Fines vs. Fees: The Impact of Monetary Penalties on Prosocial Motivation

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Abstract

Using an experiment, we investigate the impacts of distinct monetary penalties using a modified dictator game that allows in which the dictator can take money from the receiver. We introduce a penalty of equal monetary value in two formats: one mimicking a 'fine,' imposed *after* taking money, and another mimicking a 'fee,' paid *before* taking money. Our findings reveal that the fee is more effective than the fine in reducing the amount of money taken. In comparison to a situation with no penalty, the fee significantly reduces the aggregate amount taken, whereas the fine shows no significant overall impact. We demonstrate that the differences across conditions can be explained by the heterogeneity in the individual impact of the penalties: some individuals increase the amount they take when facing a penalty, indicating a crowding-out effect, while others stop taking money when confronted with the penalty, evidence of a crowding-in effect. The fee proves to be more effective in promoting crowding-in than the fine, while crowding-out effects are similar across formats, leading to the overall result. Additionally, we show that the implementation of monetary penalties induces changes in perceived social norms. As individuals conform to these norms, these changes partially explain the crowding-out and crowding-in effects, but they cannot account for effect differences between a fee and a fine.

Keywords: Crowding-out effect, crowding-in effects, fine, framing effects, social norm

JEL classification:
A13, D91, C91, K42

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1 Introduction

Monetary penalties come in many formats and contexts, yet little attention has been paid to how the format of a penalty might impact its effectiveness. Our study aims to analyze how different formats for a monetary penalty might lead to different behavioral impacts by comparing penalties of the same value implemented in two different ways, mimicking features of fees and fines. There are numerous examples of how penalties are implemented differently. For instance, in environmental legislation, governments often issue emission permits or impose fees on companies, allowing them to emit a specified amount of greenhouse gases — an amount paid before a 'bad action.' Conversely, companies that violate environmental regulations are frequently subject to fines - a punitive measure imposed after a 'bad action.' We conducted an experiment to observe the differences between a fine, paid after an infraction, and a fee, paid before an infraction. Understanding how the impacts of different formats for a penalty are crucial for the effectiveness of policy interventions.

Traditional economic theory suggests that penalties influence behavior by raising the relative cost of undesirable actions, thus decreasing their occurrence. However, such theories fail to discern the format of a penalty as a potential source for altering outcomes. Meanwhile, penalties implemented in different formats may yield different impacts, as their influence could extend beyond mere cost-benefit analyses; penalties might also shape prosocial inclinations (e.g., Frey and Oberholzer-Gee (1997); Frey (2000); Frey and Jegen (2001)). For example, Gneezy and Rustichini (2000a) describes a crowding-out effect, wherein the implementation of a penalty associated with undesirable behavior leads to an increase in its prevalence. Conversely, Kimbrough and Vostroknutov (2016) suggests that people tend to follow rules; the introduction of a fine (a new rule) could have a positive impact, as individuals simply adhere to it even without the need for monetary costs, a potential crowding-in effect. Consequently, the literature highlights distinct and inconclusive impacts of penalties on prosocial behavior. Meanwhile, if penalties do influence prosocial preferences, it may matter whether the penalty is implemented as a fee (i.e., paid upfront) or as a fine (i.e., paid afterward).

We also explore the extent to which social norms mediate the effects of the penalty's format and their potential impacts on prosocial preferences. Social norms (e.g., Janssen and Mendys-Kamphorst (2004); Gneezy, Meier, and Rey-Biel (2011)) have been speculated to potentially explain crowding-in and crowding-out phenomena, as the penalty might be perceived as a signal that many individuals are acting in specific ways. Such a signal, perceived as a norm, may have the undesirable effect of agents coordinating toward a 'bad' equilibrium. We provide a different approach by drawing insights from Xiao and Bicchieri (2010); Krupka and Weber (2013), which indicate that individuals tend to conform to social norms by directly incorporating norms into their preferences. Additionally, Lane, Nosenzo, and Sonderegger (2023) and Kimbrough and Vostroknutov (2016) demonstrate that implementing a law or rule might induce shifts in social norms. We aim to directly test whether the implementation of different monetary penalties leads to varying shifts in social norms, potentially explaining any behavioral differences observed between the formats.

To pinpoint the differences between a penalty implemented as a fee (i.e., paid upfront) or as a fine (i.e., paid afterward), and to analyze the role of social norms in potential behavioral changes, we conducted an online experiment. We examined the decisions made by participants in a modified dictator game, where they engaged in multiple rounds with varying initial endowments and the option to take money from another participant. Participants made decisions under two conditions: a control condition with no penalty, and one of two treatment conditions with different monetary penalties (fee or fine) introduced.

Taking money is the 'bad behavior' that we aim to deter with a penalty. In different groups, we implement one of the following monetary penalties: The fine condition, where participants pay *after* any money is taken, and the fee condition, where participants face a penalty paid *before* taking any money (i.e., participants have to pay before being able to take money). We eliminate other confounding factors such as risk concerns to focus solely on a simple timing difference across conditions. Both the fee and fine are implemented as fixed costs of the same value, and the difference lies solely in the framing effect on the perceived moment of the payment.

Following the choices in the dictator game, we assess the participants' social norms. We adopt the terminology developed by Bicchieri (2005) and Krupka and Weber (2013), which categorizes social norms into empirical (what others do) and normative (what others should do) expectations for situations with and without the penalty, comparing the attributed norms associated with each context.

To better explore the behavioral differences between fees and fines, we analyze three impacts: at the aggregate level, examining the average amount of money taken by all subjects; at the extensive margin, referring to the number of instances in which money is taken; and at the intensive margin, considering the amount of money taken, conditional on taking money. Following this analysis, we then compare these behavioral changes with shifts in social norms.

The findings reveal systematic differences between the fee condition and the fine condition and illustrate the heterogeneous impacts of monetary penalties on behavior: some participants show crowding-in effects, an increase in prosociality, while others display crowding-out effects, a decrease in prosociality.

At the aggregate level, the fine condition leads to no significant impact on the amount taken compared to the control, suggesting that this penalty was not effective. In contrast, the fee condition results in a significant reduction in the aggregate amount taken compared to the control. At the intensive margin, participants consistently take more money in both the fine and fee conditions compared to the control condition, even after controlling for income and individual differences. This increase in the amount taken suggests a crowding-out effect, with participants becoming less socially concerned after the implementation of the penalties. We observe no significant differences in the crowding-out effects between the fine and fee conditions. At the extensive margin, both the fee and fine conditions result in a reduction in the number of instances where money is taken compared to their respective control conditions. The fee condition leads to a significantly greater reduction than the fine. Given that the trade-offs are identical and the subject pool is similar, this difference indicates that the fee condition promotes more prosocial behaviors than the fine condition, suggesting a stronger crowding-in effect.

Hence, we observe that the fee condition is more effective than the fine condition, and this difference reflects the heterogeneous impact that the different penalty formats have on behavior. The crowding-out effects are similar across conditions, whereas the fee condition leads to higher levels of crowding-in than the fine condition, resulting in a better overall outcome.

The implementation of monetary penalties also induces changes in social norms. Participants, for example, compared to situations with no penalty, believe that fewer individuals would be willing to take money with the implementation of penalties, but they also perceive taking large amounts of money as more socially appropriate when a penalty is in place. Intuitively, the logic seems to be: "You should not do it, but if you do, you should make the most of it."

When analyzing the behavioral changes in the amount taken and the likelihood of taking money alongside shifts in social norms using a mediation model, we observe that social norms can partially explain the treatment effects at both the intensive and extensive margins, thereby partially accounting for the crowding-out and crowding-in behaviors. However, we find no evidence that changes in social norms explain the differences between the fee and fine conditions.

The paper is structured as follows: Section 2 is the theoretical analysis and hypotheses, and Section 3 presents the experimental design. Section 4 contains the results, Section 5 discusses the implications of the findings and conclusions.

2 Theory and Hypotheses

This section explains the theory and develops the hypotheses tested in the experiment described on subsection 2.1. All hypotheses, along with the experimental design and regression analyses, were pre-registered[1]. This section is divided into three parts:

The first part discuss differences between fees and fines within our experimental setting. The second part explores potential behavioral changes, emphasizing trade-offs and the potential impacts on prosocial concerns, while also discussing the differing effects that fees and fines may have. The third part analyzes the channels and investigates social norms as potential mechanisms for influencing behavioral changes.

[1] `https://osf.io/sqx38` - The differences across the hypotheses presented here compared to those in the pre-registration are primarily in wording, as we believe this format conveys the information more effectively.

2.1 Fine vs. Fee

To understand how the format of a penalty, whether it be a fee or fine, might affect its effectiveness, we first need to briefly understand the general discussion on penalties. Monetary penalties are often employed to influence behavior and reduce undesirable actions. Rational choice theory suggests that individuals and businesses evaluate the expected costs and benefits of their actions. As monetary penalties increase the cost of engaging in undesirable behavior, they can potentially reduce such behavior (Becker (1968)).

Following this perspective, monetary penalties are implemented in various formats and contexts. For example, environmental regulations often employ a combination of fees and fines to dissuade environmentally harmful actions. Emission permits, typically issued by governmental bodies, function as fees for companies, granting them the privilege to release a specified amount of greenhouse gases. Conversely, companies that violate environmental regulations often face fines as a punitive response.

In general, economic theory only considers the trade-offs of these penalties. Different formats may introduce concerns about risk or create a significant time gap between the action and the penalty, which influences behavior. However, given that the underlying trade-offs remain consistent, the specific format should not impact behavior (Tversky and Kahneman (1988)).

Our objective is to investigate whether the format of a monetary penalty influences behavior and to analyze potential mechanisms underlying any observed differences. Therefore, we aim to create a situation in which there is an undesirable behavior to target with the penalties and trying to maintain consistent trade-offs across the different penalties' format.

In our experimental setup, we adapted the traditional dictator game into a "taking game". In an classic dictator game, a participant (dictator) receives some money and has the option to give a share of this money to another participant. In our setting, both participants starts with some endowment (money), and one participant has the option to take money from another participant. The original dictator game typically encourages giving behavior, which is generally regarded positively. By reconceptualizing the game in terms of taking, we aimed to simulate a scenario where such behavior is associated with concepts like "stealing" or "greediness"[2], hence the setting provides one "bad behavior" to target with the monetary penalty.

We implement a monetary penalty associated with the action of taking money to curb this behavior. The penalties are implemented in two different formats: the fine condition and the fee condition. Fines are paid *after* the agent takes any money from the other participant, while fees are paid *before*, enabling the agent to take any money from the other participant. The participants play multiple rounds, with and without a monetary penalty (fee or fine). We can compare the behavioral impact of the fee and the fine to understand the effect of each penalty.

[2] It is worth noting that participants indeed perceive taking money as less socially acceptable, particularly in the context of a penalty associated with such behavior. This provides validation for this experimental manipulation.

To maintain consistency across the different penalties and focus on their formats, we eliminate other confounding factors such as risk concerns and center our attention on one essential distinction between fees and fines. The sole discrepancy lies in the perceived timing of payment—whether it occurs *before* or *after* the infraction. Both treatment conditions represent the same cost associated with the same behavior —a fixed cost— and lead to the same set of potential outcomes. In the experimental setting, the actual payment occurs only at the end of the experiment, and the format merely alters the moment of decision-making. Therefore, time preferences are not relevant in this context.

We can try to analyze the general impacts of the monetary penalties in dictator games in theoretical terms. Dictator games are generally analyzed using models of prosocial preferences as in Fehr and Schmidt (1999); Andreoni and Miller (2002) or Charness and Rabin (2002), and we use a simplified inequality aversion model in our setting. Consider a dictator with an initial endowment of x, and the receiver with an initial endowment of y. The dictator can take an amount of money, denoted as t, from the receiver, and ζ captures the level of inequality aversion. The dictator's objective is to maximize:

$$U(x+t, y-t) = x + t - \zeta|(x+t) - (y-t)|$$

With the introduction of either a fee or fine, p, as a fixed cost, the agent faces the following problem:

$$U(x+t, y-t) = \begin{cases} x + t - p - \zeta\,|(x+t-p) - (y-t)| & \text{if } t > 0 \\ x - \zeta\,|(x-y)| & \text{if } t = 0 \end{cases}$$

Such models cannot differentiate the change across fee and fine, and given that the penalties entail the same trade-offs, classic economic theory would predict that they would yield identical outcomes. With no further distinctions between fee and fine, both penalty types are expected to produce equivalent results.

2.2 Shaping prosocial behavior

In general, economic theory does not differentiate the format of the penalty as a source for behavioral change, and fees and fines should lead to similar impacts in our setting. The source of differences between fees and fines might come from the fact that incentives not only affect the trade-offs in a situation, but sometimes they can also influence prosocial concerns. For instance, Titmuss et al. (1970) proposed that introducing monetary compensation for blood donation might reduce donations. This hypothesis was tested by Mellström and Johannesson (2008), yielding mixed results, including a decrease in blood donations among female participants when monetary rewards were offered. A similar study by Frey and Oberholzer-Gee (1997) examined support for a nuclear waste storage facility and observed decreased support when monetary compensation was introduced. Gneezy and Rustichini (2000b) demonstrated that offering small monetary rewards led to reduced performance on various tasks, including logical exams. Similarly, Gneezy and Rustichini (2000a) reported that implementing a fine in a daycare for late-picking parents led to more late pickups.

These cases exemplify crowding-out theory (e.g., Frey and Jegen (2001); Frey (2000)), which suggests that new extrinsic incentives may diminish prosocial concerns, leading individuals to act less prosocially. In our setting, similar to Gneezy and Rustichini (2000a), this theory implies that introducing a monetary penalty may increase the number of people taking points or the amount taken.

Conversely, rule-following behaviors, as described by Kimbrough and Vostroknutov (2016, 2018), suggest that people have rule-following tendencies even when they are against their monetary interests. For example, participants adhere to red traffic lights in simulations, even when it is costly. In our setting, a monetary penalty could be perceived as a new rule to follow, leading some participants to reduce the amount taken to conform to this new rule or a signal that the behavior is undesirable, potentially causing crowding-in effects and increasing prosocial motivation.

There is a general challenge in disentangling the impacts of trade-offs and changes in prosocial behavior when implementing a penalty. The penalty itself creates an income shock, as individuals must pay for it (in our case, a fixed cost), which should be taken into account in our experimental design.

In our experiment, participants engage in multiple rounds of a modified dictator game where money can be taken from the opponent. Across the rounds, participants encounter various cases with different initial endowments with and without the monetary penalty, some these cases represent what we refer to as twin cases.

A twin case consists of options where there is a gap in the initial endowment for the participant who might pay the penalty, and the size of this gap is the size of the penalty itself. For example, in case 1, the dictator starts with x points, and the receiver starts with y points. In case 2, its twin case, the dictator starts with $x + p$ points and the receiver starts with y points, where p is the size of the monetary penalty. This means that if the participant takes money in case 2 and pays the penalty, the set of potential allocations remains the same, allowing us to control for the income effects from the penalty paid. Moreover, the dictator should take the same amount in those two situations. Consider the notation (x, y), where x is the an initial endowment for the dictator and y is an initial endowment for the receiver.

Definition 1 - Twin Cases: (x, y) and $(\hat{x}, y)$, with $\hat{x} = x + p$, are twin cases if (x, y) represents the initial endowments in the situation without the penalty and $(\hat{x}, y)$ represents the situation with penalty p.

Consider a dictator with an initial endowment of x, and the receiver with an initial endowment of y. The dictator can take an amount of money, denoted as t, from the receiver, and ζ captures the level of inequality aversion. The agent's objective is to maximize:

$$U(x+t, y-t) = x + t - \zeta|(x+t) - (y-t)|$$

In this case, two outcomes can emerge:

1. Indifference to inequality: If $\zeta \leq 0.5$, the agent takes everything, $t^* = y$, and earns $x + y$.

2. Minimizes inequality: If $\zeta \geq 0.5$, the agent takes enough to keep half, takes $t^* = \frac{(x+y)}{2} - x$, and earns $\frac{(x+y)}{2}$.

With the introduction of a penalty p, the agent has to maximize:

$$U(x+t, y-t) = \begin{cases} x + t - p - \zeta\,|(x+t-p) - (y-t)| & \text{if } t > 0 \\ x - \zeta\,|(x-y)| & \text{if } t = 0 \end{cases}$$

In this case, there are no unique thresholds for ζ to determine behavior, as different initial endowments might affect the thresholds (since not taking any money means keeping the initial endowment)[3]. However, three behaviors can emerge:

1. Indifference to inequality: The agent takes everything, $t^* = y$, keeping a total of $(x+y-p)$.

2. Avoids loss: Due to efficiency loss $(-p)$, takes zero, $t^* = 0$, and keeps the initial endowment, x, avoiding the penalty.

3. Minimizes inequality: The agent takes enough to keep half, $t^* = \frac{(x+y+p)}{2} - x$, redistributing the efficiency loss among participants, taking an extra $\frac{p}{2}$ than the case without the penalty.

The third potential behavioral change motivates the comparison between twin cases. For example, consider a dictator starting with 200 points and a receiver with 800 points. In the control condition, with no penalty, someone with strong inequality aversion takes 300 points, resulting in a 500/500 split. By introducing a 100-point penalty, the same agent would take 350 points, resulting in a 450/450 split and taking 50 points more than in the same situation without the penalty. This outcome could be considered a 'more selfish' choice and might be naively interpreted as a change in prosocial concerns, indicative of a crowding-out effect, even without an actual change in the prosocial concerns.

