

IZA DP No. 9901

**Cooperation, Punishment and Organized Crime:
A Lab-in-the-Field Experiment in Southern Italy**

Annamaria Nese
Niall O'Higgins
Patrizia Sbriglia
Maurizio Scudiero

April 2016

Cooperation, Punishment and Organized Crime: A Lab-in-the-Field Experiment in Southern Italy

Annamaria Nese

University of Salerno

Niall O'Higgins

ILO, University of Salerno and IZA

Patrizia Sbriglia

University of Naples II

Maurizio Scudiero

Ministry of Justice, Italy

Discussion Paper No. 9901

April 2016

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0

Fax: +49-228-3894-180

E-mail: iza@iza.org

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ABSTRACT

Cooperation, Punishment and Organized Crime: A Lab-in-the-Field Experiment in Southern Italy

This paper reports the results of an experimental investigation which allows a deeper insight into the nature of social preferences amongst organized criminals and how these differ from “ordinary” criminals on the one hand and from the non-criminal population in the same geographical area on the other. We provide experimental evidence on cooperation and response to sanctions by running Prisoner’s Dilemma and Third Party Punishment games on three different pools of subjects; students, ‘Ordinary Criminals’ and Camorristi (Neapolitan ‘Mafiosi’). The latter two groups being recruited from within prisons. We are thus able to separately identify ‘Prison’ and ‘Camorra’ effects. Camorra prisoners show a high degree of cooperativeness and a strong tendency to punish, as well as a clear rejection of the imposition of external rules even at significant cost to themselves. In contrast, ordinary criminals behave in a much more opportunistic fashion, displaying lower levels of cooperation and, in the game with Third Party punishment, punishing less as well as tending to punish cooperation (almost as much) as defection. Our econometric analyses further enriches the analysis demonstrating *inter alia* that individuals’ locus of control and reciprocity are associated with quite different and opposing behaviours amongst different participant types; a strong sense of self-determination and reciprocity both imply a higher propensity to cooperate and to punish for both students and Camorra inmates, but quite the opposite for ordinary criminals, further reinforcing the contrast between the behaviour of ordinary criminals and the strong internal mores of Camorra clans.

JEL Classification: A13, D63, D23, C92, K42, Z13

Keywords: economics of crime, models of identity, prisoner’s dilemma,
third party punishment, experimental economics

Corresponding author:

Niall O’Higgins
Department of Economics and Statistics
University of Salerno
Via Giovanni Paolo II
132-84084 Fisciano (SA)
Italy
E-mail: nohiggins@unisa.it

1. Introduction

This study is motivated by the belief that our practical understanding of the Mafia, Camorra and other Italian criminal organizations may potentially be enriched by recognizing that their well-known codes of behaviour are more than anecdotal curiosities, and indeed, constitute a real and distinct criminal culture which is both unique and, whilst often mentioned in movies and books, rarely seriously studied. Such a belief clearly informs the public debate in the media, but it is also evident in policy initiatives; mafiosi are understood to share common moral values characterized by strong in-group cooperativeness and loyalty, parochialism, total disregard of external (public) institutional rules, profound religious beliefs and self-reported positive identity values. Crucial to these rules are, for example, the secrecy codes of *omertà* which Mafiosi consider honourable trust among members of the same group. The importance of such codes has been demonstrated by the success of some of the strategies which have been used to fight Mafia and Mafia-type groups.¹ For example, the providing of incentives to informants, a strategy adopted to fight the Mafia in the 1980s, turned out to be a powerful instrument to undermine the secrecy codes of *omertà*. At the same time, more recently, new rules of conduct of the Catholic Church which threaten those responsible for violent crimes with excommunication or impede criminals in small cities from exerting an influential role as far as religious matters are concerned, have been seen as an important steps to fight and deprive the criminal culture of some kind of status.²

Scholars often claim that such culture produces important distortions in the social and economic life of the neighbourhoods where organized crime groups operate. Concern has also been expressed that the proliferation of Mafia organizations in the EU and US could lead to the exporting of a culture of crime with all the related consequences on the level of corruption and the functioning of the local markets.

In a recent study, Meier et al. (2014) have experimentally analysed social preferences in two groups of high-school adolescents who live in two distinct neighbourhoods of Palermo, one of which

¹To be precise, we draw subjects from a pool of members of the Camorra organization. However, as is common in similar studies, in this paper we use the words: Camorra, Mafia and Mafia-type organizations without distinction, since there appear to be few differences – as far as the “criminal culture” is concerned – between these groups.

²There are a number of policies which are directly aimed at fighting the Mafia’s codes of behaviour and reducing the importance of Mafiosi in their native towns and villages. For example, the Italian Parliament is currently discussing a new law to deprive sentenced Mafia-type leaders of parental custody, and the policy allowing wealth confiscated from Mafiosi to be re-allocated for the provision of basic public goods in local communities has already proved successful. Finally, Luigi Cantone, the Italian High Commissioner for the fight of criminality and corruption, has recently stated that a policy which does not fight the culture of crime but aims only at arresting Mafia bosses may backfire because it just leaves room for new struggles for supremacy amongst criminal families.

is traditionally connected to Mafia. Their results clearly show that the presence of Mafia strongly affects social behaviour, also for young adults who have comparable levels of education and socio-economic family conditions as those living in Mafia-free areas of the same city. Specifically, they found that people living in neighbourhoods with high Mafia involvement exhibited lower generalized trust and trustworthiness as well as greater parochialism, and that punishment norms did not alter their behaviour significantly. In their conclusions, the authors argue that in regions in which criminal organizations operate there are negative externalities; specifically, informal institutional criminal culture tends to prevail over the formal institutional culture and to affect even younger generations belonging to the non-criminal population.³ This argument is not new and it has been widely examined. Gambetta (1996) and Bandiera (2003) argue that the rise and success of the Mafia in the nineteenth century was connected to the weakness of the Italian State and the Mafia's ability to provide efficient and otherwise absent credible legal frameworks; the Mafia thus provided an alternative institutional structure, filling a vacuum whenever it had the opportunity.⁴ The weakness of legitimate institutions and the "vicious cycle" (Meier et. al.; 2014) are also claimed as one of the main reasons for Southern Italian economic underdevelopment and the persistence of regional economic disparities (Beugelsdijk and Schaik, 2005), since it produces – and reproduces - a low level of social capital in the South of Italy.⁵

The present paper proposes an experimental investigation which allows a deeper insight into the nature of social preferences amongst "organized" criminals and how these differ from "ordinary" criminals on the one hand and from the non-criminal population in the same geographical area on the other. We focus on Campania where the Camorra, perhaps currently the most important Italian Mafia-type organization, thrives. We provide experimental evidence on

³Quoting from Meier et al.; 2014 paper (p.1): "Our study experimentally demonstrates that informal institutions from the past can undermine institutions from the present, even in religiously and ethnically homogeneous populations. A culture of organized crime can affect norms and attitudes in adolescents that might create a vicious cycle where organized crime affects norms and vice versa".

⁴In the case of other organized groups, like the Camorra in Campania, which constitute our 'Mafia' sample, there are very similar historical patterns. Specific to the Camorra, however, the organization experienced extraordinarily fast growth following the earthquake of 1980 as the result of the substantial public relief funds directed to Campania (See Pinotti, 2013).

