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# Freedom to Freeride

*A study exploring the willingness to intervene in public goods settings to promote fairness and efficiency, and prevent free-riding.*

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.

## Abstract

This study examines the balance between freedom, fairness, and efficiency when individuals are presented with the opportunity to act paternalistically. Specifically, we study third-party decisions in public goods, focusing on spectators' behavior in an experimental setting. By analyzing variables including beliefs about others, as well as source of endowment, we aim to understand what drives decisions to intervene. Additionally, we explore how these experimental findings align with spectators' attitudes toward a real-world scenario—taxing Norwegian citizens to fund public goods. This research contributes to behavioral economics by addressing a gap in the literature, incorporating a third-party intervention mechanism into a public goods game, and bridging theories of public goods and social paternalism.

The study employs an experimental design in which third-party observers are given the opportunity to intervene in a public goods game, enforcing efficiency and equality among players while simultaneously infringing on their autonomy. This setup raises an intriguing question: should individuals have the freedom to freeride, or does morality justify intervening to enforce equality and/or efficiency?

The statistical analysis reveals that a majority of spectators show a moral preference for prioritizing freedom over enforcing equality and/or efficiency. Spectators with conservative right-wing ideologies are slightly less likely to intervene than those without such ideologies, whereas higher education slightly increases the likelihood of intervention compared to those without higher education. The origin of players' endowments (whether earned or windfall) had no significant impact on the intervention decisions of the spectators, nor did their beliefs about the players' contributions.

Spectators who chose to intervene showed greater support for government taxation of public goods than those who did not intervene. Furthermore, spectators with optimistic beliefs about others' behaviors were more supportive of public goods taxation compared to those with pessimistic beliefs.

## Preface

This thesis is submitted as part of our Master of Science in Economics and Business Administration program at the Norwegian School of Economics. It accounts for 30 credits within our major, Strategy and Management (STR).

The thesis falls within the field of behavioural economics and to examine third-parties' willingness to intervene, focusing on how individuals balance conflicting moral values—freedom, fairness, and efficiency—when presented with the opportunity to act paternalistically. We examine variables including beliefs about others, as well as source of endowment. Our approach also includes examining attitudes and behaviours in an experimental setting, as well as incorporating a question related to a real-life taxation scenario. We chose this topic because of our interest in behavioural economics, as well as the inspiration and motivation we drew from the FAIR Institute's project, "Understanding Paternalism."

First and foremost, we would like to thank our supervisor, Alexander Wright Cappelen, for his expertise and guidance throughout the process of writing this thesis. As one of the leading researchers in the field, his insights, particularly regarding the methodology, have been greatly appreciated.

We would like to express our gratitude to Kata Urban in the Research Administration section at NHH for her assistance in navigating the application process and for helping us connect with Norstat. Her support was crucial in ensuring the steady progress of our project.

We are also grateful to the FAIR institute at NHH for their financial contribution and Norstat for collecting the data, both of which made it possible to conduct the experiment. In particular, we would like to thank Mads Motrøen at Norstat for his exceptional follow-up and for promptly addressing all our questions about the data, which greatly contributed to the efficiency and quality of our work.

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## 1. Introduction

In a world of limited resources and the need for collective action, navigating the balance between freedom, fairness, and efficiency is a critical societal challenge. Public goods, being non-excludable and non-rivalrous, allow everyone to benefit without diminishing their availability to others (Britannica, n.d.). However, this reduces individual incentives to contribute, leading to potential *free riding*, meaning individuals can benefit from public goods, without bearing the associated costs (Olson, 1965). This may cause under-provision or collapse of such goods, posing significant challenges for policymakers and society as a whole. This raises an intriguing question: should individuals have the freedom to freeride? While governments can intervene to promote equality and efficiency, such measures may limit individual freedom. Understanding how individuals navigate these tensions in experimental settings offers valuable insights into how policymakers can balance these values while serving the public interest. Moreover, examining individuals' willingness to intervene may offer a broader perspective on societal attitudes toward government intervention.

To better understand the dynamics of public good provision, researchers use experimental setups referred to as public goods games. In these games, players are normally provided with an initial endowment and presented with a choice; they can choose to contribute to a common pot, which benefits all players, or keep the initial endowment to themselves. The results of these experiments give insights into human behavior, particularly in relation to altruism, cooperation and the impact of social norms (Fehr & Gächter, 2002).

While much research has focused on the behavior of individuals directly participating in public goods games, the role of third-party spectators—who are outside the game but have the power to influence its outcomes—has received less attention. The perspectives and decisions made by these external observers, who can be said to mirror policymakers or societal stakeholders, remain unexplored. These decisions are particularly interesting, as they may reflect broader societal views on freedom, fairness and efficiency.

With regards to paternalism, third-party spectators play an important role. Paternalism, which involves limiting an individual's freedom for their own benefit, is a key theme in literature that explores the trade-offs between balancing a person's freedom to make choices and the prevention of harm or promotion of their well-being (Le Grand & New, 2015). While much of the existing research has focused on paternalistic interventions at the individual level, the



role of a third-party spectator acting as a paternalistic agent within the framework of public goods games remains underexplored.

This thesis aims to fill the gap in literature by incorporating a third-party intervention mechanism into a public goods game, building a bridge between theory about public goods and social paternalism. It explores the conditions under which spectators, who have the power to enforce equal payouts for a Pareto-optimal outcome, choose to intervene. When making decisions, individuals often need to balance competing values like fairness, freedom, and efficiency, with several factors influencing how they weigh these values. This study will look at how spectators' expectations about players' behavior—whether they are optimistic or pessimistic about others' contributions—impact their decision-making. Additionally, we will explore how the context of the decision might play a role, particularly whether the source of the players' endowments (whether it was given or earned) influences spectators' willingness to intervene. We will look at how demographic factors and political views affect spectators' decisions to intervene. Finally, we will investigate whether spectators' actions in the experiment reflect their real-world views on public goods, especially regarding government taxation, and how their beliefs about others' behavior relate to these views.

The significance of this study lies in its exploration of how individuals balance competing values such as fairness, efficiency, and autonomy when deciding to intervene in public goods situations. By examining factors like the source of endowments and beliefs about others' behavior, the research sheds light on factors influencing the moral considerations that motivates the intervention decisions. This understanding is crucial for real-world applications, particularly for governments that must carefully evaluate when and how to intervene on issues like taxation and wealth redistribution. Policymakers often face complex decisions, balancing the promotion of fairness and efficiency with respect for individual freedom. The study's findings can guide more effective policy design, also by revealing how demographic factors, political ideologies, and personal beliefs shape support for intervention, ultimately helping governments make decisions that are both socially beneficial and publicly acceptable.

## 1.1 Structure of Thesis

This thesis is organized into six chapters. Following this introduction, the literature review will delve into relevant theory about public goods games and paternalism.

Next, the methodology chapter will describe the experimental design, focusing on the third-party interventions in the experiment. This section will introduce the spectators and detail the procedural steps.

The empirical strategy will be detailed in a separate chapter, where a comprehensive description of the methods and approaches used in the analysis will be displayed.

In the results and analysis and chapter, the results from the experiment will be presented and discussed. We will divide the chapter into two sections. The first will examine the independent effects of various factors on the probability of intervention, including treatment, political affiliation, demographic factors, and beliefs about contributions in the public goods games. The second part will analyze the correlation between spectator intervention and beliefs in the experiment with their opinions about real life public goods, connecting the general attitudes and findings of the experiment toward a real-life analogue.

Finally, the conclusion will summarize the key findings of the study. This includes evaluating the strengths and weaknesses of the study, addressing both internal and external validity, before proposing directions for future research.

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## 2. Literature

In this chapter, we present the theoretical foundation of the study, divided into two parts. We begin by presenting theory about public goods games. In the second part we present paternalism, applying a social paternalism approach to examine the moral frameworks that come into play when faced with the choice to act paternalistically.

### 2.1 Public Goods Games

Public goods are fundamental aspects of societies. Services funded through taxation, such as public education, healthcare or even a country's national defense, are goods that rely on financial contributions in order to function efficiently. However, since public goods are nonexcludable, the advantages of public goods can be enjoyed by everyone, even those who do not contribute, creating a potential for free riding. To shed light on these dynamics, researchers use public goods games, which study free-riding and cooperative behavior in public goods provision.

Public goods games are multiplayer games with  $N$  players, where each person is given an initial endowment of  $x_i$  and makes an investment  $y_i$  into a public good, where  $0 \leq y_i \leq x_i$ . Commonly, players are given the choice to either contribute their whole endowments, or refrain from contributing all together, making contributions either  $x_i$  or zero. The investment is then multiplied by a positive factor  $m$ ,  $1 < m < N$ . The total public good can be illustrated by  $m \sum y_j$ , with  $\sum y_j$  representing the sum of player contributions. The public good is then shared equally between all players. Ultimately, at the end of the game, player  $i$  receives  $x_i - y_i + m \sum y_j / N$  (Wilkinson & Klaes, 2012). The individual investment made by a single player can be treated as a positive externality, since it benefits the other players. Since  $m < N$ , it follows that the return of an individual's invested amount is less than their initial endowment, mathematically illustrated with  $x_i > m \sum y_j / N$ . Contributing to the public good can therefore be considered as making an investment with negative returns. Consequently, under standard economic theory—which assumes individuals are entirely rational and purely self-interested, consistent with the homo economicus concept rooted in Adam Smith's (1776) theory of utility maximization—the dominant strategy for players is to free ride by avoiding contributions to the public good. Should all players choose the dominant strategy, everyone ends up with their initial endowment of  $x_i$ .

From a societal perspective, the outcome of the public good game when players act in line with standard economic theory, is suboptimal. The final public good, given that every player refrain from contributing by free riding, is smaller compared to the public good for all possible contributions larger than zero, as  $Nx_i < m \sum y_j$ . Consequently, the outcome is inefficient compared to the optimal solution. Because there is no possibility of cooperation, the incentives of individual players encourage free riding (Wilkinson & Klaes, 2012). As a result, if all players behaved according to standard economic theory, they would collectively benefit from *not* having the freedom to free ride.

Extensive experimentation has been conducted using public goods games, and the majority of the results suggest that people tend to contribute at levels ranging between the free-rider equilibrium and the equal-payout Pareto-optimal outcome (Ledyard, 1995). This contradicts standard economic theory and suggests that people might have prosocial motivations additional to only maximizing their own utility.

By conducting a series of public goods games, Fischbacher and Gächter (2010) found significant heterogeneity in player behavior. In one-shot games, contributions were relatively high, with players contributing more than what standard economic theory would predict. This occurred despite there not being any opportunities for reciprocation from other players. The findings suggest that many players are *conditional contributors*, who contribute based on their expectations of others' contributions. However, results from the study also showed that many people – regardless of beliefs - have a tendency to free ride, leading to inefficiencies and unfairness. Ultimately, these findings show that both self-interest and fairness considerations are key factors when people make decisions in public goods games.

Conditional contributions, driven by expectations of others' behavior, may be influenced by varying levels of trust. Previous research suggests that individuals who identify as liberal tend to have more trust in the general public and institutions than their conservative counterparts (Uslaner, 2002). In studies related to decision-making and fairness preferences, the distinction between windfall and earned money is a notable topic. Studies differ in findings as to how players behave in public goods games depending on how they received their endowments. Some studies show that contributions to the public goods were lower if players earned their endowment with greater effort compared to lower effort (Muehlbacher & Kirchler, 2009). One possible explanation for this could be the *house money effect*, which suggests that people view windfall money as less personal and more expendable, with the opposite being true for earned

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money (Danková & Servátka, 2015). Other concepts from behavioural economics can also contribute to explaining possible differences in behaviour when dealing with various types of endowments. *Mental accounting*, introduced by Thaler (1985), explain how individuals categorize, perceive and treat money differently based on its source, which could suggest that people would act differently in public goods situations when possessing different types of endowments. However, research on endowment effects are not conclusive, some studies also find that contributions do not differ significantly in regard to the different types of endowments (Cherry, Kroll, & Shogren, 2005).

## 2.2 Paternalism

The risk of suboptimal outcomes, both in real life and in public goods games, arises when individuals act according to their own self-interest. This raises the question of whether paternalistic intervention is morally justified to promote efficiency and equality, even at the cost of individual freedom. To address this, it is essential to first define paternalism, as it provides the foundation for understanding the ethical considerations underlying such interventions.

