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Third party punishment and criminal behavior: an experiment with the Italian Camorra prison inmates

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Abstract

In this paper, we report the results of two experiments, each comprising two designs (a prisoner dilemma and a third party punishment; Fehr et al. 2004). The experiments were conducted with a sample of university students and a sample of Camorra prison inmates, both coming from the same Italian region. Our research hypothesis is that there are consistent differences in cooperative and sanctioning behavior between the two samples. The presence of these differences would justify the claim that economic analyses of crime must be integrated with a behavioral perspective. The results of the experiments fully support our research hypothesis, as Camorra inmates exhibit higher propensity to cooperate and to punish defecting behavior.

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1. Introduction

Criminal activity represents a significant cost for society, and considerable resources are devoted to preventing crime. Economic analysis of crime provides important theoretical contributions toward understanding this phenomenon. Economists have been particularly interested in understanding the individuals' incentives associated with breaking the law. To this purpose**,** since the seminal paper of Becker (1968), the economic research has mainly focused on the individual's propensity to commit crimes on the basis of the expectation of profits. However, the decision to undertake illegal activities is likely to be influenced by the individuals' degree of morality, their social preferences (altruism, cooperative behavior), their attitude to risk, their level of education or even the presence of peer effects (Kling *et al*. 2005). These elements, along with economic incentives, are likely to play an important role when an individual decides whether to break the law. In fact, one can assume that with more relevant crimes and more organized criminal groups, the higher the importance of such elements in comparison with the mere economic incentives become. There is vast experimental literature documenting the role played by morality, social preferences and risk in shaping individuals' economic choices and behaviors; however, there is little evidence of how these same elements affect criminals' choices and behaviors. Only recently, a number of experimental research efforts (see Block *et al*. 1995; Birkeland *et al*. 2011; Chmura *et al*. 2010) have compared social preferences and attitude with risk in samples of prison inmates and in samples of the general population or university students (Block *et al*. 1995). The results indicate relevant differences between university students and prisoners only in risk attitudes. Our experimental study extends this literature, focusing on cooperative and sanctioning behavior of a sample of Camorra inmates. We introduced several novel features. First, we focused on cooperation and sanctioning behavior by reproducing an experiment reported in Fehr *et al*. (2004)[1]. Altruism, in fact, is related to both morality and individual's preference structure, whereas cooperativeness is related to both individual's preference structure and degree of sociality; therefore, cooperativeness is more relevant when studying criminal behavior. Second, we selected a specific group of prisoners, the Camorra inmates, who differ from other prisoners in that they belong to a criminal organization. The Italian criminal organizations are very similar to large companies, whose employees share common moral values and behavioral codes[2]. Moreover, Camorra inmates are high-security prisoners whose life conditions in prison minimize the existence of a "prison effect", which may produce an estimation bias when measuring inmates'

[1] We run two sessions; one is based on a one-shot prisoner dilemma game, and the other reproduces a third party punishment on a one-shot prisoner dilemma (TP-PD), as in the paper by Fehr *et al*. 2004.

[2] Camorra is a criminal organization originated in Italy (specifically, in the region of Campania) and has several similarities with the Mafia. Because the Camorra cannot appeal to a legal system, it relies on strong internal social norms.

behavior[3]. In fact, measuring social preference (altruism, generosity, cooperativeness) within a prison may be a difficult task because the prison environment, as well as the very particular type of sociality, is likely to significantly affect the individuals' behavior. In the case of high-security prisoners (as Mafiosi and Camorristi), however, the prison effect has little impact on behavior for different reasons. First, Camorra inmates are grouped with members of other (non rival) Camorra clans. To prevent friendships among roommates, each inmate is frequently moved to other prison cells and to other prison facilities in Italy. Second, high-security prisons do not allow prisoners to spend much time in recreational areas. Instead, inmates spend most of their time confined in cells.