[3] Check Table 12 in the Appendix A to see the threshold for each case different endowment.

The twin cases control for this income effect. In the initial endowment 200/800 case in the treatment condition, after the penalty, it can be considered a 100/800 endowment. In the case where the penalty is 100 points, the 100/800 scenario would be its twin case, associated with the same values given that the agent pays the monetary penalty, and should yield the same decisions: a 450/450 split with 350 points taken.

Generally, models for prosocial preferences (e.g., Fehr and Schmidt (1999); Andreoni and Miller (2002); Charness and Rabin (2002); Yang, Onderstal, and Schram (2016)) only consider the set of potential outcomes in their utility function, $U(x+t, y-t)$. These models imply that the dictator will take the same amount in case (x,y) in the control condition as in the twin case (x+p,y) in the treatment condition when taking anything in the treatment condition:

Proposition 1: For twin cases (x, y) and $(\hat{x}, y)$. If a penalty p is implemented and $\operatorname{argmax} U(\hat{x}-p+t, y-t) = t^*$ with $t^* > 0$, then $\operatorname{argmax} U(x+t, y-t) = t^*$.

Therefore, for twin cases, the observed changes between the control and treatment conditions cannot be attributed to changes in trade-offs; rather, they indicate shifts in prosocial concerns. We formulate our base hypothesis based on the twin cases, which leads to clear and precise predictions:

Hypothesis 1 - Aggregate Level: The introduction of the monetary penalty reduces the average amount taken by participants.

As described, the introduction of a monetary penalty imposes a fixed cost, which may discourage some agents from taking any points due to the associated efficiency loss. However, if the agent chooses to take money in the treatment condition, they must take the same amount of money as they take in the control condition, as they are facing the same set of possible alternatives when considering the twin cases, as described before.

Following the previous discussion, we can also point that there is no significant difference across fee and fine conditions:

Hypothesis 1.1 - Fee vs. Fine: There will be no significant difference in the average amount taken by participants between the fee and fine conditions.

This aggregate change reflects two distinct alterations: the extensive margin, which concerns the number of participants taking money, and the intensive margin, which pertains to the amount of money being taken. We highlight those changes before discussing the potential impacts on prosocial preferences.

Hypothesis 2 - Extensive Margin: The introduction of the monetary penalty reduces the proportion of cases in which participants take points.

Hypothesis 2.1 - Fee vs. Fine: There will be no significant difference in the proportion of cases in which participants take points between the fee and fine conditions.

Hypothesis 3 - Intensive Margin: In the twin cases, if a participant takes points after the introduction of the penalty, there is no difference in the amount taken with or without the penalty.

Hypothesis 3.1 - Fee vs. Fine: In the twin cases, if a participant takes points after the introduction of the penalty, there will be no significant difference in average amount taken by participants between the fee and fine conditions.

A general benchmark for our setting is provided by Gneezy and Rustichini (2000a), where a penalty was imposed on parents picking up their children late from daycare. Similar to this scenario, our setting does not involve a risk component associated with the penalty. Broadly speaking, our experiment captures key aspects of Gneezy and Rustichini (2000a) and explores the effects of paying the penalty before or after the late occurrence.

As observed by Gneezy and Rustichini (2000a), crowding-out effects might indicate an increase in the number of participants taking money after the penalty is implemented. On the other hand, crowding-in effects and a propensity to follow rules suggest a larger reduction in the number of people taking money, leading to changes at the extensive margin.

For instance, the penalty could be perceived as a form of permission to act, reducing the moral concerns of the situation. This could lead people to believe that taking money is more socially acceptable, resulting in crowding-out effects. Conversely, if the penalty is perceived as a signal that such behavior is "bad," participants might view taking money as less socially appropriate when the penalty is implemented, leading to more instances of crowding-in effects.

Additionally, the upfront payment of the fee may further influence the moral significance of the decision, a similar argument as Eriksson, Strimling, Andersson, and Lindholm (2017). If this is the case, if the penalty undermines social norms, the fee might lead to higher levels of crowding-out effects than the fine. Conversely, if the penalty highlights prosocial behavior within social norms, the fee might lead to higher levels of crowding-in effects.

Hypothesis 3 directly illustrates proposition 1, and given the twin cases, the choices should be the same across conditions. Crowding-out effects might suggest that people could take money more intensively, while crowding-in effects could indicate that people would take lower amounts. Similar to the earlier arguments, the concept of entitlement illustrated by Gneezy and Rustichini

(2000a) could contribute to a crowding-out effect with fees. Participants might feel they have an even greater right to take money as they already paid to do so, in contrast to fines where the payment occurs simultaneously with the decision. If this is the case, fees could lead to larger crowding-out effects.

2.3 Shaping social norms

Social norms play a crucial role in shaping changes in prosocial behavior, as evidenced by various models and experiments (e.g., Ellingsen and Mohlin (2022); Capraro and Perc (2021); Kimbrough and Vostroknutov (2016); Bénabou and Tirole (2006); Janssen and Mendys-Kamphorst (2004); Gneezy et al. (2011); Krupka and Weber (2013)). These models encompass diverse factors such as signaling to others, coordination mechanisms, self-image concerns, and moral considerations. For instance, incentives may serve as signals of one's type to oneself or others, thereby influencing social image concerns (Bénabou and Tirole (2006)) or moral duties (? (?)). Our aim is to capture some of these behavioral changes by examining the influence of social norms.

Furthermore, by structuring the as a dictator game, we mitigate the impact of strategic interactions and incomplete information. This approach reduces the significance of coordination mechanisms and signaling, both of which can also be interpreted as manifestations of social norms influencing behavior. Instead, we focus specifically on how social norms impact behavior through conformity.

The introduction of new incentives has the potential to instigate shifts in social norms, similar to the findings illustrated by Lane et al. (2023), which demonstrate how laws can lead to changes in social norms. Meanwhile, an extensive body of literature describes how individuals conform to social norms (e.g., Bicchieri (2005), Bicchieri (2016), Xiao and Bicchieri (2010), Krupka and Weber (2013)). If norms shift in response to the penalty and agents conform to these new norms, behavioral changes will occur. If the monetary penalty fosters "better" social norms, a crowding-in effect can be anticipated. Conversely, if the monetary penalty fosters "worse" social norms, a crowding-out effect may occur.

The literature on framing effects in game theory (e.g., Ellingsen, Johannesson, Mollerstrom, and Munkhammar (2012); Chang, Chen, and Krupka (2019)) suggests that the framing of the game may influence the perceived norms associated with the situation and lead to different impacts. Consequently, the format of the game (and the penalty) may evoke distinct norms, thereby eliciting different behavioral impacts. Divergent social norms resulting from fees and fines are expected to result into divergent behaviors.

To analyze the norms, we adopt the terminology developed by Bicchieri (2005) and Krupka and Weber (2013), which categorizes social norms into empirical (what others do) and normative (what others should do) expectations for situations with and without the penalty. We compare the attributed norms associated with each context. For example, as described by Lane et al.

(2023), the implementation of a law such as an age drinking limit leads to significant shifts in appropriateness levels (normative expectations) associated with behavior close to this threshold. Similarly, the implementation of a penalty could lead to changes in the appropriateness of taking money. Meanwhile, the implementation of the penalty might be perceived as a signal that many participants are doing so; hence, many may perceive that money is being taken regularly and that the empirical expectation is lower, similar to Janssen and Mendys-Kamphorst (2004), leading to more people taking money.

Lastly, we also aim to capture a sense of perceived entitlement. Entitlement may be a factor explaining crowding-out effects (Bénabou and Tirole (2006), Gneezy et al. (2011)), as the agent might feel 'entitled' to do something as they have 'paid for it', providing a justification. Entitlement is a perceived feeling that an individual holds, often manifesting as the expectation of special treatment, privileges, or rights, and it is deeply connected to social norms but might not be fully captured by our measures of empirical and normative expectations. To explore this, we adapted a measure from Krupka and Weber (2013), based on a coordination game, to capture the groups' perceived entitlement. Our methodology is also inspired by attribution theory from social psychology (Peterson et al. (1982); Dykema, Bergbower, Doctora, and Peterson (1996)), examining how individuals perceive causes and motivations behind experiences. This method partially captures the social construction of motivation (entitlement) based on context and individuals. Moreover, it is potentially possible that the fee, paid beforehand, may further increase the perceived entitlement compared to a fine, paid afterward.

Hence, we expect that different conditions would lead to different social norms. We will examine behavioral changes in the extensive and intensive margins. Based on this conformity and these shifts in the social norms, we establish the following hypotheses:

Hypothesis 4 - Norm Shifts: The implementation of monetary penalties affects social norms. Participants attribute different empirical expectations, normative expectations, and entitlement levels to the same amount taken in the same scenario, with and without a penalty.

Hypothesis 5 - Conformity: Individuals conform to social norms. Participants who attribute higher levels of empirical expectations, normative expectations, and entitlement levels to taking any amount or larger amounts are more likely to take more or take money at all.

If the introduction of the monetary penalty affects social norms/entitlement (Hypothesis 4), and the agent conforms to social norms (Hypotheses 5), we can observe crowding-in and crowding-out effects. If the penalty negatively affects the social norm, the behavior will deteriorate, leading to crowding-out effects. If the penalty positively affects the social norm, the behavior will improve, resulting in crowding-in effects.

3 Experimental Design

The experiment was conducted online using oTree (Chen, Schonger, and Wickens (2016)), and participants were recruited from Prolific. It lasted an average of 18 minutes, and participants earned an average of approximately £4.53, with 200 points equivalent to £1.

Participants engage in dictator games, where one participant (the Dictator) decides how much money to take from another participant (the Receiver). We modified the standard dictator game into this taking game to capture the impact of implementing a monetary penalty an potential 'undesirable behavior.'

We employed the strategic method, with all participants assuming the role of the Dictator. They were informed that they would be randomly matched with another participant and, at the experiment's conclusion, would learn which role they had assumed: Participant 1 (the Dictator) or Participant 2 (the Receiver). One round was randomly selected, and participants received the amount chosen by the participant randomized as the Dictator. The payment was realized only at the experiment's end, and participants did not directly interact in any other way besides the amount chosen.

During the experiment, participants played a series of 20 dictator games divided into two blocks: 10 dictator games in the control condition and the same 10 dictator games in one of two treatment conditions:

In the control condition, participants could take points from the other participants without any further consequences. In the treatment conditions, participants were informed that there was a 100-point penalty associated with taking any money. Across the treatment conditions, we implement the monetary penalty in two different ways, and the specifics of these ways will be provided shortly. Therefore, the impact of each monetary penalty was observed within subjects, while differences in the format of the monetary penalties were observed between subjects.

We varied the order of the control and treatment decisions across experimental sessions, with some sessions starting with the control condition and others starting with the treatment conditions, to investigate if the treatment order might affect behavior.

The 10 dictator games encompassed cases with a range of initial endowments, including scenarios where the dictator began with more money than the receivers and instances where the dictator started with less money than the receiver. Some cases featured the dictator starting with a higher endowment than the receiver, while in others, the receiver started with more endowment. We introduced this variety to check the robustness of result across different initial inequality. The order of the different dictator games was randomly presented to the participants.

The endowments aimed to generate twins and enhance decision robustness. Participants consistently allocated either 900 or 1000 points, maintaining consistency across potential choices and contributing to behavioral change robustness. As previously described, twin cases represent dictator games where there is a 100-point gap in the initial endowment of the dictator, which is used to control for income effects. We also included two decoy cases to provide participants with some variety, preventing them from facing decisions with the same value repeatedly. For such cases, we cannot control for income effects as there is no twin. The 10 cases and their different initial endowments are described in Table 1.

Twins	**Cases**	**Dictator's Endowment**	**Receiver's Endowment**
1	1	100	800
	2	200	800
2	3	170	730
	4	270	730
Decoy 1	5	360	510
3	6	500	400
	7	600	400
4	8	550	350
	9	650	350
Decoy 2	10	630	310

Notes: The cases represent the 10 different initial endowments for the dictator and receiver in various rounds of the dictator game. Twins reflect a difference in endowment for the dictator equal to the size of the monetary penalties (100 points), and they are used to control for income effects associated with the penalty. Decoys represent cases without twins but with a different total amount being divided.

Table 1: Cases (initial endowment for the dictator game)

In all decisions, participants are presented with a box displaying the initial endowment, a slider to select the amount of money to take, and a confirmation button for their decision. This setup remains consistent in both the control and treatment conditions.

We have two treatment conditions, implementing the same 100 points penalty in two different ways:

The fee condition captures features associated with a fine and the deduction of 100 points occurs *after* the participant has made their decision. Specifically, the participant selects the amount they would like to take, and if the chosen amount is greater than zero, 100 points are subtracted from the final outcome; otherwise, they retain their initial endowment.

The fee condition captures features associated with a fee, the deduction of 100 points occurs *before* the participant makes their decision. The participant is presented with the following question: "Would you like to pay 100 points to be able to take points from Individual 2?" If the participant chooses to pay the fee, 100 points are subtracted from their endowment, and the slider is activated, allowing them to decide on the allocation.

Before the start of the blocks with the treatment decisions, the participant is informed that there is a penalty associated with taking any money for the next decisions. In each decision screen, in addition to the information described above, participants in the treatment conditions are reminded about the penalties. The specific text for each treatment condition can be found in Table 2:

Treatment Condition	**Text informed to the participants**
Fee (*Before*)	In this round, there is a **price** of **100 points** to be paid **before 'taking'** any positive amount.
Fine (*After*)	In this round, there is a **price** of **100 points** to be paid **after 'taking'** any positive amount.
Control	No additional text

Table 2: Treatments text for each treatment condition.

We made an effort to maintain consistent wording across conditions. For instance, we intentionally avoided using specific terms like 'fee' and 'fine' to minimize any potential moral burden of those words that could prime individuals and confound the analysis, making it challenging to disentangle the driving factors. This approach allows us to better assess behavioral changes in the amount and likelihood of taking money and their underlying mechanisms.

After all rounds of the dictator game, we elicit two potential mechanisms to explain potential differences in the amount taken: social norms (including empirical and normative expectations) and entitlement. To do so, we asked participants to report their perceptions of entitlement, empirical expectations, and normative expectations for five cases (twins 2, twins 4, and decoy 1). For each possible mechanism, one case was randomly selected for payment. Participants could earn an additional 100 points if their answers matched the group average. To maintain consistency and avoid confusion across the measures, we employed a linear rule[4] to determine points earned based on the distance from the correct answer for all measures.

We assess how social norms and entitlement affect two types of behavior: whether the participants take any amount of money (the extensive margin) and how much money they take (the intensive margin).

To elicit empirical expectations, participants are asked to estimate the proportion of 100 participants who take money in the dictator game. Subsequently, they are asked to provide an estimate of the average amount of points taken by those participants.

To elicit normative expectations, we use a questionnaire similar to the one developed by Krupka and Weber (2013) that evaluates appropriateness as judged by others through a coordination game. Participants rate different behaviors on a scale of 1 (very socially inappropriate) to 5 (very socially appropriate). The questionnaire aims to capture the perceived normative expectations by asking participants to consider how others would evaluate what people ought to do in this situation. One question assesses the appropriateness of taking points (extensive margin), and the other question assesses the appropriateness of taking a significant amount of points (intensive margin), around 70% of the total (initial endowment + amount taken).

[4] Proportionally, for each difference of one unit on the 5-point scale or twenty units on the 100-point scale, 50 points would be reduced. Hence, we maintain a 20% deduction rule for each scale.

We use the same framework as Krupka and Weber (2013) and the coordination game to create a new measure for entitlement. While Krupka and Weber (2013)'s methodology is typically used to measure and incentivize the appropriateness of behavior, we adapt it to measure the social perception associated with entitlement. To do that, we modify the question from "According to the other participants, how appropriate is it to take points in this situation?" to "According to the other participants, is Participant 1 entitled to take points in this situation?". We also change the rating scale from 1 - Not entitled - to 5 - Completely entitled.

We also recorded the demographic information provided by Prolific, along with measures of positive reciprocity, negative reciprocity, trust, and altruism (Falk et al. (2018)), as well as a reactance scale (Hong and Faedda (1996)), which is a psychological measure associated with the level of conformity to rules and norms.

4 Results

The study involved 201 participants, split between fee and fine conditions, with respectively 101 and 100 participants contributing to a total of 4020 decisions. Our primary focus narrows down to twin cases to address income effects, totaling 1608 observations. Participants also provided information on social norms and perceived entitlement for two twin cases: one where the dictator is behind (Twins 2) and another where the dictator is ahead (Twins 3), resulting in 804 observations for each case.

To ensure robustness, we assessed order effects given the variable session start conditions (control or treatment). No significant differences were observed across the order[5]. Consequently, all corresponding treatment sessions were consolidated for data analysis. The results presented are also robust to other specifications and models, such as the use of hurdle models[6].

The study's findings are presented in two sections. Section 4.1 delves into the differences of fees and fines on taking behavior, examining overall changes and breaking them down into extensive and intensive margins. In Section 4.2, the study investigates the influence of social norms and entitlement on the amounts taken by participants, analyzing these changes as potential behavioral explanations.