Le Grand and New's definition of paternalism states that a government intervention is paternalistic if it aims to address the failure of judgement by the individual, and if it is performed to further the own good of the person in question (Le Grand & New, 2015).

From one perspective, in a public goods scenario, it is possible to argue that the spectators in a public good game do not act paternalistic if they choose to interfere with the decisions of players. The highest utility of every participant is achieved if he or she chooses to keep their money, due to it being the dominant strategy. For an act to be considered paternalistic according to New and Le Grand, it needs to further the good of the individual (Le Grand & New, 2015). If a spectator interferes in our experiment, this reduces the total amount of money the income-maximising player could end up with, thereby working against the individual's best interest.

However, it is possible to connect the overall ideas of paternalism to the public goods game. Although the individual is better off by choosing to keep his or her endowment, there is an efficiency loss if players do not contribute to the common pool. According to standard economic theory, the rational consumer would choose to maximize their own utility by keeping their money. However, this causes the players to be collectively worse off compared

to if they contributed, since everyone will end their initial endowments if everyone chooses the dominant strategy. Therefore, the group fails to reach the optimal decision from an efficiency standpoint. Hence, an intervention forcing everyone to contribute could be said to address the failure in judgement of the group, if the group itself is treated as one entity. By collectively acting selfishly, the players act against their own common interest. Therefore, even though the act of intervening in our case does not follow the traditional definition of paternalism, intervening does carry paternalistic properties, when viewing the group as an entity. Consequently, in this paper, we define paternalism from a social perspective: someone acts paternalistically when their actions aim to correct a judgment failure of the group as a whole.

When presented with the option to act paternalistically, different moral frameworks come into play. On one hand, spectators may employ a utilitarian philosophy, encouraging intervention if they believe that this would lead to a more efficient outcome. According to utilitarian thought, actions are right if they increase overall pleasure or happiness, and likewise wrong if they increase overall suffering or pain (Bentham, 1789). Bentham explicitly supports government intervention when it promotes utility for the majority of people.

On the other hand, spectators may employ a libertarian philosophy, encouraging non-intervention, valuing freedom of choice higher than efficiency. Murray Rothbard (1973) defines libertarianism as an advocacy for a society categorized by individual freedoms, where its inhabitants should be free to reap the fruits of their labour, without the coercion of the state.

Another important consideration arises with respect to fairness: what constitutes a fair distribution of contributions? It is reasonable to suggest that a fair outcome in a public goods scenario would result in everyone having an equal amount of the good (money). Interestingly, fairness can be achieved in two contrasting scenarios: either if no one contributes—an outcome that is not efficient yet consistent with fairness principles—or if everyone contributes equally. The latter alternative would ensure both equality and efficiency, however if this is achieved through coercion, this would infringe on individuals' freedom to make their own choices.

Together, these perspectives provide valuable insights into the moral and philosophical debates surrounding paternalism, laying the groundwork for further exploration of how these concepts can inform both theoretical and practical considerations in public policy and behavioral interventions.

### 3. Methodology

This chapter outlines the methodology used in the study, including a description of the design of the experiment. Additionally, we will describe the process of conducting the experiment, covering the initial power calculations, data collection, and finally, the implementation and execution of the study.

#### 3.1 Experimental Design

The experiment seeks to investigate how a third-party spectator balances conflicting moral values, such as fairness, freedom, and efficiency, when deciding whether to make a paternalistic intervention related to a public goods game. The spectator can choose to allow players to make their own decisions, thereby preserving their freedom of choice. Alternatively, the spectator can intervene, forcing everyone to contribute their endowments to maximize efficiency and ensure equality. As part of the study, we examine whether the source of endowment in the public goods games, tested through two different treatments, affects how spectators balance these conflicting values. Furthermore, we explore whether the spectators' beliefs and expectations about the players' behavior influence their choices. Finally, we investigate whether the attitudes and decisions observed in the experimental setting align with the spectators' views on government taxation of public goods.

Spectators are informed that four individuals will participate in a public goods game. Half are told that the players have earned their endowments, the other half is told that the players have been given their endowments. Spectators are shown the options available to the public goods game players along with the different possible outcomes of the game. Next, spectators are asked about their beliefs regarding player contributions, before deciding whether or not to intervene. Finally, they are asked to answer the extent to which they agree with government taxation for public goods.

Figure 1 presents the flowchart of the experiment, illustrating how spectators are assigned to different treatments and asked about their beliefs, intervention decisions, opinions on taxation, and demographic-related questions (see Appendix A.1). Additionally, the figure includes the public goods games, in which the decisions of a subset of spectators have real consequences. The public goods games are conducted with a separate group of participants, different from the spectators.

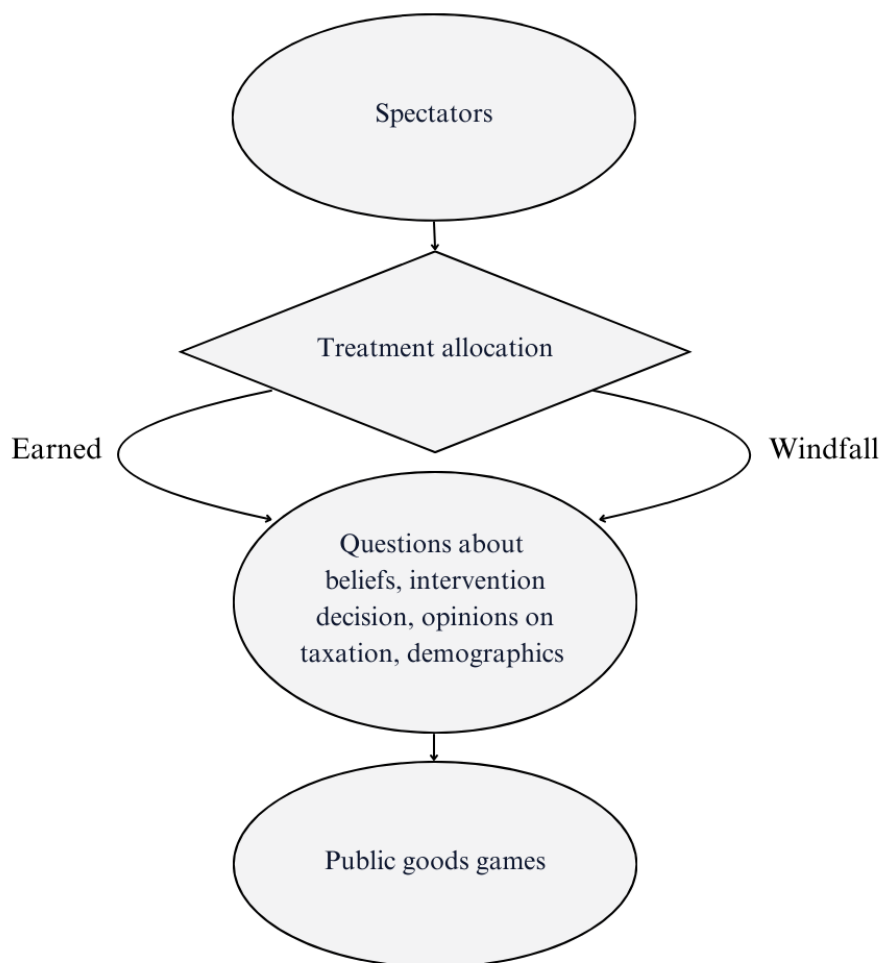


Figure 1 – The figure shows the flowchart of the experiment. Spectators were randomly allocated into one of two treatments; windfall or earned

Each public goods game involves four players. In five of a total of ten games, every player receives an initial endowment of 100Kr. In the remaining five, players perform a small task before receiving their 100Kr endowment. They are then given the choice of either contributing their full endowment to the common pool or refraining from contributing altogether. For simplicity, partial contributions between these two options are not allowed, and players cannot cooperate with each other. The investments made by the players are then pooled together, and the total value is doubled and split evenly among all four players.

As described in the literature review, the dominant strategy for each player is to keep their initial endowment. Consequently, the Nash equilibrium occurs when no one contributes, leaving each player with 100Kr (Nash, 1950). The maximum payout for an individual can be achieved if he or she does not contribute while everyone else does, resulting in 250kr for that individual, and 150kr for each of the remaining three players. The optimal collective outcome is achieved when all four players contribute, with each player ending up with 200kr. Therefore,



the maximum efficiency gain is 400Kr, which represents the difference between the total payouts in the full-contribution scenario and the no-contribution scenario. This setup follows the typical structure of public goods games, widely used in research.

The public goods games are carried out using actual money. The reason behind using real money is to ensure that the spectators are aware that their decisions have real life consequences for the players in the public goods games. We believe this approach encourages spectators to base their decisions on genuine preferences. If the games were purely hypothetical, spectators might be more inclined to make choices that do not reflect their true opinions, as their decisions would carry no real-world implications. This design aligns with existing literature, which commonly employs real monetary stakes in similar experiments to enhance the realism and validity of participant behavior.

Only 10 public goods games are conducted, meaning approximately 1% of the spectators' choices have direct consequences. Spectators were told this as part of the instructions in the experiment (see Appendix A.1). This approach is adopted due to time and budget constraints, as well as the fact that the primary focus of the research is on the spectators' decisions rather than the outcomes of the public goods games themselves. Nonetheless, studies have shown that participants tend to engage seriously in experiments as long as there is some likelihood that their choices will have real-life consequences, supporting the validity of this approach (Cubitt, Starmer, & Sugden, 1998).

The main goal of using public goods games is to examine individuals' willingness to restrict free-riding behavior in public goods scenarios. Thus, the key aspect of the study is when a spectator, independent of the game, is presented with a choice between two alternatives. The spectator can choose to let the players make their own decisions, giving them freedom of choice according to libertarian principles. The second alternative is whether to make a paternalistic intervention, forcing everyone to contribute their endowments in order to maximize efficiency and/or fairness.

Spectators have no self-interest in the game, as they receive a fixed payment for their participation. We chose this design to elicit general, social attitudes about public goods situations, untainted by self-interested motivations. The results from the experiment might turn out different if the spectators themselves were part of the public goods games.

To explore the factors that influence their decisions, we introduce two different treatment groups: windfall and earned. In the windfall treatment, the spectators are informed that the people participating in the public goods game has been handed an initial endowment. In the second variation, the earned treatment, the spectators are told that the people participating have earned their endowments prior to the game. This allows us to determine whether the source of endowment in the public goods games influences spectators' decisions to intervene.

When making their decision, spectators cannot be sure of how many players will contribute to the common pot, and as a result, they cannot determine what the outcome of the game would be if they choose not to intervene. This introduces an element of uncertainty and risk, mirroring the challenges governing bodies face when making regulatory decisions in real-life scenarios.

In both treatments, spectators are first asked to answer how many players they believe will contribute to the common pool, choosing from the options: 0, 1, 2, 3, or 4 contributes. This element is included to encourage speculation about the likely outcome and guide their decision-making process. This allows research on how beliefs may shape their decisions. Understanding this dynamic can reveal how choices either promote or hinder optimal outcomes, particularly when balancing personal beliefs and perspectives with social pressures. Additionally, when gathering these beliefs, we ensure that one group sees the answer options in rising order and another in sinking order. This is done as a robustness check, to ensure that spectators' responses reflect their true preferences, rather than being influenced by the visual framing of the options. As part of the study on factors influencing the decision, data will also be collected on additional factors that may influence decision-making, such as the spectators' age, gender, education level, and political inclinations.

The experiment consists of four conditions based on the combinations of the two treatments—windfall and earned—and the order in which belief alternatives were presented. Random assignment of the sample ensures the groups are similar across all relevant characteristics, allowing any observed differences in spectator behavior to be attributed to the treatments and orders of belief alternatives, rather than pre-existing biases or traits.

To determine if the attitudes and decisions observed in the experimental setting align with spectators' views on government taxation and public goods funding in real-world contexts, we include a question related to a real-life taxation scenario: "To what extent do you agree that the government should tax citizens to finance goods that benefit everyone?" Spectators are

asked to choose one of five alternatives: strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree. Including this question helps to assess the external validity of the study.

In this anonymous, one-shot game setting, concerns about pushback are not relevant, as players have no direct way to express discontent. However, this introduces a limitation to the study's design. Unlike the game's context, real-world governing bodies are neither anonymous nor do they make one-time decisions. In reality, governments and institutions must consider the potential for public resistance and long-term repercussions when implementing regulations. This limitation should be considered when interpreting the study's findings and their applicability to actual governance.