To control for the "prison effect", Birkeland *et al*. (2011) compared the behavior of current prisoners with convicted criminals outside the prison; however, many convicted criminals have passed through the prison and hence could have been conditioned by their previous prison experience[4]. Notably, the Camorra and Mafia inmates view their permanence in prison in a very different way from the manner in which common criminals view prison. In fact, long detention periods are considered a likely life occurrence and do not alter their personal and professional choices (Saviano 2006).

The final novel feature of our work consists of our comparison between the behaviors of the sample of Camorra inmates with the behavior of a sample of Italian university students coming from the same geographical area (Campania). As such, we assumed a high degree of homogeneity within each sample.

Our research hypothesis is that there are significant differences in cooperative and sanctioning behavior between the two samples, thus justifying the claim that economic analyses of crime must be integrated with a behavioral perspective. Alternatively, if cooperative and sanctioning rates do not differ between the samples, the expectation of monetary benefits may be considered as the main motivation to break the law.

The results of the experiments fully support our research hypothesis. Cooperative and sanctioning behavior are significantly higher among the Camorra inmates. Interestingly, we find similarities between the results of the Italian students' behavior in the TP-PD with the students performing the experiment in the original Fehr et al. paper, even though the two samples come from two very different social and institutional contexts. In our opinion, these similarities mark a significant difference in social preferences between the criminal and the non-criminal groups in Italy.

2. The samples and the recruiting procedures

The student sample was recruited at the University of Naples II, which is located in the Province of Caserta. The students were enrolled in different colleges (law, psychology, political science and economics) and were recruited by advertisements on the college websites. The sessions were conducted over two days in the central university laboratory. The Province of Caserta has several

[3] See also Birkeland *et al.* 2011 for a discussion on the prison effect.

[4] We are grateful to the referee for some useful comments on the relevance of the "prison effect".

Camorra family groups (Saviano 2006), and there are large prisons located in the area. However, for the inmate sample, we selected a prison that was not in the same area. In fact, the Camorra sample was recruited at the Secondigliano prison, one of the most important Neapolitan prisons with four high-security branches. Each branch houses approximately 400 inmates. The Camorra inmates were recruited through advertisements posted in the prison recreation areas. The advertisements stated i) a number of researchers from the University of Naples and Salerno were conducting a study on several population groups in Campania, ii) these researchers would conduct sessions in the prison and, iii) participation would be rewarded with a fee of 10-18 euro[5]. The inmates were free to choose among enrollment in the experiments, participation in courses or sport activities, or remaining in the recreation area. Thus, the sessions did not overlap with the inmates' usual daily outdoor hours. We conducted both sessions on the same day, one after the other, and each session was advertised in a different branch. All sessions were conducted in June and July 2012. A total of 109 students and 129 Camorra inmates participated in the four sessions.

3. The design

The experiments consisted of two different designs: a one-shot PD and a one-shot TP-PD. For the latter design, we reproduced the design adopted in Fehr *et al.* (2004). All sessions consisted of paper-pencil experiments[6]. In the PD design, the session began when each subject was provided with an envelope labeled A or B and a number identifying the subject. The envelope contained an instruction sheet, a decision sheet and a questionnaire (we have omitted the details). The instructions were read aloud by the experimenters, and in both sessions, we stated that the participants could ask questions only privately and after the reading of the instructions. The game in the PD session was one-stage. Therefore, the game consisted of a single decision, which the participants were required to report on the decision sheet. Subjects A (B) were endowed with 10 experiment tokens and were paired with subjects B (A). The subjects had to determine whether to keep the tokens or send them to the partner. If the subjects sent an amount of tokens to their partners, the researcher would triple it. Therefore, the game had four possible outcomes: (10, 10), (40, 0), (0, 40), and (30, 30). The four outcomes were illustrated in a table provided on both the instruction and decision sheets. The TP-PD is a two-stage design where three subjects (A, B and C) participate. The first stage is equivalent to the PD with the fundamental difference being that A and B were aware that the C player would act in the second stage and could affect their payoffs. In fact, at the beginning of the second stage, after A and B had determined

[5] This amount corresponds to the average amount an inmate can spend at the prison canteen for cigarettes and food in a day.