⁵A careful investigation into the importance of these disparities has been conducted by Casari et al. (2015). The authors experimentally test social preferences in two distinct areas; the North\Centre and the South of Italy. Their tests on risk attitudes, trust and trustworthiness suggest that observed economic differences may be the result of differences in unobserved preferences. The recent experimental field investigations conducted in Italy in the last few years is particularly interesting in as much as they provide suggestive insights into the underpinning of economic development in Western countries where heterogeneous and conflicting social preferences co-exist, sometimes in the same geographical area and often within groups of population who otherwise share similar socio-economic conditions.

cooperation and response to sanctions by running Prisoner's Dilemma and Third Party Punishment games on these three different pools of subjects. Specifically, the experiments presented in this paper were conducted in Southern Italy (2012-2013) with a sample of university students and two samples of prison inmates. The two groups of prison inmates differed in that one group were members of the Camorra whilst the other were not involved in organized crime. In fact, the experimental sessions were run in two different prisons located in Campania, one of which hosted convicted members of the Camorra, and the other, "ordinary" criminals. Furthermore, we conducted the same experiments on a pool of students enrolled in several faculties of the University of Naples II, which is located in the Caserta area, a territory notorious for the strong presence of Camorra families.

As explained below, members of the Camorra and "ordinary" criminals were convicted for similar types of crimes (crimes against property) and had similar criminal curricula with the exception that one pool of inmates were convicted as members of the Camorra and were consequently hosted in a separate high-security unit.⁶

In addition to the experimental sessions, we completed our analysis by asking all subjects to fill out a questionnaire which measured the propensity for individuals to cooperate and to positively (or negatively) reciprocate others' behaviour. Also, the questionnaire included two questions based on the Rotter scale intended to broadly measure the locus of control of participants (Rotter, 1966). Individuals with an external locus of control (externals) tend to believe that they are unable to be the master of their own lives and events are outside of their control. On the contrary, internal locus of control (internals) indicates a tendency to believe in self-determination and to be endowed with high self-esteem. There is robust evidence that psychological measures such as the Rotter scale are positively related to pro-social behaviour, in the sense that an internal locus of control is associated with cooperativeness and reciprocity (Boone et al.; 2002; Carpenter and Seki; 2011). Therefore, although the Rotter scale is basically a personality measure, it has been often used as a proxy of the individuals' willingness to cooperate in a social dilemma context.

The purpose of the questionnaire is to integrate the behavioural data with measures of the individuals' preferences and personality values.⁷ Furthermore, as we illustrate in a further section,

⁶In Italy, prisoners who have been sentenced as members of a criminal organization such as the Mafia or the Camorra are always hosted in segregated units and the specific prison rules applied to them can differ from those to which ordinary prisoners have to adhere, even when the latter have been sentenced for similar crimes.

⁷Because poor literacy is common amongst Italian prison inmates, whether these be ordinary inmates or Camorristi, the questionnaire contained only six questions and they were framed in an extremely simple manner. Our measure of locus

the questionnaire's answers allows us to identify similar social preference profiles and to evaluate how individuals who have similar attitudes to cooperation and reciprocity actually behave differently, depending on whether they adhere to the strong internal mores of Camorra clans or not.

Our main finding is that Camorra prison inmates are significantly different from both of the other two groups (students and ordinary criminals) under study. The Camorra prisoners show a high degree of cooperation and strong punishing behaviour, as well as a strong rejection of the imposition of external rules even at significant cost to themselves. On the contrary, ordinary criminals behave in a much more opportunistic fashion, displaying lower levels of cooperation and, in the Game with Third Party punishment, punishing less as well as punishing cooperation (non-opportunistic behaviour) (almost) as much as defection (opportunistic behaviour). Our econometric analyses of behaviour during the game also suggest that locus of control and reciprocity serve different purposes according to the specific sample under investigation. High degrees of self-determination and reciprocity imply – in fact – a higher propensity to both cooperate and punish for students and Camorra inmates but not so for ordinary criminals; for the latter these characteristics tend to strengthen their tendency towards opportunistic behaviour.⁸

2. A brief note on Camorra

Before proceeding to the experiment itself, a brief examination of the specific criminal group under study is in order. The Camorra, similarly to the Mafia, has its origins in nineteenth century

of control is then highly simplified since such personality traits are generally identified using more (and more detailed) questions (ranging from six - as in Carpenter and Seki, 2011 - to twenty three questions). We do not claim, therefore, to have fully measured individuals' locus of control, but rather use the questionnaire to define broad individual preference 'types'.

⁸The analysis presented here falls within the growing area of literature on the application of economic experiments to the economics of crime typically through – as here - the implementation of experiments on cooperation, trust and altruism conducted with samples of convicted prisoners (Birkeland et al., 2014; Kadjevi et al., 2013 and Chmura et al., 2013). The motivation underlying these papers is to evaluate whether there are differences between the social behaviour of prisoners and ordinary citizens, such as students or the general population, since criminals clearly manifest anti-social behaviour in their professional life. The presence of such differences strongly suggest that criminal activity cannot usefully be studied focusing exclusively on economic incentives and opportunities, as traditional theories claim, but rather should also include a behavioural perspective. A common finding of these papers is that convicted prisoners do not appear to be less pro-socially motivated than 'normal' citizens. Two explanations have been put forward for this. Firstly, the experimental findings seem to confirm that economic opportunities play an important role in deciding whether an individual will commit a crime; secondly, a lab environment may be a poor proxy of a real world environment (see Birkeland et al.; 2014), thus the comparison may generate inconclusive results.

Campania; and, again in common with the Mafia, the Camorra was originally composed of ordinary out-laws who shared common codes of honour based on *omertà*, in-group cooperativeness, self-defined heroic identities, strong religiosity, and so forth.

However, similarities to the Mafia, however, should not be over emphasized. The New Camorra (NCO), which emerged in Campania in the 1980s, has at least three specific characteristics which mark it apart from the Sicilian Mafia (and indeed from the other mafia type organizations operating in Italy). First, the Camorra is a particularly violent organization. Comparing the number of homicides in Campania with the remaining Italian regions, in the 1990s, the Camorra emerged as the most violent Mafia-type organisation in Italy.⁹ Second, and not unrelated, the Camorra is constituted by about 100 competing families which operate in a small geographical area (Naples and Caserta), which itself provides an explanation for the substantial amount of violence associated with the organisation. The Camorra has a network structure, quite different from the pyramidal structure of the Sicilian Mafia, and all clans share similar socio-demographic and ethnical features. This clearly contributes to making Camorra mobsters more competitive and hence more violent than the Mafia. The third aspect which characterizes the Camorra group consists in the fact that Camorra has always been a very profitable organization, often with revenues higher than Mafia, and with the ability to diversify its investments and to invest across Europe.^{10,11}

3. The samples, the prisons and the recruiting procedures

The student sample was recruited at the 2nd University of Naples which is located in Caserta Province. The students were enrolled in different faculties (Law, Psychology, Political Science, Economics) and were recruited by advertisements on the faculty websites. The sessions were conducted over two days in the Central University laboratory. Caserta Province has several Camorra family groups (Saviano, 2006), and there are large prisons located in the area. For the Camorra's

⁹Rapporto sulla Criminalità, Ministero dell'Interno, several years. Saviano (2006).