## 3.2 Conducting the Experiment

After finalizing the design, the first step in its implementation was to submit an IRB application to Norwegian School of Economics to assure that appropriate measures were taken to protect the rights and welfare of participants. This application was approved (see Appendix A.3).

### 3.2.1 Power Calculations

The next step in the implementation of the study was to conduct power calculations. Power calculations are used to determine the required minimum number of participants needed to confidently detect true effects, should these effects exist (Cohen, 1988). Three key components of statistical hypothesis testing make the foundations of power calculations. The first component, statistical significance level, noted  $\alpha$ , shows the probability of rejecting the null hypothesis when it is actually true. In simpler terms, this means finding an effect, despite there in reality not being one. The second component is the statistical power, noted  $1 - \beta$ , which states the likelihood of rejecting the null hypothesis correctly, meaning  $\beta$  is the probability of failing to reject the null hypothesis, despite the null hypothesis being false. Lastly, the effect size, which can be separated into small, medium or large, states the magnitude of the effect one tries to detect. Ultimately, according to Cohen (1988), larger sample sizes are needed when wanting to detect smaller effects, due to these being more subtle and harder to distinguish from random data variations.

The aim of our study is to analyze the behaviors, beliefs and opinions of the spectators of the public goods game. Hence, the outcomes of the public goods games are not relevant to our analysis. Therefore, it is essential that our sample size of spectators is large enough to ensure statistical significance of our data. The spectator sample size provided by Norstat amounted to 1022. In order to measure the types of effects we would be able to detect with this sample size, we used G\*Power, a statistical software tool for conducting power analyzes, which is considered to be fitting for behavioral research (Faul, Erdfelder, & Buchner, 2007). The effect size  $f^2$ , when using multiple regressions, is defined by Cohen (1988) to be  $f^2 = \frac{R^2}{1-R^2}$ . He further states that 0.02, 0.15 and 0.35 are small, medium and large size effects for  $f^2$ , respectively. The significance and power levels in the power calculations used, were  $\alpha = 0.05$  and  $1 - \beta = 0.80$ , as these are extensively used in behavioral research (Cohen, 1988).

In our analysis, we perform several multiple linear regressions. Through our analysis, the most independent variables we use are 13. Using G\*power and applying the sample size of 1022, we calculate that with an effect size of  $f^2 = 0.02$ , we find that we obtain a power of  $1 - \beta = 0.86$ , which exceeds the power level of  $1 - \beta = 0.80$ . This indicates that with our sample size, we would be able to detect even small effects through our regressions.

### **3.2.2 Collection of Data**

The experiment was conducted online, using Norstat, a Norwegian data collection agency. Using their online platform, we sought to present the spectators in our experiment with real-life scenarios requiring them to make a decision. In the following subsections, we will first discuss important benefits and disadvantages of online experiments. Secondly, we will present Norstat, and how they conduct their data collection, before we present the final sample.

#### Online experiments

Compared to classical lab experiments, the literature highlights several advantages of online experiments. Firstly, online experimentation gives easier access to large samples, as well as simplifying the process of making these samples culturally and demographically diverse (Reips, 2000). This is very useful to reach a more representative sample of the societal population when conducting experiments, as well as scaling the experiment if a larger sample is needed. Moreover, online experiments help streamline data collection and survey customization, through automation (Kraut, et al., 2003). This can enhance the efficiency of various aspects of an experiment, such as the random allocation of participants to different

treatments or the automated collection of data. Compared to doing these processes manually, their automation reduces both time and likelihood of error. Reips (2000) also highlights how performing experiments online contribute to reducing costs, due to the decreased need of person-hours, lab space and equipment. Another benefit of conduction online experiments can also be the reduction of demand effects (Dandurand, Shultz, & Onishi, 2008). These are changes in behaviour for participants due to what they perceive to be the purpose of the experiment, leading to distorted results. Online experiments can help mitigate some of these demand effects, by not having researchers present, for example. Lastly, online experimentation allows for the participants to partake in the experiment remotely from their own home, which can increase their comfort (Salgado & Moscoso, 2003).

There are, however, also some disadvantages of online experimentation. Despite online data collection giving researchers more control in some areas, conducting an experiment online makes it more difficult to ensure uniform environments for all participants (Kraut, et al., 2003). Dandurand, Shultz & Onishi (2008) also underline this, and state that by asking participants to partake in the study in a certain type of environment can mitigate this risk. Another drawback of using online experimentation is that it can lead to biases in the final sample due to self-selection (Reips, 2002). This can occur due to only motivated and interested individuals participating, and research shows that online experiments having higher dropout rates than lab experiments (O'Neil, Penrod, & Bornstein, 2003). Different ways to tackle these challenges are pilot-testing (Michalak & Szabo, 1998) and also using warm up tasks before assigning participants to different groups (Reips, 2000).

### Norstat

Our data was collected through the Norwegian data collecting agency Norstat. The organization is recognized as the leading independent European institution for data collection in market research (Norstatpanel, n.d.). Norstat has access to more than 3 000 000 participants in 19 European countries. The core of the agency's data collection are their consumer panels, where they gather data through online from their participants. Our experiment involved moderately complex information, making it essential for spectators to fully comprehend the material to ensure the reliability of the final data collection. Hence, Norstat conducted an Ad-Hoc survey for our experiment, which was considered to be a more fitting method than their weekly survey "Omnibus", that contains simpler questions, requiring less engagement from the participants (Norstat, n.d). The survey was sent out to a representative sample of Norstat's Norwegian panel members between the ages 18 and 99. In order to secure samples

representative of the population, Norstat hand-picks their panel members. Participation in the surveys is voluntary and incentivized through rewards such as coupons, gift cards, or donations to various charities (Norstatpanel, n.d.).

### Sample

Our study included a total sample of 1,022 individuals acting as spectators, with plans for 40 additional participants to take part in public goods games, which will be divided across ten games at a later stage. Norstat recruited the spectators on our behalf, whereas we conducted and found players for the public goods game ourselves. The 1022 participants from the Norwegian Norstat panel made up a representative sample of Norwegians between 18 and 99 years old. The sample was also selected based also of several other background characteristics. Despite our sample only being representative for the Norwegian population, our experiment is easily replicated and can be used to study other nationalities as well. The sample from Norstat was randomly split evenly into one of two treatments; windfall or earned. Furthermore, out of the 511 spectators in the windfall treatment, 257 randomly presented with the belief alternatives in sinking order, and 254 were shown the alternatives in a rising order. For the earned treatment, the amount of spectators presented with the belief alternatives in the two different orders were 255 and 256, respectively. Since these allocations were done randomly, this ensured a diverse demographic distribution of the spectators across the different groups. The regressions below indicate that there are no statistically significant differences between the earned and windfall treatments in terms of the background characteristics of our sample.

Table 1: Background Characteristics by Treatment

	Total sample	Treatment group		Difference	P-value
		Earned	Windfall		
High age	0.460	0.440	0.479	-0.039	0.210
Female	0.497	0.501	0.493	0.008	0.803
High education	0.591	0.597	0.585	0.012	0.703
High income	0.455	0.474	0.436	0.037	0.233
Right wing	0.323	0.329	0.317	0.012	0.688

Table 1 - The table displays the fractions of spectators possessing the specific background characteristics in the total sample, as well as across the two treatments, *Earned* and *Windfall*. In the last two columns, the difference between the two treatments, along with p-values derived from two sample t-tests between *Earned* and *Windfall* are displayed. The P-value shows the statistical significance of the differences. *High age* is an indicator for being between 50 and 99 years old. *Female* indicates spectators being an adult female. *High education* is an indicator for having completed at least a bachelor's degree. *High income* is an indicator for living in a household where household income after tax is above the Norwegian median, calculated using SSB (2023)<sup>1</sup>. *Right-wing* is an indicator for whether the respondent reports that they would vote for one of the Norwegian right-wing parties.<sup>2</sup>

We conducted the same type of analysis to examine potential differences between the sinking and risking groups (see Appendix A.8) and found no significant differences at conventional levels.

After finalizing the design of our study, Norstat conducted the experiment. Since the spectators were asked to make decisions regarding the public goods games in advance, the public goods games are carried out subsequently to the spectator phase. After having submitted our final design, Norstat sent out a test link to 159 participants, to ensure that the survey worked as intended. The 20 first spectators who responded to the test link were mistakenly put into both

<sup>1</sup> Household income after tax was calculated using the median after-tax income in 2022, adjusted for a tax rate of 22% to reflect the median income before tax.

<sup>2</sup> Norwegian right-wing parties include: Fremskrittspartiet, Høyre, Demokratene, Konservativt (formerly known as Partiet De Kristne) and Liberalistene.

the sinking and rising treatment. These were removed from the final sample, to ensure no inclusion of invalid data. After the technical issues were resolved, the survey was sent out to the remaining respondents (see Appendix A.1) One week later, we received the final data from Norstat based on our total sample of 1022, along with the descriptive results (see Appendix A.2). In order to ensure that the spectators were engaged in the survey, we included a simple question prior to the other tasks as an attention check. None of the participants failed this test.



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## 4. Empirical Strategy

In this section, we outline the empirical strategy employed in the main analysis of the experiment, focusing on the third-party inventions in the spectator phase.

We begin with a linear regression model to estimate effects of several factors on the probability of intervention. In this section, we study the effect of *Earned*<sup>3</sup> on *Intervention*, while controlling for all background variables. This regression is displayed in equation (I).

(I)

$$\begin{aligned} Intervention_i = & \beta_0 + \beta_1 Earned_i + \beta_2 High\ age_i + \beta_3 Female_i + \beta_4 High\ education_i + \beta_5 High\ income_i \\ & + \beta_6 Right\ wing_i + \epsilon_i \end{aligned}$$

We conduct five additional multiple linear regressions, each including one of the background variables (*High age*, *Female*, *High education*, *High income*, and *Right-Wing*) as a separate covariate, alongside *Earned*.

These regressions provide a baseline understanding of the main effects of treatment and the background variables, before considering any interaction effects.

Next, we examine whether the effect of treatment on intervention varies across subgroups, including gender, political affiliation, income, and education. We achieve this through an empirical specification that includes interaction terms, as shown in equation (II) (illustrated with *High age*).

(II)

$$Intervention_i = \beta_0 + \beta_1 High\ age_i + \beta_2 (High\ age \times Earned)_i + \epsilon_i$$

Here,  $\beta_2 (High\ age \times Earned)$  represents the interaction variable between age and treatment, capturing any differential effect of treatment by gender.

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<sup>3</sup> *Earned* is an indicator for being in the earned treatment.

Furthermore, we examine the correlation between background variables and beliefs about contributions, where belief ranges from zero to four, representing the believed number of contributions in the public goods game. This is shown in equation (III).

(III)

$$Belief_i = \beta_0 + \beta_1 High\ age_i + \beta_2 Female_i + \beta_3 High\ education_i + \beta_4 High\ income_i + \beta_5 Right\ wing_i + \epsilon_i$$

We conduct this test for both the controlled effects and the individual raw effects of the different background variables on beliefs.

Next, we examine the effects of beliefs on the probability of intervention, using intervention as the dependent variable. Beliefs, which range from 0 to 4 (where 0 indicates no contributions and 4 indicates all four players contributing), are transformed into categorical dummy variables to assess nonlinear effects. Additionally, we include a variable representing the linearization of beliefs as a robustness check. Both specific levels of beliefs and linearized<sup>4</sup> beliefs are analyzed using models with and without control variables, as shown in equations (IV) and (V).

(IV)

$$Intervention_i = \beta_0 + \beta_1 1\ contribution_i + \beta_2 2\ contributions_i + \beta_3 3\ contributions_i + \beta_4 4\ contributions_i + gX_i + \epsilon_i$$

(V)

$$Intervention_i = \beta_0 + \beta_1 Belief(Linear)_i + gX_i + \epsilon_i$$

$X_i$  is a vector of control variables, including age, gender, political inclination, income, and education.

To further evaluate whether treatment effects differ based on beliefs, interaction terms are incorporated following the structure of equation 3. These interactions capture the differential impact of treatment by beliefs. The regressions are showed in equation (VI) and (VII), including background variables as controls. We also conduct the regressions without control variables.

---

<sup>4</sup> Beliefs are linearized by creating a new variable, noted *Belief(Linear)*, ranging from 0 to 1.