[6] The data are available on request. The instructions of the experiment can be downloaded from: www.economiasperimentale.it/instructioneb.docx;www.economiasperimentale.it/instructionseconomicbulletin.pdf.

whether to send the tokens, the C player was endowed with 40 tokens. Then, the C player had to determine whether to keep the tokens or to spend the endowment to attribute deduction points to A and B. One deduction point would decrease A and B's total number of tokens by three units (C was allowed to attribute a maximum of 20 deduction points to each player). We retained certain important features of the design created by Fehr *et al.* (2004). First, at the beginning of the second stage, A and B's endowments were increased by 15 tokens (avoiding the focal point: 40, 40, and 40). Second, the participants received a show-up fee of 10 tokens to prevent a subject from experiencing a loss after C's decision. Finally, C's decisions were recorded using a strategy method (Selten 2003). According to the strategy method, C was asked to indicate on the decision sheet how many deduction points he/she would allocate for each of the four possible outcomes in the PD: (CC), (DD), (CD), and (DC). In our design, the three subjects acted concurrently in different rooms with different experimenters. The pairing procedure was conducted after the experiments. In each room, the experimenter collected the closed envelopes and asked one participant to mix them and form pairs. The pairs and their identification numbers were then read aloud. Next, privately and in the presence of only the participant who had randomly selected the pairs, we opened the envelopes and calculated the gains. The final gains were then posted in the recreation area and on the faculty websites. For the TP-PD the procedure was the same. However, participant A or B of the first stage formed triplets rather than pairs. To make forming triplets possible, the C decisions were collected first and brought to the first room. Once the triplets had been privately formed, but in the presence of participant A, B or C (selected randomly), the experimenters calculated the final gains. Then, the gains were reported in a table and the results posted in the recreation area and on the university website.[7] As in Fehr *et al.* (2004), the exchange rate was one token = 0.3 euro cents, whereas the average earnings were between 12-15 euro for both the students and the Camorra inmates. The final gains were provided directly to the students after the experiments and credited to the inmates' internal accounts.

4. The results

Figure 1 shows Player A and B's decisions in the PD and TP-PD sessions that were performed in prison and performed with the university students. We are interested in two points: i) the comparison of the prisoners and students' cooperation rates and ii) the effect of sanctions on cooperative behavior in both samples. In the PD game, 86.67 % of the prisoners (both A and B players) sent their tokens to the partner, whereas the percentage of cooperative choices among the students in the same session was much lower (approximately 67.50%). A chi-square test shows that this difference is significant (P-value=0.021).

[7] Posting the results on the boards of the recreational area was the only way to communicate the outcome of the experiment to the inmates, and - being a one-shot game - did not create reputational effects.

Interestingly our results differ from previous findings in this field. Birkeland *et al.* (2011) did not find differences in the pro-social preferences of the prisoners and a benchmark group of criminals (not in prison when they participated in the experiment). Moreover, Chmura *et al.* (2010) reported a significant similarity between an experiment conducted in a prison and an experiment performed with a control group in a laboratory.

In the TP-PD game, we note a decrease in the cooperation rates regardless of which sample we consider. This variation among the Camorra inmates is from 86.67% to 65.22% (P-value=0.009), whereas the variation among the students is from 67.50% to 34.78% (P-value=0.0025). The difference between the cooperation rates is statistically significant (P-value= 0.0035).

