## Discussion paper

# Immoral criminals?
# An experimental study of social preferences among prisoners

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# Immoral criminals? An experimental study of social preferences among prisoners*

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## Abstract

This paper studies the pro-social preferences of criminals by comparing the behavior of a group of prisoners in a lab experiment with the behavior of a benchmark group recruited from the general population. We find a striking similarity in the importance the two groups attach to pro-social preferences in both in strategic and non-strategic situations. This result also holds when the two groups interact. Data from a large internet experiment, matched with official criminal records, suggest that our main finding from the lab experiment is not influenced by the additional scrutiny experienced by participants in prison.

JEL Classification Numbers C91 · D63 · K40

# 1 Introduction

Criminal activity has significant direct costs for society and considerable resources are used on crime prevention. Close to ten million individuals are held in penal institutions around the world (Walmsley, 2009) and in the US alone, 227 billion USD are spent each year to catch, prosecute, and punish offenders (Bureau of Justice Statistics, 2010). Even in countries with a prison population that is considerably smaller than in the US, such as Norway and other European countries, as many as one third of all young males are charged with at least one crime (Skardhamar, 2004). Criminal behavior is thus a pervasive and costly phenomenon and it is important to understand what explains such behavior.

According to standard economic theory of crime, a person commits a crime if the expected consequences of doing so are better than the expected consequences of any legal alternative. Economists have focused on how differences in legal income opportunities and differences in the expected cost of punishment might explain differences in criminal behavior (Allingham and Sandmo, 1972; Becker, 1968; Dilulio, 1996; Eide, 2000; Levitt, 1997, 2004; Lochner, 2004; McCarthy, 2002). The economic theory of crime has typically ignored how moral considerations might affect the decision to commit a crime, but such considerations could easily be included in the theory as a moral cost of crime (Andvig and Moene, 1990).

Recent experimental studies have documented that many people are motivated by social preferences and often take moral costs into account when they make decisions that have consequences for others (Camerer, 2003; Konow, 2003). These studies have also shown that there is considerable heterogeneity in pro-social preferences both within and between groups (Henrich, Heine, and Norenzayan, 2010). Heterogeneity in pro-social preferences could potentially be important in explaining criminal behavior because crime typically has negative consequences for others (Wikström, 2006; Wikström and Treiber, 2007). More specifically, if people take into account how their actions affect others before they decide whether or not to commit a crime, then the likelihood of a person committing a crime would be decreasing in the importance he attaches to pro-social preferences. Consequently we would expect criminals on average to be less motivated by pro-social preferences than non-criminals.

This paper reports the results from, to our knowledge, the first lab experiment designed to study the social preferences of criminals. The experiment consists of a dictator game and two versions of the trust game: a standard trust game and a trust game with punishment. The dictator game provides us with the classical measure of the importance attached to pro-social preferences in a non-strategic situation. However, as pointed out by Fehr, Naef, and Schmidt (2006), social preferences may differ fundamentally across economic environments, in particular between strategic and non-strategic situations. The trust games allow us to study social preferences in strategic situations (Berg, Dickhaut, and McCabe, 1995).

The prisoners taking part in the experiment were recruited from a medium security prison in Norway. Most of the prisoners had committed crimes related to drugs and violence. In order to have a benchmark with which to compare the behavior of the prisoners, we also included a group of males with the same age distribution as the prisoners, recruited from a representative sample of the Norwegian population.

Group identity has been shown to be important for social preferences in many contexts (Akerlof and Kranton, 2000, 2005; Bernhard, Fehr, and Fischbacher, 2006; Charness, Rigotti, and Rustichini, 2007; Chen and Li, 2009; Tajfel and Rurner, 1979), and in-group favoritism could potentially affect the behavior of the prisoners in the experiment. In addition to single group sessions, where participants only interacted with participants from their own group, we therefore included mixed group sessions where the participants interacted with participants from both groups. This allows us to compare how the prisoners behave when they interact with other prisoners and when they interact with participants from the benchmark group.

The advantage of a controlled lab experiment in studying the social preferences of prisoners and the benchmark group is that it allows us to compare their behavior in similar choice situations. When the circumstances under which the two groups make their choices are different, which typically would be the case outside the lab, it is not possible to say whether differences in pro-social behavior are a result of differences in circumstances or differences in social preferences. If circumstances are equalized, however, differences in pro-social behavior cannot be explained by differences in circumstances.

Our main finding is that the prisoners are not immoral in the sense that they are unwilling to act on pro-social preferences. On the contrary, the prisoners are highly motivated by pro-social preferences and there is a striking similarity in the importance the prisoners and the benchmark group attach to pro-social preferences in both strategic and non-strategic situations. This is the case both when the prisoners interact with other prisoners and when they interact with the benchmark group and we find little evidence of in-group favoritism. Even if our main finding is the similarity in the pro-social preferences of the two groups, we find some interesting differences in how the two groups respond to the punishment (Block and Gerety, 1995). In particular we find that the prisoners respond less than the benchmark group to a perceived increase in the expected punishment.

Special care was taken to make the lab experience as similar as possible for the prisoners and the benchmark group. In particular we made sure that no prison guards were present in the lab during the experiment in the prison and that the instructions were the same for the two groups. To reduce the feeling of scrutiny, we explained in detail the procedures ensuring that it was impossible for the experimenters, or anyone else, to link participants to individual choices (Levitt and List, 2007). The experiment was furthermore highly incentivized, with an average payment, excluding the show-up fee of 482 NOK (approximately

85 USD), and this should reduce the relative importance of an experimenter demand effect.

A concern when comparing the behavior of a group of participants who are imprisoned with the behavior of a group of participants who are not imprisoned is the possibility that the experimenter demand effect due to the scrutiny of the experimental situations might be stronger in the prison. Results from an internet experiment with the dictator game, conducted with a large number of participants drawn from the general population in Denmark, suggest that the main finding from the lab experiment is not due to the fact that the criminals were imprisoned.[1] In collaboration with Statistics Denmark we matched the behavioral data from the internet experiment to the official criminal records and we find no significant difference in the pro-social behavior of former criminals and the general population.

The similarity in pro-social behavior found in both the lab experiment and the internet experiment could be interpreted as providing support for claim made in Becker (1968), that criminals do not differ from non-criminals with respect to their basic motivation. This interpretation implies that differences in criminal behavior primarily are a result of differences in circumstances and that social preferences are of little importance in explaining criminal behavior. An alternative interpretation of our main results, however, is that there is weak cross-situational consistency in social preferences, and that behavior in economic experiments is motivated by different social preferences than behavior in other situations (Levitt and List, 2007).