¹⁰ Several reports indicate that Camorra has a strong presence in the North of Italy and in some Northern European countries (see Europol, 2013). It is difficult to precisely identify the profitability of Mafia-type groups. However, Eurispes (2007-2009) reports Mafia and Mafia-type clans revenues in Italy yearly, and it is often noticed that, out of 4 Southern groups, Camorra is one of the most successful. To give an example, Europol (2013) reports the value of the goods and property confiscated from a single Camorra boss (Polverino) after his arrest which summed to a value of more than one billion euros.

¹¹The Camorra's ability to penetrate financial European markets has been recognized by several studies. This ability also marks it apart from the Mafia which traditionally has strong economic interests in the US.

inmate sample, we selected a different prison. Specifically, the Camorra sample was recruited in one of the most important Neapolitan prisons, Secondigliano jail.¹² Secondigliano is a detention centre composed of several sections, some of which are “high security” and host Camorristi and Mafiosi. In Italy, if sentenced as members of the Mafia or Camorra, prisoners are located in separate units of correction centres or in prisons destined to host only Mafiosi or Camorristi and Secondigliano jail is one of the most important such prisons in Southern Italy.

There are four high security units. Each unit houses approximately 400 inmates. Camorra inmates were recruited through advertisements posted in the prison's recreation areas. The advertisements stated that a number of researchers from the Universities of Naples and Salerno were conducting a study on several population groups in Campania; that the researchers would conduct sessions in the prison; and, that participation would be rewarded with a fee of 10 -18 euros (which corresponds to roughly 1 – 1.5 times the (pro-rata) amount an inmate is allowed to spend at the prison canteen for cigarettes and food in one day¹³). The inmates were free to choose between enrollment in the experiments, participation in courses or sports activities or remaining in the recreation area. Thus, the sessions did not overlap with the inmates' usual daily outdoors hours and participation was voluntary. We conducted both sessions on the same day, one after the other, and each session was advertised in a different section of the jail.

“Ordinary criminals” were enrolled in a different prison located in the Caserta area (The Santa Maria Capua Vetere prison, hereafter SMCV). SMCV hosts all sorts of criminals with the exception of members of mafia-type organisations.¹⁴ Here we followed precisely the same procedures to recruit inmates as in Secondigliano Jail, advertising the experiments in the recreational areas of the prison and running the sessions in the prison “classrooms” during the time of the day they devoted to training and sports activities. Also in common with Secondigliano, the sessions took place over two days.¹⁵ All sessions were conducted in 2012-2103. A total of 109

¹²The experiments were conducted in two different phases: 1) in 2012 we ran experiments in Naples and in the University (see also: Nese, *et al.*; 2013); 2) in 2013, experiments were run in Santa Maria Capua Vetere.

¹³ Specifically, inmates are allowed to spend upto a maximum of €350 per month in the canteen, which corresponds to a little under €12 per day.

¹⁴ We decided not to use the same prison for the specific sample of ordinary criminals, in order to minimize the probability of communication between ‘Mafia’ inmates and ordinary inmates. Finally, we selected SMCV because – at the time of the experiments – this was the biggest prison facility in the region.

¹⁵ Given the unusual nature of our samples, it is important to clarify some procedural aspects of the research. For security reasons, we did not pre-announce the precise days of the experiments; however, inmates knew that we would be working in the months of June and July. In order to conduct experiments in Italian prisons we had to follow the relevant rules and procedures established by the Ministry of Internal Affairs, Court Judges, the Prison Authorities and the special Italian Governmental Department regulating all detention centres (DPRA). The basic rule was that prisoners’

students, 129 Camorra and 109 “ordinary” inmates participated in the sessions. The specific samples of inmates had comparable legal and socio-economical characteristics. In fact, in SMCV we excluded foreigners, sex offenders and drug addicts, focusing on inmates who were convicted for crimes against property (such as thefts, robberies, house breaking, etc.)¹⁶. The Camorra sample was constituted by inmates convicted for crimes against property, homicides and drug dealing. The exclusion of some specific crimes and criminals does not imply that we had to operate a selection after recruitment was over, since all Camorra inmates met the requirements and, in SMCV, we simply advertised in recreational areas where foreigners, sex offenders and drug addicts did not socialize. The two samples belong to the same age-groups, in the range 20-35. One further element of comparison was that the majority of inmates in both samples came from the same region, Campania. The purpose of these comparisons is that we wished to study behaviour in two defined “types” of prisoners – Camorristi and “ordinary” criminals – who came from otherwise similar backgrounds, similar criminal curricula and hence, similar outside opportunities. All subjects – including students – completed a questionnaire in which three types of questions were reported. The questionnaires were anonymously distributed in recreational areas to all inmates, even to those who did not participate in the experiments. The only requirement we imposed was that the inmates who decided to join the sessions had to bring the questionnaires with them and to give it to the monitor of their session (see the section below). The monitors would identify the questionnaire by reporting the inmate identity code on the sheet of paper. We implemented this procedure in order to preserve the complete anonymity of the inmates, as required by the inmates themselves and the prison management. As for the students, we used the usual procedure, asking the students to fill the questionnaire before leaving the experiment.

Conducting experiments in prisons creates two different types of problem, as far the measurement of social preferences is concerned. Firstly, there may be unobservable prison effects

anonymity had to be preserved and no personal information could be disclosed. All the experimental materials had to be viewed and approved by each of these authorities. In order to preserve the privacy, rights and security of inmates (and also the rights and security of the researchers conducting the sessions), no personal information on individuals' crime curricula could be disclosed (in Secondigliano, we were allowed to view the general statistics on the prison's population collected by the prison authorities). Finally, as in lab experiments the inmates' participation was entirely voluntary and anonymous. Recruitment to the experiments proved very successful for several reasons. Firstly, in SMCV, the financial incentive played an important role; whilst, in Secondigliano, the experiment substituted tasks (courses and psychologists' assessment and meetings) which inmates strongly dislike. Secondly, the experimental sessions lasted from two to three hours - much longer than the courses which they replaced - thus allowing inmates to spend more time than normal outside their cells. The average duration of the sessions was reported in the advertisement.

¹⁶ Since information on the individuals' crimes were not disclosed, however, we do not know exactly the percentages of (participating) prisoners who committed a specific type of crime.

determined by the fact that prison rules may affect an inmate's social life and relationships in a way that experimenters cannot control for (see also: Birkeland *et al.*; 2014). Thus, the inclusion of a group of 'ordinary criminals' (OCs) allows us to identify a common prison effect. Secondly, the prison effect is likely to increase if inmates have spent all the time of their incarceration in the same prison and with the same group of people. Fortunately for the experimental design, in the Italian prison system, inmates are regularly moved for security reasons. Especially in the case of Camorra inmates, there is a high mobility among special prison units and inmates do not share the same rooms with members of the same criminal family or of competing families, nor indeed with the same people for very long. Naturally, there is a chance that inmates have met before entering prison, however, the Italian system does guarantee that inmates move cells fairly often in order to avoid the establishment of violent and domineering gangs. This "mobility rule" can be claimed as a (partial) random matching mechanism among experimental subjects. It is applied to both Camorra and non-Camorra inmates, although for fairly obvious reasons it is applied more stringently to the former.