(VI)

$$\begin{aligned}
Intervention_i &= \beta_0 + \beta_1 1 \text{ contribution}_i + \beta_2 (1 \text{ contribution} \times Earned)_i \\
&+ \beta_3 2 \text{ contributions}_i + \beta_4 (2 \text{ contributions} \times Earned)_i \\
&+ \beta_5 3 \text{ contributions}_i + \beta_6 (3 \text{ contributions} \times Earned)_i + \beta_7 4 \text{ contributions}_i \\
&+ \beta_8 (4 \text{ contributions} \times Earned)_i + gX_i + \epsilon_i
\end{aligned}$$

(VII)

$$Intervention_i = \beta_0 + \beta_1 Belief(Linear)_i + \beta_2 (Belief(Linear) \times Earned)_i + gX_i + \epsilon_i$$

Lastly, we analyze the correlation between *intervention* and *Belief(Linear)* in the experiment with spectators' opinions about public goods taxation. We examine both *Public goods opinions* using the 5-point Likert scale, and a binary variable, *Public Goods opinion (Agree)*, indicating whether a spectator agrees or strongly agrees to government taxation of public goods. The results are also controlled for political affiliation, along with the broader set of control variables. This analysis examines the correlation between the general findings of the experiment and attitudes toward a real-life scenario. The regression is shown in equation (VIII).

(VIII)

$$Public\ Goods\ opinion_i = \beta_0 + \beta_1 Intervention_i + \beta_2 Belief(Linear)_i + \beta_3 Right\ wing_i + gX_i + \epsilon_i$$

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## 5. Results and Analysis

This chapter presents the results of our experiment, organized into two main parts. The first part analyzes the behavior of spectators within the experimental framework, focusing on the variables influencing their decisions to intervene, including their background characteristics and beliefs about others. The second part analyzes spectators' attitudes toward a real-life scenario—specifically the taxation of Norwegian citizens to fund public goods—to assess whether the attitudes observed in the experiment translate to real-world contexts. Each section is further divided into two subchapters: the first provides descriptive statistics, while the second presents the main analysis.

### 5.1 Variables Influencing Spectators' Decisions to Intervene

#### 5.1.1 Descriptive Statistics

Figure 1 displays the share of spectator interventions in the two treatment groups.

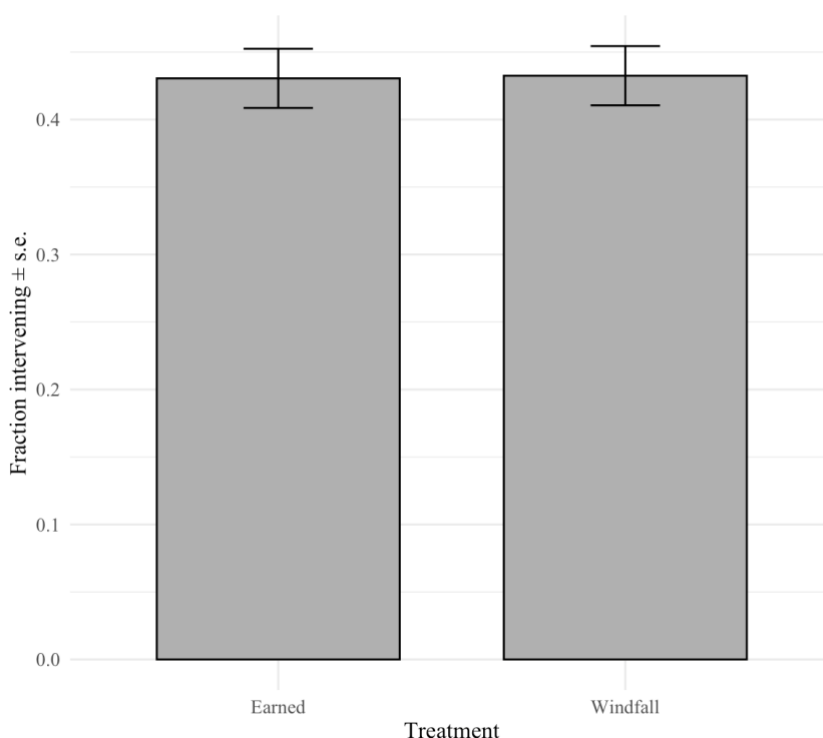


Figure 2 -The figure shows a bar chart displaying the intervention rates in the two treatments; windfall and earned. Spectators were split evenly between the two treatments. Standard errors are shown at the top of each bar.

In the earned treatment, 43% of spectators chose to intervene, while in the windfall treatment, the intervention rate was identical, with 43% of spectators choosing to intervene as well. In both treatments, the majority (57%) of spectators did not intervene, which was consistent across the treatments and the overall sample. These results indicate that treatment allocation did not affect whether or not spectators intervened. This will be further discussed in the main analysis.

In Figure 3, the fractions of our total sample with different beliefs are displayed.

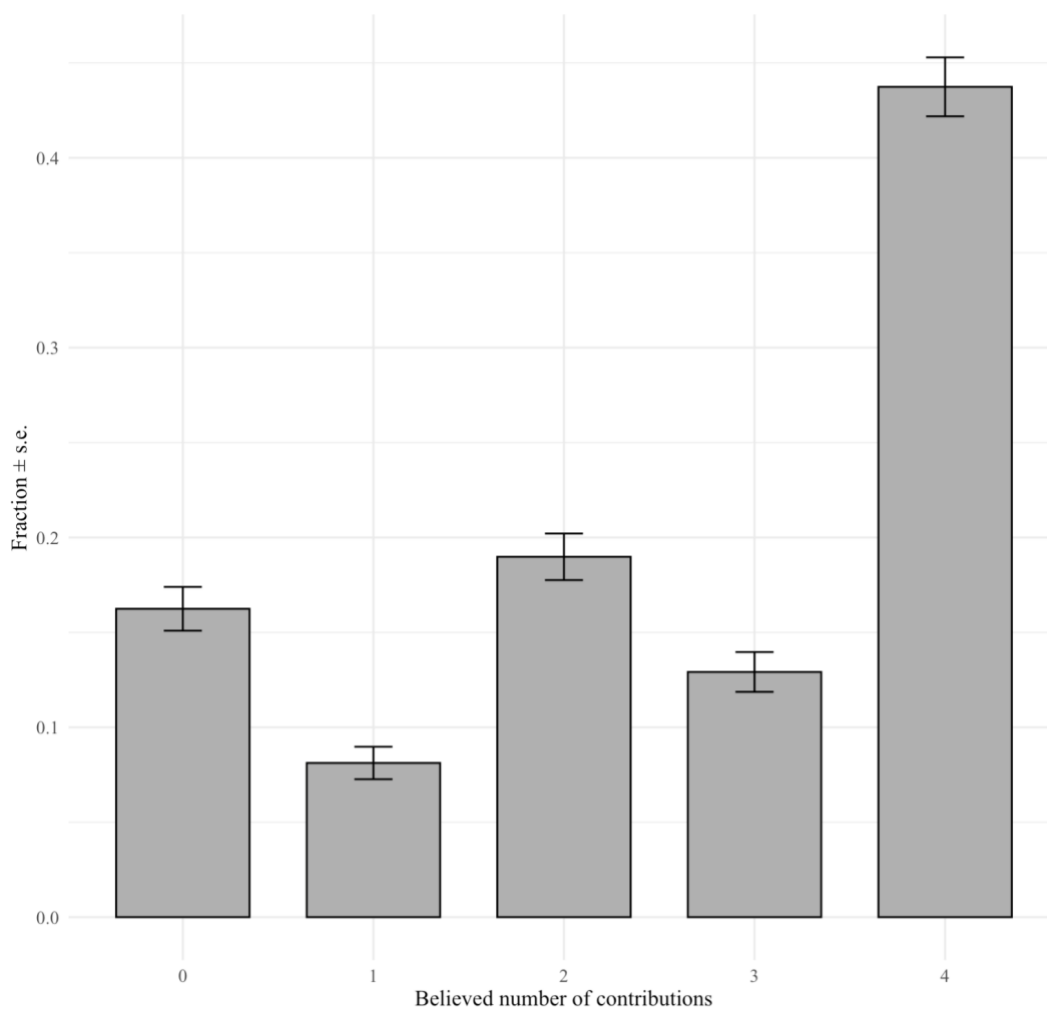


Figure 3 – The figure shows a bar chart, displaying the fraction of the spectators holding different beliefs, ranging from zero to five, as shown with the labels on the x-axis. Standard errors are shown at the top of each bar.

From the chart, we observe that the most common belief among spectators is that all four players in the public goods game will contribute, with 44% of spectators holding this view. The second-largest group consists of those who believe that two players will contribute,

accounting for 19% of spectators. Meanwhile, 16% of spectators believe that none of the players will contribute, and 13% expect three players to contribute. The smallest group is those who believe only one player will contribute, with 8% reporting this belief. As belief distribution is skewed towards the right, this indicates that people generally hold optimistic assumptions about players' contributions. This will be further discussed in the analysis section.

Figure 4 displays the fraction of spectators intervening across the different belief groups.

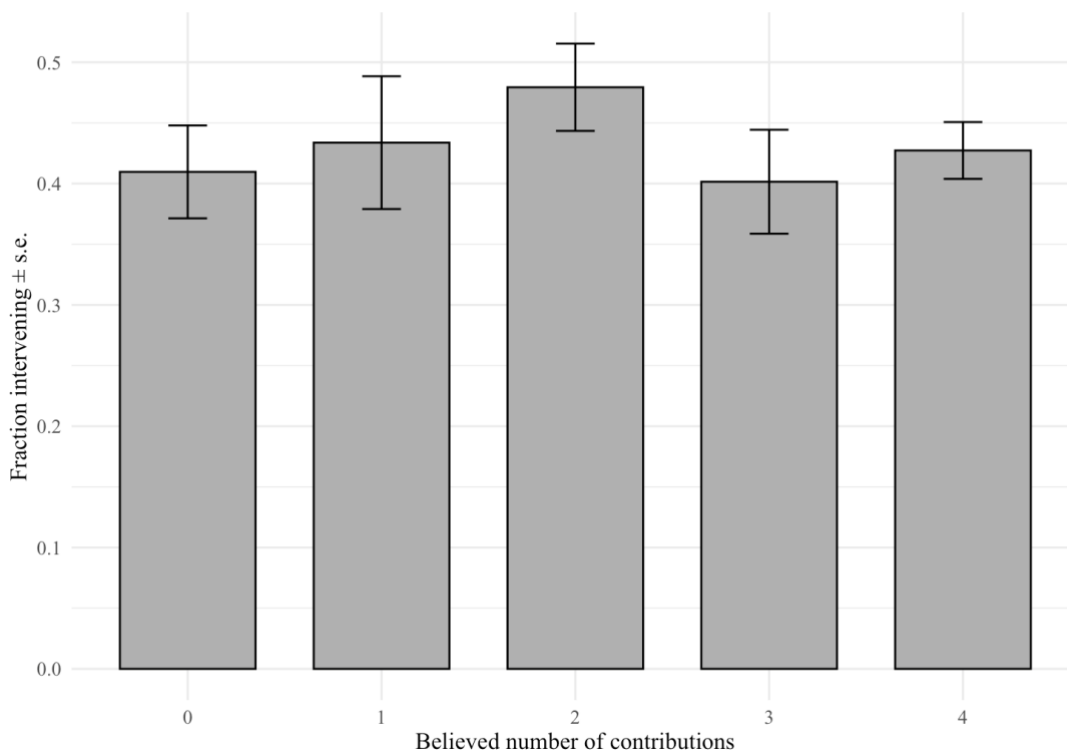


Figure 4 - The figure shows bar charts displaying the intervention rates in groups with different beliefs. The number below each bar indicates spectators' believed number of contributions by the players in the public goods games. Standard errors are shown at the top of each bar.

Spectators who believed two out of four players would contribute in the public goods game had the highest intervention rate, with 48% intervening. In the groups where people held beliefs of one and four contributions, the intervention rate was 43%. Meanwhile, 41% of those who believed no players would contribute chose to intervene, whereas 40% of those who believed all four players would contribute decided to intervene. However, the standard error bars overlap among the intervention rates across belief groups, indicating that the observed differences are not statistically significant. This finding will be further discussed in the analysis section.

## 5.1.2 Main Analysis

### Effects of background characteristics

Table 2 presents regression results with *intervention* as dependent variable, with *Earned* included as an independent variable across all models. Models (2)-(6) each study one of the background variables alongside *Earned*, following the main empirical specifications outlined in Chapter 4. In model (7), all variables are included simultaneously.