Section 2 and Section 3 present the sampling procedure and the design of the lab experiment. Section 4 and Section 5 analyze pro-social preferences in the dictator game and the trust game, respectively. Section 6 uses data from the internet experiment to shed light on the role of scrutiny. Section 7 discusses some implications of our findings.

# 2  The participants

We conducted 12 sessions, which on average lasted 90 minutes, with a total of 360 participants during the period from June 2007 to April 2009. Four sessions, with a total of 207 participants, were mixed sessions in which the prisoners and the benchmark group interacted, and eight sessions, with a total of 153 participants, were single group sessions in which the participants only interacted with participants from their own group. No individual participated in more than one session.

The 187 prisoners who participated in the experiment were all male inmates of Bjørgvin Prison, a medium security prison located outside the city of Bergen,

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[1] The experiment was part of a large research project using the Internet Laboratory for Experimental Economics at the University of Copenhagen headed by Jean-Robert Tyran.

Norway. All the prisoners were given a written invitation to participate in the experiment at a meeting a few days in advance of each session. At this meeting we explained that the experiment was voluntary, that participants would not be asked to reveal any personal information, and that any information gathered in the experiment would be anonymous. They were also informed that in addition to a show-up fee they could earn extra money during the experiment, that all earnings would be paid in cash immediately after the experiment, and that they did not have to report their earnings from the experiment to the prison authorities. More than 90 percent of the prisoners accepted the invitation. For the prisoners, the experiment was conducted in a mobile computer lab that was set up in the prison gymnasium and no prison guards were present in the lab during the experiment.

The other group of participants consisted of 173 males selected randomly from the population living in the 27 basic statistical units closest to the Norwegian School of Economics (NHH) in Bergen.[2] These basic statistical units include parts of the second largest city in Norway as well as a less populated rural area, and the population is close to the national average with respect to the distribution of income, education and occupation. The inmates at Bjørgvin prison are on average younger than the general population, and we stratified the invitations so that the age profile of the benchmark group was approximately the same as for the prisoners.[3] Table 1 reports the characteristics of the two groups based on self-reported age, education and work experience. We observe that the two groups are very similar with respect to age and work experience, but that a somewhat higher share of the benchmark group has completed secondary education.

[ Table 1 about here. ]

The benchmark group received an invitation letter similar to the one received by the prisoners and they were given the same instructions during the experiment. For the benchmark group, the experiment was conducted at NHH in a computer lab of the same type as the one in Bjørgvin Prison.[4]

# 3   Design

The experiment consisted of two parts: a dictator game and a version of the trust game. It was conducted using a web-based interface and was double blind so

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[2]A basic statistical unit is the smallest geographical unit used by Statistics Norway.

[3]The selection procedure was approved by the Norwegian Social Science Data Services ("Norsk samfunnsvitenskaplig datatjeneste") and the Norwegian Public Register ("Norsk Folkeregister").

[4]To compensate the benchmark group for the additional time and costs incurred by this group in order to come to the lab, the show-up fee for the benchmark group, 300 NOK, was higher than the show-up fee for the prisoners, 100 NOK. The participants were not informed about the other group's show-up fee.

that neither subjects nor experimenters could associate decisions with particular subjects. No information about the outcome of the dictator game was given to the participants before both parts of the experiment were completed.

At the beginning of the experiment, all participants were informed about the rules of conduct and given a description of how the experiment would proceed.[5] Instructions were given by the experimenter and on the computer screens. To prevent participants with poor reading skills from misunderstanding the written instructions, it was possible to listen to a pre-recorded version of the instructions on each screen using headsets available to all participants. In all the mixed sessions, the participants were told the location of the other participant, in Bjørgvin Prison or at NHH, and informed that the participants at Bjørgvin Prison were male inmates at a medium security prison and that the participants at NHH were males recruited from the general population.

In the dictator game, the participants were asked to divide an endowment of money between themselves and another participant. Each participant made this decision in two situations and was a recipient in two other situations. In each situation they were matched with a different participant and they were not informed about the outcome in the two situations where they were a recipient before at the end of the session.

The endowment to be distributed by the dictator in the mixed session was 1000 NOK (approximately 175 USD). In the single group session each participant was a dictator in one situation with an endowment of 1000 NOK and in one situation with an endowment of 500 NOK. The dictators could give the other participant six alternative shares of the endowment: 0 percent, 20 percent, 40 percent, 60 percent, 80 percent or 100 percent.

Immediately after the dictator game, the participants took part in one of two versions of a trust game: a standard trust game or a trust game with a punishment option. Each participant was involved in four trust game situations; first in two situations as a sender and then in two situations as a receiver, and in each situation they were given an endowment of 400 NOK (approximately 70 USD). They did not receive any information about the outcome of the first two situations before they decided how much to return in the situations in which they were receivers. In each situation they were matched with a different participant. In the mixed sessions they were matched with one participant from each location, both as a sender and as a receiver, and the participants knew the location of the other participant when they made their decisions.

In the standard trust game the senders were given the opportunity to send up to 200 NOK, choosing among six alternative shares of this amount: 0 percent, 20 percent, 40 percent, 60 percent, 80 percent and 100 percent. The amount sent was multiplied by a factor of three so that the receiver received three times the sent amount. Before the sender made his choice, he was informed that the

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[5]Complete instructions can be downloaded from http://sites.google.com/site/sameos/.

receiver could return six alternative shares of the received amount: 0 percent, 20 percent, 40 percent, 60 percent, 80 percent or 100 percent, and was asked to report what he believed the probability was that the receiver would return each of the alternative shares.[6] The sender thus had to reflect on how the receiver would respond to his decisions before he decided what to do.

After all participants had made their decisions as a sender, they were informed about how much they had received as a receiver. The receivers then had to decide what share of the received amount (0 percent, 20 percent, 40 percent, 60 percent, 80 percent or 100 percent) they wanted to return to the sender.

The trust game with a punishment option was identical to the standard trust game except that the sender had the option to punish the receiver. In the mixed sessions, the sender could choose to reduce the other participants's payoff by 100 NOK or 200 NOK at a low cost to himself (0.25 NOK per 1 NOK reduction). In the single group sessions the punishment cost for the sender was low in one of the situations and high in the other (1 NOK per 1 NOK reduction).

Before the receiver made his choice of how much to return he was asked, for each possible return amount, to report what he believed the probability was that the sender would choose to reduce his payment by 0 NOK, 100 NOK or 200 NOK.[7] After the receiver had decided how much to return, the sender decided whether he wanted to punish the receiver by reducing his payment by 100 NOK or 200 NOK at a cost to himself.