The second important difference that emerges between the two samples concerns the effect of the introduction of the punishment option in the TP-PD game. The evidence in Figure 1 indicates that the cooperation rates decrease in both samples in the TP-PD session, particularly among the students. Therefore the Camorra inmates again demonstrate higher cooperation rates than the control group. This result is not new. Laboratory findings document a detrimental effect of sanctions on human altruism, particularly when sanctions are considered unfair or illegitimate (Fehr and Rockenbach 2003). Regarding the effect of punishment in a one-shot PD context, there is no previous evidence we can compare our results with. However, from a different perspective, Birkeland *et al.* (2011) note a difference between a sample of prisoners and a control group in a comparable setting. These researchers find that prisoners increase their pro-social behavior when the punishment option is introduced. In contrast, in the control group, a decrease in pro-social behavior is registered when the punishment option is introduced.

We now consider only the TP-PD experiment, where our primary research question concerns the choices of costly punishments by the third parties. Table 1 refers to the experiment conducted in the prison. The table shows all C players' average expenditure for punishment; reported in the parentheses are the percentages of punishing C players in each of the four possible situations: (DD), (CD), (CC), and (DC). For example, almost all of the C players (96%) punished the defector if the other player was a cooperator in the PD; a sizeable fraction (approximately 39%) also punished when both players defected. However, in the second case, the average punishment is much lower and a Wilcoxon signed rank for matched players shows that this difference is significant (two tailed P-value: 0.025). Therefore, the C players considered "defection" in a different way, depending on the other player's behavior. Defection appears to be a less damaging behavior when the other player also defects. Surprisingly, a sizeable percentage of C players (approximately 46%) also punished the cooperator if the other player was a cooperator. However, the same action (in this case "cooperation") was considered differently depending on the other player's action. The fraction of C players, who punished cooperators when the other player defected was negligible (approximately 9%) and the degree of punishment was low.

In table 2, we regressed the expenditure of sanctions by the third parties on dummy variables that represent the different possible situations: i) both players defected,

ii) the punished player defected and the other player cooperated, iii) the other player was a defector and the punished player cooperated and iv) the excluded dummy represented the situation of mutual cooperation. The estimates confirm that the tendency to punish is highly significant when the punished player is a defector (and the other is a cooperator). In contrast, there is no significant difference in the punishing behavior between the two cases of mutual defection and cooperation.

We now compare the figures in table 1 with the results (in table 3) from the experiment conducted in the university laboratory. As above, the highest percentage (56.52%) of punishments is reported for defectors when the other player cooperated. A Wilcoxon signed rank test for paired players shows that defection is considered to be a less severe violation of the norm when the other player also defects (P-value=0.015). However, the differences between the evidence from the two samples are noticeable because i) students never punished cooperators and ii) the fraction of C players who punished defectors (when the other player cooperated) in the student sample was much lower than that one in the prisoner sample (approximately 56% and 96%, respectively). The results in table 3 are similar to the evidence reported in Fehr *et al.* (2004) for a sample of students: "*the punishment of a cooperator is negligible, irrespective of whether the other player defected or cooperated*" and "*the sanctioning of a defector becomes much more severe if the other player changes from defection to cooperation*" (Fehr *et al.* p.74). Similarly, in Fehr's study, the sanctioning rate is low (approximately 45%) compared with the evidence in table 1. Briefly, the most important patterns that emerge from our study are that the Camorra inmates are more willing than the students to adopt costly punishments to sanction non-cooperative behavior, particularly when the defection is "unfair".

5. Concluding remarks

The theories of the economics of crime have investigated the reasons why people break the law mainly on the basis of expected high profits. A growing research area (Birkeland *et al.* 2011; Chmura *et al*. 2010), however, adopts a different perspective by focusing on criminal pro-social behavior and investigating whether it is possible to identify specific characteristics of criminal behavior. Similarly, we claim that economic analyses of crime must be integrated with a behavioral perspective. We focus on individual propensity to cooperate and punish violating behavior as a specific trait characterizing individuals engaged in criminal organizations**.** We measured the behavioral distance between two groups of individuals with similar social and historical backgrounds but very different institutional cultures. Our results confirm that there are significant differences between the two samples: the Camorra inmates showed a higher propensity than the benchmark group of students to cooperate and punish non-cooperative behavior, particularly when the defection is considered to be "unfair". When comparing the results of the Italian students' behavior TP-PD with the students performing the experiment in the original Fehr *et al.* paper, we find remarkable similarities between the two samples, thus reinforcing the hypothesis that social

preferences and social norm enforcement completely differ between Camorra prisoners and the non-criminal population.
The research raised some further interesting questions that could stimulate future research: Do criminal organizations create strong social norms? and Do more cooperative criminals select into criminal organizations?