More generally, in all aspects of the experiments, we tried to reproduce as far as possible the same laboratory environment in the prisons as were used for students and above-all applying the same rules and protocols for all participants, students and inmates. The sessions took place in classrooms in which inmates usually attended general training courses. Prison guards remained outside the rooms (as is the case during training) and two experimenters (in the same age range as the inmates) supervised the sessions; we also chose monitors from amongst the participants, in order to increase commitment and to guarantee anonymity as required by both inmates and prison authorities. In other words, we tried to preserve the basic rules of lab-experiments, guaranteeing voluntary participation in the sessions, anonymity, and similar rules between the experiments run in the prisons and those run in the University.¹⁷

4. Experimental design and behavioural hypotheses

The experimental design also adopted standard protocols for a laboratory experiment with formal Instructions, the selection of monitors and the public reading of the Instruction sheet before the sessions started. The experiments comprised two different designs: a one-shot Prisoners'

¹⁷We delivered more than 250 questionnaires in both prisons, however we did not know how many subjects would turn up till the actual moment the session started.

Dilemma (PD) and a one-shot Prisoners dilemma with third party punishment (TPP). For the latter, we reproduced the design of Fehr and Fischbacher (2004). In all of the sessions, experiments were conducted on pencil and paper. In the PD design, at the beginning of the sessions, each subject was provided with an envelope that was labelled A or B and a number that identified the subject. The envelope contained an instruction sheet, a decision sheet and a copy of the questionnaire.¹⁸ 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. The game in the PD session was one-stage; the game consisted of a single decision that the participants were required to report on the decision sheet. A (B) subjects were endowed with 10 experiment tokens and were paired with B (A) subjects. The (A and B) subjects had to (simultaneously) determine whether to keep the tokens or send them to the partner. If subjects sent the tokens to their (anonymous) partner, the researcher would triple the amount. Thus, the game had four possible outcomes: (10, 10), (40, 0), (0, 40), (30, 30).

The TPP is a two-stage design involving three types of subject (A, B and C). The first stage corresponds to the PD and our procedures were precisely the same; the fundamental difference being that A and B were aware that the C player could intervene at the second stage and could thus influence their final payoff by awarding deduction points to one (or both) of them. In fact, at the beginning of the second stage, after A and B had determined whether or not to send the tokens, player C was endowed with 40 tokens and had to decide whether to keep the tokens or spend the endowment so as to deduct points from A and/or B. One deduction point would decrease A and B's total payoff by three tokens (C was allowed to attribute a maximum of 20 deduction points for 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, 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 the strategy method (Selten, 2003).¹⁹ Thus, C was asked to indicate on the decision sheet how many deduction points he would allocate for each of the four possible outcomes in the PD: (CC), (DD), (CD), (DC). In our design, the three subjects acted at the same time in different rooms with different

¹⁸As explained in a previous footnote we delivered copies of the questionnaires to the common rooms of the prisons, however, since students found their questionnaires in the envelope, we included a copy in the envelopes also for inmates.

¹⁹We only study Third Party Punishment, therefore, C players do not participate in the PD game in the first phase of the game.

experimenters. The pairing procedure was conducted after the experiments. In each room, the experimenter collected the closed envelopes and asked one participant to mix the envelopes and form pairs. The pairs and their identification numbers were then read aloud. Next, 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 prison recreation area or – in the case of university students - on the faculty websites. For the TPP the procedure was the same. However, the 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 formed, always privately but in the presence of one participant A or B or C (selected randomly) the experimenters calculated the final gains. These earnings were reported in a table and the results posted in the prison recreation area or on the university website. The exchange rate was 1 token = €0.30 and average earnings were in the range €12-15, both for the students and inmates. The final payoff was given directly to students after the experiments or, for prisoners, was credited to the inmates' internal account. Finally, it is important to emphasise one important aspect of the design.²⁰ Subjects interacted with partners belonging to the same sample, that is, Camorristi interacted (of course anonymously) with other Camorristi and so forth. Even though we are aware that studying the interaction between Camorristi and individuals of the two alternative samples would be an important extension of the present analysis, we did not try to implement this extension here since the primary goal of this analysis is to assess the existence and nature of the Mafioso culture and its effects on behaviour, thus identifying the existence and effects of a unique 'Mafia culture' separate and different from a more general 'culture' of crime.²¹

The purpose of the experiments was to study the behaviour of individuals A and B in the PD game and of individuals A, B and C in the TPP game, bearing in mind the well-known codes of behaviour of criminal organizations. We expected that all three groups would differ in their behaviour. The students provide a baseline control group, whilst the inclusion of two distinct groups of prisoners – 'ordinary criminals' and Camorristi - allowed us to identify a general prison effect (contrasting with the students' behaviour) as well as identifying specificities of Camorra culture by comparing their behaviour with that of the OCs.

²⁰We thank a referee for his comments on this specific point.

²¹We are not sure that such an extension could be implemented since Mafia and Camorra inmates are generally separated by the remaining sectors of the population even when leaving in the same prison.

Given the well known solidaristic forms of mafia culture, we expected that Camorra inmates would have a higher tendency to cooperate when playing in the A and B roles in both contexts, even though they are paired with fellow criminals of different families. We also expected that the behaviour of Camorra members would differ from other groups – students and ordinary criminals - both in the reaction to the presence of external sanctions and in the choices of imposing sanctions when playing in the role of the C player, showing a higher propensity to punish defectors. Using data from the questionnaires, we are able to control for an individual's propensity to cooperate and reciprocate in a social dilemma context.

5. The Empirical Analysis

5.1 Descriptive Statistics

A first look at the descriptive statistics throws some light on the differences in behaviour across the three subject groups. Figure 1 reports the percentage of players who co-operate across the three groups in the two treatments; Table 1 reports the results of the chi-square tests, comparing behaviour across the different groups and treatments.

In the PD game, Camorristi proved to be more cooperative than either students or ordinary criminals (Figure 1) and this difference is statistically significant (Table 1). Ordinary criminals were less cooperative than students – in line with the findings of Khadjavi and Lange (2013) - but they are also **much** less co-operative than Camorristi. With the introduction of exogenous sanctions, students and Camorristi became less cooperative – with the negative shift being statistically significant in both cases, whilst in contrast, the proportion of ordinary criminals who cooperated increased. The introduction of sanctions is often found to be detrimental for cooperation (Fehr and Rockenback, 2003), therefore it is of particular interest that in the case of the ordinary criminals', sanctions led to an (albeit not statistically significant) increase in cooperation. It is also true that the reduction in co-operation arising with punishment is less for Camorristi than for Students. Although one would not wish to over-emphasize the importance of this specific observation, it is plausible (and certainly consistent with the idea) that this is a consequence of a 'double' effect for Camorristi – a 'prison' effect tending to promote opportunistic cooperation and a 'Camorra' effect invoking the rejection of the external imposition of rules (as well as greater cooperation without such imposition). Certainly this issue would bear further investigation.