Throughout the experiment, after having made a decision the participants were immediately asked to confirm or revise it. At the end of each part of the experiment, they were again given the opportunity to revise all of their decisions in that part, and then asked to make a final confirmation of their decisions.

At the end of the experiment, one of the eight situations each participant was involved in was randomly drawn and the participant received his earnings from this situation in addition to the show-up fee.[8] The average earnings, excluding the show-up fee, was 482 NOK (approximately 85 USD). Special care was taken so that the payment procedure ensured anonymity. The computer assigned a payment code to each of the participants, and a group of assistants who were not present in the lab during the experiment prepared envelopes containing the payments corresponding to each payment code. The assistants also made sure that it was impossible to identify the amount of money by simply looking at the envelope. After bringing the envelopes to the lab, the assistants immediately

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[6]In the mixed sessions, the sender was asked to report these beliefs both when the receiver was a prisoner and when the receiver was from the benchmark group.

[7]In the mixed sessions the participants answered these questions both when the sender was a prisoner and when the sender was from the benchmark group, and in the single group sessions they answered these questions for high and low punishment cost.

[8]Due to a computer error, five participants in the benchmark group only made one choice as a dictator and one choice as a sender in the trust game. Total number of observations from this group is therefore 341 and not 346.

left and the envelopes were handed out in accordance with the payment codes. The sequence of events in the two versions of the experiment is summarized in Table 2.

[ Table 2 about here. ]

# 4   Social preferences in non-strategic situations

The distributive situation in the dictator game has two important characteristics that restricts the possible motives the dictator may have for sharing. First, the receiver is unable to respond to the decision made by the dictator so sharing cannot be motivated by self-interest. Second, the dictator does not respond to decisions made by the receiver, which implies that sharing cannot be motivated by reciprocity. Sharing in the dictator game could, however, be motivated by both by a concern for equality and by altruism.

[ Figure 1 about here. ]

The upper left panel in Figure 1 provides a histogram of the share given in situations where prisoners are matched with other prisoners, where we observe that most give something to the other participant. Some prisoners give nothing to the other participant, but the modal choice is to give 40 percent of the endowment.[9] From Table 3 we observe that the prisoners give on average 36.2 percent to the other participant, which is more than commonly reported for experiments conducted with students (Camerer, 2003).

[ Table 3 about here. ]

The dictators were informed about the location of the other participant and this information could potentially affect their sharing behavior. Prisoners could, for example, be more willing to act on pro-social preferences when they were matched with other prisoners than when they were matched with a participant from the benchmark group. Comparing the upper left and the upper right panels in Figure 1 we observe, however, that the distribution of shares given is very similar in the two types of situations. From Table 3 we observe that the prisoners on average give slightly more to other prisoners than they give to participants from the benchmark group, but the difference is small and not significant ($p = 0.134$).

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[9]There is no significant difference in the average share given when the endowment is 500 NOK and 1000 NOK. The prisoners gave 2.7 percentage points less with the high endowment than with the low endowment ($p = 0.242$) and the benchmark group gave 1.2 percentage points more ($p = 0.420$).

Comparing the upper panels and the lower panels in Figure 1 we observe a striking similarity in the distribution of shares given for the prisoners and the benchmark group. This impression is confirmed by Table 3 where we find no significant difference in the average share given across all situations ($p = 0.273$). This similarity in the share given also holds when we look separately at how much each of the two groups gives in situations where they are matched with prisoners ($p = 0.426$), and in situations where they are matched with the benchmark group ($p = 0.601$).

Table 4 reports a regression on share given where we control for age, education and work experience. The coefficient for the dictator being a prisoner is insignificant, which confirms the impression that there is no difference in the importance the two groups attach to pro-social preferences. We also observe that both groups give somewhat more when the recipient is a prisoner than they do when the recipient is from the benchmark group, but this is only significant for the benchmark group.

[ Table 4 about here. ]

In sum, we find that the prisoners are highly motivated by pro-social preferences in the dictator game and that there are no differences in the sharing behavior of the prisoners and the benchmark group. We therefore conclude that prisoners are not characterized by an unwillingness to act on pro-social preferences in non-strategic situations, neither in meetings with other prisoners or with participants from the general population.

# 5   Social preferences in strategic situations

We now turn to the trust game, which allows us to study the participants' social preferences in strategic situations. Since the participants in the trust game respond to decisions made by other participants and have to take into account how other participants respond to their decisions, this game introduces motives that are not present in the dictator game.

The decision to send does not provide a clean measure of pro-social behavior, since it also is affected by beliefs about the other participant's behavior, and our analysis therefore focuses on the return decision and on the decision to punish in the trust game with a punishment option. We observe, however, from Table 5, that the average share sent by the prisoners and by the benchmark group is strikingly similar if we look at all the situations, 62.2 percent versus 64.1 percent. Looking only at the standard trust game, we observe that prisoners send somewhat less than the benchmark group, in particular when the receiver is a prisoner, but this difference is not statistically significant ($p = 0.183$). The share sent in the standard trust game is often interpreted as a measure of trust (Fehr,

2009), and this result therefore suggests that the two groups are equally trusting when they make choices in the same circumstances.[10]

[ Table 5 about here. ]

## 5.1 Share returned

Table 6 reports the average share returned in the trust game for the prisoners and the benchmark group. If we look at the average across all return decisions, the prisoners return 38.6 percent of the received amount and the benchmark group returns 41.3 percent.

Looking only at the share returned in the standard trust game we observe that the prisoners in these situations on average return close to one third of the money they receive. From Table 6 we observe that there is no significant difference in the average share returned when the sender is a prisoner and when the sender is from the benchmark group ($p = 0.179$). Only pro-social preferences can motivate the receiver to return a share of the received money in the standard trust game and prisoners thus appear motivated by pro-social preferences also in situations where they respond to others decisions.

Comparing the average share returned by the prisoners and the benchmark group in the standard trust game, we observe from Table 6 that the benchmark group returns a higher share, but this difference is not statistically significant, ($p = 0.157$). This result suggests that both groups are equally motivated by pro-social preferences in their interaction with participants from the benchmark group. When the sender is a prisoner, however, we observe that the benchmark group return somewhat more than the prisoners ($p < 0.001$).

[ Table 6 about here. ]

Is the return decision in the trust game motivated by the same pro-social preferences that motivated sharing in the standard dictator game? To address this question, and to study the role of reciprocity and punishment, Table 7a reports a regression of the share returned by the prisoners in all the return decisions.