Table 2: Intervention as dependent variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Earned	-0.002 (0.031)	-0.004 (0.031)	-0.002 (0.031)	-0.002 (0.031)	-0.004 (0.031)	-0.001 (0.031)	-0.005 (0.031)
High age		-0.051 (0.031)					-0.044 (0.031)
Female			0.015 (0.031)				0.007 (0.031)
High education				0.026 (0.032)			0.009 (0.032)
High income					0.057* (0.031)		0.065** (0.032)
Right-wing						-0.091*** (0.033)	-0.092*** (0.034)
Constant	0.432*** (0.022)	0.457*** (0.027)	0.425*** (0.027)	0.417*** (0.029)	0.408*** (0.026)	0.461*** (0.024)	0.446*** (0.039)
Observations	1022	1022	1022	1022	1022	1022	1022
$R^2$	0.000	0.003	0.000	0.001	0.003	0.007	0.014

Table 2- The table shows OLS regressions. The dependent variable for all models (1)-(7) is an indicator for whether a spectator chooses to intervene. *Earned* is an indicator for whether spectators were allocated to the earned treatment, and is included as an independent variable in all regressions (1)-(7) In models (2)–(6), each control variable is added individually. These controls are based on the background variables (*High age*, *Female*, *High education*, *High income*, and *Right-wing*). In model (7), all background variables are included as controls. Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10p$ , \*\*  $p < 0.05p$ , \*\*\*  $p < 0.01p$ .

**Result 1 – A majority of spectators did not intervene, indicating a moral preference for prioritizing freedom over enforcing equality and efficiency. Whether the players' resources are earned or received as a windfall does not significantly impact the likelihood of paternalistic intervention by the spectators.**

Table 2 shows that a majority of our sample chose to refrain from intervention, with people in the windfall group on average having a 43,2 % likelihood of intervention in the public goods game (model (1)). As seen from the coefficient of *Earned* in model (1), being in the earned treatment decreases the likelihood of intervening by 0,2 percentage points. However, this effect is not statistically significant.

Treatment not having a statistically significant effect on intervention also holds true when controlling for the different background variables. The coefficients for *Earned* across models (1)-(7) are consistently near zero, ranging from  $-0.001$  to  $-0.005$ , with no coefficients being statistically significant. This implies that being in the earned treatment does not significantly change the predicted outcome compared to the baseline windfall treatment group. The result remains consistent when examining heterogeneous treatment effects, as shown when addressing interaction effects (see Appendix A.4).

Ultimately, we find that 43% of our total sample of 1,022 spectators chose to intervene in the public goods game, indicating that the majority (57%) of spectators preferred prioritizing freedom over enforcing equality and/or efficiency. Furthermore, we observe that whether players' resources are earned or received as a windfall does not significantly affect the likelihood of spectators choosing to intervene. This suggest that they do not find the source of endowment as morally relevant when making their decision.

Regarding the 43% of our total sample of 1,022 spectators who chose to intervene, their motivations for doing so may differ. Some might be utilitarians primarily driven by efficiency gains, while others may be more focused on ensuring fairness and equality among players by ensuring that all players receive an equal amount of money.

On the other hand, the 57% of spectators who did not decide to intervene might have refrained from doing so due to libertarian views, as this preserves the freedom of the players in the public goods game. Alternatively, equality might have played a role; if they believed no one or everyone would contribute, not intervening would still preserve equal payouts.

**Result 2 – Individuals with right-wing political inclinations are less likely to act paternalistically (intervene) compared to individuals with left-wing political inclinations, while high-income individuals are more likely to act paternalistically (intervene) compared to low-income individuals. Age, gender and education are not statistically significantly correlated with spectators' paternalistic intervention behavior**



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The effect of right-wing political inclinations on spectators' willingness to act paternalistically is examined in model (6) and (7).

In model (6), *Right-wing* is the only explanatory variable in addition to *Earned*. In model (7), the other background variables are added as controls. When including controls the coefficient for *Right-wing* decreases from  $-0.091$  to  $-0.092$  and is still statistically significant at the  $p < 0.01$  level. This means that individuals with right-wing political inclinations, on average, are 9.2 percentage points less likely to intervene than the reference group when controlling for the other background variables. Subtracting 9.2 percentage points from the baseline of 44.6% for intervention in the reference group results in an expected outcome of 35.4% intervention for individuals with right-wing political inclinations.

These findings suggest that individuals with right-wing political inclinations have a clear preference for prioritizing freedom over equality and/or efficiency in moral decisions. This aligns with standard assumptions regarding libertarian characteristics of right-wing ideologies. While it is possible to ensure a fair and socially optimal outcome by intervening, libertarians value the freedom of choice higher than the common good, if the common good is obtained through coercion.

The effect of *High income* on spectators' likelihood of intervening is examined in models (5) and (7).

In model (5), *High Income* is the only explanatory variable in addition to treatment, and the coefficient of 0.057 is not statistically significant at a conventional level. In model (7), additional control variables are included. The coefficient for *High Income* increases slightly from 0.057 to 0.065 and is now statistically significant at conventional levels ( $p < 0.05$ ). This indicates that, on average, high-income individuals have a 6.5 percentage point higher probability of intervention compared to those with lower income, when controlling for the other background variables. Adding 6.5 percentage points to the baseline probability of 44.6% for intervention in the reference group results in an intervention probability of 51.1% for high-income individuals.

These findings suggest that high-income individuals have a slight preference for prioritizing equality and/or efficiency over freedom in moral decisions. Because *Earned* itself has no significant effect, high-income individuals in the earned treatment group behave similarly to those in the windfall treatment group.

It is important to note that the 6.5 percentage point higher probability of intervention is modest, and the predicted intervention rate is just slightly above 50%. This means that nearly 50% of high-income individuals are still likely to choose not to intervene.

The coefficient for *High Age*, *Female* and *High education*, in model (2), (3) and (4) respectively, are not significant at conventional levels. This also holds true in model (7), when controlling for all variables. This suggests that, overall, age, gender, and education are not correlated with spectators' paternalistic intervention behavior.

#### Effects of Beliefs

While the alternatives for belief were presented to spectators in different orders depending on their assigned group (rising or sinking), this was implemented only as a robustness measure. It had no significant effect on beliefs at conventional levels (see Appendix A.5). Therefore, it will be excluded from further analysis. Likewise, treatment – whether earned or windfall – did not significantly affect the beliefs of spectators (see Appendix A.6), and will also be excluded from further analysis.

#### **Result 5 - A majority of spectators hold optimistic assumptions about players' contributions in the public goods game.**

The overall finding from figure 2 is that the belief distribution is skewed toward more optimistic assumptions about players' contributions, with 57% believing that three or more players will contribute. Given that the dominant strategy in the public goods game is to contribute nothing according to standard economic theory, this optimism is somewhat unexpected. This could indicate that the spectators may not have fully understood the rules and tactics of the game, or it could reflect cultural factors, such as high levels of optimism and trust.

In order to see which factors influence the spectators' beliefs, the effect of demographic and ideological factors on belief was analyzed using regression. In Table 3, the results of the analysis are presented in model (1)-(5), with each variable tested separately for its effect on beliefs, according to the main empirical specifications explained in chapter 4. In model (6), all variables are included in the same regression to account for their joint influence.

Table 3: Belief as dependent variable

	(1)	(2)	(3)	(4)	(5)	(6)
High income	0.154 (0.094)					0.152 (0.097)
Female		0.025 (0.094)				0.034 (0.096)
High education			0.129 (0.095)			0.075 (0.098)
High age				0.173* (0.094)		0.176* (0.095)
Right-wing					-0.091 (0.100)	-0.110 (0.103)
Constant	2.528*** (0.064)	2.586*** (0.066)	2.522*** (0.073)	2.518*** (0.064)	2.627*** (0.057)	2.422*** (0.109)
Observations	1022	1022	1022	1022	1022	1022
$R^2$	0.003	0.000	0.002	0.003	0.001	0.008

Table 3 - The table shows OLS regressions. The dependent variable across all models (1)-(6) is an indicator for the number of players a spectator believed would contribute in the public goods game. In models (1)–(5), each of the background variables (*High age*, *Female*, *High education*, *High income*, and *Right-wing*) are used as independent variables. In model (6), we control for all background variables simultaneously. Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10p$ , \*\*  $p < 0.05p$ , \*\*\*  $p < 0.01p$ .

**Result 6 – The demographic factors gender, age, education, income and political affiliation, are not significantly correlated with spectators' beliefs about player contributions.**

When examining the impact of demographic variables on *Belief*, none of the background variables—age, gender, education, income or political affiliation—demonstrate statistically significant effects at the conventional  $p < 0.05$  level.

The coefficient for *High age* is 0.173 and is statistically significant at the  $p < 0.10$  level. When controlling for all other background variables, the coefficient for *High age* increases slightly to 0.173 and remains statistically significant at the  $p < 0.10$  level. Although this result is not

statistically significant at the conventional level of  $p < 0.05$ , it is notable that the effect of age is somewhat more pronounced than other variables. This suggests a modest trend toward older spectators holding slightly more optimistic beliefs about players' and their behavior. However, age is not a strong predictor overall.

The coefficient for *Female*, *High education*, *High income* and *Right-wing*, in model (2), (3) (4) and (5) respectively, are not significant at conventional levels. The coefficients are also statistically insignificant as shown in model (6), when controlling for all variables. This indicates that gender, education, income and political affiliation are not correlated with spectators' paternalistic intervention behavior.

The constants range from 2.422 to 2.627 across all models. These findings suggest that a general optimism is shared across the sample, regardless of demographic or ideological factors. As previously mentioned, this could suggest that spectators did not fully comprehend the tactics and rules of the games, or it could point to potential cultural factors, like high optimism and trust levels.

To examine whether beliefs correlate with intervention behavior, Table 4 presents regression models analyzing the effect of beliefs on intervention. The analysis includes beliefs categorized into dummy variables to capture potential threshold effects, as well as using a linearization of beliefs. Each model is presented both with and without the inclusion of the set of control variables.

Table 4: Intervention as dependent variable

	(1)	(2)	(3)	(4)
1 contribution	0.024 (0.067)	0.000 (0.067)		
2 contributions	0.070 (0.052)	0.048 (0.053)		
3 contributions	-0.008 (0.058)	-0.035 (0.058)		
4 contributions	0.018 (0.045)	0.006 (0.045)		
Belief (Linear)			-0.001 (0.041)	-0.006 (0.041)
Constant	0.410*** (0.038)	0.435*** (0.052)	0.432*** (0.031)	0.447*** (0.044)
Controls	No	Yes	No	Yes
Observations	1022	1022	1022	1022
$R^2$	0.003	0.016	0.000	0.014

Table 4 - The table presents the results of OLS regressions. In all models (1)–(4), the dependent variable is an indicator for whether a spectator chooses to intervene. Models (1) and (2) display the coefficients for different spectator beliefs about contributions in the public goods game, relative to the reference group of zero-contribution beliefs. In models (3)–(4), we use a linearization of the belief variable. In models (2) and (4), we control for the different background variables (*High age*, *Female*, *High income*, *High education* and *Right-wing*). Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Result 7 - Spectators' belief about contributions does not significantly correlate with paternalistic intervention behavior.**

The reference group in models (1)–(4) represent individuals who believe that zero players will contribute to the public goods game. Across the regression models, the constants range from 0.410 to 0.447, indicating that spectators with this belief have a likelihood of intervention between 41% and 44.7%, depending on the model. The regression analysis reveals that spectator beliefs, relative to the reference group, do not significantly predict the likelihood of intervention behavior, as all coefficients are statistically insignificant. This holds true for the models where we look at specific belief levels, as well as when we linearize beliefs. Additionally, the effects of belief are insignificant when controlling for all background variables.

Although treatment does not significantly affect beliefs, treatment might still have a moderating effect on the relationship between beliefs and the decision to intervene. According to the *house money effect*, individuals are often more generous when dealing with windfall money. Therefore, it could be reasonable to assume that the earned/windfall treatment could influence beliefs as spectators might perceive players with earned money as less likely to contribute generously compared to those with windfall money. However, regression analyses including interaction terms reveal no significant effect on the relationship between spectators' beliefs about the players' actions and their decision to intervene (see Appendix A.9).

It is somewhat surprising that spectators who believe everyone will contribute, and those who believe nobody will contribute, do not exhibit significantly higher or lower likelihoods of intervention. It is natural to assume that the most optimistic spectators, who believe all players will contribute, would be less likely to intervene because they would trust players to act in the best interest of the group without external interference. Likewise, it is natural to assume that the pessimistic spectators, those who assume that players are likely to freeride, would be more likely to intervene to ensure efficiency.