4.1 Changes in the prosocial behavior

Aggregate impact:

[5] Detailed in Table 14 in Appendix A

[6] Detailed in Table 20 and 21 for hurdle models in Appendix A. Table 15 and 16 in Appendix A for the impact of different in endowment.

We start by investigating the impact of the monetary penalties on aggregate behavior. To illustrate any potential behavioral shifts, we can examine the amount of money taken in each condition and each case, as observed in Table 3

As the initial endowment increases, the available amount to be taken decreases. Consequently, individuals tend to take lower amounts overall but maintain a higher total share[7].

In the fine condition, when the agent starts with less money than their opponent, there is a consistent increase in the amount taken, reaching statistical significance in some instances. Conversely, when the agent begins with more money, the fine leads to a systematic reduction, although this effect does not reach statistical significance.

In contrast, in the fee condition, the fee results in nonsignificant increases when the agent starts with less money but leads to systematic and statistically significant decreases when the agent has more money than the other participant.

To consolidate the analysis of the changes on the amount taken, we conducted the following regression model[8].

$$\mathit{Take}_{i,r} = \beta_0 + \beta_1 \mathit{Fine} + \beta_2 \mathit{Fee} + \beta_3 \mathit{ControlFine} + \epsilon_{i,r}$$

We aim to explain the amount taken (*Take*) by individual i in round r. β_0 captures the mean behavior of the control condition in the fee treatment. The variable *Fine* is a dummy for the fine treatment, and β_1 captures the fine treatment effects. *Fee* is a dummy for the fee treatment, and β_2 captures the fee treatment effects. *ControlFine* is a dummy for all sessions in which the participants made decisions on the fine condition, and β_3 captures any potential differences for the control of the fine condition and the control condition of the fee condition. [9]

We use a random effects model to control for individual differences, and the residuals are clustered at the individual level. After running the regressions, we perform a chi-square test comparing β_1 and β_2 to check if the fee and fine have different impacts.

[7] Further details are provided in the Table 15 in Appendix A.

[8] For a detailed examination of the impact of the specific cases, check Table 18 in the appendix.

[9] This coefficient serves as a robustness check for the balance of the control conditions across the sessions at the aggregate level; however, it also has a key interpretation on the intensive margin, as will be discussed.

		Fine			Fee			
Twin	**Case**	**Control Amount Taken**	**Treatment Amount Taken**	**Diff**	**Control Amount Taken**	**Treatment Amount Taken**	**Diff**	**Diff-in-Diff**
1	(100,800)	505.35	525.54	20.19 [0.101]	514	518.9	4.9 [0.78]	15.29 [0.47]
	(200,800)	470.79	513.83	42.37*** [0.00]	486.4	509.4	23 [0.148]	19.37 [0.35]
2	(170,730)	450.69	455.14	4.45 [0.74]	450.1	452.9	2.8 [0.87]	1.65 [0.94]
	(270,730)	414.45	447.82	33.36** [0.02]	435.2	445.2	10 [0.59]	23.36 [0.33]
Decoy 1	(360, 510)	274.75	270.89	-3.86 [0.80]	240.2	238.6	-1.6 [0.90]	-2.26 [0.91]
3	(500,400)	153.46	148.11	-5.34 [0.67]	161.7	104.9	-56.8*** [0.00]	51.45*** [0.00]
	(600,400)	152.67	138.01	-14.65 [0.18]	173.8	112.9	-60.9*** [0.00]	46.24*** [0.00]
4	(550,350)	139.50	134.15	-5.34 [0.59]	143.7	83.5	-60.2*** [0.00]	54.85*** [0.00]
	(650,350)	135.74	125.34	-10.39 [0.28]	146.1	90.9	-55.2*** [0.00]	44.80*** [0.00]
Decoy 2	(620,310)	81.98	75.44	-6.53 [0.29]	81.1	41.6	-39.5*** [0.00]	32.96*** [0.00]

Notes: The table presents the average amount taken in each case, along with their respective conditions (Fee and Fine) and treatments (control and treatment), as well as the differences (diff) in the amount taken across treatments. The last column (diff-in-diff) describes the differences-in-differences across fee and fine treatment effects. p-values in brackets are referenced to a random effect model with standard error clustering at the individual level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

Table 3: Average amount taken by each case and condition

Table 4 presents the results of the regression analyses for the aggregate impact of each treatment. Regression (1) displays the impact when considering all data, and regression (2) focuses on the twin cases.

	(1 - All data)	(2 - Twin cases)
	Take	Take
Fine	5.426	-6.163
	(6.448)	(7.614)
Fee	-23.35***	-27.78***
	(8.300)	(10.19)
ControlFine	-5.289	-5.123
	(20.53)	(21.55)
Constant	283.2***	317.4***
	(15.24)	(15.82)
N	4020	1608

Notes: Amount taken (*Take*) regressed on a dummy for *Fee* and *Fine Conditions*. *ControlFine* represents the differences across control conditions associated with fee or fine. Regression (1) uses all observations, while regression (2) uses only the twin cases, controlling for income effects. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 4: Aggregate treatment effects on the amount taken

The results between regression (1), without controlling for income effects, and regression (2), controlling for the income effect, are very similar. We consider regression (2) as our primary benchmark. Notably, there is a statistically significant decrease in the amount taken in the fee condition (-27), supporting Hypothesis 1. Conversely, the fine condition shows a non-significant decrease (-6). A comparison of the fee and fine treatment impacts reveals a marginally significant difference ($\chi^2(1) = 2.89, p = 0.0894$), indicating that the fee leads to a slightly larger impact than the fine. To illustrate this difference, refer to Figure 1:

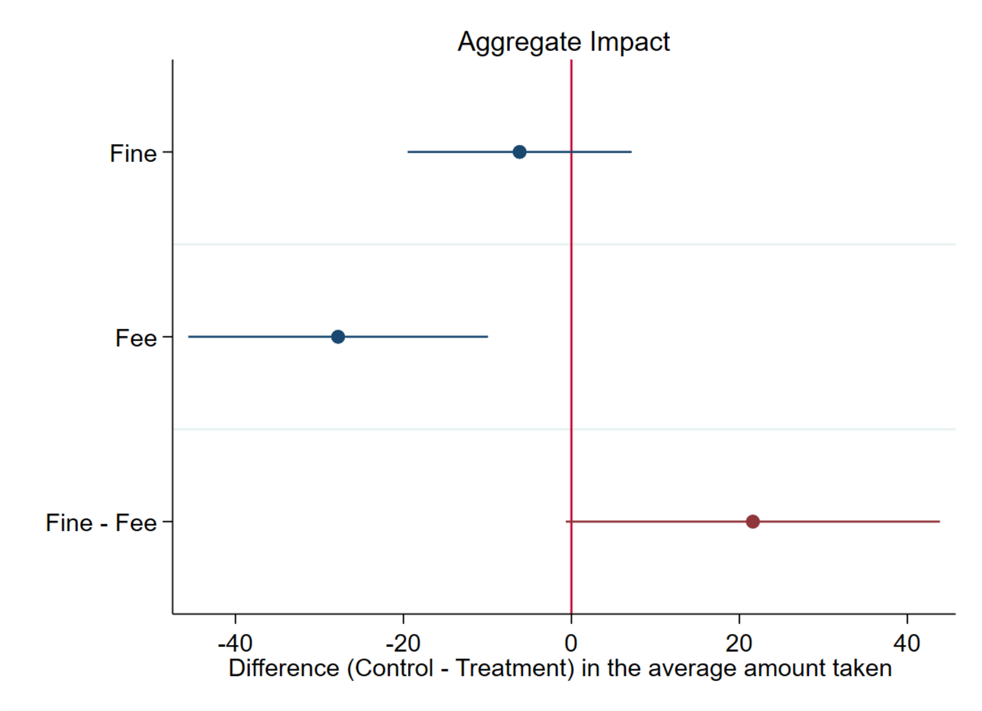

Figure 1: Treatment effects and their 95% confidence intervals on the amount taken at the aggregate level for the twin cases by condition (fee and fine) and their differences.

Result 1 - Aggregate level: *At the aggregate level, the introduction of a* ***fee*** *results in a significant reduction in the amount taken compared to the scenario with no penalty, whereas the introduction of a* ***fine*** *does not lead to a significant change.*

Result 1.1 - Aggregate Level (Fee vs. Fine): *At the aggregate level, marginal differences in the treatment effects of the* ***fee*** *and the* ***fine*** *are observed. Specifically, the* ***fee*** *demonstrates a significantly greater reduction in the amount taken compared to the fine, when contrasted with situations without any monetary penalty.*

To gain a deeper understanding of these differences, we analyze the impact of both the extensive margin, i.e., the number of instances in which money is taken, and the intensive margin, i.e., the amount of money taken when money is taken.

Extensive margin:

To analyze behavioral changes on the extensive margin, we check the instances in which any positive amount of money is taken. To do so, we create a dummy variable *Participation*, equal to 1 if any money is taken in that specific decision. To illustrate any potential behavioral shifts, we can the share of cases in which money is taken for each case, as observed in Table 5:

		Fine			**Fee**			
Twin	**Case**	**Control Participation**	**Treatment Participation**	**Diff**	**Control Participation**	**Treatment Participation**	**Diff**	**Diff-in-Diff**
1	(100,800)	1	0.98	-0.02	0.99	0.93	-0.06**	0.04
				[0.156]			[0.031]	[0.318]
	(200,800)	1	0.98	-0.02	0.99	0.95	-0.04	0.02
				[0.156]			[0.01]	[0.471]
2	(170,730)	1	0.98	-0.02	0.99	0.93	-0.06**	0.04
				[0.156]			[0.031]	[0.318]
	(270,730)	1	0.97	-0.03*	0.99	0.94	-0.05*	0.02
				[0.081]			[0.056]	[0.515]
Decoy 1	(360, 510)	1	0.84	-0.16***	0.99	0.72	-0.27***	0.11*
				[0.000]			[0.000]	[0.061]
3	(500,400)	0.58	0.50	-0.08*	0.6	0.31	-0.29***	0.21**
				[0.071]			[0.000]	[0.002]
	(600,400)	0.57	0.50	-0.07*	0.64	0.36	-0.28***	0.21**
				[0.087]			[0.000]	[0.001]
4	(550,350)	0.58	0.50	-0.08**	0.64	0.3	-0.34***	0.25***
				[0.047]			[0.000]	[0.000]
	(650,350)	0.60	0.52	-0.08*	0.65	0.33	-0.32***	0.24***
				[0.071]			[0.000]	[0.000]
Decoy 2	(620,310)	0.59	0.44	-0.15***	0.58	0.36	-0.35***	0.20**
				[0.000]			[0.000]	[0.002]

Notes: The table presents average number of instances in which money has been taken in each case given and, along with their respective conditions (Fee and Fine) and treatments (control and treatment), as well as the differences (diff) in the instances in which money has been take across treatments. *Participation* is a dummy variable equal to 1 if any money was taken in that decision. The last column (diff-in-diff) describes the differences-in-differences across fee and fine treatment effects. p-values in brackets are referenced to a random effect model with standard error clustering at the individual level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

Table 5: Participation by each case and condition

When the agent starts with less money than their opponent, participants almost always take money. The introduction of the fine results in a small, non-significant reduction in the number of cases where money is taken. Conversely, the introduction of the fee leads to a significant reduction, although not significantly different from the impact of the fine.

In cases where the agent starts with more money than their opponent, a significant portion of participants refrain from taking money. The fine consistently produces a marginally significant reduction in the number of cases where money is taken. However, the fee has a significantly more drastic impact, leading to even larger reductions that surpass the effect of the fine significantly.

To formally test the changes in the likelihood of taken money, we perform a regression similar to the previous one. However, we modify the dependent variable to a binary outcome, "Participation," which equals one if money was taken and zero otherwise. Additionally, we employ a logit regression with random effects. Table 6 presents the results, with Regression (3) using the entire dataset, and Regression (4) focusing on the twin cases.

	(3 - All data)	(4 - Twin cases)
	Participation	Participation
Fine	-0.514***	-0.388**
	(0.139)	(0.156)
Fee	-1.269***	-0.962***
	(0.159)	(0.159)
ControlFine	0.142	0.0343
	(0.294)	(0.258)
Constant	1.902***	1.712***
	(0.214)	(0.200)
N	4020	1608

Notes: The share of instances in which money was taken (*Participation*) is represented as a dummy variable equal to 1 if any money is taken in that decision and regressed on dummy variables for the *Fee* and *Fine Conditions* using a logit model. *ControlFine* represents the differences across control conditions associated with fee or fine. Regression (3) uses all observations, while regression (3) uses only the twin cases, controlling for income effects. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6: Extensive margin - instances in which money was taken

The observations provide evidence supporting Hypothesis 2 for both regression (3) and (4). Using regression (4) as our main benchmark, there is a decrease in the percentage of cases where points are taken in both the fee and fine conditions. Translating the logit differences into numbers, we observe a reduction from 80.19% to 64.64% for the fee condition and from 80.65%

to 75.06% in the fine condition, accounting for the twin cases.

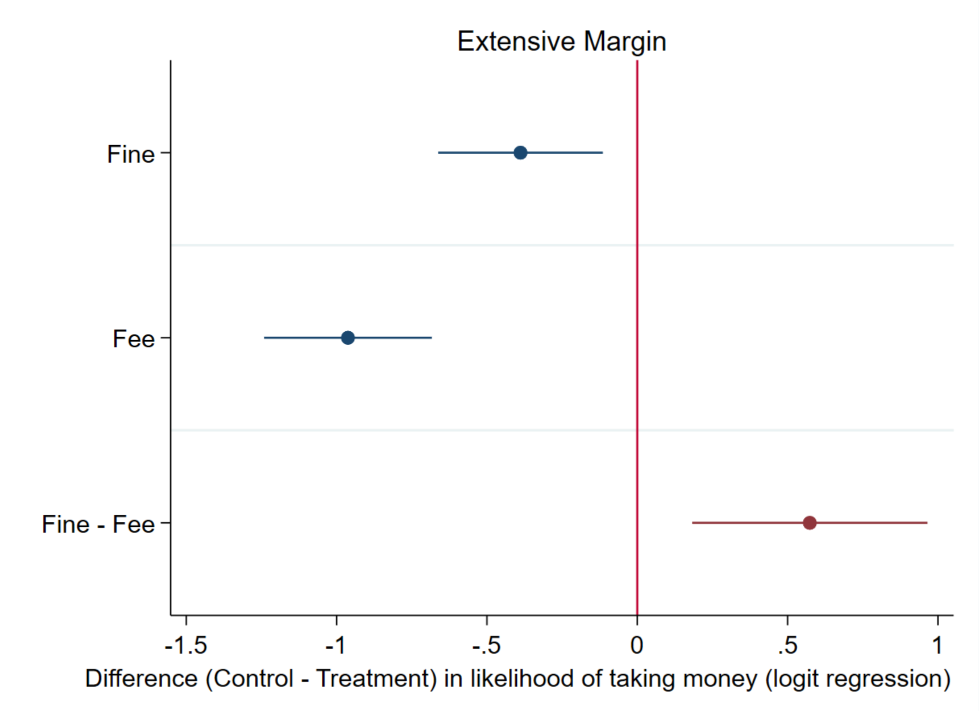

Figure 2: Treatment effects and their 95% confidence intervals on the likelihood of taking money for the twin cases at the aggregate level by condition (fee and fine) and their differences.

We conduct a chi-square test to analyze the 10-percentage-point difference in impacts between the fee and fine treatments ($\chi^2(1) = 5.01, p = 0.0252$). The results indicate significant differences between the fee and fine treatments.

Considering that individuals are similar across the conditions, this larger decrease in the number of cases in which money is taken can be associated with a crowding-in effect linked to the fee relative to the fine condition, as it shows that similar agents act more prosocially in the fee condition than in the fine condition.

Result 2 - Extensive Margin: *At the extensive margin, implementing both the* ***fee*** *and the* ***fine*** *significantly reduces the number of cases where money is taken, compared to the scenario with no monetary penalty.*

Result 2.1 - Extensive Margin (Fee vs. Fine): *At the extensive margin, significant differences emerge in the treatment effects between the fee and the fine. Specifically, the fee demonstrates a significantly greater efficacy in reducing the frequency of instances where money is taken compared to the fine, when contrasted with situations without any monetary penalty.*

Intensive margin:

We proceed with the intensive margin analysis and analyze the amount taken by individuals in the control and treatment condition, conditional on taking any money in the treatment condition, hence, pinpointing the same individual in the same situation. To illustrate the changes in the amount taken for the intensive margin, we can check Table 7:

We formally assess changes at the intensive margin using the same regression as before, examining variations in the amount taken for each condition, and also focusing on the subsample of participants who continue to take money after the penalty is implemented. While the intensive margin generally concentrates on participants who took any money, as indicated by regression (5), it is crucial to recognize potential differences among participants who took money in the treatment and control conditions, which may introduce an endogenous effect due to varying individuals in each condition.

To address this concern, we specifically chose cases where money was taken in the treatment condition and matched those cases with the corresponding instances for the same participants in their respective control conditions, ensuring consistency across participants and cases in the regression. Regression (6) presents the results when we pair with the same case for the same individual conditional that individual took money in the treatment condition. Regression (7) pairs with its twin case, controlling for individual and income effects.