Figure 1: Cooperation in the PD and in the PD-TPP Game

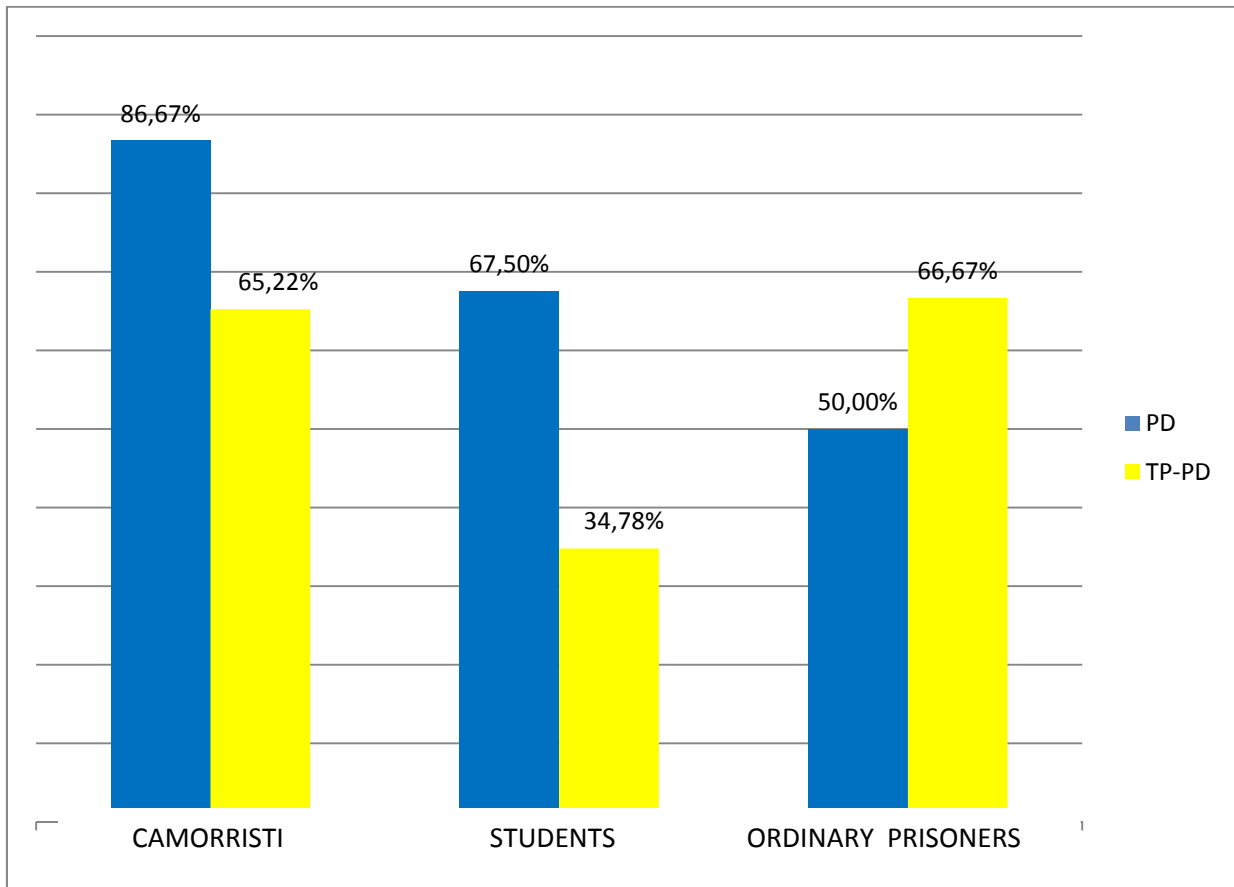


Table 1: χ^2 tests of difference between groups and treatments

	PD	PD-TPP
Students vs. Ordinary Criminals	-	***
Students vs. Camorristi	**	***
Ordinary Criminals vs. Camorristi	***	-
	PD vs. PD-TPP	
Students	***	
Ordinary Criminals	-	
Camorristi	***	

Note: The table indicates whether the null hypothesis of equality across participant types (upper portion of the table) or across treatments (lower portion of the table) are rejected at $p < .01$ (***), $p < .05$ (**) or are not rejected at at least $p > .10$ (-).

Result 1: We find significant differences in cooperation amongst the three different samples, with the Camorra inmates being the most cooperative and ordinary criminals the least.

Result 2: We also find that sanctions lead to an increase cooperation only in the case of ordinary criminals, whilst they lead to a fall in cooperation in the other two samples.

A second important issue concerns the tendency to punish amongst the three groups. Table 2 reports the average size of punishment inflicted by Third Parties and the proportion of Third Parties who punish (in parentheses) according to the behaviour of the participants. Both types of prisoner punish more and more often than students and in contrast to them, both types of prisoner sometimes punish co-operators as well as defectors. This is reasonably to be attributed to a ‘prison effect’; being subject to punishment themselves, it would appear that both types of prisoner tend to punish more often even when behaviour is not obviously offensive. Moreover, there is also an important difference between OC and Camorristi punishment of co-operators; OCs punish co-operators more (and more often) when the other player defects compared to when both players co-operate. It is not unreasonable to see this as an indicator of opportunistic behaviour on the part of OCs²².

Table 2: Punishment inflicted on each player according to his behaviour and that of his correspondent

Punished player is:	Students		Ordinary Criminals		Camorristi	
	Other player cooperates	Other player defects	Other player cooperates	Other player defects	Other player cooperates	Other player defects
co-operator	0 (0%)	0 (0%)	1.57(15.2%)	4.37(52.2)	2.91(45.7%)	0.54(8.7%)
defector	6.09 (56.5%)	1.48(43.5%)	6.67(67.4%)	1.76(41.3%)	9.65(95.7%)	1.76(39.1%)

Notes: 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.

Somewhat more in line with a sense of natural justice, Camorra inmates punish less (and less often) co-operators when they fall foul of a defector as correspondent. All three groups punish defectors more when the other player cooperates, indicating for all there is a sense that such players

²² In the sense that OCs (appear to) punish players for their naivety in trusting the other player when defection is the obvious option (for an opportunist). Although indicative rather than conclusive, this is one indication amongst several emerging from OCs behaviour, which lead us to label OCs’ behaviour as opportunistic.

are taking unfair advantage. Thus, the general impression emerging is that there is a strong tendency towards favouring cooperative behaviour amongst the Camorra (and students) whilst OC behaviour is more characteristic of opportunism. On the other hand, both types of prisoners punish co-operators, suggesting an underlying tendency or willingness to punish.

Result 3: *Focusing on the behaviour of Third Parties, different behavioural patterns emerge across all three groups: Camorristi and OCs punish more than students, suggesting a common 'prison effect'.*

On the other hand, Camorristi and students both tend to punish defectors more when they are coupled with co-operators, whilst ordinary criminals also significantly punish co-operators when coupled with defectors, suggesting opportunism on the part of the latter contrasting with some sense of natural justice prevailing in the behaviour of the former.

As explained in the Introduction, we complemented the experimental evidence with attitudinal questionnaires, which were distributed to all subjects who participated in the sessions. Specifically, We asked individuals whether and to which extent (on a scale from 1 to 4²³) they shared the following statements: a) "I believe my success depends on ability rather than luck;" b) "I believe that unfortunate events occur because of bad luck;" c) "It is good to compete;" d) "It is good to cooperate;" e) "It is good to be fair to fair people;" f) "People should revenge wrongs done to them." The cooperation index is drawn from statement c) and d), whereas sentences e) and f) measure individuals' reciprocity. The questions a) and b) are based on the Rotter scale (1966). Relying on these attitudinal data, we also derive more synthetic indexes to measure individual attitudes: respectively, the "Coop index", the "Reciprocity index" and the "Locus of control index".²⁴ Table 3 presents summary statistics from the attitudinal survey.

