructions

Introduction:

Thank you for participating in this experiment.

From now on, please remain seated and stop communicating with other participants. These instructions are identical for all participants. Please read the instructions carefully. If you have any questions, please ask one of the supervisors for help. We will come to your seat to answer your questions in private.

You will be grouped with two other participants. You will not find out who these other participants are, and they will not learn anything about your identity.

(CC) One participant of each group has to make two decisions, another participant one decision. These decisions will influence the expected payoffs of all three group members. The third participant remains inactive. His payoff depends on the choices of participants authorized to make decisions and on a random draw.

(RA) One participant of each group has to make two decisions which will influence the payoff of the other group members. The other two participants remain inactive. Their payoff depends on the choice of the participant authorized to make decisions and on a random draw.

Your payoffs will be stated in points during the experiment. After the experiment, you will be payed 1 Euro in cash for each point you received.

A detailed description of the experiment:

In the experiment, the other participants and you and will take on a role. There are three different roles. These are labeled A, B, and C. Your role will be assigned to you by a random mechanism. You only decide if and what your role is assigned to decide. In the following, the participant who takes on role A will be referred to as participant A.

Participants A and B obtain endowment in the amount of 10 points, participant C in the amount of 5 points.

Participant A	Participant B	Participant C
10	10	5

Table 3: Endowment

Participant B can decide whether he wants to steal 5 points from participant A or not. Participant A cannot influence participant B's decision. If participant B takes 5 points from participant A, he holds 15 points and participant A holds 5 points. Otherwise the initial allocation remains.

Participant A	Participant B	Participant C
5	15	5

Table 4: Point allocation if B takes points from A

Participant A	Participant B	Participant C
10	10	5

Table 5: Point allocation if B takes no points from A

(CC) Subsequently participant C tries to control participant B. Participant B can try to avoid control. Participant B and participant C see a sequence of four symbols on their computer screen. The order of the symbols has been generated by a random mechanism such that both participants very likely see the pictures in different order. Both participants select one symbol from the set of four by clicking on it.

(RA) Subsequently, a random mechanism decided whether a control of player B takes place. Whether or not player B is controlled will be decided as follows. Participant B sees a sequence of four randomly ordered symbols on the computer screen and selects one symbol from the set of four by clicking on it. At the same time, the computer picks one symbol from the same set at random.

(CC) If the symbol participant C decided for and the number participant B picked match, an investigation of player B takes place. If the two symbol do not match, there will be no investigation. Thus, participant B can avoid control by choosing a different symbol than participant C. If the investigation by participant C shows that participant B has not taken points from participant A, it will have no effect. If, however, participants C finds out that participant B has taken points from participant A, participant B has to hand a fine of 10 points over to participant C. In this case, participant A has 5 points, participant B has 5 points, and participant C has 15 points.

(RA) If the symbol participant B decided for and the symbol the computer picked match, an investigation takes place. If the two symbols do not match, there will be no investigation. Thus, participant B can avoid control by choosing a different symbol than the random mechanism. If the investigation shows that participant B has not taken points from participant A, it will have no effect. If, however, the investigation shows that participant B has taken points from participant A, participant B has to hand a fine of 10 points over to participant A. In this case participant A has 15 points and participant B has 5 points. Otherwise the initial allocation of points applies. Participant C does not make any decisions and will definitely obtain 5 points.

Participant A	Participant B	Participant C
5	15	5

Table 6: Point allocation in case B takes points from A but no investigation takes place

Participant A	Participant B	Participant C
5	5	15

Table 7: (CC) Point allocation in case B takes points from A and C detects him doing so

Participant A	Participant B	Participant C
15	5	5

Table 8: (RA) Point allocation in case B takes points from A and the investigation uncovers it

Participant A	Participant B	Participant C
10	10	5

Table 9: Point allocation in case B takes no points from A (a potential investigation has no consequence)

(CC) After participants B and C have made their decisions, the experiment is over.

(RA) After participant B has made his decision and, potentially, an inspection took place, the experiment is over.

At the end of the experiment, you will be informed about

- whether participant B decided to steal
- whether there was an investigation of participant B (CC: by participant C), and
- the amount of your payoff.

After the experiment, we will ask you to fill in a brief questionnaire. Then your payoff will be payed in cash. The exchange rate is 1 point to 1 Euro.

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