One possible explanation for why optimistic spectators, who believe everyone will contribute, still choose to intervene is that they may perceive intervention as a low-stakes or even supportive action. These spectators might see their action as upholding the majority's wishes, ensuring that the few who might go against the majority by attempting to freeride are held accountable. In this way, intervention is not viewed as an imposition but rather as a way to uphold social norms, ensuring fairness.

On the other hand, pessimistic spectators who believe that nobody will contribute but still choose not to intervene may prioritize values like freedom over efficiency and fairness. These individuals might think that intervention infringes too much on the players' freedom, even if that freedom potentially leads to selfish outcomes. Another possible explanation is that these spectators might want to penalize players for acting selfishly. If they assume that all players will choose not to contribute, they might believe that the resulting failure of the public goods is deserved.

Future research could explore how contextual factors and specific moral motivations—such as fairness, efficiency, and freedom—further influence the relation between beliefs and intervention decisions.

## 5.2 Spectators' Policy Attitudes

### 5.2.1 Descriptive Statistics

Figure 5 shows the results from the question regarding policy attitudes, where spectators responded to what degree they agreed to government taxation of public goods.

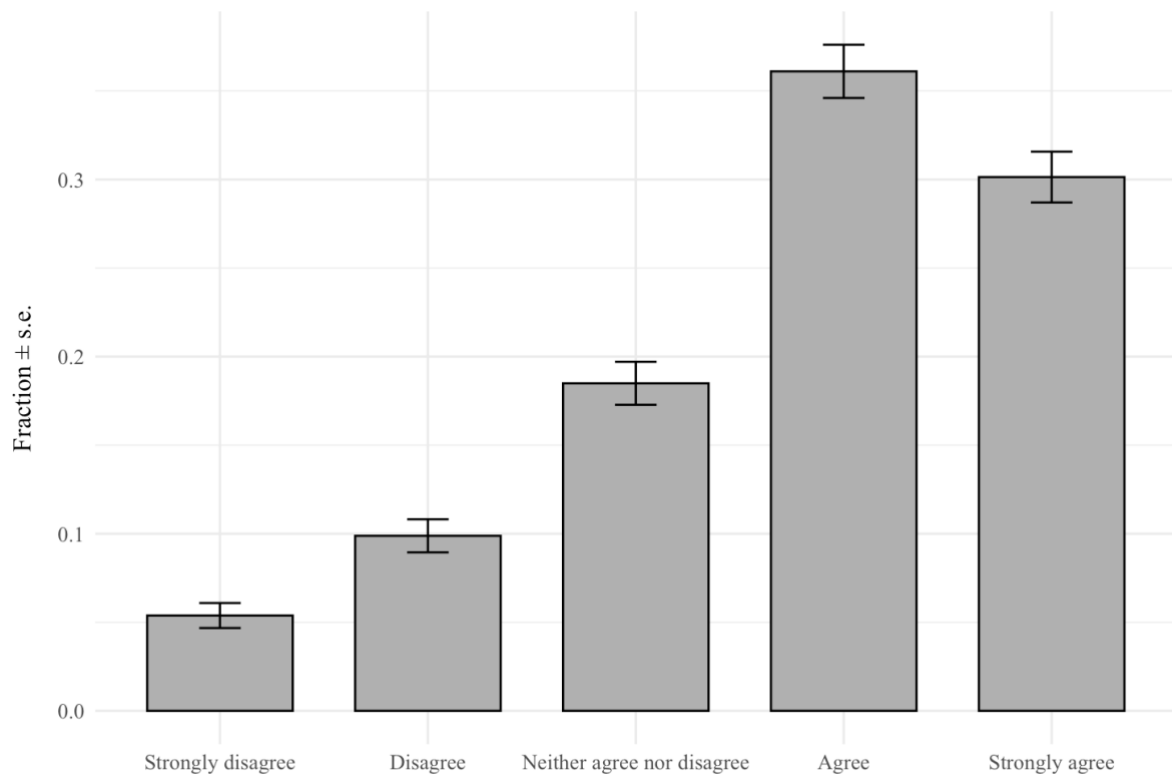


Figure 5 - The bar chart illustrates the distribution of the sample's responses to a 5-point Likert scale regarding their agreement with government taxation for public goods. The percentages of spectators answering the different alternatives are displayed with the height of each bar, with responses ranging from "Strongly Disagree" to "Strongly Agree". Standard errors are shown at the top of each bar.

The histogram exhibits a right-skewed distribution, with more than half of spectators agreeing to the statement presented to them in the survey. 30,1% of the spectators strongly agree with government taxing public goods, while 36,1% agree to the same statement. Conversely, only 5,4% strongly disagree, whereas 9,9% disagree to government taxation on the matter. 18,5% neither agree nor disagree with the statement.

Ultimately, our sample shows a strong preference for government taxation of public goods, with 66.2% agreeing or strongly agreeing, compared to 15.3% who disagree or strongly

disagree. These results reflect clear support for public goods taxation. The strong emphasis on the welfare state in Norway likely underpins these findings, reflecting the societal importance placed on collective welfare and shared responsibility. In the next section, we will further explore these views on public goods.

## 5.2.2 Main Analysis

### *Correlation with intervention and belief*

In table 5, we examine how spectators' opinions on public goods are correlated with their beliefs on how many people will contribute to the public goods game, as well as their likelihood of intervention. The dependent variable is the spectators' opinion about public goods, ranging from 1 to 5, depending on their answer in the survey.

Table 5: Public goods opinion as dependent variable

	(1)	(2)	(3)	(4)	(5)
Intervention	0.439*** (0.071)		0.439*** (0.071)	0.385*** (0.068)	0.381*** (0.067)
Belief (Linear)		0.327*** (0.095)	0.328*** (0.093)	0.304*** (0.090)	0.273*** (0.088)
Constant	3.568*** (0.047)	3.545*** (0.071)	3.355*** (0.076)	3.607*** (0.078)	3.297*** (0.098)
Controls	No	No	No	Right-wing	Yes
Observations	1022	1022	1022	1022	1022
$R^2$	0.036	0.012	0.048	0.120	0.164

Table 5 - The table shows OLS regressions. In all models (1)-(5), the dependent variable is the spectator's *Public goods opinion* regarding taxation, measured on a 5-point Likert scale. *Intervention* is an indicator for spectator intervention in the public goods game. *Belief (Linear)* is an indicator for believing all four players will contribute in the public goods game. In model (4), we control for *Right-wing*, and in model (5), we also control for all



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remaining background variables (*High age, Female, High education and High income*). Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10p$ , \*\*  $p < 0.05p$ , \*\*\*  $p < 0.01p$ .

**Result 9 – Both intervention and higher beliefs about players’ contribution have strong positive correlations with spectators’ support for government taxation of public goods.**

From model (1), we observe that *Intervention* is positively correlated with *Public Goods Opinion*, as indicated by the coefficient of 0.439, which is statistically significant at the  $p < 0.01$  level. This suggests that, relative to the reference group—those who did not intervene—intervention in the public goods game is associated with a 0.439-point increase on the 5-point Likert scale related to opinions about public goods taxation. This correlation remains at the same magnitude and statistical significance when controlling for *Belief(Linear)* in model (3), but decreases to 0.385 when controlling for *Right-wing* in model (4), while still remaining statistically significant at the  $p < 0.01$  level. In model (5), where all variables are controlled for, the coefficient for *Intervention* decreases further to 0.381 but retains statistical significance at the  $p < 0.01$  level.

*Intervention* consistently exhibits a positive and significant correlation with *Public Goods Opinion* across all models. While the strength of this correlation diminishes slightly when controlling for political affiliation and other demographic factors, it remains robust. These regressions suggest that intervention in the experiment is meaningfully related to greater support for real life government taxation of public goods.

Several explanations could account for these results. Since intervention is associated with support for government taxation of public goods, this suggests that individuals who view intervention as necessary to ensure effectiveness and fairness in the public goods game may hold similar attitudes in real-life contexts. These individuals might see government taxation as essential for securing contributions to public goods.

Another explanation could be cognitive alignment, where spectators adjust their opinions about taxation to align with their actions during the experiment. Intervention, as an enforcement mechanism for efficiency and fairness, might prime spectators to express more support for public goods taxation.

It is important to note that the baseline support for government taxation, indicated by the constants, remains above the mid-level of 3 for all models (1)-(5). This indicates that even among spectators who did not intervene, there is a general tendency to support public goods

taxation. This baseline support could stem from cultural predispositions, as collective contributions are central to maintaining the functioning of Norway's welfare state. Such cultural factors may underpin a strong normative support of public goods taxation.

The fact that the coefficient of intervention decreases when controlling for political affiliation highlights the importance of political ideology in shaping opinions about taxation. Political beliefs appear to moderate *intervention's* correlation with *Public goods opinion*, as spectators' ideological alignment plays a dominant role in explaining opinions regarding such questions. This is further supported by the increase in the baseline coefficient after controlling for political affiliation, indicating that political ideology strongly influences attitudes toward public goods taxation.

While *Intervention* continues to exhibit a positive and statistically significant correlation with support for *Public goods opinion*, demographic factors also play a role, as shown by the slight decline in intervention's coefficient on the dependent variable when these controls are added.

These results, which indicate that the intervention behavior in the experiment strongly correlates with spectators' opinions on a real-life taxation case, strengthens the external validity of our findings.

In model (2), *Belief (Linear)* has a coefficient of 0.327, being statistically significant at  $p < 0.01$ . This means that a one-unit increase in *Belief (Linear)*, is associated with an increase of 0.327 on the 5-point Likert scale for *Public goods opinions*. The constant, with a coefficient of 3.545, represents the baseline, suggesting that individuals who believe no players will contribute to the public goods game still, on average, support government taxation for public goods. This baseline coefficient is closer to "Agree" than to the neutral position on the scale.

In model (3), the effect remains strong (0.328) and statistically significant when controlling for *Intervention*. In model (4), when controlling for *Right-wing*, the coefficient decreases slightly to 0.304, still significant at  $p < 0.01$ . In model (5), after controlling for all variables, the coefficient for *Belief (Linear)* decreases further to 0.273, but it remains statistically significant at  $p < 0.01$ .

In conclusion, across all models, higher beliefs of spectators have a positive and statistically significant correlation with their support for government taxation of public goods, underscoring a robust relationship between beliefs and opinions on public goods.

Multiple potential factors can explain these results. A belief that others will contribute to the common good can enhance overall trust in societal systems, leading individuals to be more supportive of taxation. This belief may reflect a broader optimism about the effectiveness of collective action, which is essential for societies to successfully provide public goods. Additionally, the perception that others are contributing can strengthen individuals' sense of reciprocity, fostering a stronger sense of obligation to support taxation when they believe others are also contributing. Another possible explanation is that the optimistic belief in others' contributions makes taxation seem more justified, as it reduces concerns about free riding and reinforces the fairness of collective efforts.

However, it is important to note that support for government taxation of public goods remains high, even when beliefs of contribution in the public goods game are low. This suggests that individuals who believe others may not voluntarily contribute to public goods view government intervention, in the form of taxation, as necessary. Taxation ensures the provision of public goods that might otherwise go underfunded due to a lack of voluntary contributions. Additionally, cultural and historical factors could play a role, as Norway's history of a strong welfare state may influence a predisposition among the population to support the taxation of public goods.

## 6. Conclusion

In this paper, we have examined the balance between freedom and equality/efficiency when individuals are given the option to act paternalistically. Specifically, we investigated factors that influence third-party decisions and attitudes toward public goods. This involved analyzing the behavior of spectators within an experimental framework, focusing on the variables that shape their decisions to intervene, including their background characteristics and beliefs about others. Additionally, we explored spectators' policy attitudes—specifically towards the taxation of Norwegian citizens to fund public goods—to assess whether the behaviors observed in the experiment extend to real-world contexts. In doing so, we contribute to the field of behavioral economics, addressing a gap in the literature by incorporating a third-party intervention mechanism into a public goods game and bridging the gap between theories of public goods and paternalism.

Our analysis reveals that the majority of spectators exhibit a moral preference for prioritizing freedom over the enforcement of equality or efficiency. This indicates that the majority of individuals in our sample align with libertarian principles. Across both treatments, 57% of spectators chose not to intervene, favoring individual autonomy, while 43% went for a paternalistic approach by intervening. These results highlight the challenges of public goods, as people often exhibit skepticism toward the restriction of freedom, even when potential means exist to enforce fairness and efficiency in public goods contexts.