To study whether the pro-social preferences that motivate the participants in the dictator game also are important for the return decision, we calculate the amount that each participant has to return in order to achieve the same distribution he selected as a dictator. The variable "Dictator" is defined as the maximum of this number and zero.[11] This variable is the amount the participant would return if he wanted the distribution in the trust game to be as close as

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[10]This similarity in trust is confirmed by what the participants answered when asked to report how much they believed the receivers in the trust game would return to the sender, where we find no difference in the average trust.

[11]A similar approach is used in Ashraf, Bohnet, and Piankov (2006).

possible to the distribution he chose when he was a dictator, taking into account that it is impossible to return a negative amount.

From column (5) in Table 7a we observe that the level of generosity in the dictator game has a large and significant effect on how much the prisoners return in the dictator game, which suggests that the pro-social preferences salient in the non-strategic situations also are important motives in strategic situations. Table 7b reports the regression of share returned for the benchmark group and we find that the cross-situational consistency in pro-social preferences also holds for the benchmark group.

[ Table 7 about here. ]

A large body of evidence has shown that many people are willing to reward kind actions even at a cost to themselves (Fehr and Gachter, 2000; Falk and Fischbacker, 2006). Reciprocity could potentially be important for the receivers in the trust game since they are placed in a distributive situation where the sender may have acted kindly by sending them money. If the receivers are motivated by a desire to reciprocate, we would expect the share returned to be increasing in the share sent. From column (5) in Table 7a we do not, however, observe that the prisoners increase the share sent when the share sent increases, which suggests that reciprocity is not an important motive in this situation. Comparing with Table 7b we observe that the same holds for the benchmark group.

A desire to avoid punishment could affect the return decision in the situations where the sender had a punishment option. We observe from Table 6 that the prisoners, but not the benchmark group, return a higher share when there is a punishment option than they do in the standard trust game, in particular when the cost of punishment is low. In the regression we look at the effect of the two different punishment options, low cost and high cost, and the effect the participants' beliefs about whether the sender will use the punishment option. From column (5) in Table 7a we observe that the existence of a punishment option has a positive effect on the share returned by the prisoners, but this effect is only significant when the cost is low. We follow the approach of Falk, Meier, and Zehnder (2011) and use the average expected punishment as a proxy for the belief that the sender is likely to use the punishment option and we observe that the coefficient for this variable is small and insignificant for the prisoners. This suggests that expectations about punishment are of little importance when the prisoners decide how much to return.

In contrast to what we find for the prisoners, the benchmark group responds to the punishment option by reducing how much they return. The benchmark group also differ from the prisoners in how they respond to an increased likelihood that the other participant will use the punishment option. Column (10) in Table 7b shows that expectations about punisment has a large and significant effect on the share returned for the benchmark group ($p = 0.001$).

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From Table 7a and Table 7b we observe that the indicator for sender being a prisoner is not significant for either group and the interaction terms between sender being a prisoner and other variables are also insignificant. In line with the results from the dictator game, we thus find no evidence of the participants differentiating their behavior on the basis of the other participant's type.

In sum, the high average share returned by the receivers in the standard trust game shows that both the prisoners and the benchmark group are highly motivated by pro-social preferences. The share returned in the trust game is strongly correlated with the share given in the dictator game and this suggests that the return decision to a large extent is motivated by the same pro-social preferences that motivated sharing in the dictator game. Social preferences are thus consistent across very different economic environments within an experimental setting. Reciprocity does not seem to be an important motive for either of the two groups. The two groups differ, however, in how they respond to the punishment option. The existence of of a punishment option increases the share returned among the prisoners, but it has a large negative effect on the share returned among the benchmark group. For both groups, the share returned is higher the more likely the participant think it is that the punishment option will be used, but this effect is only statistically significant for the benchmark group. In line with what we found in the dictator game, there is no evidence of in-group favoritism.

## 5.2   Punishment

In the previous section we found that reciprocity was of little importance for both groups when they decided how much of the received money they would return to the sender. The trust game with a punishment option allows us to study whether reciprocity is more important in the decision to punish than in the return decision. The punishment option is also interesting because it creates a situation where inequality aversion might conflict with altruism. Punishment can, when the cost of punishment is low, equalize the final income distribution and inequality averse participants therefore have a motive to punish.[12] Altruism would, however, be a reason not to punish because punishment reduces the income of the other participant.

None of the participants chose to punish the receiver when the cost of punishment is high. From Table 8, we observe, however, that when the cost of punishment is low, 21.5 percent of the prisoners choose to punish and their average punishment is 34 NOK. For the benchmark group the corresponding numbers are 23.8 percent and 39.2 NOK. Even if there is no significant difference in the average levels of punishment, the two groups differ with regard to who they punish.

[ Table 8 about here. ]

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[12]This is not the case when the cost of punishment is high, in which case the difference in earnings is unaffected by the level of punishment.

Table 9 reports marginal effects for a probit regression on the decision to punish when the punishment cost is low and it allows us to study how different motives affect the decision to punish.[13] If reciprocity is an important motive in the punishment decision we would expect the participants to be more likely to punish when the share returned is low. From Table 9 we observe that this indeed is the case. Both prisoners and the benchmark group are significantly less likely to punish if the receiver returns a high share of the received amount ($p < 0.001$). Reciprocity is thus an important motive for both groups when they decide whether or not to punish.

[ Table 9 about here. ]

In the dictator game, inequality aversion and altruism are both motives for sharing. With respect to punishment, however, these motives pull in opposite directions. The correlation between pro-social behavior in the dictator game and punishment in the trust game will therefore depend on the relative importance of these two motives in the dictator decision. In Table 9 the variable "Dictator" is defined as the punishment that is required in order to come as close as possible to the distribution the participant selected as a dictator. We observe that this variable has a large negative effect on punishment for the prisoners ($p = 0.031$). In contrast, the variable has no effect on punishment for the benchmark group ($p = 0.838$). There are two plausible interpretations of this difference between the two groups. First, it could be seen as suggesting that the prisoners place less weight on inequality aversion relative to altruism than the benchmark group. However, it could also be seen as suggesting that the prisoners view punishment as a more anti-social act than the benchmark group, and that they therefore are more reluctant to punish if they are highly motivated by pro-social preferences.

The prisoners are less likely to punish other prisoners than participants from the benchmark group, while the benchmark group is more likely to punish prisoners than members of their own group, but when we control for background variables and other motives these effects are not significant ($p = 0.103$ and $p = 0.332$ respectively).