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Appendix. Tables and figures

Figure 1. PD, PD-TP GAME - Camorra vs Students

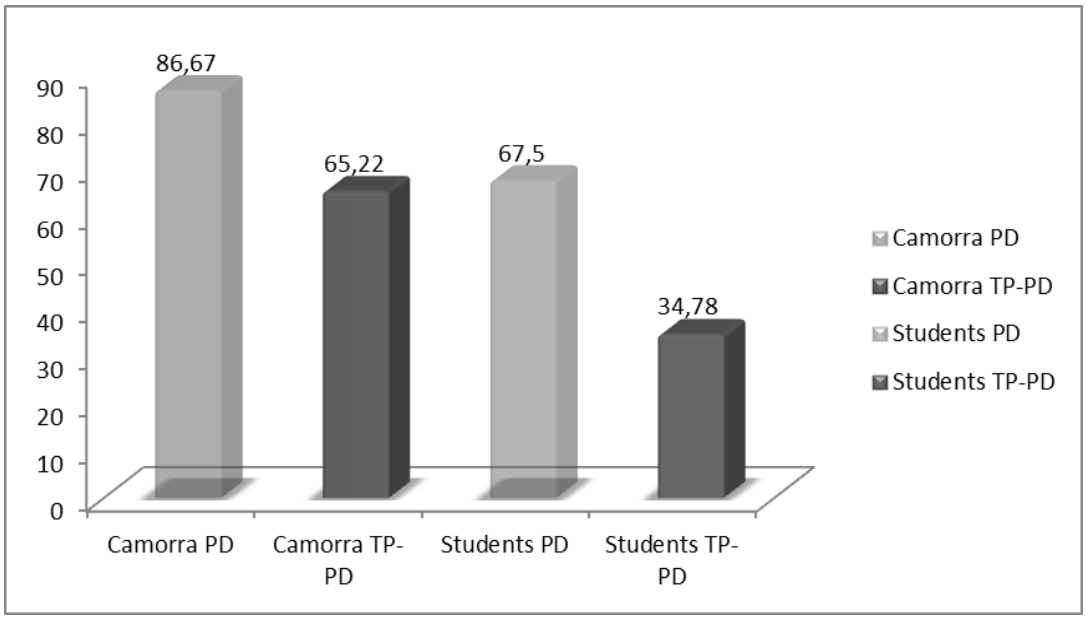

Table 1. TP-PD – Camorra sample (main statistics)

Punished player is	**Other player is a defector**	**Other player is a cooperator**
defector	1.76 (39.13%)	9.65 (95.65%)
cooperator	0.54 (8.69%)	2.91 (45.65%)

The first number in each cell indicates the average punishment of player C, whereas the number in parentheses indicates the percentage of C players who punish (N=23).

Table 2 . TP-PD - Camorra sample (Ols regressions)

Punished player is a defector	7.89 (1.46)***
Other player is a defector	-1.22(0.56)**
Both players are defectors	1.15 (0.96)
Constant	1.76 (0.61)***
Adj. R-sq.: 0.44. N. =184.	
Notes: ***Statistically significant at 1% level; ** significant at 5% level. Robust standard errors clustering on individuals.	

Table 3. TP-PD - Students' sample (main statistics)

Punished player is a	**Other player is a defector**	**Other player is a cooperator**
defector	1.48 (43.48%)	6.09 (56.52%)
cooperator	0	0
The first number in each cell indicates the average punishment of player C, whereas the number in parentheses indicates the percentage of C players who punish (N=23)		