Overall, with respect to the "Coop index" Camorristi are more cooperative than students ($p < 0.01$), in line with the results reported in Figure 1; however, ordinary criminals - the least cooperative group during the game (at least in the PD game) - in the survey exhibit a greater

²³1 indicates "completely disagree", 4 means "completely agree".

²⁴Though this variable is only a proxy of the individuals' locus of control (see Introduction), in this and in the following section we use this denomination for simplicity reason.

tendency towards cooperativeness than either students or Camorristi (and again these differences are statistically significant at 1% level).²⁵

	Students Mean (std errors)	Ordinary Criminals Mean (std errors)	Camorristi Mean (std errors)
Cooperation index	2.463 (0.131)	3.518 (0.082)	3.379 (0.085)
Competition index	3.102 (0.115)	2.983 (0.109)	3.20 (0.096)
Positive reciprocity	3.741 (0.054)	3.743 (0.066)	3.78 (0.057)
Negative reciprocity	3.129 (0.117)	1.569 (0.087)	1.629 (0.093)
Locus of control (good events)	3.462 (0.079)	3.231 (0.098)	3.156 (0.091)
Locus of control (bad events)	1.361 (0.062)	2.462 (0.122)	2.149 (0.108)
Coop index	2.361 (0.224)	3.543 (0.131)	3.189 (0.128)
Reciprocity index	4.870 (0.148)	3.342 (0.115)	3.341 (0.095)
Locus of control index	5.102 (0.15)	3.781 (0.161)	4.017 (0.142)

Legenda:
Cooperation index: score reported on question d); **Competition index:** score reported on question c); **Positive reciprocity:** score reported on question e); **Negative reciprocity:** score reported on question f); **Locus of control (good events):** score reported on question a); **Locus of control (bad events):** score reported on question b).
Coop index was obtained as follows: score reported on question d) - score reported on question c) +3; hence, higher values indicate higher propensity to cooperate. **Reciprocity index:** e) + f) -2; hence, higher values indicate higher propensity to reciprocate others' kindness (or badness). **Locus of control index:** a) - b) +3; hence, higher values indicate higher propensity to believe that people can control events affecting them.

Regarding the Reciprocity index, no statistically significant differences emerge respect to the answers on the "positive reciprocity" whereas both the two groups of criminals appear to be less inclined to revenge than students (the reported differences are statistically significant at 1% level). Whilst somewhat implausible, and indeed negated by the behavioural results, we believe this has to do with a prison effect which requires formal compliance with certain behaviour; in particular, prisoners attend rehabilitative training seeking to counter the revenge culture, so that they might well consider as compromising "sincere answers" to question f). Moreover, such apparent contradictions are certainly not unknown amongst Camorristi; members practice violent and harmful criminal activity but, at the same time, are assiduous in church attendance and are often, at least overtly, highly religious²⁶. Finally, students exhibit a more internal locus of control (or, lesser degree of fatalism) than the two groups of criminals; this difference is likely due to the different cultural backgrounds and, in particular, to criminals' higher propensity to believe that bad luck is

²⁵The differences between the three groups are always statistically significant when considering the "Cooperation index" only; when we look at the "Competition index", on the other hand, a (statistically significant) difference emerges only between Camorristi and OC.

²⁶Witness the recent funeral of a major Clan boss in Rome which caused consternation amongst the population.

responsible for failures, particularly when considering the Ordinary Criminals (in this respect, statistically significant differences emerge also between OC and Camorristi).

Result 4: *From the attitudinal survey statistically significant attitudinal differences emerge across the three samples about individuals' locus of control, (positive and negative) reciprocity and cooperativeness.*

5.2 Econometric analysis

In this section we look at the evidence in a more structured framework mainly focusing on whether, and to which extent, individual attitudes elicited through the questionnaires are consistent with behaviour exhibited during the game. Furthermore, we are interested in assessing whether individuals who have similar attitudes to cooperation and reciprocity behave differently, according to whether they belong to one or other of the groups under investigation.

Table 4, columns I-III, reports the results of Probit estimates of the probability of cooperation run for all participants in both types of treatment. The specification of the model in first column includes only dummies for participant type and treatment type. In this case, averaging over the two treatments, Camorristi are much more likely, and OCs a little more likely, to co-operate than students, although the distinction is not statistically significant for OCs. Given the negative reaction of both students and Camorristi to TPP, the tendency to co-operate overall falls once punishment is introduced.

The discussion above is based on the specifications that estimate an "average treatment effect" through the variable (TPP). Given the opposing reaction to punishment between OCs on the one hand and Camorristi and students on the other, it makes sense to interact treatment with participant type. This is accomplished in Column II. The reluctance to cooperate without punishment amongst OCs and their opportunistic reaction to TPP emerges with a strong divergence between the reaction of OCs to TPP compared to students. The interaction dummies also bring out the strong negative reaction of both students and Camorristi to TPP. Camorristi tend to be more co-operative than either students or OCs, and, in contrast to the other two groups OCs change their behaviour becoming more co-operative when (potential) sanctions are introduced. Thus, the outcomes revealed by simple descriptive statistics are confirmed also here.

In order to take the analysis one step further, the third column allows us to look more into the underlying motivation, including terms to represent attitudes drawn from the questionnaire on co-operation, reciprocity and locus of control. We will return to this below, however, the results suggest that attitudes to co-operation are, somewhat unsurprisingly, the motivation underlying cooperation amongst players, in addition to the player type.

The last two columns in Table 4 which estimates the probability of co-operation separately for camorristi and OCs, allow us to look in more detail at the behaviour and motivations of these two groups. In this case, interaction terms are introduced in the set of the covariates between the attitudinal dummies (namely, "Locus", "Cooperator" and "Reciprocator") and the dummy "TPP". Of particular relevance, the results reported in column IV demonstrate that the negative reaction to TPP is related to participants' locus of control and to their attitudes towards co-operation in the case of Camorristi; that is, both internal locus and a more co-operative attitude tend to strengthen Camorristis' negative reaction to the imposition of TPP. On the other hand, the results for OCs are almost diametrically opposed to these (column V): whereas, a stronger internal locus leads to a strengthening of Camorristi's rejection of external authority, its role for OCs is to enhance cooperation in the face of externally imposed punishment. Again, this is strongly indicative of opportunism on the part of OCs – the more they feel in control of the outcome, the more likely they are to co-operate under threat of sanctions, whilst for Camorra, it is quite the opposite, the more they feel in control, the more they are likely to explicitly reject the external authority and refuse to co-operate with its external imposition, despite the likely cost of doing so.