Our main findings suggest that right-wing political inclinations reduce the probability of paternalistic intervention, while individuals with high income are more likely to intervene. Interestingly, the type of treatment (windfall/earned) had no effect on the willingness to intervene, suggesting that intrinsic factors like for instance political ideology may play a bigger role than the external context of where the money stem from in such decisions.

With regards to the analysis of spectators' beliefs about others' behavior, we saw a baseline optimism, with spectators on average expecting contributions from approximately 2.5 out of 4 players in the games. We found that demographic and ideological factors did not significantly correlate with spectators' beliefs. We also found that beliefs do not have a statistically significant effect on intervention behavior, and this holds true for spectators in both treatment groups.

When analyzing spectators' attitudes toward a real-life scenario, we found that spectators with optimistic beliefs about players' contributions and those who chose to intervene were more likely to support government taxation for public goods. The positive correlation between intervention and support for taxation held true even when accounting for political affiliation and other background factors. The correlation between experimental behavior and real-world attitudes toward taxation highlights the potential for behavioral economics to inform policymaking.

While the majority of participants in the study favored individual freedom over enforced behavior, their support for taxation programs suggests that people are open to collective action when they see the benefits for society as a whole. This indicates that while there is a preference for autonomy, there is also recognition of the need for government intervention to achieve fairness and efficiency in areas like public goods provision. People may be more supportive of taxation if it is framed as a necessary tool for achieving public welfare, especially if they feel the tax system is fair and the benefits are equitably distributed.

In the context of origin of monetary means, our finding that the origin of endowment (windfall or earned) did not affect the intervention behavior might have broader implications for governing bodies. The findings implies that public support for taxation policies may not depend on how wealth is acquired—whether through inheritance or through labor—but rather on broader moral values. Policymakers could emphasize fairness in the distribution of resources, focusing on how taxation can reduce inequality and promote social welfare, regardless of the origin of the wealth.

Although our experimental design aimed to ensure both internal and external validity by using real money, the way people evaluate the trade-offs between freedom and efficiency or equality may vary if the economic stakes were higher. For instance, with 200kr being less than the Norwegian average hourly wage of 312kr<sup>5</sup>, the relatively low stakes might have influenced the spectators' reasoning during their decision-making.

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<sup>5</sup> The hourly Norwegian wage of 312kr was calculated dividing the median Norwegian annual pay across all sectors (SSB, 2024) by the amount of working hours every month, assuming a standard full-time schedule of 1,950 working hours per year (SSB, n.d)

Findings from our study pave the way for multiple topics for future research. While our study looks at intervention rates and spectators' beliefs about contributions in public goods games, and analyses the relationship between beliefs and intervention rates on opinions regarding real-life government taxation of public goods, it does not uncover reasons behind spectators' different beliefs. This could be an interesting area to explore in future studies, as such research could uncover causes for different beliefs. Moreover, our findings indicate that high income individuals have higher probabilities of intervening in public goods games to ensure fairness, efficiency and equality, without explaining the reasoning behind this. This presents an intriguing avenue for future researchers to investigate.

A key finding from our experiment is that beliefs of spectators regarding contributions do not significantly influence their likelihood of intervening in the public goods games. This indicates that other factors than beliefs are important for intervention among spectators. Conducting qualitative studies in the future could provide valuable insights into spectators' choices and factors driving spectator intervention.

Furthermore, exploring how results differ across different countries could also be an interesting topic of research in order to generalize results, as we have only looked at a representative sample from the Norwegian population. It might be that cultural factors specific to Norway, such as high levels of trust, diminish or influence the impact of other explanatory variables.

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## **Declaration on the use of AI Tools in the Work on this Master's Thesis**

ChatGPT (4.0) was used to generate codes for various regression models and other statistical calculations and figures relevant to the study. The generated codes were then reviewed and adapted. We want to emphasize that no confidential data, personal information, or proprietary research data was shared with ChatGPT.

ChatGPT was also used as tool to review and refine the language. This process focused only on improving sentence structure and ensuring the language was formal and appropriate for academic writing. It is important to clarify that ChatGPT was not used to generate the content of this thesis. All original text, ideas, analysis, and conclusions presented in the thesis were created by us independently.

We are aware that we are responsible for all content of this master's thesis, including the parts where AI tools were used. We are responsible for ensuring that the thesis complies with ethical rules for privacy and publication.

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## Appendix

### A.1 Norstat Survey

**Hva er din alder?**

\_\_\_\_\_

**Er du mann eller kvinne?**

Mann

Kvinne

**Hva er ditt postnummer?**

\_\_\_\_\_

Neste

**For å sikre at du leser den oppgitte informasjonen nøye, vil vi at du først svarer på et enkelt spørsmål.**

**Hvilket av de følgende er et møbel du bruker for å sitte ved bordet?**

Kjøleskap

Stol

Sykkel

Brødrister

Neste

Du vil nå bli bedt om å ta et valg som kan ha reelle konsekvenser for fire andre personer. Du vil også bli bedt om å svare på to spørsmål. Vi ber deg derfor lese informasjonen nedenfor nøye for å forsikre deg om at du forstår situasjonen.

De fire personene har blitt tilfeldig plassert i samme gruppe. Personene kjenner hverandre ikke fra før, og kan ikke kommunisere med hverandre.

Hver av de fire personene har gjort en jobb og tjent 100kr hver.

Hver av de fire vil bli bedt om å velge mellom to alternativer:

1. Bidra med sine 100 kr til en fellespott. Pengene de bidrar med dobles og fordeles deretter likt mellom alle fire.

2. Ikke bidra med sine 100kr.

Hver av de fire tar valget på egenhånd.

- Dersom alle fire bidrar med 100kr, vil alle ende opp med 200kr hver.
- Dersom ingen bidrar, vil alle ende opp med 100kr hver.
- Dersom kun én bidrar, vil vedkommende ende opp med 50kr, mens de tre andre vil ende opp med 150kr hver.
- Dersom to bidrar, vil disse to ende opp med 100kr hver, mens de to som ikke bidro vil ende opp med 200kr hver.
- Dersom alle utenom én bidrar, vil den som ikke bidro, ende opp med 250kr, mens de tre andre vil ende opp med 150kr hver.

Dermed er det beste for den enkelte å ikke bidra med sine 100kr inn til fellespotten, uavhengig av hva de tre andre gjør.

Neste

### Hvor mange tror du vil bidra?

Ingen bidrar

Én av fire bidrar

To av fire bidrar

Tre av fire bidrar

Alle fire bidrar

Neste

**Du vil nå få mulighet til å velge om de fire personene skal ha frihet til å bestemme selv om de vil bidra med sine 100kr inn til fellespotten, eller om alle må gi sine 100kr inn til fellespotten. Velg ett av de to følgende alternativene:**

Deltakerne får selv bestemme om de vil bidra med sine 100kr til fellespotten eller beholde dem.

Deltakerne får ikke selv bestemme om de vil bidra: Alle må bidra med 100kr inn til fellespotten.

Du og 99 andre respondenter har blitt bedt om å ta et valg i denne situasjonen. *Etter alle har gjort sitt valg, trekker vi tilfeldig ett av disse valgene som vil bli gjennomført. Valget ditt er anonymt og vil ikke være synlig for noen andre.*

Neste

**I hvilken grad er du enig i at myndighetene burde skattlegge borgere for å finansiere goder som alle har nytte av?**

Svært uenig

Uenig

Verken enig eller uenig

Enig

Svært enig

Neste

**Hva er din høyeste fullførte utdanning?**

Folkeskole/grunnskole

Videregående (inkl. tidligere yrkesskole)

Fagskole, fagbrev/svennebrev og annen 1-2 årig utdanning etter videregående skole

Universitet/høyskole inntil 3 år (Bachelorgrad)

Universitet/høyskole 4 år eller mer (Mastergrad og høyere)

Annet

Neste

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### Hva er husstandens bruttoinntekt (før skatt) per år?

 0-100.000 NOK 100.001-200.000 NOK 200.001-300.000 NOK 300.001-400.000 NOK 400.001-500.000 NOK 500.001-600.000 NOK 600.001-700.000 NOK 700.001-800.000 NOK 800.001-900.000 NOK 900.001-1.000.000 NOK 1.000.001-1.100.000 NOK 1.100.001-1.200.000 NOK 1.200.001-1.300.000 NOK 1.300.001-1.400.000 NOK 1.400.001-1.500.000 NOK 1.500.001 NOK eller mer Vil ikke svare Vet ikke

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## Dersom det var stortingsvalg i morgen, hvilket parti ville du da stemt på?

Arbeiderpartiet - AP

Fremskrittspartiet - Frp

Høyre - H

Kristelig Folkeparti - Krf

Rødt - R

Senterpartiet - SP

Sosialistisk Venstreparti - SV

Venstre - V

Miljøpartiet De Grønne - MDG

Demokratene i Norge - DEMN

Pensjonistpartiet - PP

Konservativt (tidligere Partiet De Kristne) - K

Industri- og Næringspartiet - INP

Andre partier

Vil ikke stemme

Vil ikke svare

Ikke sikker/vet ikke

Har ikke stemmerett

Vil stemme blankt

Neste

## A.2 Descriptive Statistics

gender

### Er du mann eller kvinne?

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
<b>Mann</b>	50%	51%	51%	51%	51%	48%	100%	
<b>Kvinne</b>	50%	49%	49%	49%	49%	52%		100%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

### Hva er din alder?

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
<b>18-29</b>	19%	100%					19%	18%
<b>30-39</b>	18%		100%				18%	17%
<b>40-49</b>	16%			100%			17%	16%
<b>50-59</b>	17%				100%		17%	17%
<b>60+</b>	31%					100%	29%	32%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

educationLevel

### Hva er din høyeste fullførte utdanning?

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
<b>Folkeskole/grunnskole</b>	5%	11%	3%	4%	3%	4%	7%	4%
<b>Videregående (inkl. tidligere yrkesskole)</b>	19%	35%	14%	16%	17%	13%	17%	20%
<b>Fagskole, fagbrev/svennebrev og annen 1-2 årig u</b>	17%	13%	20%	15%	19%	17%	20%	13%
<b>Universitet/høyskole inntil 3 år (Bachelorgrad)</b>	29%	23%	31%	30%	27%	33%	29%	29%
<b>Universitet/høyskole 4 år eller mer (Mastergrad og</b>	30%	18%	30%	34%	33%	32%	27%	32%
<b>Annet</b>	1%	1%	3%	1%		1%	0%	2%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%



household\_income

## Hva er husstandens bruttoinntekt (før skatt) per år?

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
0-100.000 NOK	1%	3% CE	1%		1%		1%	1%
100.001-200.000 NOK	1%	4% BDE		1%	1%	1%	1%	2%
200.001-300.000 NOK	2%	4% D	1%	2% D		2% D	2%	2%
300.001-400.000 NOK	6%	7% D	6% D	6%	2%	6% D	4%	7%
400.001-500.000 NOK	6%	7% C	3%	3%	3%	9% BCD	7%	5%
500.001-600.000 NOK	7%	7%	5%	5%	9%	7%	6%	8%
600.001-700.000 NOK	8%	8% C	8% C	3%	9% C	10% C	9%	7%
700.001-800.000 NOK	7%	5%	6%	5%	7%	9%	7%	7%
800.001-900.000 NOK	7%	5%	5%	10%	6%	10% AB	7%	8%
900.001-1.000.000 NOK	5%	4%	3%	4%	7%	8% AB	6%	5%
1.000.001-1.100.000 NOK	6%	5%	8%	6%	7%	7%	8% G	5%
1.100.001-1.200.000 NOK	5%	4%	6%	4%	11% ACE	4%	5%	5%
1.200.001-1.300.000 NOK	4%	2%	7% AE	9% ADE	4%	1%	4%	4%
1.300.001-1.400.000 NOK	2%		4% A	4% A	3% A	2% A	3%	2%
1.400.001-1.500.000 NOK	3%	2%	4%	5%	5%	2%	4%	2%
1.500.001 NOK eller mer	11%	5%	15% AE	20% AE	17% AE	6%	14% G	9%
Vil ikke svare	15%	15%	17%	12%	10%	18% D	12%	18% F
Vet ikke	4%	15% BCDE	4% DE	2%		0%	3%	5%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Hid\_group

## Dummy variable for groups

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
group1	50%	48%	54%	52%	49%	47%	50%	50%
group2	50%	52%	46%	48%	51%	53%	50%	50%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Group1 refers to the group that received earned treatment, while Group2 refers to the group that received the windfall treatment.

hid\_group1

**Dummy variable for groups**

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>520</b>	<b>97</b>	<b>99</b>	<b>88</b>	<b>86</b>	<b>149</b>	<b>261</b>	<b>260</b>
<b>group1a</b>	50%	50%	57%	52%	48%	45%	51%	50%
<b>group1b</b>	50%	50%	43%	48%	52%	55%	50%	50%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Group 1a refers to the group that received both earned treatment and sinking order, Group 1b refers to the group that received both earned treatment and rising order

hid\_group2

**Dummy variable for groups**

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>528</b>	<b>102</b>	<b>86</b>	<b>81</b>	<b>89</b>	<b>169</b>	<b>263</b>	<b>265</b>
<b>group2a</b>	50%	49%	51%	46%	56%	49%	47%	53%
<b>group2b</b>	50%	51%	49%	54%	44%	52%	53%	47%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Group 1a refers to the group that received both earned treatment and sinking order, Group 1b refers to the group that received both earned treatment and rising order.