In sum, we find that the prisoners are more willing to punish others than the benchmark group. In contrast to what we find for the decision to return, reciprocity is an important motive in the punishment decision for both groups. For the prisoners there is a strong negative correlation between pro-social behavior in the dictator game and the willingness to punish, but there is no such correlation for the benchmark group. One interpretation of this result is that prisoners perceive punishment as a more anti-social act than the benchmark group.

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[13]OLS regressions give very similar results.

# 6 The role of scrutiny

The previous sections have documented a striking similarity in the pro-social behavior of prisoners and the benchmark group in a lab experiment. One possible interpretation of this result is that a lower level of pro-social motivation among the prisoners is canceled out by a stronger experimenter demand effect. More generally, it is natural to ask how the behavior of the prisoners is affected by the fact that the experiment was conducted in the prison and whether we would get the same results if we studied a group of criminals who are not imprisoned when they participate in the experiment.

Data from a dictator game we conducted as part of an internet experiment with 1565 participants drawn from the general population in Denmark, a country that is very similar to Norway along most dimensions, allow us to shed some light on these questions. Participants were randomly selected from the Danish population aged 18-80 years and invited in a hard-copy letter from Statistics Denmark. Participants were matched in pairs and each participant in a pair was asked to divide an endowment of 150 DKK (approximately 30 USD) between themselves and the other participant in the pair. One of the two proposals was randomly selected to determine the final payment for both participants in the pair.

In collaboration with Statistics Denmark, we matched the behavioral data from this experiment to the official criminal records in Denmark which include information about offences and sanctions in the period from 1980 to 2009. A substantial fraction of the participants in this experiment had a criminal record and 389 participants had been sentenced to either imprisonment, suspended imprisonment, or a fine. The bottom left panel in Figure 2 provides the histogram of the share given by this group and the histogram of the share given by the rest of the participants. We observe that the histograms are very similar and the average share given by the two groups is 0.327 and 0.341 respectively ($p = 0.288$).

Prison sentences, including suspended prison sentences, were given to approximately 10 percent of those with a criminal record in our sample, reflecting the fact that the prison population in Denmark is relatively small.[14] The upper right panel in Figure 2 provides the histogram of the share given by the 35 participants who have either been imprisoned or received a suspended prison sentence and the histogram of the share given by the rest of the participants. Again we observe that the histograms are very similar. The average share given by participants with either unsuspended or suspended prison sentence is slightly lower than for rest of the participants, 0.308 versus 0.338, but the difference is small and not significant ($p = 0.435$).

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[14]On average 74 individuals per 100.000 of the national population are imprisoned in Denmark. The corresponding rate for Norway is 73 individuals per 100.000. The prison population rate in Denmark and Norway is close to the average rate in Western Europe (www.prisonstudies.org).

[ Figure 2 about here. ]

The sub-sample in the internet experiment that most closely corresponds to the prisoners in the lab experiment is those participants who have been given a prison sentence. The upper left panel in Figure 2 provides the histogram of the share given for those who have been imprisoned at least once and the histogram of the share given for those who have never been imprisoned. Also in this case we observe that the two histograms are very similar. The average share given by participants with a prison sentence is furthermore almost identical to the average share given by the rest of the participants, 0.338 and 0.337 respectively, and the difference is not significant ($p = 0.986$). It is interesting to notice that the average share given by participants in the internet experiment who have served a prison sentence is also almost identical to the average share given by the prisoners to the benchmark group in the lab experiment, 0.342.

The results from the internet experiment thus strongly suggest that the main finding from our lab experiment, that criminals are not characterized by a general unwillingness to act on pro-social preferences, is not a result of a particularly strong experimenter demand effect in prison.

The criminal statistics also contain information about what type of crime the participants have been convicted of committing. This information allows us to shed some light on whether individuals who are charged with particular types of crimes, for example white collar crimes, are characterized by attaching less importance to pro-social preferences than others. In the bottom right panel in Figure 2 we compare the share given by the 16 participants who had been convicted of white collar crimes with the share given by the rest of the participants. We observe that there is a noticeably higher share among the white collar criminals who give nothing or very little to the other participant. The average share given by the white collar criminals is also lower than for the rest of the participants, 0.255 versus 0.338, but with only 16 white collar criminals in the sample this difference is not significant ($p = 0.138$).

# 7    Conclusion

The results from the experiments studied in this paper suggest that prisoners are not immoral in the sense that they are unwilling to act on pro-social preferences. On the contrary, we find no major differences in the pro-social preferences of the prisoners and a benchmark group recruited from the general population when they face the same circumstances in a lab. Importantly, this result is not driven by in-group favoritism among the prisoners. Furthermore, the result does not seem to be due to a particularly strong experimenter demand effect in the prison.

The main differences we find between the prisoners and the benchmark group in our lab experiment are related to the punishment option in the trust game.

We find that prisoners increase their pro-social behavior when the punishment option is introduced, but that they do not respond to an increase in expected punishment. The benchmark group, in contrast, decreases their pro-social behavior when the punishment option is introduced, but responds strongly to an increase in expected punishment. For the prisoners we also find that there is a strong negative correlation between pro-social behavior in the dictator game and their willingness to punish, but we find no such correlation for the benchmark group. This last result might suggest that prisoners view punishment as a more anti-social act than the benchmark group.

If social preferences were important in explaining criminal behavior we would expect prisoners on average to be less motivated by pro-social preferences than the benchmark group. In contrast, we find a striking similarity in the pro-social motivation of the two groups. We consider two interpretations of this result. One interpretation is that there is weak cross-situational consistency in social preferences and that our results therefore cannot be extrapolated from the experimental setting to other types of situations. Interestingly, we find considerable consistency in pro-social behavior across different situations in our lab experiment, but we can not exclude the possibility that such consistency does not apply when we move out of the experimental setting.

If we assume some cross-situational consistency in pro-social preferences, our main result suggests that social preferences are of little importance in explaining criminal behavior and that differences in criminal behavior primarily are a result of differences in circumstances. This interpretation evokes a puzzle in light of the fact that pro-social preferences seem to be important in many other contexts where people make decisions. One explanation for this puzzle could be that criminal behavior to a large extent is caused by lack of self-control, a view common among criminologists (Gottfredson and Hirschi, 1990). If this is the case, criminals can be highly motivated by pro-social preferences in situations where they have self-control, but sometimes be unable to act on these preferences because they lose their self-control. An interesting avenue for further research is to investigate the interaction between social preferences and self-control in explaining criminal behavior.

A related issue for further research is whether there are systematic differences in the social preferences of different types of criminals. In order to secure the anonymity of the prisoners we did not ask them about what type of crime they had committed. We can therefore not rule out that particular groups of criminals, for example those who are convicted for crimes that typically require deliberation, are characterized by attaching little importance to pro-social preferences. The results from the internet experiment suggest that this might be the case for individuals who are convicted of white-collar crimes.