Notice that the coefficient, *ControlFine*, is intended to capture whether the participants who are willing to take money after the fee or fine conditions significantly differ. If this is the case, *ControlFine* will account for these differences. Table 8 offers additional details.

		Fine			Fee			
Twin	**Case**	**Control Amount Taken**	**Treatment Amount Taken**	**Diff**	**Control Amount Taken**	**Treatment Amount Taken**	**Diff**	**Diff-in-Diff**
1	(100,800)	521.63	560.34	38.70**	506.08	536.28	30.20**	-8.50
				[0.001]			[0.003]	[0.590]
	(200,800)	489.12	536.07	46.94***	470.65	521.96	51.31***	4.36
				[0.000]			[0.000]	[0.800]
2	(170,730)	449.41	490.70	41.29	448.13	464.90	16.76	-24.52*
				[0.156]			[0.109]	[0.080]
	(270,730)	431.59	475.74	44.14**	409.25	457.21	47.95**	3.81
				[0.001]			[0.00]	[0.834]
Decoy 1	(360, 510)	247.39	291.42	44.027**	257.03	301.86	44.82***	0.79
				[0.001]			[0.000]	[0.967]
3	(500,400)	144.92	189.76	44.83*	157.31	203.98	46.666**	1.82
				[0.071]			[0.004]	[0.944]
	(600,400)	174.52	189.24	14.72	165.30	188.44	23.13**	8.41
				[0.171]			[0.075]	[0.618]
4	(550,350)	135.75	149.08	13.33	132.66	168.22	35.55**	22.22
				[0.212]			[0.001]	[0.146]
	(650,350)	146.15	156.46	10.30	128.82	154.10	25.28**	14.97
				[0.466]			[0.031]	[0.41]
Decoy 2	(620,310)	1.80	21.37	19.56	46.99	71.88	24.88**	5.32
				[0.066]			[0.002]	[0.689]

Notes: The table presents the average amount taken (intensive margin) in each case, along with their respective conditions (Fee and Fine) and treatments (control and treatment), as well as the differences (diff) in the amount taken across treatments. The last column (diff-in-diff) describes the differences-in-differences across fee and fine treatment effects. p-values in brackets are referenced to a random effect model with standard error clustering at the individual level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

Table 7: Amount taken by each case and condition when money was taken in the treatment condition

	(5 - All data)	(6 - Same participants)	(7 - Twin cases)
	Take	Take	Take
Fine	38.66^{***}	35.67^{***}	15.45^{**}
	(6.592)	(6.657)	(7.539)
Fee	78.63^{***}	37.22^{***}	25.31^{***}
	(8.817)	(6.795)	(8.754)
ControlFine	1.505	-38.42^{**}	-26.93
	(16.24)	(17.72)	(19.45)
Constant	338.8^{***}	384.3^{***}	417.8^{***}
	(12.19)	(13.91)	(15.16)
N	2946	2668	1118

Notes: Amount taken (*Take*) conditional on money being taken (intensive margin) regressed on a dummy for *Fee* and *Fine Conditions*. *ControlFine* represents the differences across control conditions associated with fee or fine. Regression (5) uses all observations that money is taken. Regression (6) pairs the cases (control and treatment) for the same participant conditional that participant taking money being taken in the treatment condition. Regression (7) does the same but also pairs the case and its twin case, controlling for income effects. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 8: Intensive margin

The results contradict hypothesis 3, suggesting increases in the amount taken, and we observe crowding-out effects for all regressions. After controlling for income effects, regression (7), both the fee and fine conditions lead to a significant increase in the amount taken - 15.45 and 25.31, fine and fee respectively. We conducted a chi-square test to compare the fee and fine treatment effects ($\chi^2(1) = 0.73, p = 0.3933$), revealing no significant differences between them. The results can be observed in figure 3:

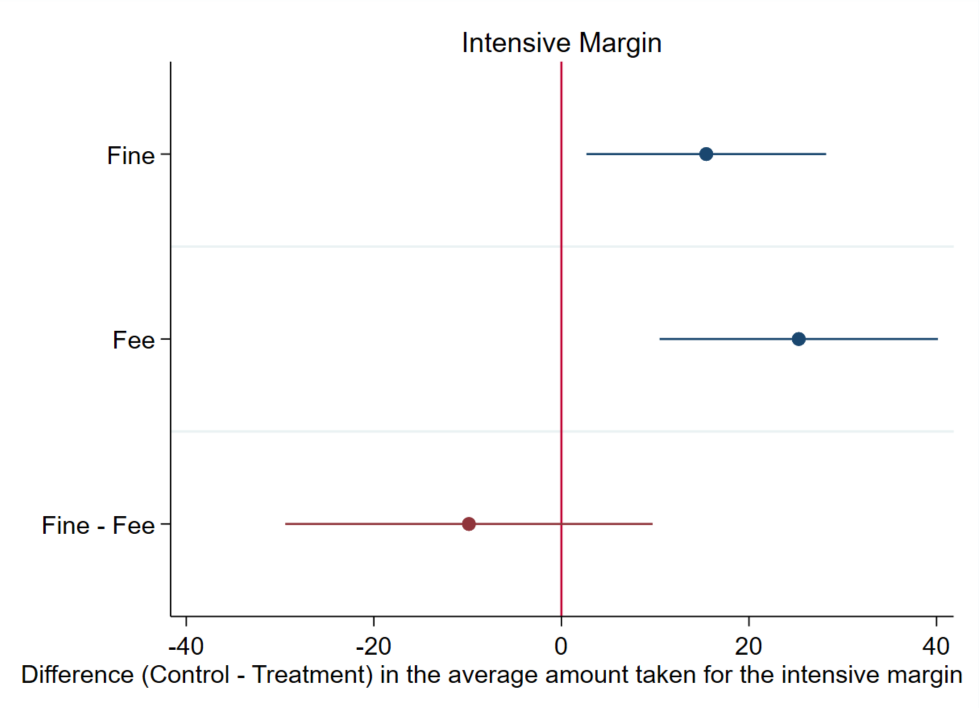

Figure 3: Treatment effects and their 95% confidence intervals on the amount taken for the twin cases conditional on money being taken in the treatment condition (intensive margin) by condition (fee and fine) and their differences.

Regressions (6) also reveal differences across the individuals selected by the fee and the fine, exemplified by the *ControlFine*, with the regular individual in the fine condition taking fewer points than the individual in the fee condition. This difference is not robust, and it is not significant after controlling for the income effect in regression (7).

Result 3 - Intensive Margin: *At the intensive margin, both the **fee** and the **fine** lead to an increase in the amount taken compared to the cases with no monetary penalty.*

Result 3.1 - Intensive Margin (Fee vs. Fine): *At the intensive margin, there are no significant differences between the treatment effects of the **fee** and the **fine**.*

Considering the decisions of participants who kept taking money in the treatment condition, both Fee and Fine demonstrate systematic increases in the amount taken when implemented compared to their respective controls. The increase in the fine condition is consistently significant only when the agent starts with less money than their opponent, whereas the fee consistently increases values similarly across all cases. However, the differences are not significant.

In summary, our findings highlight the significant and heterogeneous impacts of introducing monetary penalties on prosocial behavior, with significant distinctions between the fee and fine conditions. Some participants become less likely to take money after the penalty's introduction, even if they had previously taken substantial amounts, indicating a crowding-in effect. Conversely, among participants who persist in taking money despite the penalty, they do so more intensively, demonstrating a crowding-out effect.

The fine condition effectively balanced these effects, resulting in no statistically significant impact on the overall amount of money taken. In contrast, the fee condition led to a substantial reduction, mainly due to significantly fewer instances of money being taken, evidence of a bigger crowding-in effect.

We also observed differences in the impacts across various cases.[10] In general, when the agent starts with more money than the opponent and is compared with their respective control conditions, the fee condition leads to further decreases in the instances of money being taken compared to the fine condition. However, for agents consistently taking money, the amount taken systematically increases when the penalty is implemented, more regularly and consistently in the fee condition compared to the fine condition.

4.2 Shifts in social norms and entitlement

In this section, we explore two potential mechanisms that may explain the observed changes in amount taken and likelihood of taking money: social norms (empirical expectations and normative expectations) and perceived entitlement. For each measure of social norms/entitlement, we assess both the extensive margin and the intensive margin.

The first aspect reflects the extensive margin: To analyze the potential changes, we employ the same regression as previously with dummies for the treatment conditions but adjust the dependent variable for each measure of social norm/entitlement: *Empirical*, *Normative*, or *Entitlement.*

We elicit empirical expectations by asking participants to consider 100 other participants and inquire about how many would take money. For normative expectations, we inquire about the perceived appropriateness levels (ranging from 1.0 to 5.0) that others would report for taking any amount. Additionally, for perceived entitlement, participants are asked about the perception of how entitled others would feel (ranging from 1.0 to 5.0) when taking any amount.

The regressions are illustrated in Table 9, with regressions (8)-(9)-(10) describing a linear regression with random effects for empirical expectations, normative expectations, and entitlement, respectively:

[10] The analysis delving into the relationship between inequality and behavioral changes is discussed and illustrated in Appendix D.

	(8) Empirical	(9) Normative	(10) Entitlement
Fine	-5.866***	-0.1812***	-0.1010*
	(1.239)	(0.0526)	(0.0601)
Fee	-4.860***	-0.2010***	-0.1550***
	(1.484)	(0.0477)	(0.0442)
ControlFine	3.476	-0.0919	-0.0693
	(2.432)	(0.0838)	(0.0962)
Constant	65.95***	3.430***	3.250***
	(1.645)	(0.0635)	(0.0721)
N	804	804	804

Notes: Changes in social norms associated with the likelihood or act of taking any amount of money (extensive margin) are regressed on dummies for *Fee* and *Fine* conditions. *ControlFine* represents the differences across control conditions associated with fees or fines. Regression (8) analyzes empirical expectations (the proportion of individuals who would take money). Regression (9) analyzes normative expectations (appropriateness levels of taking any money). Regression (10) examines the perceived entitlement of taking any amount of money. Random effects are applied at the individual level, with standard errors clustered at the individual level in parentheses. $p < 0.10$, $p < 0.05$, $p < 0.01$.

Table 9: Changes in social norms for the extensive margin

For both the fee and the fine, participants expected fewer people to take money, perceived taking any amount of money as less socially appropriate, and attributed a lower perceived entitlement to take any amount of money. No significant difference between the fee and fine is observed.

Result 4 - Norm Shifts (Extensive Margin): *Both the fee and the fine result in significant shifts in social norms associated with the extensive margin compared to a situation with no penalty. Participants anticipate fewer people taking money and attribute lower scores to normative and entitlement levels for taking any money when a penalty is present compared to a situation with no penalty. No significant difference in the impact of the penalty is observed between the fee and the fine conditions.*

Now, we shift our focus to the intensive margin. Our objective is to examine the impact on the intensive margin and capture the crowding-out effect. To achieve this, we utilize norm changes for those participants who continue taking money in the treatment condition. In other words, we analyze the norm change using the same criteria while controlling for income and individual effects in the intensive margin analysis.

For normative and entitlement measures, participants were asked to express the appropriateness/perceived entitlement that others would report for taking approximately 70% of the total amount. Regarding empirical expectations, we utilized two measures. The first involves our inquire about the average amount of money taken by the same 100 participants, reflecting the aggregate impact of the penalties. To better represent the intensive margin, we weighted this value by the expected number of participants taking money from the previous question, resulting in the weighted empirical expectations, labeled as *Weighted Empirical*.

The regressions are presented in Table 10. Regression (11) outlines a linear regression with random effects for empirical expectations, while regressions (12) depict the weighted empirical expectations. Regressions (13) and (14) present analyses for normative expectations and entitlement.

	(11)	(12)	(31)	(14)
	Empirical	Weighted Empirical	Normative	Entitlement
Fine	7.947	142.3**	0.116*	-0.00265
	(7.361)	(62.64)	(0.0690)	(0.0814)
Fee	8.661	220.7	0.176**	0.128**
	(8.745)	(177.8)	(0.0699)	(0.0616)
ControlFine	-23.45	-39.31	-0.155	0.0120
	(20.29)	(38.89)	(0.136)	(0.151)
Constant	365.2***	479.8***	3.083***	2.956***
	(14.59)	(33.71)	(0.0962)	(0.114)
N	556	546^{+}	556	556

Notes: Changes in social norms associated with the act of taking larger amounts of money (approximately 70% of the total amount) are regressed on dummies for *Fee* and *Fine* Conditions. *ControlFine* represents the differences across control conditions associated with fees or fines. Regression (11) analyzes empirical expectations (the expected amount that individuals would take). Regression (12) analyzes weighted empirical expectations (expectations of how much multiplied by expectations of how likely it is to take). Regression (13) analyzes normative expectations (appropriateness levels of taking larger amounts of money). Regression (14) examines the perceived entitlement of taking larger amounts of money. Random effects are applied at the individual level, with standard errors clustered at the individual level in parentheses. $p < 0.10$, $p < 0.05$, $p < 0.01$.

$^{+}$ For the weighted empirical expectations, in a few cases, participants anticipated that no one would take money, preventing the creation of its weighted version

Table 10: Changes in social norms for the intensive margin

The penalties do not induce changes in general empirical expectations regarding the amount taken. That is, participants do not expect the penalties to work at the aggregate level; in fact, they anticipate a non-significant increase in the amount taken. When weighted by the expected likelihood of taking money, weighted empirical expectations display a significant increase in the fine condition and a substantial increase in the fee condition, though not deemed significant due to the high variance of this new measure.

Furthermore, both the fee and fine conditions lead to (marginally) significant increases in perceived appropriateness levels for taking larger sums of money. The fee condition also increases the perceived entitlement to take larger amounts of money, while it does not affect the fine condition.

Result 4 - Norm Shifts (Intensive Margin): *Both the fee and fine result in significant shifts in social norms related to the intensive margin compared to a situation with no penalty. Participants assign higher scores to normative levels for taking larger amounts of money when a penalty is present compared to the situation with no penalty. Additionally, the fee leads to higher entitlement scores than its respective control condition.*

To conclude our analysis, we include social norms and entitlement in regression models similar to those used in previous sections. This allows us to investigate whether changes in social norms or entitlement could potentially explain the impact of the penalties on both the intensive and extensive margins.

First, we reassess our treatment effects for the four cases where we have measured social norms/entitlements to replicate the earlier findings. Subsequently, we conduct two new regressions: one to explore the treatment effects controlling for social norms/entitlement, and the other regression introduces an interaction term between social norms and the treatments.

Hence, we start by replicating the results previous results using only the cases in which the norms were measured (twin 2 & 3):

$$Take_{i,r} = \beta_0 + \beta_1 Fine + \beta_2 Fee + \beta_3 ControlFine + \epsilon_{i,r}$$

Subsequently, we conduct the following regression:

$$Take_{i,r} = \hat{\beta_0} + \hat{\beta_1} Fine + \hat{\beta_2} Fee + \hat{\beta_3} ControlFine + \beta_4 Empi + \beta_5 Norm + \beta_6 Enti + \epsilon_{i,r}$$

The additional variables, *Empi*, *Norm*, and *Enti*, represent empirical expectations, normative expectations, and entitlement, respectively.

If β_4, β_5, and β_6 are significantly positive, the regression indicates a positive relationship between actions and behavior. For instance, if people consider larger amounts to be more socially appropriate, they are also more likely to participate.

With this specification, we test whether the treatment condition affects the amount taken through social norms. We can examine whether $\beta_1 = \hat{\beta_1}$ and $\beta_2 = \hat{\beta_2}$. If these coefficients are significantly different, it suggests that the treatment effects are influenced by variations in social norms between the treatment and control conditions, implying that changes in norms may partially explain the crowding-out (in) effects. Finally, we can test whether $\beta_1 - \beta_2 = \hat{\beta_1} - \hat{\beta_2}$, which would indicate that the difference between the fee and fine treatments is influenced by changes in social norms across the conditions.

The impact of social norms might differ from the fee and fine condition, and hence, we use the following regression to control for this aspect:

$$\begin{aligned} Take_{i,r} = \hat{\beta_0} + \hat{\beta_1} Fine + \hat{\beta_2} Fee + \hat{\beta_3} ControlFine + \beta_4 Empi + \beta_5 Norm + \beta_6 Enti \\ + \beta_7 Empi \times Fee + \beta_8 Norm \times Fee + \beta_9 Enti \times Fee + \epsilon_{i,r} \end{aligned}$$

This regression adds an interaction term between the *Fee* dummy that captures the treatment condition, and each social norm. Such interaction terms would differentiate any potential difference impact of each measure on the behavior across the treatment conditions.

These models represent a mediation model, similar to those suggested by Howell (1992) and others. The general idea is that changes in social norms can explain the changes in behavior, and hence the changes are correlated. If this is the case, the coefficients associated with the social norms would partially capture the treatment effects.

In Table 11, regression (15) aims to replicate the previous results for the extensive margin using a smaller selected sample (2 twin cases where norms were measured) through linear regression[11]. In regression (16), we incorporate social norms/entitlement into the regression. In regression (17), interaction terms are also added. Regressions (18), (19), and (20) reproduce the same results for the intensive margin (Take) using linear regression.