Result 5: *We do not find similar patterns of cooperation among the three samples, particularly between the two samples of prisoners; an internal locus of control and attitudinal cooperativeness are positively correlated with pro-social behaviour in the experiment amongst Camorristi, whilst internal locus of control reduces co-operativeness following the imposition of potential sanctions - reflecting the explicit nature of the rejection of the external authority; amongst OCs, the strong and statistically significant positive association between internal locus of control and co-operation in TPP may be considered, in contrast, as further evidence of opportunistic behaviour on the part of OCs.*

TABLE 4 - Probability of cooperation among A and B players- Probit estimates

Variables	Coeff. (std. err.)		Coeff. (std. err.)		Coeff. (std. err.)		Coeff. (std. err.)	
	I		II		III		Camorristi IV	Ordinary criminals V
Ordinary Criminals [1]	0.220	(0.195)	-0.454	(0.286)	0.019	(0.237)		
Camorristi [2]	0.731***	(0.190)	0.657**	(0.290)	0.493**	(0.217)		
TP - PD[3]	-0.374**	(0.159)	-0.845***	(0.280)	-0.268°	(0.181)	0.064(0.504)	0.086 (0.416)
Cooperator [4]					0.420***	(0.176)	0.300***(0.123)	-0.098 (0.131)
Reciprocator [5]					-0.323°	(0.201)	-0.175(0.168)	-0.002 (0.150)
Locus [6]					-0.178	(0.178)	0.204*(0.108)	-0.259**(0.126)
Ordin. Criminals*TPP			1.275**	(0.396)				
Camorristi*TPP			0.125	(0.395)				
Cooperator*TPP							-1.197** (0.566)	0.073 (0.533)
Reciprocator*TPP							0.111 (0.641)	-0.297 (0.509)
Locus*TPP							-1.223** (0.569)	1.446*** (0.551)
Constant	0.201	(0.159)	0.454**	(0.206)	0.338	(0.231)	-0.025 (0.834)	1.402 (0.814)
N.of observations	277		277		265		98	81
Log. Lik.	-171.075		-165.70		-148.544		22.68	12.853
Wald χ^2	23.03		32.23		59.24		-44.529	-47.47
<p>Legend:Ordinary Criminals: dummy=1 for ordinary criminals, 0 otherwise; Camorristi: dummy=1 for Camorra inmates, 0 otherwise; excluded category are students; TPP: second session in the game; Cooperator: dummy equal to 1 if the propensity to cooperate, as measured by the coop index, is higher than the median value in the sample; Reciprocator: dummy equal to 1 if the propensity to reciprocate, as measured by the reciprocity index, is higher than the median value in the sample; Locus: dummy equal to 1 if the propensity to believe that people can control event, as measured by the locus of control index, is higher than the median value in the sample. Coop index, reciprocity and locus of control indexes are described in Table 3; the variables Reciprocator, Locus and Cooperator in columns IV and V are calculated with reference to the median values reported for camorristi and ordinary criminals respectively.</p> <p>Notes: Robust standard errors clustering on individuals. ° statistically significant at 20% confidence level; * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%.</p>								

Turning now to Third Parties, Table 5 reports FGLS estimates of punishment decisions: the dependent variable is the amount of tokens spent by C players in order to punish players A & B in the TPP session of the game. The set of independent variables includes dummies representing the different possible situations: i) mutual cooperation; ii) the punishable player defected and the other player cooperated, iii) the other player was a defector and the punishable player cooperated and iv) the (default) situation of mutual defection.

Vars	Coefficients (std. err.)					
	I		II		III	
Ordinary Prisoners	0.659**	(0.324)	1.307***	(0.365)	1.137	(0.599)
Camorristi	1.264 ***	(0.259)	1.412***	(0.274)	0.565	(0.498)
Both players cooperate	-0.089	(0.310)	-0.075	(0.311)	-1.292***	(0.316)
Punishable player defects	5.216***	(0.310)	5.134***	(0.311)	5.131***	(0.316)
Other player defects	-1.099***	(0.310)	-1.136***	(0.311)	-1.292***	(0.316)
Cooperator			-0.661***	(0.269)		
Reciprocator			0.754***	(0.259)		
Locus			-0.547**	(0.261)		
Both players cooperate*Ord. Criminals					3.034***	(0.846)
Punished player defects*Ord. Criminals					-2.135**	(0.846)
Other player defects* Ord. Criminals					0.456	(0.846)
Both players cooperate*Camorristi					2.199***	(0.705)
Punished player defects*Camorristi					1.717**	(0.705)
Other player defects* Camorristi					-0.437	(0.705)
Constant	0.803***	(0.237)	0.724***	(0.270)	1.292***	(0.223)
Number of observations	552		488		552	
Wald χ^2	530.42		497.78		833.67	
<p>Legend:Both players cooperate: dummy=1 if both players (A &B) had cooperated during the TP- PD session; Punished player defects: dummy=1 if the punished player (A or B) had defeated during the TPP session while the other player had cooperated; Punished player cooperates: dummy=1 if the punished player (A or B) had cooperated during the session TP- PD while the other player had defeated; the excluded dummy refers to both players defeating. The variables Cooperator, Reciprocator, Locus, are defined in Table 4.Notes: ° statistically significant at 20% confidence level; * statistically significant at 10%;** statistically significant at 5%;*** statistically significant at 1%.</p>						

The estimates in column I confirm that, on average, sanctions on defectors are more severe when the other player cooperates. Taking the analysis a little further, controlling for individual preferences, the second column shows that a more co-operative attitude and a stronger internal locus of control negatively affect the size of punishment while the opposite evidence is reported among co-operators. The model specification reported in column III includes interactive terms between dummies representing, respectively, the different possible situations of the game (i.e., mutual cooperation, punished player defects, the other player defects) and the type of sample (ordinary criminals or camorra inmates). This shows that only Camorra inmates are more likely to punish defectors when the other player cooperates, while the opposite evidence is reported for ordinary criminals, confirming the suggestive results of the descriptive analysis. Finally, when both players cooperate, the sanctions imposed by ordinary prisoners are also more severe than those inflicted by Camorra inmates: this confirms the finding of a strong tendency towards punishing "unfair behaviour" amongst the Camorra inmates, whereas OPs are more likely to punish co-operators.

Beyond confirming the results of the descriptive analysis, the separate results for Camorra and OCs reported in Table 6 offer a deeper insight into the differences between the two samples of prisoners. Introducing terms for individual preferences towards cooperation, reciprocity and locus of control, it emerges that whereas for Camorristi, the tendency to punish increases with belief in the 'correctness' of reciprocity – and particularly positive reciprocity – and with a more internal locus of control (i.e. the belief that individuals are influential in determining outcomes affecting them), again above-all as regards positive outcomes, for Ordinary Prisoners, the sign of the effects is reversed. In other words, amongst the Camorra, subjects who are more oriented towards reciprocity, cooperativeness and with a higher internal locus of control are more likely to punish "unfair behaviour". We find quite the opposite relation amongst ordinary prisoners: more cooperative subjects are more likely to punish, while the "kind reciprocators" punish less. This provides further and more concrete evidence of the opportunism of OPs which can be compared with the more 'Honour' bound mores of Camorristi and the consequent strong punishment of betrayal.

Result 6: *With respect to the severity of punishment, the three samples exhibit quite different behaviour; in particular, Camorra inmates are more willing to punish "betrayal". Consistent with our*

expectations, a positive correlation between reciprocity, internal locus of control and sanctioning behaviour emerges amongst Camorra inmates, where co-operators are less likely to punish. Quite the opposite results are found for ordinary criminals.