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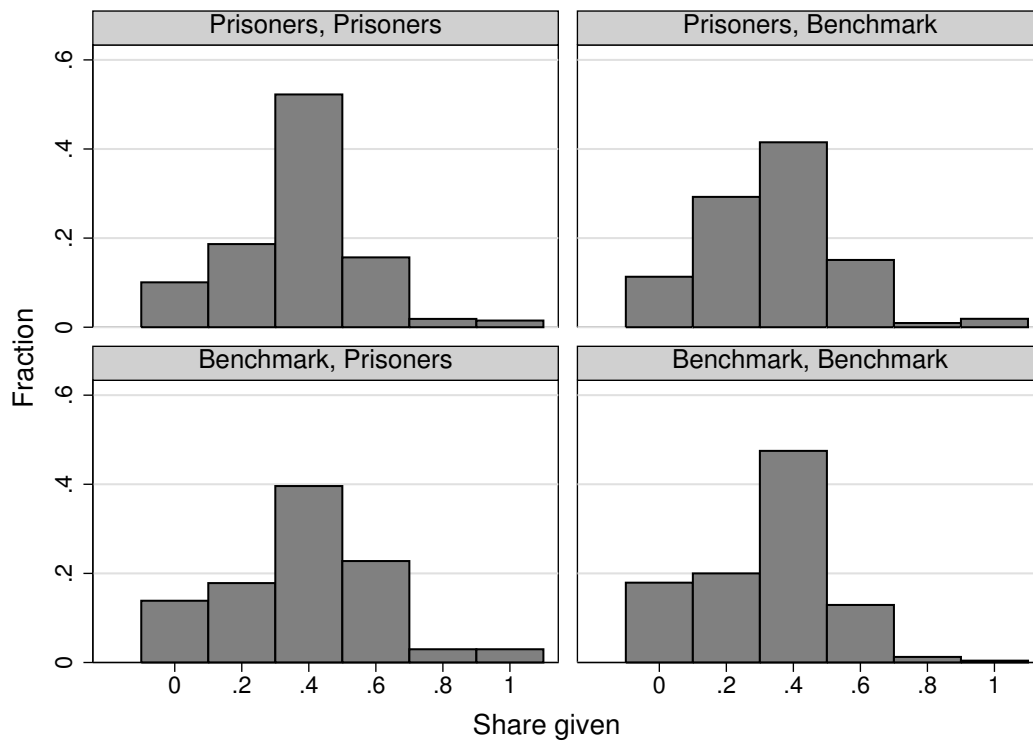
Figure 1: Histograms of share given

*Note:* Share given is the share of the endowment given to the other participant in the dictator game. "A, B" should be read as the situations where a participant from subject group A decides how much to give to a participant from subject group B.
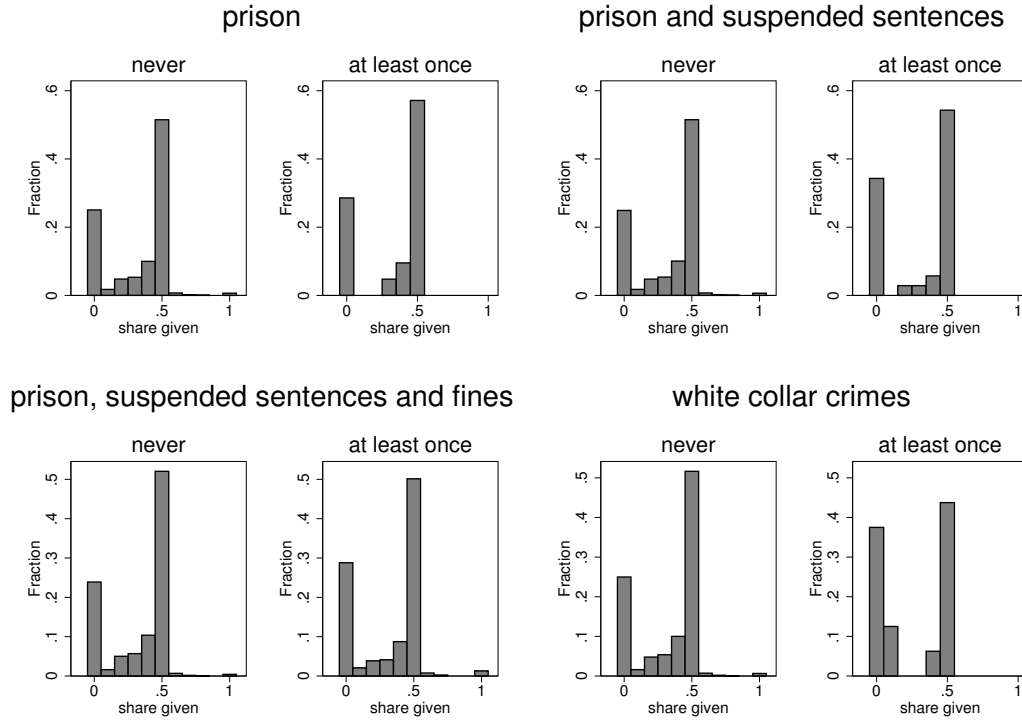
Figure 2: Histograms of share given - internet experiment

*Note:* Share given is the share of the endowment given to the other participant in the dictator game in the internet experiment. The upper left panel reports the histogram of the share given by the participants who have been in prison at least once between 1980 and 2009 and by the rest of the participants. The upper right panel reports the histogram of the share given by the participants who either have been imprisoned or received a suspended prison sentence at least once between 1980 and 2009 and by the rest of the participants. The lower left panel reports the histogram of the share given by the participants who either have been imprisoned, received a suspended prison sentence or been fined at least once between 1980 and 2009 and by the rest of the participants. The lower right panel reports the histogram of the share given by the participants who have been convicted of white collar crime, such as fraud, embezzlement and forgery, and by the rest of the participants.

Table 1: Sample characteristics

|  | Prisoners | Benchmark |
|---|---|---|
| Above 25 years old | 0.764 | 0.774 |
|  | (0.031) | (0.032) |
| Completed secondary school | 0.631 | 0.879 |
|  | (0.035) | (0.025) |
| At least five years work experience | 0.727 | 0.722 |
|  | (0.037) | (0.034) |
| $n$ | 187 | 173 |

*Note:* Self-reported age, education and work experience for the prisoners and the benchmark group. Standard errors in parentheses.

Table 2: Sequence of events

| Stage of experiment | T1 | T2 |
|---|---|---|
| 1. Decisions to share in dictator game | yes | yes |
| 2. Beliefs about share returned in trust game | yes | yes |
| 3. Decisions to send in trust game | yes | yes |
| 4. Beliefs about punishment in trust game | no | yes |
| 5. Decisions to return in trust game | yes | yes |
| 6. Decisions to punish in trust game | no | yes |
| 7. One situation drawn for payment | yes | yes |

*Note:* Sequence of events in the experiment. T1: the standard trust game; T2: trust game with a punishment option.

Table 3: Average share given in the dictator game

| Sender | Receiver | | |
| --- | --- | --- | --- |
| | Prisoner | Benchmark | All |
| Prisoner | 0.370 | 0.342 | 0.362 |
| | (0.014) | (0.020) | (0.013) |
| $n$ | 268 | 106 | 374 |
| Benchmark | 0.384 | 0.322 | 0.340 |
| | (0.023) | (0.015) | (0.015) |
| $n$ | 101 | 240 | 341 |

*Note:* The table reports average share given in the dictator game, standard errors (in parentheses) are corrected for clustering on individuals, and $n$ is the number of observations.

Table 4: Regressions of share given

|  | Prisoner | Benchmark | All |
|---|---|---|---|
| Dictator is prisoner |  |  | 0.008 |
|  |  |  | (0.022) |
| Other participant is prisoner | 0.032 | 0.060 | 0.046 |
|  | (0.019) | (0.021) | (0.014) |
| Age | 0.010 | 0.102 | 0.037 |
|  | (0.032) | (0.057) | (0.028) |
| Education | 0.020 | 0.011 | 0.020 |
|  | (0.027) | (0.040) | (0.023) |
| Work experience | 0.040 | -0.030 | 0.024 |
|  | (0.029) | (0.053) | (0.026) |
| Constant | 0.290 | 0.254 | 0.263 |
|  | (0.035) | (0.047) | (0.032) |
| Observations | 374 | 341 | 715 |
| $R^2$ | 0.019 | 0.046 | 0.028 |

*Note:* Regression of share given in the dictator game on background variables. Age, Education and Work experience are indicator variables taking the value one when age is above 25 years, when secondary education is completed, and when work experience is at least five years. The left column is based on all situations where the dictator is a prisoner, the middle column is based on all situations where a participant from the benchmark group is a dictator, and the right column is based on all situations. Standard errors (in parentheses) are corrected for clustering on individuals.

Table 5: Share sent

| Sender | All | T1 Recipient | | T2-low Recipient | | T2-high Recipient | |
|---|---|---|---|---|---|---|---|
| | | Prisoner | Benchmark | Prisoner | Benchmark | Prisoner | Benchmark |
| Prisoner | 0.622 | 0.586 | 0.600 | 0.663 | 0.682 | 0.586 | |
| | (0.024) | (0.039) | (0.047) | (0.034) | (0.043) | (0.056) | |
| $n$ | 374 | 128 | 50 | 98 | 56 | 42 | |
| Benchmark | 0.641 | 0.735 | 0.664 | 0.600 | 0.636 | | 0.541 |
| | (0.025) | (0.050) | (0.043) | (0.042) | (0.033) | | (0.058) |
| $n$ | 340 | 43 | 107 | 58 | 95 | | 37 |

*Note:* Average share sent in the standard trust game (T1) and the trust game with punishment (T2). "Low" and "High" refer to the price of punishment and $n$ is the number of observations. Standard errors (in parentheses) are corrected for clustering on individuals.

Table 6: Share returned

| Receiver | All | T1 Sender | | T2-low Sender | | T2-high Sender | |
|---|---|---|---|---|---|---|---|
| | | Prisoner | Benchmark | Prisoner | Benchmark | Prisoner | Benchmark |
| Prisoner | 0.386 | 0.335 | 0.309 | 0.443 | 0.458 | 0.395 | |
| | (0.018) | (0.028) | (0.040) | (0.025) | (0.038) | (0.042) | |
| $n$ | 343 | 113 | 46 | 94 | 52 | 38 | |
| Benchmark | 0.413 | 0.512 | 0.382 | 0.449 | 0.420 | | 0.300 |
| | (0.021) | (0.042) | (0.032) | (0.039) | (0.030) | | (0.049) |
| $n$ | 320 | 41 | 99 | 57 | 89 | | 34 |

*Note:* Average of share returned in the standard trust game (T1) and in the trust game with punishment (T2). "Low" and "High" refer to the cost of punishment and $n$ is the number of situations with a positive sent amount. Standard errors (in parentheses) are corrected for clustering on individuals.

Table 7: Regressions of share returned

(a) Prisoners

|  | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Dictator | 0.574 | | | | 0.674 |
| | (0.113) | | | | (0.127) |
| Share sent | | 0.056 | | | -0.149 |
| | | (0.057) | | | (0.084) |
| Beliefs | | | 0.013 | | 0.051 |
| | | | (0.064) | | (0.065) |
| Sender is prisoner | | | | 0.007 | -0.040 |
| | | | | (0.026) | (0.079) |
| Dictator X sender is prisoner | -0.013 | | | | -0.084 |
| | (0.104) | | | | (0.140) |
| Share sent X sender is prisoner | | 0.023 | | | 0.102 |
| | | (0.036) | | | (0.104) |
| Beliefs X sender is prisoner | | | -0.017 | | -0.041 |
| | | | (0.043) | | (0.060) |
| Low cost | 0.117 | 0.123 | 0.120 | 0.122 | 0.092 |
| | (0.033) | (0.037) | (0.055) | (0.037) | (0.046) |
| High cost | 0.079 | 0.074 | 0.078 | 0.073 | 0.062 |
| | (0.044) | (0.048) | (0.061) | (0.048) | (0.053) |
| Age | -0.014 | -0.013 | -0.017 | -0.017 | -0.019 |
| | (0.039) | (0.044) | (0.044) | (0.044) | (0.039) |
| Education | 0.036 | 0.041 | 0.038 | 0.039 | 0.037 |
| | (0.031) | (0.036) | (0.037) | (0.036) | (0.031) |
| Work experience | 0.012 | 0.033 | 0.040 | 0.039 | 0.014 |
| | (0.033) | (0.039) | (0.039) | (0.039) | (0.033) |
| Constant | 0.202 | 0.237 | 0.287 | 0.281 | 0.278 |
| | (0.048) | (0.058) | (0.049) | (0.054) | (0.083) |
| Observations | 343 | 343 | 343 | 343 | 343 |
| $R^2$ | 0.206 | 0.066 | 0.058 | 0.058 | 0.215 |

Continued on next page.

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Table 7: Regressions of share returned (continued)

(b) Benchmark

|  | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|
| Dictator | 0.645 | | | | 0.783 |
| | (0.090) | | | | (0.122) |
| Share sent | | -0.009 | | | -0.137 |
| | | (0.054) | | | (0.070) |
| Beliefs | | | 0.188 | | 0.204 |
| | | | (0.081) | | (0.062) |
| Sender is prisoner | | | | 0.071 | 0.124 |
| | | | | (0.027) | (0.081) |
| Dictator X sender is prisoner | 0.081 | | | | -0.109 |
| | (0.120) | | | | (0.220) |
| Share sent X sender is prisoner | | 0.056 | | | -0.047 |
| | | (0.035) | | | (0.122) |
| Beliefs X sender is prisoner | | | 0.004 | | -0.046 |
| | | | (0.041) | | (0.060) |
| Low cost | 0.044 | 0.027 | -0.118 | 0.025 | -0.109 |
| | (0.035) | (0.042) | (0.084) | (0.042) | (0.060) |
| High cost | -0.042 | -0.085 | -0.234 | -0.074 | -0.183 |
| | (0.053) | (0.057) | (0.077) | (0.056) | (0.060) |
| Age | -0.082 | -0.034 | -0.060 | -0.033 | -0.119 |
| | (0.057) | (0.066) | (0.065) | (0.065) | (0.052) |
| Education | -0.051 | 0.000 | 0.021 | -0.003 | -0.027 |
| | (0.049) | (0.051) | (0.048) | (0.049) | (0.045) |
| Work experience | 0.210 | 0.166 | 0.152 | 0.166 | 0.202 |
| | (0.051) | (0.058) | (0.056) | (0.056) | (0.046) |
| Constant | 0.234 | 0.310 | 0.328 | 0.296 | 0.302 |
| | (0.052) | (0.062) | (0.059) | (0.059) | (0.061) |
| Observations | 320 | 320 | 320 | 320 | 320 |
| $R^2$ | 0.275 | 0.076 | 0.100 | 0.084 | 0.338 |

*Note:* Regression of share returned in the trust game. "Dictator" is the share the participant has to return in order to come as close as possible to the distribution chosen in the dictator game. "Beliefs" is the average expected punishment measured in units of 100 NOK. "Low cost" and "high cost" refer to the price of punishment in the trust game with a punishment option. "Sender is prisoner" is an indicator variable taking the value one if the sender is a prisoner, "Age" is an indicator variable taking the value one if age is above 25 years, "Education" is an indicator variable taking the value one if secondary school is completed, and "Work experience" is an indicator variable taking the value one if work experience is at least five years. Standard errors (in parentheses) are corrected for clustering on individuals.

Table 8: Average punishment

| Sender | Share that punishes Receiver | | | Punishment in NOK Receiver | | |
|---|---|---|---|---|---|---|
| | All | Prisoner | Benchmark | All | Prisoner | Benchmark |
| Prisoners | 0.215 | 0.160 | 0.309 | 34.23 | 23.40 | 52.73 |
| | (0.038) | (0.038) | (0.063) | (6.43) | (5.94) | (11.22) |
| $n$ | 149 | 94 | 55 | 149 | 94 | 55 |
| Benchmark | 0.238 | 0.278 | 0.213 | 39.16 | 42.59 | 37.08 |
| | (0.040) | (0.061) | (0.044) | (6.90) | (10.06) | (7.89) |
| $n$ | 143 | 54 | 89 | 143 | 54 | 89 |

*Note:* Share of participants who punish and average punishment in NOK by receiver type. $n$ is the number of situations with low price of punishment and where a positive amount was sent. Standard errors (in parentheses) corrected for clustering on individuals.

Table 9: Regression of punishment

| **A: Prisoners** | | | | |
| --- | --- | --- | --- | --- |
| | (1) | (2) | (3) | (4) |
| Dictator | -0.494 | | | -0.685 |
| | (0.237) | | | (0.241) |
| Share returned | | -0.374 | | -0.586 |
| | | (0.112) | | (0.159) |
| Receiver is prisoner | | | -0.136 | -0.203 |
| | | | (0.064) | (0.148) |
| Share returned X Receiver is prisoner | | -0.221 | | 0.146 |
| | | (0.090) | | (0.216) |
| Age | 0.123 | 0.167 | 0.131 | 0.132 |
| | (0.068) | (0.063) | (0.069) | (0.059) |
| Education | 0.140 | 0.147 | 0.147 | 0.119 |
| | (0.069) | (0.071) | (0.069) | (0.070) |
| Work experience | -0.181 | -0.195 | -0.203 | -0.159 |
| | (0.105) | (0.108) | (0.103) | (0.101) |
| Observations | 148 | 148 | 148 | 148 |
| log likelihood | -69.803 | -63.336 | -70.597 | -57.653 |
| **B: Benchmark** | | | | |
| | (1) | (2) | (3) | (4) |
| Dictator | 0.258 | | | -0.046 |
| | (0.256) | | | (0.226) |
| Share returned | | -0.872 | | -0.804 |
| | | (0.173) | | (0.173) |
| Receiver is prisoner | | | 0.059 | 0.105 |
| | | | (0.068) | (0.112) |
| Share returned X Receiver is prisoner | | 0.155 | | -0.067 |
| | | (0.166) | | (0.277) |
| Age | 0.032 | -0.036 | 0.052 | -0.044 |
| | (0.118) | (0.134) | (0.111) | (0.140) |
| Education | 0.124 | 0.125 | 0.120 | 0.121 |
| | (0.118) | (0.067) | (0.120) | (0.067) |
| Work experience | -0.022 | 0.074 | -0.028 | 0.081 |
| | (0.115) | (0.098) | (0.113) | (0.097) |
| Observations | 142 | 142 | 142 | 142 |
| log likelihood | -76.695 | -55.886 | -77.020 | -55.481 |

*Note:* Marginal effects from a probit model where the outcome is whether there is any punishment. Only run on observations with low price. "Dictator" is the punishment, measured in units of 100 NOK, that would implement the mean distribution chosen in the dictator game. "Receiver is prisoner" is an indicator variable taking the value one if the receiver is a prisoner, "Age" is an indicator variable taking the value one if age is above 25 years, "Education" is an indicator variable taking the value one if secondary school is completed, and "Work experience" is an indicator variable taking the value one if work experience is at least five years. Standard errors (in parentheses) corrected for clustering on individuals.