First, regressions (15) and (18) almost perfectly replicate the results of regressions (4) and (7). The only difference lies in the significance of the fine treatment effect for the intensive margin, although it maintains the same directional value. This discrepancy could be partially explained by the fact that we utilize only half of the observations (those in which the norms were measured), and the results might be underpowered. However, all other results remain consistent across the regressions.

Secondly, the coefficients for social norms and entitlement are positive and significant for all conditions and regressions. This indicates that measured social norms can partially explain behavioral levels. For example, if someone expects more people to take money, they are also more likely to take money. If someone thinks that it is more socially appropriate to take larger amounts of money, they will take more money.

Thirdly, the regressions remain fairly consistent when the interaction terms are added, comparing regression (16) and (17), and regressions (19) and (20). The only divergence is observed for the impacts of *Entitlement*, which is not robust across the equations. This suggests that both empirical and normative expectations play similar roles for fee and fine, while entitlement does

[11] To facilitate the comparison of coefficients across regressions.

	(15)	(16)	(17)	(18)	(19)	(20)
	Participation	Participation	Participation	Take	Take	Take
Fine	-0.0644**	-0.0194	-0.0258	11.13	3.919	4.713
	(0.0250)	(0.0249)	(0.0254)	(9.652)	(10.41)	(10.38)
Fee	-0.180***	-0.137***	-0.131***	24.02**	13.41	12.86
	(0.0280)	(0.0290)	(0.0298)	(9.914)	(10.55)	(10.91)
ControlFine	-0.00312	-0.0112	0.122	-24.30	-4.671	33.51
	(0.0343)	(0.0317)	(0.107)	(20.68)	(20.03)	(38.84)
Empirical		0.00488***	0.00564***		0.684***	0.744***
		(0.000662)	(0.000857)		(0.0439)	(0.0658)
Normative		0.00712***	0.00941***		1.564**	2.124**
		(0.00195)	(0.00249)		(0.718)	(1.000)
Entitlement		0.00339**	0.00156		1.516**	0.775
		(0.00170)	(0.00205)		(0.672)	(0.921)
Empirical × *Fee*			-0.00157			-0.118
			(0.00129)			(0.0890)
Normative × *Fee*			-0.00418			-0.840
			(0.00369)			(1.444)
Entitlement × *Fee*			0.00359			0.986
			(0.00315)			(1.341)
Constant	0.815***	0.139**	0.0698	395.4***	47.91**	31.10
	(0.0242)	(0.0539)	(0.0642)	(15.94)	(20.80)	(27.61)
N	804	804	804	556	556	556

Notes: Social norms serve as potential channels for understanding behavioral changes. Regressions 15, 16, and 17 address the extensive margin, where we regress a dummy variable indicating instances of money being taken (*Participation*) on dummies for *Fee* and *Fine* Conditions using a logit model. Regression (15) replicates the previous analysis of the extensive margin conducted in regression (4) using a subsample for which social norms have been measured. In Regression (16), we augment the model by incorporating social norms (Empirical and Normative) and perceived entitlement (*Entitlement*) as explanatory variables. Regression (17) further extends the model by introducing an interaction between the treatment condition dummy (*Fee*) and social norms. Regressions 18, 19, and 20 address the intensive margin, focusing on the likelihood of taking money (*Take*) and regressing it on dummies for *Fee* and *Fine* Conditions using a linear model with random effects. Regression (18) replicates the previous intensive margin analysis conducted in regression (7) using the subsample for which social norms have been measured. In Regression (19), we expand the model to include social norms (Empirical and Normative) and perceived entitlement (*Entitlement*) as explanatory variables. Regression (20) further extends the model by introducing an interaction between the treatment condition dummy (*Fee*) and social norms. *ControlFine* represents the differences across control conditions associated with fee or fine. Regression (3) utilizes all observations, while regression (3) employs only the twin cases, controlling for income effects. Random effects at the individual level. Standard errors are clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 11: Social norms as potential channels for behavioral change

not. This result indicates that the impact of social norms on behavior is fairly consistent across fee and fine.

Given such results, we analyze the changes in the coefficients for the treatment effects and their differences change across the regressions to check if social norms can be a potential mediator for behavioral change:

When comparing the results of regression (15) and (16) to analyze the extensive margin, the coefficients of the fine treatment effect are significantly different ($\chi^2(1) = 22.57, p = 0.000$), as are those for the fee condition ($\chi^2(1) = 29.44, p = 0.000$).

However, the differences between the fee and fine conditions were not significantly explained by changes in social norms and entitlement ($\chi^2(1) = 0.00, p = 0.9810$). These results indicate that social norms partially account for the treatment effects for the extensive margin. However, the gap between fee and fine conditions remains similar even when controlling for social norms.

When comparing the results of regressions (18) and (19) to analyze the intensive margin, the coefficients of the fine treatment effect are not significantly different ($\chi^2(1) = 1.64, p = 0.2000$). However, this result might partially be attributed to the fact that the coefficient itself was not significant in the replication (regression 17), leaving less room for the influence of social norms. Regarding the Fee condition, the coefficient change is marginally significant ($\chi^2(1) = 3.04, p = 0.0812$).

Again, the difference between fee and fine was not significantly explained by changes in social norms and entitlement ($\chi^2(1) = 0.26, p = 0.6084$). These results indicate that the drop in coefficients for the fee condition is significant, while the decrease for the fine condition is illustrative but not statistically significant. Hence, social norms partially explain the treatment effects, especially for the fee condition.

Result 5: There is a positive correlation between the amount taken/participation and social norms/entitlement. The changes in social norms/entitlement partially account for the treatment effects of the fee and fine on the amount taken and likelihood of taking money (both intensive and extensive margins).

Result 5.1: Changes in the social norms/entitlement were unable to explain the differences between the fee and fine conditions.

The results indicate that the introduction of the fee and fine affects social norms and perceived entitlement. People expect fewer individuals to take money, find it less socially appropriate, and feel less entitled to take money. However, they also perceive taking larger amounts of money as more socially appropriate, and, in the fee condition, they also report higher levels of entitlement to take larger amounts of money.

These measures are positively correlated with behavior on both the extensive and intensive margins. For instance, if someone believes that more people take money or that it is more socially acceptable, they are more likely to take money themselves. Social norms and entitlements were able to partially capture the effects on both the intensive and extensive margins and can partially explain the crowding-out (in) effects. However, the changes in social norms and entitlement did not account for the differences between the treatment conditions (fee vs. fine).

5 Discussion and conclusion

We conduct a comparative analysis of the impacts of monetary penalties, structured as fines and fees, with the aim of discerning differences in effectiveness, providing important insights for policy-oriented results about the most effective way of implementing a monetary penalty. Additionally, we investigate the impact of these penalties on prosocial preferences, testing and contrasting different literature such as crowding-out effects similar to those discussed in Gneezy and Rustichini (2000a); Frey and Jegen (2001) and rule-following behaviors as discussed in Kimbrough and Vostroknutov (2016, 2018). Lastly, we attempt to understand the mechanisms underlying potential changes by examining the role of social norms to explain the different impacts of penalties, creating a direct test of hypotheses illustrated by Gneezy and Rustichini (2000a); Kimbrough and Vostroknutov (2016) and partially incorporated by models such as those discussed in Ellingsen and Mohlin (2022); Bénabou and Tirole (2006).

To distinguish between fees and fines, we utilize modified dictator games, allowing individuals to extract money from others. By reconceptualizing the game in terms of taking, we aim to simulate a scenario where such behavior is associated with concepts like 'greediness', hence the setting provides one 'bad behavior' to target with the monetary penalty. In certain rounds, we introduce a monetary penalty, applying it either as a fee or a fine across different groups to potentially diminish the amount of money taken. Both fees and fines are implemented as fixed costs of equal value, with the only disparity lying in the perceived timing of payment: Fees are paid *before* any money is taken, while fines are paid *after* the participant has taken any money. Therefore, they represent equivalent costs and should theoretically yield similar impacts. Any observed distinctions serve to underscore the importance of the penalty's format on effectiveness.

Potential variations between fees and fines may arise from the fact that incentivization could influence individuals' prosocial concerns. For instance, Gneezy and Rustichini (2000a) found that imposing a fine for late pick-ups at day-care led to an increase in tardiness and a decrease in prosocial concerns. Accordingly, we designed our experiment to isolate the influence of fees and fines on prosocial preferences. The introduction of penalties naturally induces an income effect by increasing the relative price of a behavior. In our experiment, participants engage in multiple rounds of a dictator game, encountering situations described as twin cases. These cases allow for specific comparisons wherein we can control for income effects associated with the monetary penalty and highlight changes in prosocial preferences. By doing so, we can elucidate changes in social preferences solely attributable to the implementation of the monetary penalty, keeping the same set of potential outputs across decisions.

Following the dictator game, we elicit participants' social norms concerning decisions made in situations with and without monetary penalties. Social norms (e.g., Janssen and Mendys-Kamphorst (2004); Gneezy et al. (2011)) have been speculated as an explanation for potential changes in prosocial preferences, and we aim to provide a direct test of this hypothesis. We elicit empirical expectations regarding the likelihood and amount of money others would take, employ Krupka and Weber (2013)'s method to measure normative expectations regarding appropriateness levels associated with taking any or larger amounts of money, and adapt Krupka and Weber (2013)'s approach to measure perceived entitlement for similar decisions. Our aim is to determine whether the implementation of monetary penalties induces shifts in social norms, whether these changes differ between fees and fines, and whether shifts in social norms can partially explain changes in the amount taken across conditions.

We observe systematic differences between fees and fines, providing clear evidence that the implementation of penalties induces changes in prosocial preferences. To comprehend these changes, we analyze behavior across three levels: aggregate (average amount of money taken), extensive margin (likelihood of taking money), and intensive margin (average amount of money taken conditional on taking money).

At the extensive margin, the introduction of the penalty prompts many participants to refrain from taking money, even if they had previously taken large amounts, resulting in changes to the likelihood of money being taken. The fee treatment leads to a roughly 15% reduction (from 80% to 65%) in instances where money is taken compared to the situation with no penalties, while the fine treatment results in a 5% reduction (from 80% to 75%). These differences are significantly different, indicating that people were acting more prosocially in the fee condition compared to the fine condition, given the same trade-offs across conditions.

Meanwhile, participants who persist in taking money after the penalty's implementation exhibit a significant increase in the amount they take, observed in both the fee and fine conditions, reflecting changes in the intensive margin. The fee condition leads to an increase of around 23% compared to the baseline condition with no penalty (from 338 to 417), while the fine condition leads to an increase of 12% (from 339 to 379) compared to their respective baseline condition with no penalty. When controlling for income effect and individual factors, the relative increase decreases, but it remains consistent, with a 25-point increase for the fee and a 15-point increase for the fine conditions, with no significant differences across fees and fines.

The impact at the aggregate level reflects the combined effects of changes in the intensive and extensive margins. The fine was inefficient and showed no significant impact on the amount taken by participants compared to the situation with no penalty. This occurs as the intensity of the amount of money taken by those who continued to take compensates for the reduction associated with the lower number of people taking money. Meanwhile, the fee condition leads to a reduction in the average amount taken compared to the situation with no penalty, as the bigger decrease in the instances in which money is taken, compared to the fine condition, overshadows the increase of money taken by participants who continue to take money.

When analyzing changes in social norms, our study also demonstrates that the implementation of monetary penalties induces shifts in them. Participants perceive, for example, that others are less likely to take money when a penalty is in place, reflecting norm changes associated with the extensive margin. Meanwhile, participants also perceive that taking larger amounts of money is more socially acceptable when penalties are in place compared to situations with no penalties, indicating norm changes for the intensive margin.

When directly testing the relationship between behavioral changes and social norms/entitlement using a mediation model, we also observe a positive correlation between norms/entitlement and behavior, both at the extensive and intensive margins. For example, individuals who believe that taking more money is socially appropriate are more likely to do so, highlighting their conformity to social norms. Moreover, our regression model shows that the treatment effects associated with the fee and fine are partially explained by changes in social norms/entitlement. This suggests that the shifts in social norms can partially explain the reduction in instances where money is taken in the extensive margin and the increase in the amount of money in the intensive margin. However, the shifts in social norms cannot account for differences across fee and fine conditions.

Our findings underscore the policy implications of penalty format on behavior. In our study, both fees and fines theoretically entail the same trade-off impact and should result in similar outcomes (e.g., Tversky and Kahneman (1988)), given their identical potential outcomes. However, the mere change in format significantly reduced the amount taken with the fee, while the fine proved ineffective. This finding is particularly striking; both the fee and fine impose a minimum penalty of 10% (100 out of 1000 points) on the amount participants can obtain, and it was expected that they should lead to some reduction.

These results illustrate the discussions by Bicchieri and Dimant (2019), Bowles (2016), and Sunstein (2003), emphasizing the need for careful consideration in interventions, as the message and format can yield diverse outcomes. Contemporary approaches to environmental legislation, such as carbon markets, might deteriorate morals by implementing a market (Falk and Szech (2013); Bartling, Weber, and Yao (2015); Bartling, Fehr, and Özdemir (2023)) or lead to inefficient results, as described here. The format of a penalty, market, or intervention has implications for the outcomes, and our results underscore the importance of analyzing the moral impacts of each setting to create truly effective interventions.

Future research could enhance external validity by examining additional intervention formats, such as the effects of bonuses or interventions in contexts with greater strategic interaction than individual decision-making. A deeper understanding of the interplay between context and individuals' perceptions of incentives is crucial for designing more effective interventions and achieving societal improvement.

The inefficiency of the fine and the differences between the fee and fine also reflect the myriad discussions on the impact of monetary penalties. A portion of the literature describes how monetary penalties might potentially worsen situations, as described in crowding-out effects (e.g., Frey and Jegen (2001); Frey (2000); Frey and Oberholzer-Gee (1997); Gneezy and Rustichini (2000a); Festré and Garrouste (2015)). Meanwhile, Kimbrough and Vostroknutov (2016, 2018) describe the potential for crowding-in effects, as people conform to rules and increase prosocial behavior even when it is costly to do so to comply with a rule. Both behaviors are mutually exclusive, and this has been a puzzle in the literature concerning whether and how penalties might work.

Our results shed light on this conflict. When analyzing both the extensive and intensive margins and examining individual changes, we observe heterogeneous shifts in prosocial preferences due to the penalties:

At the extensive margin, some participants who were previously taking large amounts of money, sometimes all available, ceased taking any money. Such reductions could potentially be interpreted as an increase in prosocial motivation. The fee was also more effective in reducing instances of taking money compared to the fine, further indicating that different formats can promote prosocial behavior. These findings are consistent with a tendency to follow rules (e.g., Kimbrough and Vostroknutov (2016)) and can be considered a potential crowding-in effect associated with the format.

Meanwhile, at the intensive margin, we observed a deterioration in prosocial behavior, with participants using the penalty as an excuse to increase the amount taken, with no significant difference across the fee and fine conditions. Such behaviors align with the crowding-out effects (e.g., Frey and Jegen (2001); Gneezy and Rustichini (2000a)).

Therefore, both crowding-out effects and crowding-in effects may inevitably occur simultaneously, with individuals being pulled towards one end or the other. The overall outcome reflects a delicate equilibrium between these opposing forces, which is context-dependent, resulting in the inefficiency of fines and the effectiveness of fees. The ongoing debate in the literature regarding crowding-out versus crowding-in phenomena underscores the context-dependency and the heterogeneity of behavioral responses to monetary penalties.

Lastly, our results indicate that changes in social norms can partially explain the crowding-in and crowding-out effects. Social norms (e.g., Janssen and Mendys-Kamphorst (2004); Gneezy and Rustichini (2000a)) have been described as potential reasons for such changes in choices.

Our approach focuses on the impact of social norms and conformity (e.g., Xiao and Bicchieri (2010); Krupka and Weber (2013)) to explain the impact of the penalties on the likelihood of taking money and the amount taken.

We observe that implementing both fees and fines indeed leads to changes in social norms. This result builds upon the findings of Lane et al. (2023), who demonstrated the impact of law on social norms at an extensive margin level. Similar to their results, we show that violating the 'rule' and taking any money when a penalty is present also decreases the appropriateness levels associated with such behavior. However, we also find changes in the intensive margin, with people believing that bigger violations are relatively more acceptable when the penalty is present compared to when it is not. Intuitively, the logic seems to be: 'You should not do it, but if you do, you should make the most of it.'

Moreover, the results resonate with those presented by Ellingsen et al. (2012) and Chang et al. (2019), as well as with other experiments that demonstrate how the framing of the game affects the expectations associated with that context. However, we did not observe significant differences in the attributed social norms and perceived entitlement across the fee and fine conditions, with similar changes occurring for both conditions.

When employing a mediating model to analyze the impact of norm changes on behavioral shifts, we observed significant correlations among social norms (empirical and normative expectations) and perceived entitlement with the amount taken and the likelihood of taking money. Thus, there is indeed conformity to norms, as described by Xiao and Bicchieri (2010) or Krupka and Weber (2013). Furthermore, the mediation model reveals that these variables partially explain the changes in the amount taken and the likelihood of taking money, providing direct evidence that shifts in social norms resulting from new incentives can lead to outcomes such as crowding-out effects, reflecting conformity to the new norm. This evidence provides clear support for the relationship between norms and crowding-out and crowding-in effects, differing from the arguments put forward by Janssen and Mendys-Kamphorst (2004) and others, who suggest that norms primarily function as coordination devices.