Q1\_a

**Hvor mange tror du vil bidra?**

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>511</b>	<b>95</b>	<b>98</b>	<b>82</b>	<b>88</b>	<b>148</b>	<b>249</b>	<b>262</b>
<b>Alle fire bidrar</b>	46%	31%	41%	51%	52%	54%	48%	45%
<b>Tre av fire bidrar</b>	13%	22%	15%	14%	10%	7%	13%	13%
<b>To av fire bidrar</b>	19%	25%	22%	21%	18%	12%	18%	19%
<b>Én av fire bidrar</b>	7%	9%	10%	5%	4%	6%	7%	6%
<b>Ingen bidrar</b>	16%	14%	12%	9%	17%	23%	15%	17%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Q1\_b

## Hvor mange tror du vil bidra?

	TOTAL	Age					Gender	
		18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>511</b>	<b>98</b>	<b>81</b>	<b>84</b>	<b>83</b>	<b>164</b>	<b>263</b>	<b>248</b>
Ingen bidrar	17%	18%	14%	11%	25%	16%	17%	16%
Én av fire bidrar	10%	17%	12%	14%	9%	4%	12%	8%
To av fire bidrar	19%	28%	23%	23%	16%	12%	21%	18%
Tre av fire bidrar	12%	16%	17%	14%	8%	9%	11%	14%
Alle fire bidrar	42%	20%	35%	38%	42%	59%	39%	44%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Du vil nå få mulighet til å velge om de fire personene skal ha frihet til å bestemme selv om de vil bidra med sine 100kr inn til fellespotten, eller om alle må gi sine 100kr inn til fellespotten. Velg ett av de to følgende alternativene:

	TOTAL	Age					Gender	
		18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
Deltakerne får selv bestemme om de vil bidra n	57%	56%	51%	57%	53%	64%	57%	57%
Deltakerne får ikke selv bestemme om de vil bi	43%	45%	49%	43%	47%	36%	43%	43%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

I hvilken grad er du enig i at myndighetene burde skattlegge borgere for å finansiere goder som alle har nytte av?

	TOTAL	Age					Gender	
		18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
Svært uenig	5%	4%	4%	6%	7%	5%	7%	4%
Uenig	10%	7%	14%	11%	10%	9%	11%	9%
Verken enig eller uenig	19%	30%	15%	16%	17%	16%	18%	20%
Enig	36%	35%	32%	37%	35%	38%	35%	36%
Svært enig	30%	23%	34%	29%	32%	32%	29%	31%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

Q2

pol

## Dersom det var stortingsvalg i morgen, hvilket parti ville du da stemt på?

	Age						Gender	
	TOTAL	18-29 A	30-39 B	40-49 C	50-59 D	60+ E	Mann F	Kvinne G
<b>BASE</b>	<b>1022</b>	<b>192</b>	<b>180</b>	<b>166</b>	<b>172</b>	<b>312</b>	<b>512</b>	<b>510</b>
Arbeiderpartiet - AP	13%	8%	9%	8%	16%	19%	13%	12%
Fremskrittspartiet - Frp	16%	24%	10%	12%	22%	14%	21%	10%
Høyre - H	16%	12%	9%	19%	19%	19%	17%	15%
Kristelig Folkeparti - Krf	3%	2%	1%	1%	1%	6%	3%	3%
Rødt - R	4%	3%	6%	6%	6%	3%	4%	4%
Senterpartiet - SP	4%	3%	3%	6%	2%	4%	4%	3%
Sosialistisk Venstreparti - SV	10%	9%	13%	8%	9%	10%	8%	12%
Venstre - V	3%	3%	3%	5%	1%	3%	4%	2%
Miljøpartiet De Grønne - MDG	3%	3%	7%	3%	2%	1%	3%	2%
Demokratene i Norge - DEMN	0%				1%			0%
Pensjonistpartiet - PP	1%		1%	1%	1%	2%	1%	1%
Konservativt (tidligere Partiet De Kristne) - K	1%	1%	1%			0%	1%	0%
Industri- og Næringspartiet - INP	2%	1%	4%	1%	2%	2%	2%	2%
Andre partier	1%	1%	1%		1%	0%	1%	1%
Vil ikke stemme	2%	1%	5%	1%	1%	1%	2%	2%
Vil ikke svare	3%	3%	2%	2%	3%	3%	2%	4%
Ikke sikker/vet ikke	17%	23%	21%	23%	13%	11%	12%	23%
Har ikke stemmerett	1%	1%	1%			0%		1%
Vil stemme blankt	3%	4%	3%	5%	1%	1%	3%	2%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Sign.level: 95%

## A.3 IRB-application

NHH




### NHH IRB REVIEW ASSESSMENT LETTER

<b>Application number</b>	NHH-IRB-2024-53
<b>Outcome</b>	Approved
<b>Title</b>	Social Paternalism
<b>Name of applicant</b>	Alexander Cappelen

### COMMENTS

The above referenced project has been approved by the NHH Norwegian School of Economics Institutional Review Board (NHH IRB). This approval is limited to the activities described in the approved application and enclosed attachments (experimental set-up treatment descriptions and information about data collection).

The IRB assumes that all necessary legal requirements have been met.

Date	SIGNATURE
2024-10-04	
	Erik Ø. Sørensen
	IRB Chair

## A.4 Interaction Effects between Background Variables and Treatment

Table 6: Intervention as dependent variable

	(1)	(2)	(3)	(4)	(5)
High age	-0.038 (0.038)				
High age × Earned	-0.025 (0.046)				
Female		0.024 (0.038)			
Female × Earned		-0.019 (0.044)			
High education			0.029 (0.038)		
High education × Earned			-0.005 (0.040)		
High income				0.070 (0.039)	
High income × Earned				-0.025 (0.046)	
Right-wing					-0.115** (0.043)
Right-wing × Earned					0.047 (0.054)
Constant	0.455*** (0.021)	0.424*** (0.022)	0.416*** (0.024)	0.406*** (0.021)	0.461*** (0.019)
Observations	1022	1022	1022	1022	1022
$R^2$	0.003	0.000	0.001	0.004	0.008

Table 6 - The table shows OLS regressions. The dependent variable across all models (1)-(5) is an indicator for whether a spectator chooses to intervene. In model (1), *High age* is an indicator for the spectator being of high age. *High age*×*Earned* is an interaction between *High age* and *Earned*. In the subsequent models (2)-(4), we do the same for the remaining background variables (*Female*, *High education*, *High income* and *Right-wing*). Robust standard errors are reported in parentheses. Significance levels: \* p<0.10p, \*\* p<0.05p, \*\*\* p<0.01p.

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## A.5 Belief Order

Table 7: Belief as dependent variable

	(1)
Sinking order	0.164* (0.094)
Constant	2.516*** (0.066)
Observations	1022
$R^2$	0.003

Table 7 - The table shows an OLS regression. *Belief* is the dependent variable, measured between beliefs of zero and 4 contributions. *Sinking order* is an indicator for the spectators being presented with the belief alternatives in sinking order in the survey. The *Constant* refers to the reference group, which are those presented with the belief alternatives in rising order. Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

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## A.6 Belief by Treatment

Table 8: Belief as dependent variable

	(1)
Earned	-0.108 (0.094)
Constant	2.652*** (0.066)
Observations	1022
$R^2$	0.001

Table 8 - The table presents an OLS regression. The dependent variable is *Belief*. *Earned* indicates the spectator being in the *Earned* treatment. The *Constant* refers to being in the reference group, the *windfall* treatment. Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



## A.7 Public Good Opinion Agree

Table 9: Public goods opinion (Agree) as dependent variable

	(1)	(2)	(3)	(4)	(5)
Intervention	0.167*** (0.029)		0.167*** (0.029)	0.148*** (0.029)	0.146*** (0.028)
Belief (Linear)		0.112*** (0.039)	0.112*** (0.039)	0.104*** (0.038)	0.090** (0.037)
Constant	0.590*** (0.019)	0.590*** (0.029)	0.518*** (0.032)	0.606*** (0.033)	0.490*** (0.041)
Controls	No	No	No	Right-wing	Yes
Observations	1022	1022	1022	1022	1022
$R^2$	0.031	0.008	0.038	0.091	0.128

Table 9 - The table presents the results of OLS regressions. In all models (1)–(4), the dependent variable, *Public Goods Opinion (Agree)* is an indicator for whether a spectator agreed or strongly agreed to the question regarding public goods taxation. *Intervention* is an indicator for spectator intervention in the public goods game. *Belief (Linear)* is an indicator for believing all four players will contribute in the public goods game. In model (4), we control for *right-wing*, and in model (5), we also control for all remaining background variables (*high age*, *female*, *high education* and *high income*). Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## A.8 Background Characteristics by Belief Order

Table 10: Background Characteristics by Belief Order

	Total sample	Belief order		Difference	P-value
		Sinking	Rising		
High age	0.460	0.447	0.473	-0.025	0.418
Female	0.497	0.510	0.484	0.025	0.416
High education	0.591	0.578	0.604	-0.026	0.402
High income	0.455	0.480	0.429	0.051	0.101
Right-wing	0.323	0.328	0.318	0.010	0.721

Table 10 - The table displays the fractions of spectators possessing the specific background characteristics in the total sample, as well as across the two groups presented with the alternatives to the question regarding belief in different order: sinking and rising. In the last two columns, the difference between the two groups, along with p-values derived from two sample t-tests between sinking and rising are displayed. The P-value shows the statistical significance of the differences.

## A.9 Interaction Effects Between Beliefs and Treatment

Table 11: Intervention as dependent variable

	(1)	(2)	(3)	(4)
1 contribution	-0.006 (0.062)	0.018 (0.062)		
1 contribution $\times$ Earned	-0.021 (0.077)	-0.044 (0.077)		
2 contributions	0.025 (0.080)	0.017 (0.080)		
2 contributions $\times$ Earned	-0.038 (0.109)	-0.047 (0.109)		
3 contributions	0.031 (0.056)	0.022 (0.056)		
3 contributions $\times$ Earned	0.042 (0.071)	0.039 (0.071)		
4 contributions	-0.054 (0.065)	-0.069 (0.065)		
4 contributions $\times$ Earned	0.058 (0.086)	0.055 (0.086)		
Belief (Linear)			0.000 (0.046)	-0.005 (0.046)
Belief (Linear) $\times$ Earned			-0.003 (0.041)	-0.001 (0.041)
Constant	0.427*** (0.023)	0.441*** (0.042)	0.432*** (0.031)	0.447*** (0.044)
Controls	No	Yes	No	Yes
Observations	1022	1022	1022	1022
$R^2$	0.004	0.017	0.000	0.014

Table 11 - The table shows OLS regressions. The dependent variable across all models (1)-(4) is an indicator for whether a spectator chooses to intervene. Models (1) and (2) display the coefficients for different spectator beliefs about contributions in the public good game, relative to the reference group of zero-contribution beliefs. In models (3)-(4), we use a linearization of the belief variable. Interaction terms between different beliefs and *Earned*, is included in all models, where for instance, *1 contribution* $\times$ *Earned*, shows the coefficient for the interaction between beliefs of one contribution and the earned treatment. In models (2) and (4), we control for the different background variables (*High age*, *Female*, *High income*, *High education* and *Right-wing*). Robust standard errors are reported in parentheses. Significance levels: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .