"Your Brother is watching you"

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1. Introduction

There is a growing literature that shows that individuals follow social norms in the sense that social disapproval is efficient to avoid deviant behaviors (Festré, 2009) or that reputational concerns enhance cooperative behaviors (Bénabou & Tirole, 2006). A common result from this vast literature is that in dictator games (Fehr & Fischbacher (2004)), ultimatum games (Camerer & al., 2003), prisoner dilemma games (Fehr & Fischbacher (2004)) or public goods games (Fehr & Gächter, 2000; Masclet & Villeval, 2008) sanctions are effective tools to help enforce social norms. In third-party sanction experiments (Turillo, Folger, Lavelle, Umphress & Gee, 2000, Fehr & Gätcher, 2002b, Carpenter & Matthews, 2009), the result is the same: sanctions prove to be effective. Some experiments show however that such an assumption can be falsified. According to Fehr and Schmidt (2000), agents' efforts are lower when principals condition a fine on the deviation from a desired effort level. Fehr and Gächter (2002a) or Fehr and List (2002) not only show that positive incentives can crowd out motivations but also that sanctions undermine agents' motivations. Their interpretation of this phenomenon rests on the idea of reciprocity. Our experimental design does not allow giving a definitive answer to this debate but our results seem to show that costless sanctions are associated with higher levels of the propositions in both dictator and ultimatum games.

What is however less appreciated in the economic literature is that individuals not only anticipate the sanction and its level, but also modify their due to others' watching them only.

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Levitt and List (2007) show for instance that due to scrutiny, individuals may behave differently in laboratory and field experiments. In this paper, we test whether being observed by others affects individuals' decisions.

In order to test this intuition, we provide experiments that not only show, as in Fehr and Fischbacher (2004), that 1) a third-party (the observer of the game) or a second party (the recipient or the responder) does sanction a first party (the proposer) when his offer is deemed to be unfair, and that 2) the proposer is likely to modify his offer when a third party is simply informed about the amount of the offer. We use a sequence of dictator (DG) and ultimatum (UG) games between randomly-selected pairs of proposer / recipient and introduce at a certain stage the fact that a third party is first informed about the transfer from the proposer to the recipient of the pair he is assigned to, and thereafter has the option to sanction (at no cost but under some restricted conditions) unfair offers by deducting a certain amount from the proposer's remaining share.

The experiment is made of two periods of three phases (see figure 1):

- The first period is a sequence of three DGs and consists of a first stage where a proposer and a responder are alone, a second stage where a proposer and a responder who both know that a third party (the observer) is informed about the sharing of the pie, and a third stage identical to the second except that the observer can now sanction (at no cost) the proposer.
- The second period is a sequence of three UGs with the same three stages as described for DGs.

In order to prevent them from retaliating against proposers, responders are randomly matched at the beginning of the second period with one of the existing pair of proposer / observer. Although retaliation behavior is interesting in itself (in particular, it occurred during the pilot), we prefer to neutralize it in order to avoid pollution of the results.

Moreover in order to avoid public good problem associated with costly sanctions (Fehr & Gächter, 2000; Masclet & Villeval, 2008) we assume that sanction is costless for the punisher. We are also justified in holding that social disapproval is not necessarily costly for those who sanction a given behavior. For instance answering an opinion poll that asks a given question such as "would you say that the President's decision is: excellent, good, bad, very bad, no opinion" is not costly (if we except an opportunity cost that we may approximate to the show-up) and can be assimilated to a sanction.

The remainder of the paper is organized as follows. In Section 2 we describe the experiment. In section 3, we analyse the effects of the existence of a third-party on the level of the propositions in the two kinds of game. In section 4, we focus on the level of sanctions as well as their effects on the propositions. In section 5 we look at the receiver's behavior in the UG and finally we discuss our results in section 6.

2. The experiment

Methods and experimental design may be summarized as follows.

First, all subjects were informed about the extensive form of the game and the exchange rate between Euros and ECU (Experimental Currency Unit). The exchange rate was 1ECU= 0.1euro. Thus, Player A knew, for instance, that C will be informed about the sharing of the pie at the second stage and that he could punish him at the third stage of both the DG and UG. The experimental instructions can be found in appendix 1 and the two games payoffs in figure 1.

Second, subjects received a show-up fee of 5 euro in all experiments; as usual this show-up fee is not considered part of type A players' endowment, but is included when we report subjects' average earnings in some of the results below. Moreover, in the second stage of both the DG and the UG, the third-party gets a random amount G_2 with $1 < G_2 < 5$.

Third, we never used terms like "being observed", "sanction" or "punish" in the instructions, deducting part of the remaining share of the A player they are related to.

More precisely, in order to avoid too obvious strategic behaviors, we implemented sanctioning rules. Because the sanctions are costless for the punishers they have indeed the possibility to take all what the proposers keep. In the DG, the sanction cannot be greater than the mean of the remaining shares of all proposers, otherwise it is a random amount G_3 with $1 < G_3 < 5$. In the UG, the sanction cannot be greater than the maximum of the remaining shares of proposers but can be equal to zero, otherwise it is a random amount G_6 with $1 < G_6 < 5$ (see figure 1).

Fourth, subjects interacted anonymously[3] and were never informed of other players' identities. Fifth, the subjects were students or people who have voluntarily registered to the LEEP (Laboratoire d'Economie Expérimentale de Paris) platform dedicated to experimental economics in the University of Paris 1.

Sixth, each subject participated in only one experiment.

[3] Dictator giving tends to increase when adding an additional observer (Cason and Mui, 1997), or visual cues in the form of stylized eyes that suggest being observed (Haley and Fessler, 2005) and when weakening anonymity across subjects (Bohnet and Frey, 1999a and 1999b; Frohlich et al., 2001; Burnham, 2003). However Bolton et al. (1998) find no significant experimenter anonymity effect.

Seventh, all experiments were computerized using the REGATE software designed by Zeilliger (2000) and the program was set up by Maxim Frolov from the Centre d'Economie de la Sorbonne of the University of Paris 1.

Eighteenth, each participant played the whole sequence of three DGs and three UGs (i.e. the two periods of the experiment) five times.

The instructions (see appendix 1) were distributed and read aloud. The subjects then filled out a questionnaire that allowed to their understanding of the rules of the game. They answered privately the questions. The answers were mainly correct and we read the right answers aloud. When necessary we gave complementary information.

The specific roles of proposer (A), recipient (B) and observer (C) were randomly assigned to the subjects inside 6 distinct groups drawn at random at the beginning of the experiment. Moreover, as already mentioned, subjects of type B were randomly reallocated in one of the existing group at the end of the first period. The experiment lasted roughly 1h30 and subjects earned on average 95.71 ECU. Each experiment has been run 6 times during the period December 2008 through January 2009[4].

Period 1: DG

Stage 1	**Stage 2**	**Stage 3**
$A \rightarrow 10 - p_1$	$A \rightarrow 10 - p_2$	$A \rightarrow 10 - p_3 - S$
$B \rightarrow p_1$	$B \rightarrow p_2$	$B \rightarrow p_3$
$C \rightarrow 0$	$C \rightarrow E[G_2]$ with $1 < G_2 < 5$	$C \rightarrow S$, if $S \leq \frac{\sum_{i=1}^{6}(10 - p_3^i)}{6}$ or $C \rightarrow E[G_3]$ with, $1 < G_3 < 5$ if $S > \frac{\sum_{i=1}^{6}(10 - p_3^i)}{6}$

[4] The data of the experiments are available on the following site: http://hp.gredeg.cnrs.fr/piegar/index.htm. We have decided to eliminate seven (out of a total of 180) observations considered as too irrational. More precisely, they were corresponding to offers of 9 and 10 in the two first steps of the two games).

Period 2: UG

Stage 1	**Stage 2**	**Stage 3**
$A \rightarrow 10 - p_4$	$A \rightarrow 10 - p_5$	$A \rightarrow 10 - p_6 - S$ or $A \rightarrow 0$ or $A \rightarrow -S$
$B \rightarrow p_4$	$B \rightarrow p_5$	$B \rightarrow p_6$ or $B \rightarrow 0$
$C \rightarrow 0$	$C \rightarrow E[G_5]$ with $1 < G_5 < 5$	$C \rightarrow S$, if $S \leq \max\left(10 - p_6^1\right)$ and $p_6 = 0$ or $C \rightarrow E[G_6]$ with $1 < G_6 < 5$ if $S > \max\left(10 - p_6^1\right)$

Figure 1: the two games payoffs

p_1 defines the offer of proposer (A) at the first step, p_2 at the second step, and p_3 at the third step of the DG.
p_4 defines the offer of proposer (A) at the first step, p_5 at the second step, and p_6 at the third step of the UG.
S defines the sanction (the amount C deducts from A's remaining share)

3. The effects of the existence of a third-party on the level of the propositions in the DG and UG

Theoretically (see figure 2 below for the theoretical equilibrium payoffs), the introduction of a third-party who is only informed about the sharing of the pie should have no effect on the proposer's offer in the DG as well as in the UG. The theoretical solution of the DG corresponds to a proposal of zero, that is:

$p_j^i = 0$ for i =1, .., 6 and j = 1, 2, 3 (where i defines the six As and j the steps)

while in the UG it corresponds to the minimum possible proposition (in our experiments, one ECU), that is:

$p_j^i = 1$, for i =1, .., 6 and j = 4, 5, 6

The empirical results give a completely different picture: the existence of the third-party increases the level of the propositions in the two games (see appendix 2, 3, 4 for the statistics of the results). In the DG, the mean of the differences (p_2p_1) in terms of offers by the proposers between the case where the third party is not informed (the opaque case) and the case where he is only informed (the open case) reach a mean of 0.32 and is significantly different from zero (Pr (|T| >|t|) = 0.03), and in the UG (p_5p_4), this mean is equal to 0.28 and is significantly different from zero (Pr (|T|>|t|= 0.02) (see appendix 5). The mean of the differences between the case with sanctions and the open case are respectively 1.12 (with Pr (|T|>|t|) = 0) for the DG (p_3p_1) and 0.34 for the UG (p_6p_4) (with Pr (|T|>|t|) = 0.02) (see appendix 5).

What is more interesting is that the regressions of the differences between offers in the case of sanctions and the open case on the differences between the proposals in the open case and the opaque case suggest that the existence of a third-party increases (at the margin) offers by proposers more than the sanction does. When we regress the differences (in both the DG and the UG) between the sanction case and the open one on the opaque case and the open one we obtain a coefficient of -0.41 in the DG and of -0.37 in the UG (see appendix 7). This means that the marginal effect of the presence of a third-party being informed about the sharing of the pie is higher than the marginal effect of being sanctioned by the same third-party. In other words, as far as the level of offers is concerned, the higher is the marginal effect of being observed by someone, the lower is the marginal effect of the sanction. This result suggests the existence of self-reputational motives guiding individual behavior (see e.g. Bénabou and Tirole, 2006).

4. Third-party's sanctions in the DG and UG

Theoretically, in the DG, there is one equilibrium (see figure 2). It corresponds to the situation where the proposers keep the whole pie. In this case, the sanction S is equal to the size of the pie and the proposers get nothing. This equilibrium corresponds to a gain of 0 for both the proposers and the responders and 10 for the third-party. The reasoning is as follows: if one of the proposers keeps less than 10, say 9, the mean of the amounts the proposers want to keep is 9.83. In this case, the proposer who keeps 9 may encounter a loss of -.83 (because the third-party can take up to 9.83) while the others can win (10-9.83). Therefore, he has better not to deviate from keeping the whole pie. The other solution could be when the proposers keep a value less or equal to $E[G_3]$[5]. In this case, the third-party has no interest to punish the proposer since he obtains less (the sanction) than what the random draw gives him. This solution is however unstable because the proposers are better off if they keep a higher amount. Just because the sanction needs to be less than the mean of the amount kept by all proposers, if five proposers decide to keep, say 3, the sixth proposer has interest to keep 4 since the mean is 3.16 and since, according to the rules of the game, the third-party cannot take him higher than 3.16. But the other proposers have also interest to keep 4. This reasoning can be reproduced until 10 is reached.

More generally a proposer i, if rational has to keep:

$$10 - p_3^i \leq \frac{\sum_{i=1}^{6}\left(10 - p_3^i\right)}{6}$$

That is

$$\frac{\sum_{i=1}^{6} p_3^i}{6} > p_3^i$$

This condition holds and we obtain a stable equilibrium if and only if

$p_3^i = 0$ for all i = 1,…, 6

The only stable equilibrium is then the following: the proposers keep 10 and the third-parties' sanctions (SDG, for sanction in the DG) are 10. For the UG, the result is slightly different. The proposer offers 9, which the responder accepts (the perfect sub-game equilibrium) and the third-party sanctions (SUG, for sanction in the UG) the proposer if $E[G_6] < 1$, a condition that cannot be satisfied.

The empirical results tell a different story. If the mean of the sanctions (S) is 4.37 for the DG and 4.78 for the UG (the difference between the two equals .4 and is significant ($Pr(|T|>|t|) = 0.094$), the mean of the corresponding offers are respectively 2.9 and 4.25 for the DG and the UG. The first result (the means of the sanctions) is due to the difference between the rules governing sanctions in the two games respectively. In the DG, the sanction

[5] G_3 is what the third-party obtains when his sanction is strictly higher than the average value the six proposers want to keep in the DG. In the UG, G_3 is what the third-party obtains when the responder accepts the offer or when his sanction is strictly higher than the highest value of what the proposers want to keep if the responder refuses the proposer's offer. In the two games, it is defined as a random value drawn between 1 and 5.

needs not to be higher than the mean of the amounts kept by the proposers whereas in the UG it needs not to be higher than the highest amount kept by the proposers. It seems rational for the third-parties to punish more in the second game than in the first. What is however interesting is that whereas sanctions rules are different, the effect of the existence of a third-party is not affected by this difference. The difference between the offers in the two games is due to the fact that in the UG responders are allowed to refuse offers from proposers even in the two first steps of the game when no sanction is allowed. The differences between offers made at the same steps in the two games give a strange result. If the differences are the same in the two first steps (2.33 and 2.31 respectively), the difference between the third steps is less important (1.4). Accordingly, the effect of the difference in the rules of sanctioning is less important than the effect of the difference in the rules of the game (to be allowed or not to refuse the offers).

Another result lies in the relations between sanctions and offers. When we regress the last propositions on the second ones and on the sanctions we find a negative and significant relationship between the last proposition and the sanction in the ultimatum game (-0.18) (no significant relationship between the last proposition and the previous one), but a positive and significant one between the last proposition and the second on in the dictator game (0.038) and no significant relationship between the last proposition and the sanction (see appendix 6). We find similar result when we test the two following models:

- $p_3 = \alpha_d.p_1 + \beta_d.p_2 + \mu_d.SDG + b_d$
- $p_6 = \alpha_u.p_4 + \beta_u.p_5 + \mu_u.SUG + b_u$

β_d and μ_u are both significant (0.31 and - 0.18 respectively) but the other parameters are not.

5. The second-party's 'sanctions' in the UG

Theoretically the second party (responder) refuses the proposition only if it is nil. If rational, he has to accept all non nil propositions. In our experiments, the percentage of rejections is 0.40. The mean of the amount of propositions rejected is 2.54 (with standard deviation of 1.49) while the mean of the amount of the propositions accepted is 4.29 (with standard deviation of 1.29). We see that the accepted propositions are not far from a fifty-fifty solution. This is a classical experimental result. We controlled for the gender and the age and found no significant impacts.

DG

	A	B	C
1	10	0	0
2	10	0	G_2
3	0	0	10

UG

	A	B	C
1	9	1	0
2	9	1	G_5
3	9	1	G_6

Figure 2: the theoretical payoffs in the two games for the players A, B, and C, in the three steps.

6. Discussion

Our experimental design allows us first to validate some now well accepted experimental features and second to obtain new interesting results.

We indeed show that sanctions are efficient. In the two games expected possible losses make the proposers increase their offers. In the UG the offers are always higher than the perfect sub-game equilibrium offers. Those two results are well documented in economics. What is however more surprising and original is the idea that individuals increase their offers when they know that somebody else knows the level of their offers. Consequently, the percentage of individuals whose propositions increase from one step to the next is always higher than the percentage of those whose propositions decrease (see appendix 4). Moreover, the difference between the propositions in the second and first steps in the two games (i.e. p_2p_1 in the DG and p_5p_4 in the UG) is significantly positive. This 'brother is watching you' effect is completed by the fact that the more the effect of being regarded by other the less the effect of the sanction and vice versa. The fact that individuals react when they are scrutinized can corroborate two approaches. First individuals may be considered as guided by reputational motives. This is in line with Bénabou and Tirole (2006) or Lewitt and List (2007). Second individuals can be conceived as strong reciprocators (Fehr and Fischbaker, 2005) in the sense that they internalize the possible reaction of others: the fact that somebody is aware of my decisions makes me behaving in conformity with what the others consider as fair. It is the reason why the more they react to people scrutiny the less they react to expected sanction, just because they internalize a fair behavior as a norm.

Nonetheless, we need to explain why the sanctions are negatively related with the offers in the UG and not in the DG. In the UG the relation is intuitive for the higher the offer the less the sanction. This result is in line with the assumption that individuals (here, the third-parties) are reciprocators and accordingly when proposers expect a sanction they increase their offers. What is less intuitive is, in the DG the proposers do not seem to be sensitive to a possible sanction. The explanation lies either in the rules defining sanctions threshold (remind that the equilibrium level is 10 ECU) or in the fact that third-party internalizes dictator behavior as being necessarily 'unfair' and that the dictator knows that. This explanation is corroborated by the fact that in 21.1% of the cases the sanctions are nil (3.8% in the UG). In these cases the third-parties consider that the dictator has the 'right' to take an important amount. Everything is as if people internalize the right of a dictator to act as he does just because he is a dictator. Moreover while in the DG, the average offer with a nil sanction is 1.52, in the UG, this level is 5.71. This suggests that individuals consider that a fair behavior is more needed in the UG than in the DG.

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Appendix 1: instructions

This is an experience on decision-making within a group. If you follow the instructions carefully, you could win money which would be paid in cash at the end of the experience. ECU (Experimental Currency Unit) is the currency used during the experience, and all conversions will be made in ECU. At the end of the session, your profit will be paid in euros at the rate of 1ECU = 0.1 euro.

You will participate in the experience for 5 times of two periods each. Prior to the first period, the participants are divided randomly into groups of 3. Therefore, there are 6 groups of three participants each. Within each group, each participant will be identified by a letter A, B or C. The decisions to be made by each participant during the two periods are detailed in the remaining instructions. At the end of the first period, the Bs are redistributed randomly within the groups while the As and Cs are not. At the end of the second period, the roles will be reassigned randomly and both periods are played 5 times.

The first period contains three steps carried out as follows.

Step 1: C does not participate in this step. A receives 10 ECU. A has the possibility of sending part of this amount to B; namely x_1, the amount sent to B from A. At the end of this first step, A has $10 – p_1$ ECU and B has p_1 ECU.

Step 2: A receives 10 ECU once again. A can choose to send part of this amount to B; namely x_2 the amount sent to B from A. C is informed of the value of the amount p_2 that A chose to send to B. C receives a random amount between 1 and 5 ECU. At the end of this step, A has $(10 – p_2)$ ECU and B has p_2 ECU and C the random amount between 1 and 5 ECU the amount of which is represented by G_2.

Step 3: A receives 10 ECU. A can choose to send part of this amount to B; namely x_3 the amount sent to B from A. C is informed of the value of the amount p_3 that A chose to send to B. He has the possibility of withdrawing, from As profit, a share of the amount $(10 – p_3)$ that A keeps; the amount of which is represented by S. During the third step, the profits are as follows: A keeps a profit equal to $10 – p_3 – S$. B has a profit equal to p_3. C makes a profit equal to S if S is less than or equal to the average of the 6 $(10 – p_3)$ proposed by the six As who are participating in the experience, otherwise it is a random amount G_3 of between 1 and 5.

At the end of the third step, the profits are calculated for all participants of the first period and then the second period is started.

	Step 1	**Step 2**	**Step 3**	**Total for period 1**
A	$10 – p_1$	$10 – p_2$	$10 – p_3 – S$	$30 – p_1 – p_2 – p_3 –S$
B	p_1	p_2	p_3	$p_1+ p_2 + p_3$
C	0	G_2	S if $S \leq$ avg $(10 – p_3)$ otherwise G_3	G_2 + S or $G_2 + G_3$

Example

Step 1: A receives 10. A gives 0 to B. A obtains 10 – 0 and B 0 (p_1= 0)
Step 2: A receives 10. A gives 3 to B. A obtains 7, B 3 and C a profit between 1 and 5
Step 3: A receives 10. A gives 3 to B. If the average donations to B is 5, C can take S such as $3 \leq S \leq 7$ to A. In this case, A obtains 7 – S, B obtains 3 and C obtains S, if $S \leq 5$ (average of donations to B), otherwise A receives an amount between 1 and 5

The second period has two steps carried out as follows:

Step 1: C does not participate in this step. He has the possibility of sending part of this amount to B; namely p_1, the amount sent to B from A. B can accept or refuse this share. If B refuses, A and B gain nothing. If B accepts, A has $10 - p_1$ ECU and B has p_1 ECU.

Step 2: A receives 10 ECU again. A can choose to send part of this amount to B; namely p_2, the amount sent to B from A. B can accept or refuse this share. If B refuses, A and B gain nothing. If B accepts, A has $10 - p_2$ ECU and B has p_2 ECU. C is informed of the value of the amount p_2 that A chose to send to B. C receives an amount equal to 5 ECU if B refuses the share or a random amount between 1 and 5 ECU if B accepts the share.

Step 3: A receives 10 ECU again. A can choose to send part of this amount to B; namely p_3, the amount sent to B from A. B can accept or refuse this share. If B refuses, A and B gain nothing. If B accepts, A has $10 - p_3$ and B has p_3. C is informed of the value of the amount p_3 that A chose to send to B. C has the possibility of receiving an amount on A's profit; represented by S. During the third step, the profits are as follows: A keeps a profit equal to $10 - p_3 - S$ if B accepts the share or $0 - S$ if B refuses it. B has a gain equal to p_3 if he accepts the share and 0 otherwise. C makes a profit equal to S if the share is not made, that is to say if B refuses it and if S is less than the highest value $(10 - p_3)$ that the A participants who are part of the experience, otherwise than the random amount G_6 which is between 1 and 5.

At the end of the third step, the profits are calculated for all the participants of the second period.

	Step 1	**Step 2**	**Step 3**	**Total for the period 2**
A	$10 - p_1$ or 0	$10 - p_2$ or 0	$10 - p_3 - S$ or 0	$30 - p_1 - p_2 - p_3 - S$ or 0 or $20 - p_1 - p_2$ or $20 - p_2 - p_3$ or $20 - p_1 - p_3$ or $20 - p_1 - p_2 - S$ or $20 - p_2 - p_3 - S$ or $10 - p_1 - S$ or $10 - p_2 - S$ or $10 - p_3 - S$ or $0 - S$
B	p_1 or 0	p_2 or 0	p_3 or 0	$p_1 + p_2 + p_3$ or 0 or p_1 or p_2 or p_3 or $p_1 + p_2$ or $p_2 + p_3$ or $p_1 + p_3$
C	0	G_5	S if $p_3 = 0$ and $S \leq \max(10 - p_3)$ otherwise G_6	$G_5 + G_6$ or $G_5 + S$

Example

Step 1: A receives 10. A gives 4 to B. If B accepts, B obtains 4 and A obtains 6. If B refuses, A and B have 0.

Step 2: A receives 10. A give 5 to B. If B accepts, B obtains 5 and A obtains 5. If B refuses, A and B have 0. In both cases, C obtains a profit between 1 and 5.

Step 3: A receives 10. A gives 3 to B. If B accepts, B obtains 3, A obtains 7 and C obtains a profit between 1 and 5. If B refuses, A obtains 0 – S and C obtains S. If, for example, the maximum number of proposals made to B is 5 and S = 4 then A loses 4, B obtains nothing and C obtains 4.

In the following:

- **p_i is the proposition made by A at step i**
- **$p_2p_1 = p_2 - p_1$ (more generally $p_n\, p_{(n-i)} = p_n - p_{(n-i)}$)**
- **SDG and SUG for respectively the sanctions in the DG and UG**

Appendix 2: Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
p1	173	1.34104	1.750214	0	6
p2	173	1.66474	2.149303	0	10
p3	173	2.791908	2.527188	0	10
p4	173	3.647399	1.594852	0	8
p5	173	3.936416	1.299151	0	8
p6	173	4.283237	1.672488	0	10

Variable	Obs	Mean	Std. Dev.	Min	Max
p2p1	173	.3236994	1.961657	-5	10
p3p2	173	1.127168	2.733515	-10	10
p3p1	173	1.450867	2.845674	-5	10
p5p4	173	.2890173	1.652252	-5	5
p6p5	173	.3468208	2.030567	-6	9
p6p4	173	.6358382	2.196797	-6	10

Appendix 3: Correlations matrix

	p2p1	p3p2	p3p1	p5p4	p6p5	p6p4
p2p1	1.0000					
p3p2	-0.3005	1.0000				
p3p1	0.4007	0.7535	1.0000			
p5p4	-0.0111	0.0060	-0.0019	1.0000		
p6p5	-0.0517	0.0737	0.0352	-0.3021	1.0000	
p6p4	-0.0561	0.0726	0.0311	0.4729	0.6971	1.0000

Appendix 4: Percentages of changes of the propositions:

	p_2p_1	p_3p_2	p_3p_1	p_5p_4	p_6p_5	p_6p_4
equal 0	**55.6**	**36.5**	**39.3**	**40.4**	**43.8**	**27.0**
negative	**19.7**	**17.4**	**13.3**	**22.5**	**23.0**	**25.3**
positive	**24.7**	**46.1**	**47.2**	**37.1**	**33.1**	**47.8**

Appendix 5: Significance of the differences between the propositions

```
. ttest p2p1=0

One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    p2p1 |     173    .3236994     .149142    1.961657    .0293151    .6180837
------------------------------------------------------------------------------
    mean = mean(p2p1)                                             t =   2.1704
Ho: mean = 0                                     degrees of freedom =      172

    Ha: mean < 0                 Ha: mean != 0                 Ha: mean > 0
 Pr(T < t) = 0.9843         Pr(|T| > |t|) = 0.0313          Pr(T > t) = 0.0157

. ttest p3p2=0

One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    p3p2 |     173    1.127168    .2078253    2.733515    .7169512    1.537384
------------------------------------------------------------------------------
    mean = mean(p3p2)                                             t =   5.4236
Ho: mean = 0                                     degrees of freedom =      172

    Ha: mean < 0                 Ha: mean != 0                 Ha: mean > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000

. ttest p5p4=0

One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    p5p4 |     173    .2890173    .1256184    1.652252    .0410652    .5369695
------------------------------------------------------------------------------
    mean = mean(p5p4)                                             t =   2.3008
Ho: mean = 0                                     degrees of freedom =      172

    Ha: mean < 0                 Ha: mean != 0                 Ha: mean > 0
 Pr(T < t) = 0.9887         Pr(|T| > |t|) = 0.0226          Pr(T > t) = 0.0113

. ttest p6p5=0

One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
    p6p5 |     173    .3468208    .1543811    2.030567    .0420953    .6515464
------------------------------------------------------------------------------
    mean = mean(p6p5)                                             t =   2.2465
Ho: mean = 0                                     degrees of freedom =      172

    Ha: mean < 0                 Ha: mean != 0                 Ha: mean > 0
 Pr(T < t) = 0.9870         Pr(|T| > |t|) = 0.0259          Pr(T > t) = 0.0130
```

Appendix 6: Regressions of the last propositions (p_3 (in the DG) and p_6 (in the UG)) on the previous propositions (p_2 and p_5) and the sanctions, in the UG (SUG) and the DG (SDG)

	p_3	p_6
p_2	0.372*** (0.08)	
SDG	0.081 (0.06)	
p_5		0.164 (0.09)
SUG		-0.179** (-0.07)
_cons	1.906*** (0.35)	4.463*** (0.50)

Appendix 7: Regressions of the differences on the differences

In the DG:

	p_3p_2	p_3p_1	p_3p_1
p_2p_1	-0.419*** (0.102)		0.581*** (0.102)
p_3p_2		0.784*** (0.052)	
_cons	1.263*** (0.202)	0.567*** (0.154)	1.263*** (0.202)
r2	0.090	0.568	0.161

In the UG:

	p_6p_5	p_6p_4	p_6p_4
p_5p_4	-0.371*** (0.090)		0.629*** (0.090)
p_6p_5		0.754*** (0.059)	
_cons	0.454*** (0.150)	0.374** (0.122)	0.454*** (0.150)
r2	0.091	0.486	0.224