Our novel measure for entitlement, which serves as another potential explanation for these crowding-out effects, sheds light on this dynamic as well. Perceived entitlement also changes with the implementation of the penalty and correlates with behavioral levels, but consistently with the observed social norms. One potential explanation is that perceived entitlement is partially encompassed by changes in social norms, which are already integrated within this context. These results also contextualize moral frameworks, delving into moral duties (Ellingsen and Mohlin (2022)) and social image concerns (Bénabou and Tirole (2006)) used to explain these crowding-out and crowding-in effect by linking them with social norms, as exemplified in studies such as Kimbrough and Vostroknutov (2016) or Krupka and Weber (2013).

By adapting the methodology proposed by Krupka and Weber (2013), we can extend its applicability to other domains and capture phenomena akin to motivated reasoning (e.g., Epley and Gilovich (2016)) and self-image concerns (e.g., Tonin and Vlassopoulos (2013)), as we did for entitlement. Social psychology underscores the importance of understanding the motivations behind actions for inducing behavioral change, and our measures aim to encapsulate this aspect (Peterson et al. (1982); Dykema et al. (1996)). This methodology can also be adapted to explore other aspects and should be further developed in future research. [12]

The changes in social norms are insufficient to elucidate the distinctions between the fee and fine conditions in our setting. Other factors integrated into our experimental design could contribute to the differences between the fee and fine conditions. For instance, the first-stage decision in the fee condition may induce narrow bracketing (e.g., Read, Loewenstein, Rabin, Keren, and Laibson (2000)) by isolating the problem from the broader context, leading to a different cognitive process. Another possibility is related to Zellermayer (1996), as the first-stage decision may make the payment more salient, leading to stronger emotional responses. Such cognitive and emotional responses might trigger behavioral changes without significantly impacting the observed social norms. Future research may seek to further dissect these differences, for example, by focusing on the emotional salience of each condition.

Therefore, our study underscores the crucial role of the penalty's format in determining its effectiveness. A simple alteration in the perceived timing of payment, delineated here as either a fee or a fine, can render one approach effective (fee) while the other is not (fine). Furthermore, we elucidate the impact of penalties on prosocial motivation, revealing heterogeneous effects where some participants experience crowding-out effects, displaying more selfish behavior, while others exhibit crowding-in effects, demonstrating more prosocial tendencies. We demonstrate that shifts in attributed norms are correlated with changes in the likelihood of taking money and the amount taken. When a penalty is introduced, individuals adjust their perceived norms, which capture the crowding-out and crowding-in effects. These insights offer valuable guidance for designing more effective policy interventions and contribute to the understanding of the impact of penalties and the role of social norms in crowding-out and crowding-in effects.

[12] Drawing from Krupka and Weber (2013), we can employ this methodology to explore other lines of reasoning, such as the study conducted by Pico and Teixeira (2024), which examines how genders are perceived differently despite engaging in the same actions, with males often labeled as 'rational' and females as 'emotional'.

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Appendix A

A.1 ζ and the thresholds

		High inequality aversion - $\zeta \geq 0.5$		**Low inequality aversion -** $\zeta \leq 0.5$	
Case	**U(Take = 0)**	$U(Take{>}0)$	U(Take = 0) > U(Take> 0)	$U(Take{>}0)$	U(Take=0) > U(Take> 0)
(100/800)	$100 - \zeta(700)$	400	$\zeta < -\frac{3}{7}$	$800 - 800\zeta$	$\zeta > 7$
(200/800)	$200 - \zeta(600)$	450	$\zeta < -\frac{5}{12}$	$900 - 900\zeta$	$\zeta > \frac{7}{3}$
(170/730)	$170 - \zeta(560)$	400	$\zeta < -\frac{23}{56}$	$800 - 800\zeta$	$\zeta > \frac{23}{8}$
(270/730)	$270 - \zeta(460)$	450	$\zeta < -\frac{9}{23}$	$900 - 900\zeta$	$\zeta > \frac{63}{47}$
(500/400)	$500 - \zeta(100)$	500*	N/A	$800 - 800\zeta$	$\zeta > \frac{3}{7}$
(600/400)	$600 - \zeta(200)$	600*	N/A	$900 - 900\zeta$	$\zeta > \frac{3}{7}$
(550/350)	$550 - \zeta(200)$	550*	N/A	$800 - 800\zeta$	$\zeta > \frac{5}{12}$
(650/350)	$650 - \zeta(300)$	650*	N/A	$900 - 900\zeta$	$\zeta > \frac{5}{12}$

Notes: ζ and the respective threshold for stopping taking money after the introduction of the penalty are presented for each case. The first column represents the cases. The second column shows the utility in case the agent does not take money and does not pay the penalty. The third column describes the potential utility for an agent with high inequality aversion ($\zeta > 0.5$) if the agent takes money, where the agent takes half of the amount available. The fourth column compares the utility with no money being taken (column 2) with the potential amount taken (column 3), creating the threshold for ζ that would make the agent cease taking money. An asterisk (*) and N/A represent that no amount taken would decrease inequality when the agent is already ahead. The fifth column describes the utility associated with agents with $\zeta \geq 0.5$, who would take everything. The last column describes the thresholds for ζ that would lead to moving to take zero by comparing the previous column with the second.

Table 12: Thresholds for inequality aversion and the specific changes in behavior in each case.

The table describes situations in which the agent would take money and cease taking any money using an inequality aversion model.

Regarding inequality aversion, two possibilities exist. The agent may exhibit high inequality aversion, indicated by γ exceeding 0.5, leading the agent to claim half of the total available to rectify inequality. Alternatively, the agent may have low inequality aversion, as indicated by γ falling below 0.5, prompting the agent to seize all available resources.

In situations where the agent has high inequality aversion, there is no circumstance in which the agent is willing to intermittently take and stop taking actions, either because the inequalities do not hold or there is no possibility of giving money to the opponent. Conversely, when the agent has low prosocial concerns, in some cases, the agent would choose to seize all available resources and then cease accepting additional funds. For instance, if $5/12 \leq \gamma \leq 0.5$, the agent would retain 650 points, leaving the other agent with 350, instead of taking the entire 900.

Notice, however, that such an inequality aversion model can only accommodate two types of decisions. Hence, we examine the format for a utility function with a continuous structure as described below.

A.2 Quadratic inequality aversion

The utility function, denoted as U, encapsulates the agent's concern for their initial endowment (x), the amount they decide to take (t), and introduces a negative weighting factor, $\zeta > 0$, to express the quadratic relationship between their gains and the gains of others, expressed as $((x+t)-(y-t))^2$.

In the treatment condition, applicable to both the fee and fine scenarios, an additional penalty of 100 points is incurred if the agent chooses to take points. This leads to the following optimization problem as shown below:

$$\max_t : U(t) = \begin{cases} x + t - 100 - \zeta(x - y - 100 + 2t)^2 & \text{if } t > 0 \\ x - \zeta(x-y)^2 & \text{if } t = 0 \end{cases}$$

By solving the optimization problem for the case in which $t > 0$, we deduce that the maximum argument is $t = \frac{1}{8}(400 + \frac{1}{\zeta} - 4x + 4y)$, and the maximum value is $\frac{1+8\zeta(-100+x+y)}{16\zeta}$. The agent will take zero if:

$$x - \zeta(x-y)^2 > \frac{1 + 8\zeta(-100 + x + y)}{16\zeta}$$

Notice that each case creates a different initial inequality, which the agent will maintain if the agent does not take money. As for all cases $(-100 + x + y) = 900$, we can simplify the problem into:

$$x - \zeta(x-y)^2 > 450 + \frac{1}{16\zeta}$$

We can systematically examine the inequality across all scenarios in our experiment to determine the critical value of ζ at which the agent ceases to accept additional funds under each condition. By solving this inequality for every conceivable situation[13], the resulting solutions yield the values of ζ that satisfy the condition. It is worth mentioning that if the agent commences in a disadvantaged position, there exists no solution with a positive ζ.

$$x = 600, y = 400, \frac{3 - \sqrt{5}}{1600} < \zeta < \frac{3 + \sqrt{5}}{1600}$$

$$x = 650, y = 350, \frac{4 - \sqrt{7}}{3600} < \zeta < \frac{4 + \sqrt{7}}{3600}$$

Now, we can check how much money such a participant was taking in the control conditions, given the ζ values and their respective cases:

$$x = 500, y = 400, 0 < t \leq 80.90$$

$$x = 550, y = 350, 0 < t \leq 66.14$$

[13] Note that our analysis focuses on twin cases; however, an analogous argument can be extended to all cases.

Hence, the maximum amount that the dictator would take before stopping would be 80.90.

A.3 Balance table

The Table 13 describes the demographics across conditions (using the Profilic data):

	Fine	Fee	Difference
Time	1130.76	1287.37	-156.61*
	(400.53)	(577.68)	[0.03]
Age	39.43	39.75	-0.32
	(12.84)	(11.98)	[0.86]
Gender	0.50	0.43	0.07
	(0.50)	(0.50)	[0.32]
Ethnicity	0.84	0.82	0.02
	(0.37)	(0.39)	[0.73]
Observations	100	100	200

Notes: Average time spent on the experiment, average age, gender, and ethnicity for both groups subjected to fines and those subjected to fees, along with their respective standard deviations in parentheses. The last column illustrates the differences across treatments and describes their p-value in brackets. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Standard deviations are presented in parentheses, and t statistics are enclosed in brackets.

Table 13: Balance Table

Participants are similar between the fine and fee groups. However, people consistently take more time in the fee condition.

A.4 Order Effects

Table 14 presents an analysis of the amount taken by condition, comparing the order of the session. The following regression model is utilized:

$$Take_{i,r} = \beta_0 + \beta_1 Fee + \beta_2 Order + \beta_3 Fee \times Order + \epsilon_{i,r}$$

Here, *Fee* is a dummy variable equal to 1 if the fee is applied in that specific session, *Order* is a dummy variable equal to 1 if the session starts with the treatment condition. Additionally, there is an interaction term evaluating whether the order effect may differ for the Fee or the Fine conditions.

	(Control) Take	(Treatments) Take
Session	5.667	-27.62**
	(11.97)	(13.08)
Order	2.177	-13.06
	(27.64)	(29.69)
Session × Order	-0.487	8.540
	(17.01)	(18.49)
Constant	276.9***	289.8***
	(19.45)	(21.00)
N	2020	2000

Notes: The Regression (Control) analyzes order effects for the control conditions, assessing differences in decisions when conditions are presented in different orders. Regression (Treatments) investigates order effects for the treatment conditions presented in various orders. The variable *Fee* represents the distinction between fee and fine conditions, while *order* captures differences if the session starts with a treatment or control condition, including the interaction term between *order* and *fee*. Standard errors, clustered at the individual level, are provided in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 14: Order effects

Regression (Control) illustrates the order effects on the control conditions, using observations associated only with the control. Regression (Treatments) illustrates the order effects on the treatment conditions.

The results indicate significant differences between the fee and fine treatments, while no impact on the order is observed.

A.5 Cases & Inequality

Cases

We observe that the cases play a role in individuals' behavior. To simplify the discussion and avoid the income effect associated with the treatment, we focus on the control conditions and observe how the amount taken varies across different situations. We use the following regression:

$$Total_{i,r} = \beta_0 + \beta_i case_i + \epsilon_{i,r}$$

Here, *Total* indicates the sum of the endowment with the amount taken, and one dummy, $case_i$ is used for each case, i. The results can be observed in Table 15:

	(1) Total	(2) Total	(3) Total	(4) Participation
170	10.75		10.75	2.14e-15
	(6.666)		(6.668)	(1.806)
200			68.91***	2.25e-15
			(7.297)	(1.806)
270		16.22**	85.12***	2.77e-15
		(7.875)	(7.823)	(1.806)
360.			7.910	1.66e-15
			(8.010)	(1.806)
500	47.91***		47.91***	-13.42***
	(8.537)		(8.541)	(1.995)
550	81.94***		81.94***	-12.59***
	(8.692)		(8.695)	(1.963)
600		84.63***	153.5***	-13.11***
		(8.933)	(9.273)	(1.983)
620			91.89***	-13.52***
			(9.772)	(1.998)
650		112.3***	181.2***	-12.70***
		(8.822)	(8.446)	(1.967)
Constant	609.7***	678.6***	609.7***	16.35***
	(13.04)	(13.81)	(13.05)	(2.060)
N	804	804	2010	2010

Notes: *Total* (Endowment + amount taken) and instances that money is taken (*Participantion*) regressed on dummies for each case, represented by the numbers. Regression (1) describes the impact of the cases in which the total sum is 900, Regression (2) for a total sum of 1000, Regression (3) includes all data, and Regression (4) Checks for participation. Standard errors in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Regression (1) describes the impact of the cases in which the total sum is 900, Regression (2) for a total sum of 1000, Regression (3) includes all data, and Regression (4) checks the participants across conditions

Regression (4) shows that almost all participants take money when they are behind, and many stop taking money when they are ahead. The proportion of agents who cease is fairly consistent for all cases in which they are ahead.

Regressions (1-2-3) show that participants consistently keep a higher proportion of the total share when they have higher endowments.

To extend this analysis, we run the following regression:

$$Total_{i,r} = \beta_0 + \beta_1 Endowment + \beta_2 1000\text{-}Total + \epsilon_{i,r}$$

Here, we analyze the total taken, considering a linear relation for the endowment, and add a dummy to control if the case is dividing 1000 points or 900 points. The results can be observed in Table 16:

	(1)	(2)	(3)
	Total	Total	Total
Endowment	0.193**	0.617***	0.196***
	(0.0766)	(0.0855)	(0.0161)
1000-Total	52.38***	40.72***	67.49***
	(8.744)	(8.945)	(3.681)
Constant	589.0***	350.4***	580.2***
	(16.43)	(49.63)	(13.89)
N	804	804	1608

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 16: Cases impacting the total amount kept by the participant

When the agent is behind, an increase of one unit in endowment leads to a 0.20 increase in the total amount kept. When the agent is ahead, each unit increase leads to a 0.60 increase in the total amount kept.

Hence, the results indicate that agents have some reference dependence aspect associating endowments and the amount taken. Future research might aim to further understand these aspects of decision-making.

Please note that our results compare the same cases (twin cases), so this observed tendency does not affect the results presented in the main findings.

Inequality

We investigate whether the distribution of the initial endowment has an impact on the results observed in the main behavioral section. Specifically, we analyze whether the starting point of the dictators, either with more or fewer points than the receiver, influences the effectiveness of the monetary penalty in inducing behavioral change.

To do so, we will re-perform all the analyses and split the cases into two possibilities: dictators starting ahead or behind the participants. We will re-perform all the regressions, first using the subsample of each situation (ahead or behind), and then by adding an interaction term between treatments and inequality. Moreover, we will compare the twin cases, which control for income effects and serve as the main benchmark of our results. To do so, we use the following regressiion:

$$Take_{i,r} = \beta_0 + \beta_1 Fine + \beta_2 Fee + \beta_3 ControlFine +$$

$$\beta_4 Ahead + \beta_5 Ahead \times Fee + \beta_6 Ahead \times Fine + \epsilon_{i,r}$$

We begin by analyzing the aggregate results, which can be observed in Table 18:

	(1 - Behind)	(2 - Ahead)	(3 - All)
	Take	Take	Take
ControlFine	-4.030	-6.215	-5.123
	(24.77)	(20.16)	(21.58)
Fine	2.475	-14.80	3.019
	(10.06)	(9.195)	(10.44)
Fee	-4.750	-50.80***	-5.299
	(14.42)	(11.49)	(13.89)
Ahead			-330.4***
			(6.668)
Fine × *Ahead*			-18.36
			(11.82)
Fee × *Ahead*			-44.95***
			(15.87)
Constant	482.1***	152.7***	482.6***
	(18.50)	(14.47)	(17.17)
N	804	804	1608

Notes: Amount taken (*Take*) regressed on a dummy for *Fee* and *Fine Conditions*. *ControlFine* represents the differences across control conditions associated with fee or fine. *Ahead* is a dummy capturing if the agent starts with more money than their opponent, and the an interaction term between *ahead* and the treatment conditions. Regression (1) describes the impact of treatment on the amount taken for cases in which the dictator starts behind, Regression (2) for cases in which the dictator starts ahead, and Regression (3) includes all data. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 17: Aggregate Impact by inequality

The results indicate that the Fee condition is effective only when the agent is in a leading position, showing no significant impact or differences under other circumstances.

Additionally, we analyze the changes at the extensive margin in Table **??**:

	(4 - Behind) Participation	(5 - Ahead) Participation	(6 - All) Participation
ControlDiff	0.783	-0.101	-0.0322
	(1.810)	(1.111)	(0.553)
Fine	-1.959	-1.111**	-1.186
	(1.451)	(0.527)	(1.111)
Fee	-2.296	-3.557***	-2.773**
	(1.473)	(0.769)	(1.205)
Ahead			-6.589***
			(1.116)
Fine × Ahead			0.317
			(1.120)
Fee × Ahead			0.484
			(1.294)
Constant	7.294***	1.495*	7.688***
	(1.830)	(0.875)	(1.216)
N	804	804	1608

Notes: Instances that money is taken (*Participation*) regressed on a dummy for *Fee* and *Fine Conditions*. *ControlFine* represents the differences across control conditions associated with fee or fine. *Ahead* is a dummy capturing if the agent starts with more money than their opponent, and the an interaction term between *ahead* and the treatment conditions. Regression (4) describes the impact of treatment on the amount taken for cases in which the dictator starts behind, Regression (5) for cases in which the dictator starts ahead, and Regression (6) includes all data. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 18: Extensive margin by inequality

When the agent is behind, both the fee and fine conditions lead to a reduction, but the significance of this reduction varies. Regression (6) shows a significant impact, whereas regression (4) does not demonstrate significance.