TABLE 6 - Amount of punishment by C Players- FGLS Estimates				
	Camorra inmates		Ordinary Criminals	
Variables	Coeff (std. err.)		Coeff (std. err.)	
	I	II	III	IV
Both players cooperate	0.939* (0.549)	0.934* (0.527)	2.209***(0.787)	2.081** (0.766)
Punished player defects	5.670*** (0.549)	6.034*** (0.526)	3.399***(0.786)	3.261*** (0.766)
Other player defects	-1.710*** (0.549)	-1.258** (0.527)	-0.992°(0.787)	-0.875 (0.766)
Cooperator	-1.655***(0.423)		-0.783° (0.609)	
Reciprocator	1.145***(0.424)		-1.326** (0.620)	
Locus	0.682° (0.430)		-1.566*** (0.590)	
Competition index		0.290 (0.243)		0.079 (0.338)
Cooperation index		-0.643** (0.290)		0.894** (0.348)
Positive reciprocity		1.038*** (0.335)		-1.336** (0.578)
Negative reciprocity		0.515** (0.221)		-0.234 (0.353)
Locus of control (good events)		0.605** (0.308)		-0.095 (0.266)
Locus of control (bad events)		0.226 (0.209)		1.162*** (0.256)
Constant	2.265 *** (0.487)	-4.718** (1.987)	3.051*** (0.766)	1.829 (0.73)
Number of observations	152	152	160	160
Wald χ^2	219.12	253.71	52.53	64.38
Legend:				
Competition index: higher values indicate higher propensity to compete; Cooperation index: higher values indicate higher propensity to cooperate; Positive reciprocity: higher values indicate a higher tendency towards reciprocating kindness; Negative reciprocity: higher values indicate higher tendency towards reciprocating unkindness; Locus of control bad events : higher values indicate a higher propensity to believe that people can control bad events affecting them; Locus of control good events : higher values indicate a higher propensity to believe that people can control good events affecting them. See also legend in tables3 -5.				
Notes: ° statistically significant at 20% confidence level; * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%.				

6. Concluding Remarks

Recent research in experimental economics has sought to assess whether convicted criminals share comparable social preferences with other sectors of the population. On the other hand, when dealing with Mafia or Camorra, economists and social scientists have tended to invert the question arguing that the presence of Mafia generates negative externalities. Specifically, in areas where organized crime operates, citizens' social behaviour is affected by the presence of these powerful groups and posited to be less cooperative, trusting, honest and trustworthy than citizens' social behaviour living in areas where the criminal groups are absent.

The results presented here suggest a more complex pattern. We examined in-group behaviour and attitudes of the Camorra. Using a three-way comparison, with two control groups, students and 'Ordinary prisoners' allowed us to clearly identify distinct patterns of behaviour and attitudes vis-à-vis co-operation and punishment peculiar to the Camorra.

In general, we found much dissimilarity in the behaviour of ordinary prisoners, Camorristi and students. Inter alia, these differences are indicative of, or at least consistent with, a lack of contamination or negative externalities associated with the Camorra.

There is a degree of fatalism observable in the behaviour and attitudes of both Camorristi and ordinary prisoners as evidenced, for example, by the punishment of co-operators by both types of prisoner in the role of third party adjudicator, and, more directly, in the more external loci of control observable in both types of prisoner above-all when it comes to 'bad' events. This we think can reasonably be attributed to a common prison 'effect'.

On the other hand, there is clear evidence of an attachment to co-operative (in-group) norms of behaviour amongst Camorristi and rejection of such rules when they are externally imposed – leading to a significant reduction in co-operation once an external 'judge' is introduced – which is not observed amongst ordinary prisoners who tend to become more co-operative under the threat of externally imposed punishment. The behaviour of ordinary prisoner thus suggests an important element of opportunism which is entirely lacking – or perhaps more accurately – completely overwhelmed by the more honour-bound mores of the Camorra, with its emphasis on the negative nature of betrayal and the rejection of external authority.

The study offers a contribution to the growing area of experimental work on the economics of crime comparing criminals and ordinary citizens' social behaviour. In this regard, inter alia, the study provides clear evidence of behavioural differences between citizens (students) ordinary criminals and Camorristi which emphasize the need to adopt behavioural perspectives in dealing with organized crime, rather than an approach based on purely economic incentives.

REFERENCES

- Bandiera, O. 2003. Land Reform, the Market for Protection, and the Origins of the Sicilian Mafia: Theory and Evidence. *Journal of Law, Economics, & Organization* 19(1), 218-244.
- Benjamin, D. J.; Choi J.J.; Strickland A. J.; 2010. Social Identity and Preferences. *American Economic Review* 100 (4), 1913-1928.
- Beugelsdijk, S.; Van Schaik, T. 2005. Social capital and growth in European regions: an empirical test. *European Journal of Political Economy* 21(2), 301-324.
- Birkeland, S.; Cappellen, A.; Sorensen, E.; Tungodden, B. 2014. An experimental study of prosocial motivation among criminals. *Experimental Economics* 17(4), 501-511.
- Boone, C.; De Brabander, B.; Carree, M.; De Jong, G.; van Olffen, G.; van Witteloostuijnd A. 2002. Locus of Control and Learning to cooperate in a Prisoner's Dilemma Game. *Personality and Individual Differences* 32 (5), 929-946.
- Butler, J. 2014. Trust, Truth, Status and Identity An Experimental Inquiry. *The B.E. Journal of Theoretical Economics* 14(1), 293-338.
- Cohn, A., Maréchal, M. A.; Noll T. 2015. Bad Boys: How Criminal Identity Salience Affects Rule Violation. *Review of Economic Studies* 82(4).
- Carpenter, J.; Seki, E. 2005. Do Social Preferences Increase Productivity? Field Experimental Evidence from Fishermen in Toyama Bay. *Economic Enquiry* 49(2), 612-630.
- Chmura, T.; Engel C.; Englerth M. 2013. Selfishness as a Potential Cause of Crime - A Prison Experiment. *MPI Collective Goods Preprint no 2013/5*
- Fehr, E.; Fischbacher, U. 2004. Third-party punishment and social norms. *Evolution and Human Behaviour* 25(2),63-87.
- Fehr, E.; Rockenbach, B. 2003. Detrimental Effects of Sanctions on Human Altruism. *Nature*, 422, 137-140.
- Gambetta, D. 1996. The Sicilian Mafia. The Business of Private Protection. Cambridge: *Harvard University Press*.
- Europol. 2013. Threat Assessment. Italian Organized Crime. The Hague, file document, n. 667574.
- European Parliament. 2013. Organized crime, corruption, and money laundering: recommendations on action and initiatives to be taken. Resolution, June.
- Khadjavi, M.; Lange, A. 2013. Prisoners and their dilemma. *Journal of Economic Behaviour & Organization* 92, 163-175.

Meier, S.; Pierce, L.; Vaccaro, A. 2014. Trust and In-Group Favoritism in a Culture of Crime. *IZA Discussion Paper No. 8169*.

Nese, A.; Sbriglia, P.; Palomba, A.; Scudiero, M. 2013. Third party punishment and criminal behaviour: an experiment with Italian camorra prison inmates. *Economic Bulletin*, v. 33, 3, 1875-1884.

Saviano, R. 2006. *Gomorra*, Mondadori, ed. Milan.

Williamson, O. E. 1985. *The Economic Institutions of Capitalism*, New York: Free Press.