The results indicate that both the fee and fine conditions lead to a significant reduction when the agents are ahead. However, once again, the results are mixed. In the case of the Fine condition, regression (5) shows a significant impact, while regression (6) is not statistically significant.

The difference in the extensive margin between the fee and fine conditions is significantly more pronounced when the agent is ahead, and this difference is only significant in this situation.

Lastly, we analyze the intensive margin, and the results can be observed in Table 19:

	(7) Take	(8) Take	(9) Take
ControlDiff	-4.759	-28.31	-3.171
	(25.19)	(25.92)	(23.35)
Fine	11.62	22.69**	11.04
	(8.759)	(10.71)	(9.006)
Fee	22.38**	33.33**	22.99**
	(10.03)	(13.28)	(9.517)
Ahead			-331.4***
			(8.684)
Fine × Ahead			12.76
			(11.30)
Fee × Ahead			8.668
			(14.09)
Constant	484.0***	256.7***	483.2***
	(18.95)	(20.21)	(18.07)
N	772	346	1118

Notes: Amount taken (*Take*) conditional on money being taken in the treatment condition regressed on a dummy for *Fee* and *Fine Conditions*. *ControlFine* represents the differences across control conditions associated with fee or fine. *Ahead* is a dummy capturing if the agent starts with more money than their opponent, and the an interaction term between *ahead* and the treatment conditions. Regression (1) describes the impact of treatment on the amount taken for cases in which the dictator starts behind, Regression (2) for cases in which the dictator starts ahead, and Regression (3) includes all data. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 19: Intensive margin by inequality

The results for the intensive margin show that the crowding-out effect is fairly consistent across situations. The fine condition leads to a nonsignificant increase when the agent is behind, while the fee condition is significant. Both conditions are significant when the agent is ahead, and regression (9) replicates these results.

In general, the results indicate that the crowding-out effect is fairly consistent whether the agent is ahead or behind, with some evidence that it can lead to slightly bigger impacts when the agent is ahead.

However, the rule-following tendency and potential crowding-in effects do not necessarily have the same partner. It was observed that the majority of the participants still take money when they are behind, and both the fee and fine lead to a reduction, though relatively smaller. When the agent is ahead, both the fee and fine seem to be effective, with the fee being even more effective.

The aggregate results follow the balance of these two forces, with no impacts when the agent is behind, and the fee being effective when the agent is ahead.

Future research might further explore these differences and seek to better understand the reasoning behind these behavioral channels.

Potentially, the agents face higher moral costs when the agent is ahead, leading to differences in the extensive margin. However, given that the agent is willing to take money, the presence of the penalty leads to a decision to take more money.

A.6 Hurdle Models

Another method for exploring treatment effects on the intensive and extensive margins involves employing hurdle models. Essentially, these models use a two-staged regression, one for selection (extensive margin) and another using a linear model for the action (intensive margin). Here, we examine the results obtained through such models. The initial regression assesses treatment effects on the intensive and extensive margins using all available data:

	(1)
	Take
Fine	52.35***
	(12.37)
Fee	99.04***
	(12.84)
ControlFine	-4.064
	(12.28)
Constant	320.8***
	(9.001)
Selection	
Fine	-0.232***
	(0.0616)
Fee	-0.610***
	(0.0606)
ControlFine	-0.0287
	(0.0639)
Constant	0.863***
	(0.0455)
N	4020

Notes: Hurdle model for Participation and Amount Taken. Amount taken (*Take*) regressed on a dummy for *Fee* and *Fine Conditions*. *ControlFine* represents the differences across control conditions associated with fee or fine. Random effects at the individual level. Standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, ***

Table 20: Hurdle Model

The second and third regressions check the impacts of the social norms on the treatment effects:

	(2)	(3)
	Take	Take
Fine	23.64	6.711
	(24.59)	(18.19)
Fee	66.84^{***}	29.73
	(25.47)	(18.91)
ControlFine	-0.988	0.770
	(24.30)	(17.91)
Empirical Intensive		0.608^{***}
		(0.0400)
Normative Intensive		1.877^{**}
		(0.743)
Entitlement Intensive		0.406
		(0.662)
Constant	345.6^{***}	88.04^{***}
	(17.54)	(24.36)
Selection		
Fine	-0.218	-0.131
	(0.140)	(0.174)
Fee	-0.551^{***}	-0.688^{***}
	(0.137)	(0.172)
ControlFine	-0.0116	-0.0615
	(0.145)	(0.181)
Empirical Extensive		0.0174^{***}
		(0.00210)
Normative Extensive		0.0301^{***}
		(0.00710)
Entitlement Extensive		0.0179^{***}
		(0.00626)
N	804	804

Notes: We employ a Hurdle model to analyze Participation and Amount Taken, considering social norms as potential channels. The Amount taken (*Take*) is regressed on dummy variables for *Fee* and *Fine Conditions*. *ControlFine* accounts for differences across control conditions associated with fee or fine. In Regression (2) and (3), we examine treatment effects (fine and fee) on the amount taken, capturing the intensive margin, and treatment effects (fine and fee) for the selection model, capturing the extensive margin using the situations in which social norms were measured. Additionally, in Regression (3), we include social norms to capture their impacts. We utilize random effects at the individual level, with standard errors clustered at the individual level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 21: Hurdle Model and Channesl

The observed results align with those described in the main text, indicating that both fees and fines result in reductions at the extensive margins but increases at the intensive margin. Additionally, social norms exhibit a positive correlation with selection and amount taken, partially capturing the treatment effects.

A.7 Who are those who ceased with taking money:

We also investigate the behavior of agents who cease taking money during the control condition, i.e., how much they take in the control condition for the twin case in which they stop taking money in the treatment condition. Figure 4 displays the distribution of the amount taken for the same respective control conditions in which the agent did not take money in the treatment condition.

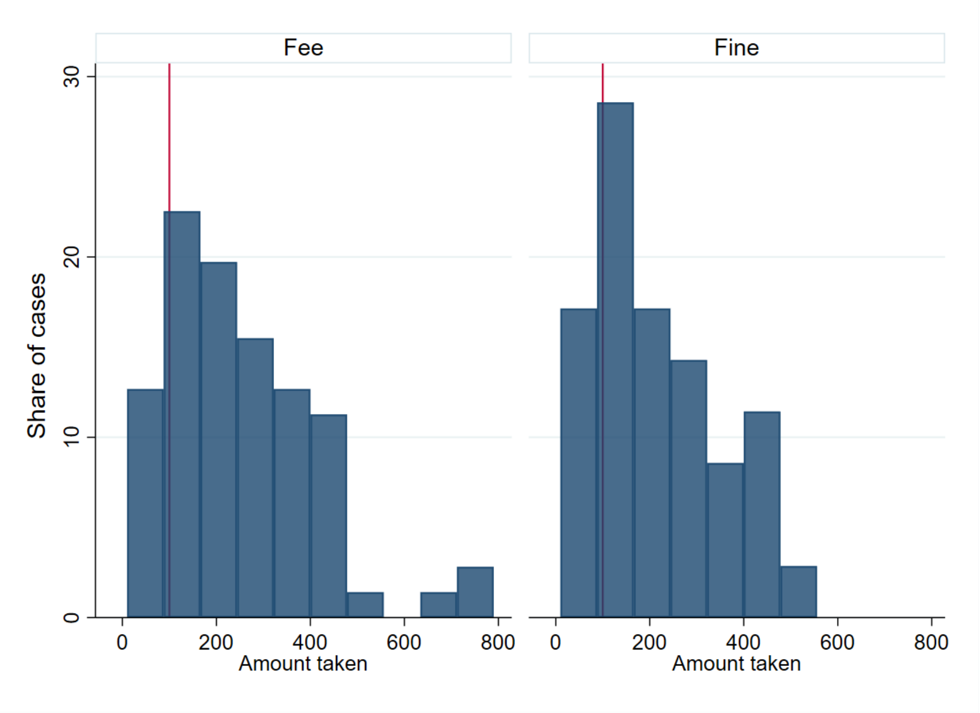


Figure 4: The distribution of the amount taken among those who did not take money in the treatment conditions. On the left side, the amount taken in the control condition by those who did not take money in the fee treatment. On the right side, the same information is presented for the fine treatment.

Participants consistently take more than 100 points. The fee results in an average reduction of 248 points, whereas the fine condition shows a reduction of 200 points, with no significant differences between the treatment conditions ($\chi^2(1) = 0.88, p = 0.3482$). In approximately 50% of the cases, participants take more than 200 points, and in around 30% of the cases, they take more than 300 points but then cease taking money in the treatment conditions. As a benchmark criterion, we compare the amount taken with the 100-point cost of the monetary penalty, and the average amount taken is significantly different ($\chi^2(1) = 42.50, p = 0.0000$).

As the range of amounts that can be taken changes across the conditions, we can also observe the share kept by the dictator - (*Take* + *Initial Endowment for dictator*) / (*sum of initial endowments*) to create the same unit across all cases. Figure 5 shows the distribution of these values.

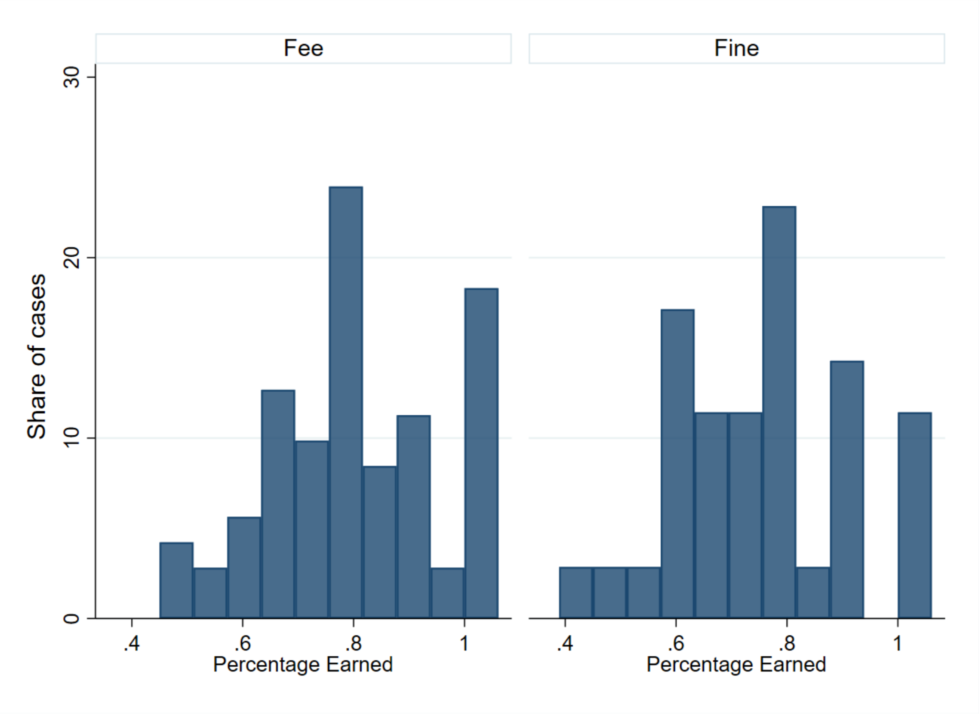
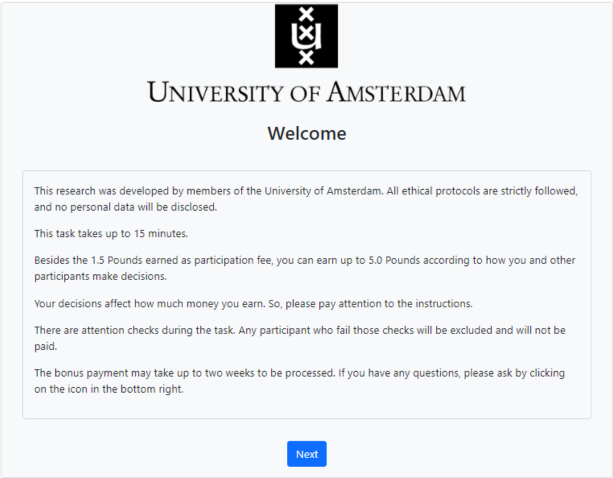


Figure 5: The distribution of the total share kept among those who did not take money in the treatment condition is shown on the left side. On the left side, the share kept in the control condition by those who did not take money in the fee treatment is displayed, while on the right side, the same information is presented for the fine treatment.

On average, dictators obtain around 80% and 77% of the total available in the fee and fine conditions, respectively, for their specific control conditions and then stop taking any money. In some cases, these ratios are extremely high. For example, in the control condition of the fee treatment, dictators obtain 100% of the money in 18.3% of cases, while in control conditions of the fine treatment, this occurs in 11.43% of cases, and these individuals decide to stop taking any money after the penalty is imposed. These significant reductions in the amount taken serve as evidence for a crowding-in effect. The agent's drastic reduction in the amount taken indicates that the monetary penalty indeed leads to an increase in prosocial concerns. This is evident as they exhibit little prosocial behavior by taking larger amounts in the control condition, but demonstrate a higher level of prosociality by taking zero in the treatment condition.

B Instructions

Introduction, instructions, and example of comprehension check:



UNIVERSITY OF AMSTERDAM

Welcome

This research was developed by members of the University of Amsterdam. All ethical protocols are strictly followed, and no personal data will be disclosed.

This task takes up to 15 minutes.

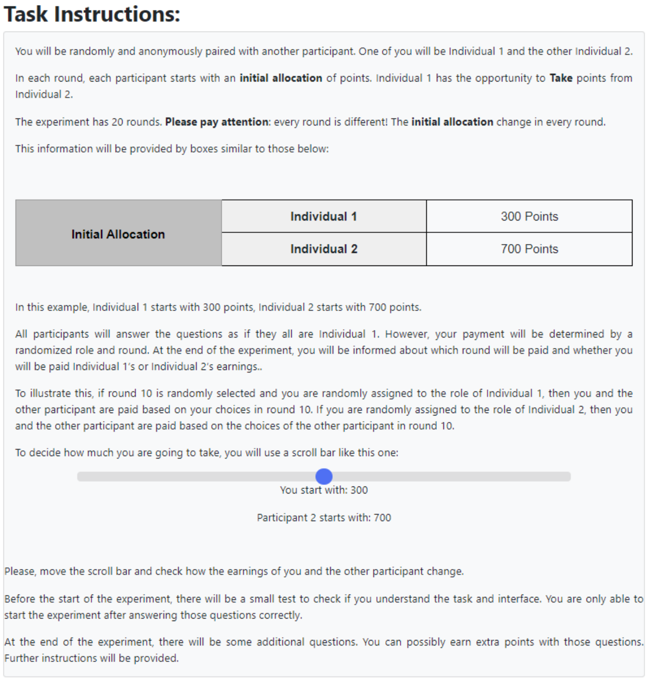
Besides the 1.5 Pounds earned as participation fee, you can earn up to 5.0 Pounds according to how you and other participants make decisions.

Your decisions affect how much money you earn. So, please pay attention to the instructions.

There are attention checks during the task. Any participant who fail those checks will be excluded and will not be paid.

The bonus payment may take up to two weeks to be processed. If you have any questions, please ask by clicking on the icon in the bottom right.

Figure 6: Introduction



Task Instructions:

You will be randomly and anonymously paired with another participant. One of you will be Individual 1 and the other Individual 2.

In each round, each participant starts with an **initial allocation** of points. Individual 1 has the opportunity to **Take** points from Individual 2.

The experiment has 20 rounds. **Please pay attention**: every round is different! The **initial allocation** change in every round.

This information will be provided by boxes similar to those below:

Initial Allocation	**Individual 1**	300 Points
	Individual 2	700 Points

In this example, Individual 1 starts with 300 points, Individual 2 starts with 700 points.

All participants will answer the questions as if they all are Individual 1. However, your payment will be determined by a randomized role and round. At the end of the experiment, you will be informed about which round will be paid and whether you will be paid Individual 1's or Individual 2's earnings..

To illustrate this, if round 10 is randomly selected and you are randomly assigned to the role of Individual 1, then you and the other participant are paid based on your choices in round 10. If you are randomly assigned to the role of Individual 2, then you and the other participant are paid based on the choices of the other participant in round 10.

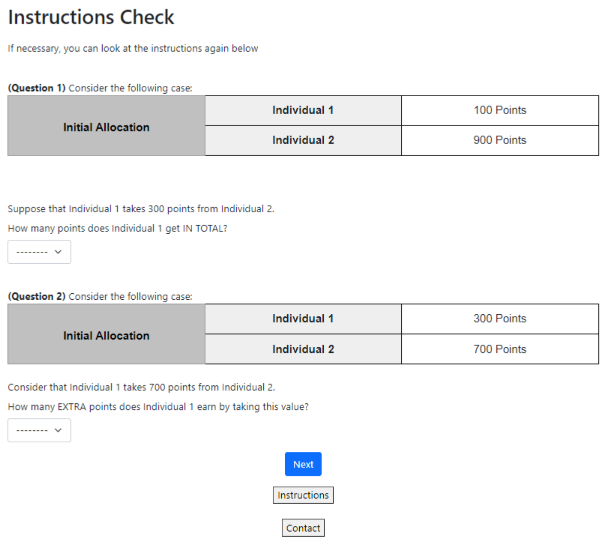
To decide how much you are going to take, you will use a scroll bar like this one:

Please, move the scroll bar and check how the earnings of you and the other participant change.

Before the start of the experiment, there will be a small test to check if you understand the task and interface. You are only able to start the experiment after answering those questions correctly.

At the end of the experiment, there will be some additional questions. You can possibly earn extra points with those questions. Further instructions will be provided.

Figure 7: Instructions



Instructions Check

If necessary, you can look at the instructions again below

(Question 1) Consider the following case:

Initial Allocation	**Individual 1**	100 Points
	Individual 2	900 Points

Suppose that Individual 1 takes 300 points from Individual 2.

How many points does Individual 1 get IN TOTAL?

-------- ⌄

(Question 2) Consider the following case:

Initial Allocation	**Individual 1**	300 Points
	Individual 2	700 Points

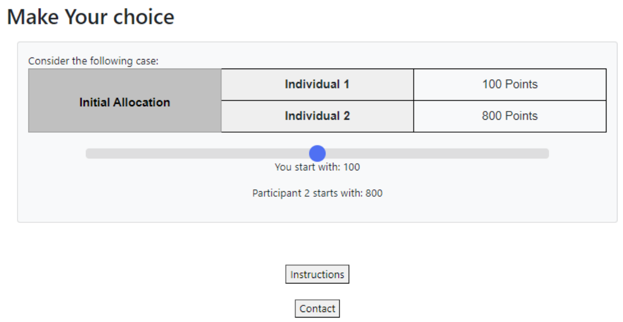
Consider that Individual 1 takes 700 points from Individual 2.

How many EXTRA points does Individual 1 earn by taking this value?

-------- ⌄

Figure 8: Example - Comprehension check

Decision - Control, info fine, fine, info fee, and fee:



Make Your choice

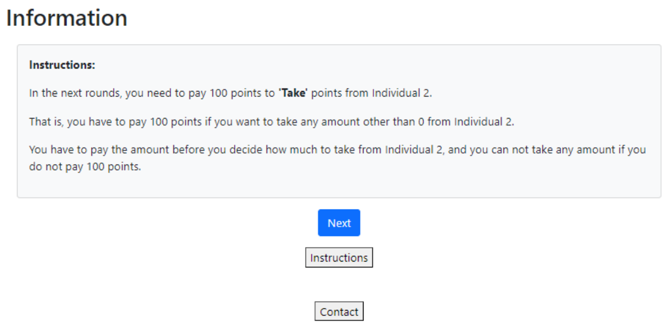
Consider the following case:

Initial Allocation	**Individual 1**	100 Points
	Individual 2	800 Points

You start with: 100

Participant 2 starts with: 800

Figure 9: Example: Control Condition



Information

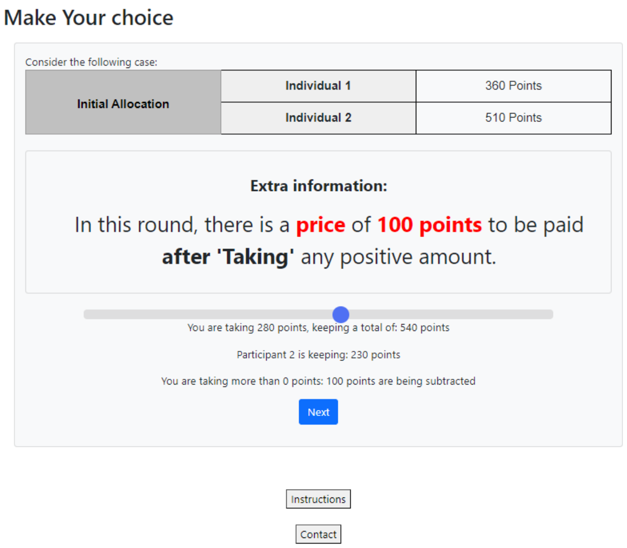
Instructions:

In the next rounds, you need to pay 100 points to '**Take**' points from Individual 2.

That is, you have to pay 100 points if you want to take any amount other than 0 from Individual 2.

You have to pay the amount before you decide how much to take from Individual 2, and you can not take any amount if you do not pay 100 points.

Figure 10: Information - Fine



Make Your choice

Consider the following case:

Initial Allocation	Individual 1	360 Points
	Individual 2	510 Points

Extra information:

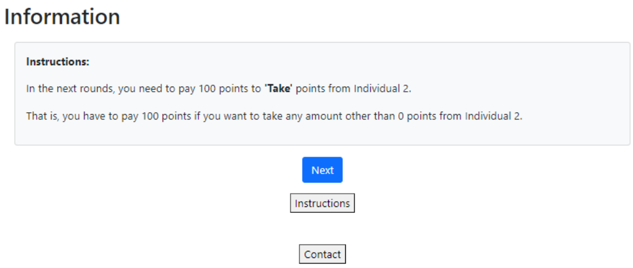
In this round, there is a **price** of **100 points** to be paid **after 'Taking'** any positive amount.

You are taking 280 points, keeping a total of: 540 points

Participant 2 is keeping: 230 points

You are taking more than 0 points: 100 points are being subtracted

Figure 11: Example: Fine Condition



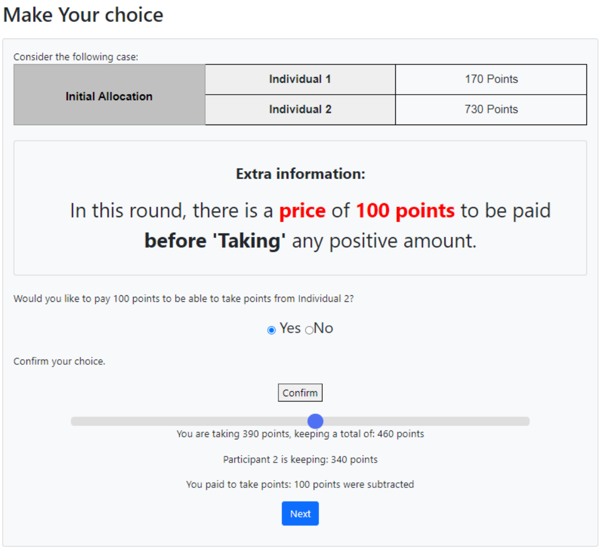
Information

Instructions:

In the next rounds, you need to pay 100 points to '**Take**' points from Individual 2.

That is, you have to pay 100 points if you want to take any amount other than 0 points from Individual 2.

Figure 12: Information - Fee



Make Your choice

Consider the following case:

Initial Allocation	Individual 1	170 Points
	Individual 2	730 Points

Extra information:

In this round, there is a **price** of **100 points** to be paid **before 'Taking'** any positive amount.

Would you like to pay 100 points to be able to take points from Individual 2?

● Yes ○ No

Confirm your choice.

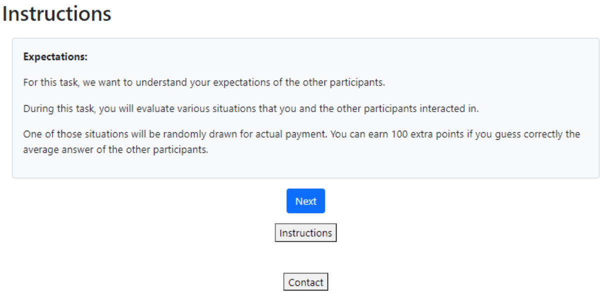
You are taking 390 points, keeping a total of: 460 points

Participant 2 is keeping: 340 points

You paid to take points: 100 points were subtracted

Figure 13: Example: Fee Condition

Social Norms and Entitlement:



Instructions

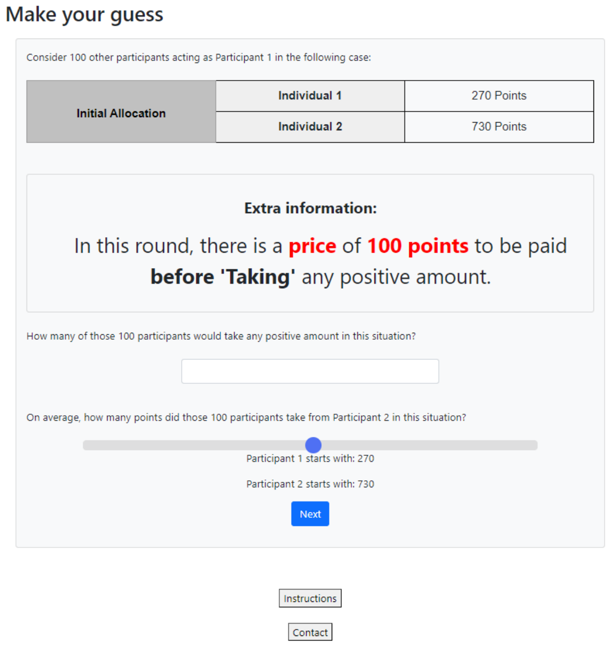
Expectations:

For this task, we want to understand your expectations of the other participants.

During this task, you will evaluate various situations that you and the other participants interacted in.

One of those situations will be randomly drawn for actual payment. You can earn 100 extra points if you guess correctly the average answer of the other participants.

Figure 14: Information - Empirical Expectation



Make your guess

Consider 100 other participants acting as Participant 1 in the following case:

Initial Allocation	**Individual 1**	270 Points
	Individual 2	730 Points

Extra information:

In this round, there is a **price** of **100 points** to be paid **before 'Taking'** any positive amount.

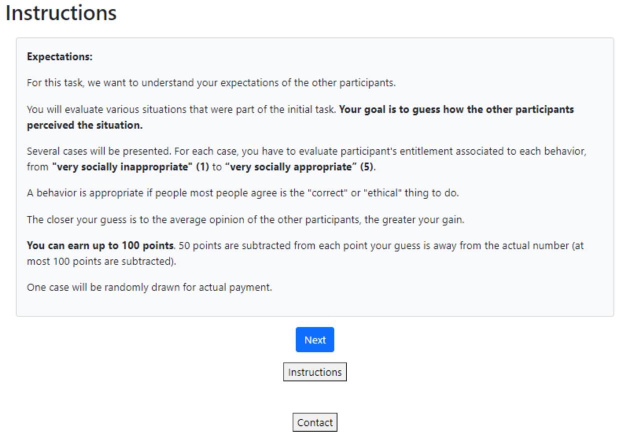
How many of those 100 participants would take any positive amount in this situation?

On average, how many points did those 100 participants take from Participant 2 in this situation?

Participant 1 starts with: 270

Participant 2 starts with: 730

Figure 15: Example: Empirical Expectation



Instructions

Expectations:

For this task, we want to understand your expectations of the other participants.

You will evaluate various situations that were part of the initial task. **Your goal is to guess how the other participants perceived the situation.**

Several cases will be presented. For each case, you have to evaluate participant's entitlement associated to each behavior, from **"very socially inappropriate" (1)** to **"very socially appropriate" (5)**.

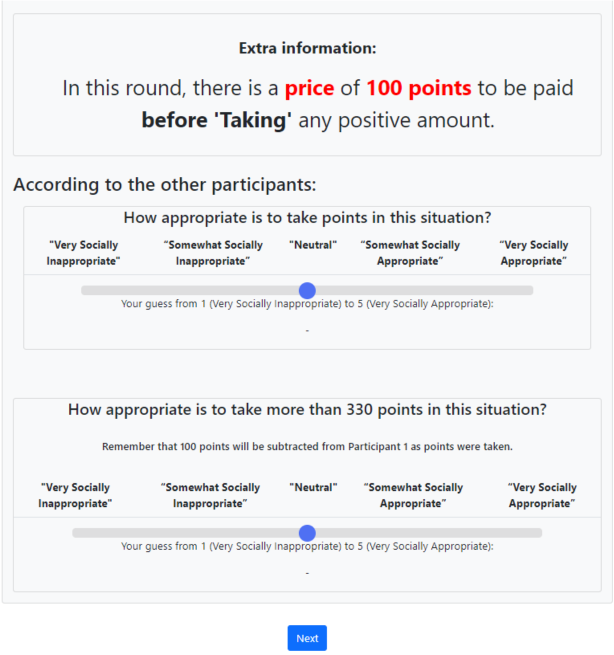
A behavior is appropriate if people most people agree is the "correct" or "ethical" thing to do.

The closer your guess is to the average opinion of the other participants, the greater your gain.

You can earn up to 100 points. 50 points are subtracted from each point your guess is away from the actual number (at most 100 points are subtracted).

One case will be randomly drawn for actual payment.

Figure 16: Information - Normative Expectation



Extra information:

In this round, there is a **price** of **100 points** to be paid **before 'Taking'** any positive amount.

According to the other participants:

How appropriate is to take points in this situation?

"Very Socially Inappropriate"
"Somewhat Socially Inappropriate"
"Neutral"
"Somewhat Socially Appropriate"
"Very Socially Appropriate"

Your guess from 1 (Very Socially Inappropriate) to 5 (Very Socially Appropriate):

-

How appropriate is to take more than 330 points in this situation?

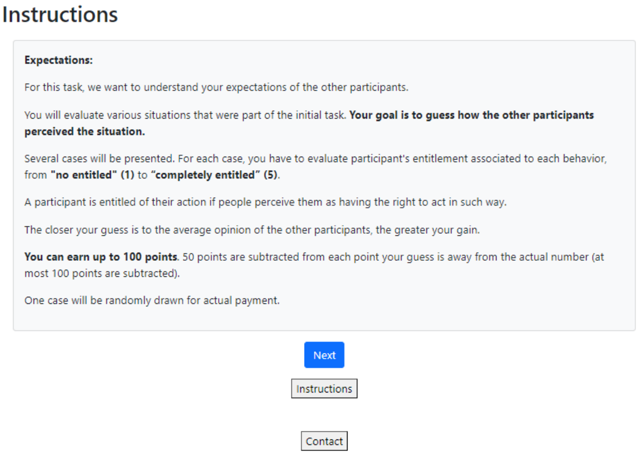
Remember that 100 points will be subtracted from Participant 1 as points were taken.

"Very Socially Inappropriate"
"Somewhat Socially Inappropriate"
"Neutral"
"Somewhat Socially Appropriate"
"Very Socially Appropriate"

Your guess from 1 (Very Socially Inappropriate) to 5 (Very Socially Appropriate):

-

Figure 17: Example: Norm Expectation



Instructions

Expectations:

For this task, we want to understand your expectations of the other participants.

You will evaluate various situations that were part of the initial task. **Your goal is to guess how the other participants perceived the situation.**

Several cases will be presented. For each case, you have to evaluate participant's entitlement associated to each behavior, from **"no entitled" (1)** to **“completely entitled” (5)**.

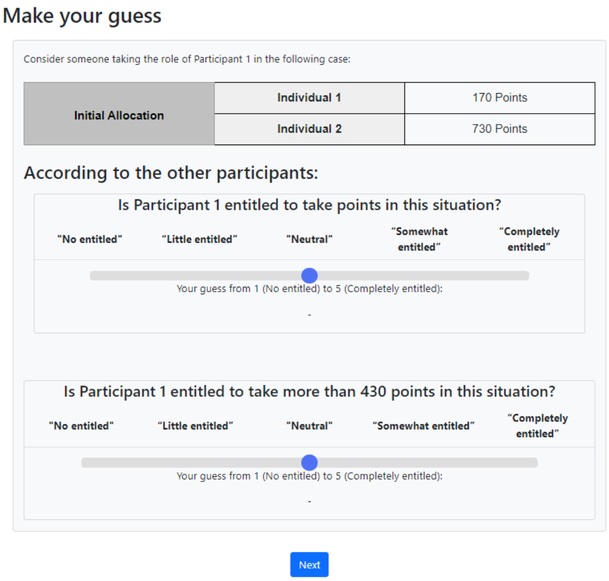
A participant is entitled of their action if people perceive them as having the right to act in such way.

The closer your guess is to the average opinion of the other participants, the greater your gain.

You can earn up to 100 points. 50 points are subtracted from each point your guess is away from the actual number (at most 100 points are subtracted).

One case will be randomly drawn for actual payment.

Figure 18: Information - Entitlement



Make your guess

Consider someone taking the role of Participant 1 in the following case:

Initial Allocation	Individual 1	170 Points
	Individual 2	730 Points

According to the other participants:

Is Participant 1 entitled to take points in this situation?

"No entitled" "Little entitled" "Neutral" "Somewhat entitled" "Completely entitled"

Your guess from 1 (No entitled) to 5 (Completely entitled):

-

Is Participant 1 entitled to take more than 430 points in this situation?

"No entitled" "Little entitled" "Neutral" "Somewhat entitled" "Completely entitled"

Your guess from 1 (No entitled) to 5 (Completely entitled):

-

Figure 19: Example: Entitlement